

Mr. C. K. McCoy
 Vice President
 Southern Nuclear Operating
 Company, Inc.
 Post Office Box 1295
 Birmingham, Alabama 35201-1295

May 20, 1998

SUBJECT: ISSUANCE OF AMENDMENTS - VOGTLE ELECTRIC GENERATING PLANT,
 UNITS 1 AND 2 (TAC NOS. M96769 and M96770)

Dear Mr. McCoy:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 100 to Facility Operating License NPF-68 and Amendment No. 78 to Facility Operating License NPF-81 for the Vogtle Electric Generating Plant (VEGP), Units 1 and 2. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated January 22, 1998, as supplemented by letter dated March 18, 1998, April 21, 1998, and May 15, 1998. The application supersedes a similar proposal that was to have been a part of the implementation of the improved Standard TS (Amendment Nos. 96 and 74 for VEGP Units 1 and 2, respectively), but was not acted upon by the NRC staff as addressed in our letter dated September 25, 1996. In this regard, with the issuance of these amendments, the last outstanding issues associated with the implementation of the improved Standard TS have now been addressed.

The amendments change the VEGP TS to allow an extended allowed outage time for one emergency diesel generator of 14 days.

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

Sincerely,

ORIGINAL SIGNED BY:
 David Jaffe, Senior Project Manager
 Project Directorate II-2
 Division of Reactor Projects - I/II
 Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

Enclosures:

1. Amendment No. 100 to NPF-68
2. Amendment No. 78 to NPF-81
3. Safety Evaluation

cc w/encls: See next page

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OFFICE	PDII-2/PM*	PDII-2/LA*	TSB*	EELB*	OGC*	RDII-2/D
NAME	D.JAFFE:cn	L.BERRY	WBeckner	JCalvo	CBarth	H.BERKOW
DATE	3/25/98	4/16/98	5/18/98	4/1/98	4/9/98	4/19/98
COPY	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

May 20, 1998

Mr. C. K. McCoy
Vice President
Southern Nuclear Operating
Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201-1295

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

Sincerely,

A handwritten signature in black ink, appearing to read "D. Jaffe", written over a circular stamp or mark.

David Jaffe, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

Enclosures:

1. Amendment No. 100 to NPF-68
2. Amendment No. 78 to NPF-81
3. Safety Evaluation

cc w/encls: See next page

Vogle Electric Generating Plant

cc:

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Burke County Commission
Waynesboro, Georgia 30830



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

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

VOGTLE ELECTRIC GENERATING PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 100
License No. NPF-68

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Vogtle Electric Generating Plant, Unit 1 (the facility) Facility Operating License No. NPF-68 filed by the Southern Nuclear Operating Company, Inc. (Southern Nuclear), acting for itself, Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the licensees), dated January 22, 1998, as supplemented by letters dated March 18, 1998, April 21, 1998, and May 15, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 set forth in 10 CFR Chapter I;
 - 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 hereby amended by page 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-68 is hereby amended to read as follows:

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 100 , and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

In addition, the license is amended to add paragraph 2.C.(10) to Facility Operating License No. NPF-68 as follows:

(10) Additional Conditions

The Additional Conditions contained in Appendix D, as revised through Amendment No. 100 , are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Additional Conditions.

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

FOR THE NUCLEAR REGULATORY COMMISSION



J. M. O'Shea
FOR

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

Attachments:

1. Operating License Changes
2. Technical Specification Changes

Date of Issuance: May 20, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 100

FACILITY OPERATING LICENSE NO. NPF-68

DOCKET NO. 50-424

Replace the following pages of the Operating License with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the areas of change.

<u>Remove</u>	<u>Insert</u>
Pages 6 and 8	Pages 6 and 8
---	Appendix D

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

<u>Remove</u>	<u>Insert</u>
3.8-2	3.8-2
3.8-3	3.8-3
-	3.8-3a
-	3.8-3b
3.8-4	3.8-4
3.8-5	3.8-5
5.0-27	5.0-27
B 3.8-5	B 3.8-5
B 3.8-6	B 3.8-6
B 3.8-7	B 3.8-7
B 3.8-8	B 3.8-8
-	B 3.8-8a
-	B 3.8-8b
B 3.8-9	B 3.8-9
B 3.8-10	B 3.8-10
-	B 3.8-10a
-	B 3.8-10b
B 3.8-11	B 3.8-11
-	B 3.8-11a
-	B 3.8-11b
B 3.8-12	B 3.8-12
B 3.8-13	B 3.8-13
B 3.8-14	B 3.8-14
B 3.8-15	B 3.8-15

4. documentation showing tradeoff analyses and other information used in resolving HEDs
5. the methodology by which control room changes were to be factored into the operators' training program
6. procedures that incorporate human factors review into the design process for future control room modifications

(8) Zinc Coating of Diesel Fuel Oil Storage Tanks (Section 9.5.4.2, SSER 4)

Prior to restart following the first refueling, GPC shall (1) replace the zinc coating in the diesel generator fuel oil storage tanks with a coating which does not contain zinc or (2) by March 1, 1988 provide an acceptable justification to the staff that the present fuel oil storage tank zinc-based coating will not affect the operability and reliability of the diesel generators over the life of the plant as specified in IE Circular 77-15.

If option (1) is chosen, GPC shall provide the NRC with a modification status report 30 days before the expiration of the license condition.

(9) Alternate Radwaste Facility (Section 11.4, SSERs 3 and 4)

Prior to restart following the first refueling, the ventilation exhaust of the alternate radwaste facility shall be modified to exhaust through HEPA filters already installed in the auxiliary building HVAC system.

GPC shall provide the NRC with a modification status report 30 days before the expiration of the license condition.

(10) Additional Conditions

The Additional Conditions contained in Appendix D, as revised through Amendment No. 100 , are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Additional Conditions.

- D. The facility requires exemptions from certain requirements of 10 CFR Part 50 and 10 CFR Part 70. These include (a) an exemption from the requirements of 10 CFR 70.24 for two criticality monitors around the fuel storage area, (b) an exemption from the requirements of Paragraph III.D.2(b)(ii) of Appendix J of 10 CFR 50, the testing of containment air locks at times when containment integrity is not required, and (c) a schedular exemption from 10 CFR 50.34(b)(2)(i) as it pertains to GDC 2, 61, and 62 of Appendix A to 10 CFR 50 for the spent fuel pool racks for the time period before the racks contain irradiated fuel. The special circumstances regarding exemptions b and c are identified in Sections 6.2.6 and 9.1.2 of SSER 5, respectively.

H. Reporting to the Commission

Except as otherwise provided in the Technical Specifications or Environmental Protection Plan, Southern Nuclear shall report any violations of the requirements contained in Section 2.C of this license in the following manner: initial notification shall be made within twenty-four (24) hours to the NRC Operations Center via the Emergency Notification System with written follow-up within 30 days in accordance with the procedures described in 10 CFR 50.73(b), (c), and (e).

- I. The Owners shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.
- J. This license is effective as of the date of issuance and shall expire at midnight on January 16, 2027.

FOR THE NUCLEAR REGULATORY COMMISSION

/s/

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Attachment 1 - DELETED
- 2. Appendix A - Technical Specifications
- 3. Appendix B - Environmental Protection Plan
- 4. Appendix C - Antitrust Conditions
- 5. Appendix D - Additional Conditions

Date of Issuance: March 16, 1987

APPENDIX D

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-68

Amendment
Number

Additional Condition

Implementation
Date

100

The licensee shall implement a procedure that will prohibit entry into an extended Emergency Diesel Generator Allowed Outage Time (14 days), for scheduled maintenance purposes, if severe weather conditions are expected, as described in the licensee's application dated January 22, 1998, as supplemented by letter dated March 18, 1998, and evaluated in the staff's Safety Evaluation dated May 20, 1998.

Prior to implementation
of Amendment No.100.



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

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

VOGTLE ELECTRIC GENERATING PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 78
License No. NPF-81

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Vogtle Electric Generating Plant, Unit 2 (the facility) Facility Operating License No. NPF-81 filed by the Southern Nuclear Operating Company, Inc. (Southern Nuclear), acting for itself, Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the licensees), dated January 22, 1998, as supplemented by letters dated March 18, 1998, April 21, 1998, and May 15, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 set forth in 10 CFR Chapter I;
 - 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 hereby amended by page 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-81 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 78 , and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

In addition, the license is amended to add paragraph 2.C.(3) to Facility Operating License No. NPF-81 as follows:

(3) Additional Conditions

The Additional Conditions contained in Appendix D, as revised through Amendment No. 78 , are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Additional Conditions.

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

FOR THE NUCLEAR REGULATORY COMMISSION



For

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

Attachment:

1. Operating License Changes
2. Technical Specification Changes

Date of Issuance: May 20, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 78

FACILITY OPERATING LICENSE NO. NPF-81

DOCKET NO. 50-425

Replace the following pages of the Operating License with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the areas of change.

Remove

Pages 4, 5, and 6

Insert

Pages 4, 5, and 6

Appendix D

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

Remove

3.8-2

3.8-3

-

-

3.8-4

3.8-5

5.0-27

B 3.8-5

B 3.8-6

B 3.8-7

B 3.8-8

-

-

B 3.8-9

B 3.8-10

-

-

B 3.8-11

-

-

B 3.8-12

B 3.8-13

B 3.8-14

B 3.8-15

Insert

3.8-2

3.8-3

3.8-3a

3.8-3b

3.8-4

3.8-5

5.0-27

B 3.8-5

B 3.8-6

B 3.8-7

B 3.8-8

B 3.8-8a

B 3.8-8b

B 3.8-9

B 3.8-10

B 3.8-10a

B 3.8-10b

B 3.8-11

B 3.8-11a

B 3.8-11b

B 3.8-12

B 3.8-13

B 3.8-14

B 3.8-15

- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I 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

Southern Nuclear is authorized to operate the facility at reactor core power levels not in excess of 3565 megawatts thermal (100 percent power) in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 78 , and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

The Surveillance Requirements (SRs) contained in the Appendix A Technical Specifications and listed below are not required to be performed immediately upon implementation of Amendment No. 74. The SRs listed below shall be successfully demonstrated prior to the time and condition specified below for each:

- a) SRs 3.8.1.8, 3.8.1.11 and 3.8.1.13 shall be successfully demonstrated prior to the first entry into MODE 4 following the fifth refueling outage.
- b) SR 3.8.1.9 shall be successfully demonstrated prior to the first entry into MODE 4 following the sixth refueling outage.
- c) SR 3.8.1.20 shall be successfully demonstrated at the first regularly scheduled performance after implementation of this license amendment.

(3) Additional Conditions

The Additional Conditions contained in Appendix D, as revised through Amendment No. 78 , are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Additional Conditions.

- D. The facility requires exemptions from certain requirements of 10 CFR Part 50 and 10 CFR Part 70. These include (a) an exemption from the requirements of 10 CFR 70.24 for two criticality monitors around the fuel storage area, (b) an exemption from the requirements of Paragraph III.D.2(b)(ii) of Appendix J of 10 CFR 50, the testing of containment air locks at times when containment integrity is not required, and (c) an exemption from the schedule requirements of 10 CFR 50.33(k)(1) related to availability of funds for decommissioning the facility. The special circumstances regarding exemptions b and c are identified in Sections 6.2.6 and 22.5 of SSER 8, respectively.

An exemption was previously granted pursuant to 10 CFR 70.24. The exemption was granted with NRC materials license No. SNM-1981, issued July 13, 1988, and relieved GPC from the requirement of having a criticality alarm system. GPC and Southern Nuclear are hereby exempted from the criticality alarm system provision of 10 CFR 70.24 so far as this section applies to the storage of fuel assemblies held under this license.

These exemptions are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security. The exemptions in items b and c above are granted pursuant to 10 CFR 50.12. With these exemptions, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission.

- E. Southern Nuclear shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The plans are entitled: "Vogtle Electric Generating Plant Unit 1 and Unit 2 Physical Security and Contingency Plan" (which contains Safeguards Information protected under 10 CFR 73.21) with revisions submitted through September 12, 1996, and "Vogtle Electric Generating Plant Guard Training and Qualification Plan," with revisions submitted through March 13, 1996. Changes made in accordance with 10 CFR 73.55 shall be implemented in accordance with the schedule set forth therein.
- F. GPC shall comply with the antitrust conditions delineated in Appendix C to this license.
- G. Southern Nuclear shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility, as approved in the SER (NUREG-1137) through Supplement 9 subject to the following provision:

Southern Nuclear may make changes to the approved fire protection program without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

H. Reporting to the Commission

Except as otherwise provided in the Technical Specifications or Environmental Protection Plan, Southern Nuclear shall report any violations of the requirements contained in Section 2.C of this license in the following manner: initial notification shall be made within twenty-four (24) hours to the NRC Operations Center via the Emergency Notification System with written follow-up within 30 days in accordance with the procedures described in 10 CFR 50.73(b), (c), and (e).

- I. The Owners shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.
- J. This license is effective as of the date of issuance and shall expire at midnight on February 9, 2029.

FOR THE NUCLEAR REGULATORY COMMISSION

/s/

Thomas E. Murley, Director
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Appendix A - Technical Specifications
- 2. Appendix B - Environmental Protection Plan
- 3. Appendix C - Antitrust Conditions
- 4. Appendix D - Additional Conditions

Date of Issuance: March 31, 1989

APPENDIX D

ADDITIONAL CONDITIONS

FACILITY OPERATING LICENSE NO. NPF-81

Amendment
Number

78

Additional Condition

The licensee shall implement a procedure that will prohibit entry into an extended Emergency Diesel Generator Allowed Outage Time (14 days), for scheduled maintenance purposes, if severe weather conditions are expected, as described in the licensee's application dated January 22, 1998, as supplemented March 18, 1998, and evaluated in the staff's Safety Evaluation dated May 20, 1998.

Implementation
Date

Prior to
implementation
of Amendment No.78.

NOTE

**ONE SET OF COMBINED TECHNICAL SPECIFICATION PAGES
PROVIDED FOR BOTH UNITS 1 AND 2.**

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	<p>A.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.</p> <p><u>AND</u></p> <p>A.3 Restore required offsite circuit to OPERABLE status.</p>	<p>24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)</p> <p>72 hours</p> <p><u>AND</u></p> <p>14 days from discovery of failure to meet LCO</p>

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One DG inoperable.	B.1 Perform SR 3.8.1.1 for the required offsite circuit(s).	1 hour <u>AND</u> Once per 8 hours thereafter
	<u>AND</u>	
	B.2 Verify SAT available.	1 hour <u>AND</u> Once per 12 hours thereafter
	<u>AND</u>	
	B.3 Declare required feature(s) supported by the inoperable DG inoperable when its required redundant feature(s) is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s)
	<u>AND</u>	
	B.4.1 Determine OPERABLE DG is not inoperable due to common cause failure.	24 hours
	<u>OR</u>	
	B.4.2 Perform SR 3.8.1.2 for OPERABLE DG.	24 hours
	<u>AND</u>	(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. (continued)</p>	<p>-----NOTE ----- Required Action B.5.1 is only applicable if the combined reliability of the enhanced black-start combustion turbine generators (CTG) and the black-start diesel generator is $\geq 95\%$. Otherwise, Required Action B.5.2 applies. -----</p> <p>B.5.1 Verify an enhanced black-start CTG is functional by verifying the CTG and the black-start diesel generator starts and achieves steady state voltage and frequency.</p> <p><u>OR</u></p> <p>B.5.2 Start and run at least one CTG while in Conditon B.</p> <p><u>AND</u></p>	<p>72 hours</p> <p><u>OR</u></p> <p>Within 72 hours prior to entry into Condition B</p> <p>72 hours</p> <p><u>OR</u></p> <p>Prior to entry into Conditon B for preplanned maintenance</p> <p>(continued)</p>

ACTIONS (continued)

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.6 Restore DG to OPERABLE status.	14 days from discovery of failure to meet LCO
C. Required Actions B.2, B.5.1, or B.5.2 and associated Completion Times not met.	C.1 Restore DG to OPERABLE status.	72 hours
D. Two required offsite circuits inoperable.	D.1 Declare required feature(s) inoperable when its redundant feature(s) is inoperable.	12 hours from discovery of Condition D concurrent with inoperability of redundant required features
	<u>AND</u> D.2 Restore one required offsite circuit to OPERABLE status.	24 hours
E. One required offsite circuit inoperable. <u>AND</u> One DG inoperable.	-----NOTE----- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems — Operating," when Condition E is entered with no AC power source to one or more trains. -----	(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. (continued)	E.1 Restore required offsite circuit to OPERABLE status. OR E.2 Restore DG to OPERABLE status.	12 hours 12 hours
F. Two DGs inoperable.	F.1 Restore one DG to OPERABLE status.	2 hours
G. One automatic load sequencer inoperable.	G.1 Restore automatic load sequencer to OPERABLE status.	12 hours
H. Required Action and associated Completion Time of Condition A, C, D, E, F, or G not met. OR Required Action B.1, B.3, B.4.1, B.4.2, or B.6 and associated Completion Time not met.	H.1 Be in MODE 3. AND H.2 Be in MODE 5.	6 hours 36 hours
I. Three or more required AC sources inoperable.	I.1 Enter LCO 3.0.3.	Immediately

5.5 Programs and Manuals

5.5.17 Containment Leakage Rate Testing Program (continued)

The provisions of SR 3.0.2 do not apply to the test frequencies specified in the Containment Leakage Rate Testing Program.

The provisions of SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.

5.5.18 Configuration Risk Management Program

The Configuration Risk Management Program (CRMP) provides a proceduralized risk-informed assessment to manage the risk associated with equipment inoperability. The program applies to technical specification structures, systems, or components for which a risk-informed allowed outage time has been granted. The program shall include the following elements:

- a. Provisions for the control and implementation of a Level 1 at power internal events PRA-informed methodology. The assessment shall be capable of evaluating the applicable plant configuration.
 - b. Provisions for performing an assessment prior to entering the LCO Condition for preplanned activities.
 - c. Provisions for performing an assessment after entering the LCO Condition for unplanned entry into the LCO Condition.
 - d. Provisions for assessing the need for additional actions after the discovery of additional equipment out of service conditions while in the LCO Condition.
 - e. Provisions for considering other applicable risk significant contributors such as Level 2 issues and external events, qualitatively or quantitatively.
-

BASES

LCO
(continued)

train. For the DGs, separation and independence are complete.

For the offsite AC sources, separation and independence are to the extent practical. A circuit may be connected to more than one ESF bus while the bus is being transferred to the other circuit.

APPLICABILITY

The AC sources and sequencers are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

- a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and
- b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources — Shutdown."

ACTIONS

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition D, for two offsite circuits inoperable, is entered.

A.2

Required Action A.2, which only applies if the train cannot be powered from an offsite source, is intended to provide assurance that an event coincident with a single failure of the associated DG will not result in a complete loss of safety function of critical redundant required features.

(continued)

BASES

ACTIONS

A.2 (continued)

These features are powered from the redundant AC electrical power train. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, may not be included.

The Completion Time for Required Action A.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

- a. The train has no offsite power supplying its loads;
and
- b. A required feature on the other train is inoperable.

If at any time during the existence of Condition A (one offsite circuit inoperable) a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

Discovering no offsite power to one train of the onsite Class 1E Electrical Power Distribution System coincident with one or more inoperable required support or supported features, or both, that are associated with the other train that has offsite power, results in starting the Completion Times for the Required Action. Twenty-four hours is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to Train A and Train B of the onsite Class 1E Distribution System. The 24 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 24 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

(continued)

BASES

ACTIONS
(continued)

A.3

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one required offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Class 1E Distribution System.

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action A.3 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition A is entered while, for instance, a DG is inoperable and that DG is subsequently returned OPERABLE, the LCO may already have been not met for up to 11 days. This could lead to a total of 14 days, since initial failure to meet the LCO, to restore the offsite circuit. At this time, a DG could again become inoperable, the circuit restored OPERABLE, and an additional 72 hours, or 14 days depending on SAT availability, allowed prior to complete restoration of the LCO. The 14 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The "AND" connector between the 72 hour and 14 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.

Tracking the 14 day Completion Time is a requirement for beginning the Completion Time "clock" that is in addition to the normal Completion Time requirements. With respect to the 14 day Completion Time, the "time zero" is specified as

(continued)

BASES

ACTIONS

A.3 (continued)

commencing at the time LCO 3.8.1 was initially not met, instead of at the time Condition A was entered. This results in the requirement when in this Condition to track the time elapsed from both the Condition A "time zero" and the "time zero" when LCO 3.8.1 was initially not met.

B.1

To ensure a highly reliable power source remains with an inoperable DG, it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered.

B.2

The 13.8/4.16 kV Standby Auxiliary Transformer (SAT) is a qualified offsite circuit that may be connected to the onsite Class 1E distribution system independently of the RATs and may be utilized to meet the LCO 3.8.1 requirements for an offsite circuit. Its availability permits an extension of the allowable out-of-service time for a DG to 14 days from the discovery of failure to meet LCO 3.8.1. The SAT is available when it is:

- Operable in accordance with plant procedures;
- Not already being applied to any of the four 4.16 kV ESF buses for Units 1 and 2 in accordance with Specification 3.8.1 as either an offsite source or to meet the requirements of an LCO 3.8.1 Condition; and,
- Not providing power to the other unit when that unit is in MODE 5 or 6 or defueled.

(continued)

BASES

ACTIONS

B.2 (continued)

Furthermore, the SAT can be applied to only one of the four 4.16 kV ESF buses at any given time for Units 1 and 2 to meet the requirements of an LCO 3.8.1 Condition.

When one or more of these criteria are not satisfied, the SAT is not available. These criteria are structured to ensure that the SAT is available as an alternate offsite source to support the extended DG Completion Time of 14 days. Therefore, when a DG is inoperable, it is necessary to verify the availability of the SAT within one hour and once per 12 hours thereafter. If Required Action B.2 is not met or the status of the SAT changes after Required Action B.2 is initially met, Condition C must be entered concurrently.

B.3

Required Action B.3 is intended to provide assurance that a loss of offsite power, during the period that a DG is inoperable, does not result in a complete loss of safety function of critical systems. These features are designed with redundant safety related trains. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG.

The Completion Time for Required Action B.3 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

- a. An inoperable DG exists; and
- b. A required feature on the other train (Train A or Train B) is inoperable.

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BASES

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BASES

ACTIONS

B.3 (continued)

If at any time during the existence of this Condition (one DG inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked.

Discovering one required DG inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

In this Condition, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.4.1 and B.4.2

Required Action B.4.1 provides an allowance to avoid unnecessary testing of the OPERABLE DG. If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on the other DG, the other DG would be declared inoperable upon discovery and Condition F of LCO 3.8.1 would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action B.4.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG, performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

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BASES

ACTIONS

B.4.1 and B.4.2 (continued)

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.4.1 or B.4.2, the applicable plant procedures will continue to require the evaluation of the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B.

According to Generic Letter 84-15 (Ref. 7), 24 hours is reasonable to confirm that the OPERABLE DG is not affected by the same problem as the inoperable DG.

B.5.1 and B.5.2

Required Action B.5.1 provides assurance that an enhanced black-start combustion turbine generator (CTG) is functional when a DG is out of service for greater than 72 hours. Required Action B.5.1 is modified by a Note that states that it is only applicable provided that the two enhanced black-start CTGs and black-start diesel generator have a combined reliability of $\geq 95\%$ based on a minimum of 20 tests per enhanced black-start CTG and quarterly testing thereafter. This quarterly testing will subject each enhanced black-start CTG to a start and load-run test. The black-start diesel generator will also be tested quarterly, but separately from the enhanced black-start CTGs. Required Action B.5.1 may be met by starting either of the enhanced black-start CTGs and the black-start diesel generator and verifying that they achieve steady state voltage and frequency. The black-start diesel generator may be started separately.

If a DG is to be removed from service voluntarily for greater than 72 hours, it may be advantageous to test an enhanced black-start CTG prior to taking the DG out of service. In such cases where advanced notice of removing a DG from service is available, Required Action B.5.1 may be performed up to 72 hours prior to entry into Condition B. In other cases, Required Action B.5.1 must be performed within 72 hours after entry into Condition B.

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BASES

ACTIONS

B.5.1 and B.5.2 (continued)

If the combined reliability of the enhanced black-start CTGs has not been demonstrated or maintained $\geq 95\%$, the option of starting and running any one of the six CTGs while in Condition B is available in the form of Required Action B.5.2. In the event of preplanned maintenance that would exceed 72 hours, any one of the six CTGs must be started prior to entry into Condition B and allowed to run for the duration of Condition B. Otherwise, any one of the six CTGs must be started within 72 hours (and allowed to run) after entry into Condition B if the DG is to be out of service for more than 72 hours. Note that Required Action B.5.1 requires that one of the two enhanced black-start CTGs be started, but any one of the six CTGs could be started to satisfy Required Action B.5.2. Since a CTG is started and running while the DG is inoperable, it is not necessary that the CTG have enhanced black-start capability.

B.6

The availability of the SAT provides an additional AC source which permits operation to continue for a period not to exceed 14 days from discovery of failure to meet the LCO.

In Condition B, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite Class 1E Distribution System. The 14 day Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

In addition, the Configuration Risk Management Program (CRMP) is used to assess changes in core damage frequency resulting from applicable plant configurations. The CRMP uses the equipment out of service risk monitor, a computer based tool that may be used to aid in the risk assessment of on-line maintenance and to evaluate the change in risk from a component failure. The equipment out of service risk monitor uses the plant probabilistic risk assessment model to evaluate the risk of removing equipment from service

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BASES

ACTIONS

B.5.1 and B.5.2 (continued)

based on current plant configuration and equipment condition. The CRMP is used when a DG is intentionally taken out of service for a planned activity excluding short duration activities (e.g., performing an air roll on the EDG prior to a routine surveillance). In addition, the CRMP is used for unplanned maintenance or repairs of a DG.

Planned activities involving an extended DG AOT will be synchronized with other maintenance activities as much as possible in order to maximize equipment reliability while minimizing the time equipment is unavailable. In addition, Required Action B.3 requires that features supported by the inoperable DG be declared inoperable within 4 hours of discovery when redundant features are discovered to be inoperable. The combination of planned maintenance centered around the extended DG AOT, Required Action B.3, and use of the CRMP provides an appropriate level of assurance that risk significant activities with an unacceptable risk achievement worth will be minimized during an extended DG AOT.

The Completion Time for Required Action B.6 also establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, an offsite circuit is inoperable, the LCO may already have been not met for up to 72 hours. If the offsite circuit is restored within the required 72 hours, this could lead to a total of 17 days, since initial failure to meet the LCO, to restore compliance with the LCO (i.e., restore the DG). However, the 14 day Completion Time provides a

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BASES

ACTIONS

B.5.1 and B.5.2 (continued)

limit on time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B (and consequently Condition E) are entered concurrently.

Tracking the 14 day Completion Time is a requirement for beginning the Completion Time "clock" that is in addition to the normal Completion Time requirements. With respect to the Completion Time, the "time zero" is specified as commencing at the time LCO 3.8.1 was initially not met, instead of at the time Condition B was entered. This results in the requirement when in this Condition to track the time elapsed from both the Condition B "time zero" and the "time zero" when LCO 3.8.1 was initially not met.

C.1

If the availability of the SAT cannot be verified, or if no CTG meets the requirements of either Required Action B.5.1 or B.5.2, the DG must be restored to OPERABLE status within 72 hours. The 72 hour Completion Time begins upon entry into Condition C. However, the total time to restore an inoperable DG cannot exceed 14 days (per the Completion Time of Required Action B.6).

The Completion Time of 72 hours (in the absence of the SAT) is consistent with Regulatory Guide 1.93 (Ref.6). The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and low probability of a DBA occurring this period.

D.1 and D.2

Required Action D.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for

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BASES

ACTIONS

D.1 and D.2 (continued)

two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a concurrent redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are not included in the list.

The Completion Time for Required Action D.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for

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BASES

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BASES

ACTIONS

D.1 and D.2 (continued)

beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both:

- a. All required offsite circuits are inoperable; and
- b. A required feature is inoperable.

If at any time during the existence of Condition D (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked.

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition D for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources.

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

- a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure; and
- b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both of the required offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were

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BASES

ACTIONS

D.1 and D.2 (continued)

postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A.

E.1 and E.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition E are modified by a Note to indicate that when Condition E is entered with no AC source to one or more trains, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems — Operating," must be immediately entered. This allows Condition E to provide requirements for the loss of one offsite circuit and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train.

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition E for a period that should not exceed 12 hours.

In Condition E, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition D (loss of both required offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a

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BASES

ACTIONS

E.1 and E.2 (continued)

single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

F.1

With Train A and Train B DGs inoperable, there are no remaining standby AC sources. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

According to Reference 6, with both DGs inoperable, operation may continue for a period that should not exceed 2 hours.

G.1

The sequencer(s) is an essential support system to both the offsite circuit and the DG associated with a given ESF bus. Furthermore, the sequencer is on the primary success path for most major AC electrically powered safety systems powered from the associated ESF bus. The sequencers are required to provide the system response to both an SI signal and a loss of or degraded ESF bus voltage signal. Therefore, loss of an ESF bus sequencer affects every major ESF system in the train. The 12 hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer

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BASES

ACTIONS

G.1 (continued)

OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.

H.1 and H.2

If the inoperable AC electric power sources or an automatic load sequencer cannot be restored to OPERABLE status within the required Completion Time, or Required Actions B.1, B.3, B.4.1, B.4.2, or B.6 cannot be met within the required Completion Times, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

I.1

Condition I corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

SURVEILLANCE
REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3), Regulatory Guide 1.108 (Ref. 9), and Regulatory Guide 1.137 (Ref. 10), as addressed in the FSAR.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 100 TO FACILITY OPERATING LICENSE NPF-68
AND AMENDMENT NO. 78 TO FACILITY OPERATING LICENSE NPF-81
SOUTHERN NUCLEAR OPERATING COMPANY, INC., ET AL.
VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2
DOCKET NOS. 50-424 AND 50-425

1.0 INTRODUCTION

By application dated January 22, 1998, as supplemented by letters dated March 18, 1998, April 21, 1998, and May 15, 1998, Southern Nuclear Operating Company, Inc. (the licensee) proposed a change to the Technical Specifications (TSs) for the Vogtle Electric Generating Plant (VEGP), Units 1 and 2. The TS change would allow an extended allowed outage time (AOT) for one emergency diesel generator (EDG) of 14 days. The EDG AOT extension, in part, is based on the availability and reliability of the Plant Wilson Combustion Turbine (CT) Facility, the Wilson Line, and the Vogtle Standby Auxiliary Transformer (SAT). The January 22 application supersedes a similar proposal that was to have been a part of the implementation of the improved Standard TSs (Amendment Nos. 96 and 74 for VEGP, Units 1 and 2, respectively), but was not acted upon by the NRC staff as addressed in our letter dated September 25, 1996. The supplements dated March 18, 1998, April 21, 1998, and May 15, 1998, provided clarifying information that did not change the scope of the January 22, 1998, application and the initial proposed no significant hazards determination.

2.0 BACKGROUND

Since the mid-1980s, the NRC has been reviewing and granting improvements to TS that are based, at least in part, on probabilistic risk assessment (PRA) insights. In its final policy statement on TS improvements of July 22, 1993, the NRC stated that it...

...expects that licensees, in preparing their Technical Specification related submittals, will utilize any plant-specific PSA [probabilistic safety assessment]¹ or risk survey and any available literature on risk insights and PSAs. . . . Similarly, the NRC staff will also employ risk insights and PSAs in evaluating Technical Specifications related submittals. Further, as a part of the Commission's ongoing program of improving Technical Specifications, it will continue to consider methods to make better use of risk and reliability information for defining future generic Technical Specification requirements.

¹PSA and PRA are used interchangeably herein.

The NRC reiterated this point when it issued the revision to 10 CFR 50.36, "Technical Specifications," in July 1995. In August 1995, the NRC adopted a final policy statement on the use of PRA methods in nuclear regulatory activities that encouraged greater use of PRA to improve safety decisionmaking and regulatory efficiency. The PRA policy statement included the following points:

1. The use of PRA technology should be increased in all regulatory matters to the extent supported by the state of the art in PRA methods and data and in a manner that complements the NRC's deterministic approach and supports the NRC's traditional defense-in-depth philosophy.
2. PRA and associated analyses (e.g., sensitivity studies, uncertainty analyses, and importance measures) should be used in regulatory matters, where practical within the bounds of the state of the art, to reduce unnecessary conservatism associated with current regulatory requirements.
3. PRA evaluations in support of regulatory decisions should be as realistic as practicable and appropriate supporting data should be publicly available for review.

On June 25, 1997, the Commission published draft regulatory guidance for making risk-informed changes to technical specifications (62 FR 34321) in DG-1061, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Current Licensing Basis," and DG-1065, "An Approach for Plant-Specific Risk-Informed Decisionmaking: Technical Specifications." These documents were revised based on public comments and forwarded to the Commission for approval. Publication of these Regulatory Guides in final form is expected in mid to late 1998. The staff has used the guidance documents in its review of the proposed TS change.

Previously at VEGP, the two required offsite power source circuits were connected to the onsite Class 1E distribution system solely through their respective reserve auxiliary transformers (RATs). Subsequently, the licensee installed an SAT as a new additional power source that can be connected to the onsite Class 1E distribution system independently of the RATs, and can be utilized to meet the TS requirements for an offsite circuit. The SAT is supplied power through direct buried cable from either the 230 kV Southern Electric System Grid or from any combination of the Plant Wilson's six, 60 MVA CT electrical generators, two of which have enhanced black start capability (can be started without offsite power). The black start capability for the two Plant Wilson CTs is enabled by the black start diesel, also located at Plant Wilson, which supplies power for the CT starting motors. Both methods of supplying power to the SAT via the underground Wilson Line utilize the Plant Wilson 13.8 kV grid system. The SAT is a "swing" or common offsite power circuit capable of connecting to any 4.16 kV Engineered Safety Features (ESF) bus on either unit. The 13.8 kV underground Wilson Line and SAT provide a new source of offsite power for VEGP that meets the capacity and capability requirements of 10 CFR Part 50 Appendix A, General Design Criterion 17 for one ESF bus.

In the January 22, 1998, application, the licensee is requesting that the SAT also be considered as a temporary replacement for an EDG during extended EDG maintenance. The NRC staff has granted EDG AOTs in the past based on plants having a source of power that meets or

exceeds the requirements of an alternate ac power (AAC) source as established by Nuclear Management and Resource Council (NUMARC) 8700, Rev. 0, "Guidelines and Technical Basis for NUMARC Initiative for Addressing Station Blackout (SBO) at Light Water Reactors," or NRC Regulatory Guide (RG) 1.155, "Station Blackout." The reasoning implicit to this special case is that, if a licensee has an excess and diverse power source available to cope with a loss of offsite power event, then this power source could be temporarily used to replace an EDG during extended maintenance. Subsequently, the staff has concluded that under certain controlled conditions it is acceptable to extend EDG AOTs to perform online maintenance to improve EDG reliability and availability.

3.0 EVALUATION

The staff evaluated the licensee's proposed amendment to the TS using both traditional engineering analysis, PRA methods, and a review of operating experience. The staff's traditional analysis evaluated the capabilities of the plant to mitigate design basis and station blackout events with one EDG inoperable. The staff then used insights derived from the use of PRA methods to determine the risk significance of the proposed changes. The results of these evaluations were used in combination by the staff to determine the safety impact of extending the allowed outage time for one inoperable EDG.

The licensee is requesting an extension of the current EDG AOT from 72 hours to 14 days for one inoperable EDG based on the reliability and availability of the Plant Wilson Facility, the SAT, and the Wilson Line. After preliminary review of this source of ac power, it was determined by the staff that VEGP warranted further consideration for an EDG AOT extension.

3.1 Equivalent AAC Source

Presently, VEGP is meeting the "SBO Rule" by coping with dc power only and would like to use its recently installed SAT, which receives power via the Plant Wilson Facility, to remove an EDG from service for up to 14 days for extended maintenance. Although this source of ac power was not explicitly credited as an AAC source as part of its SBO conformance, the staff has used the same guidance provided in NUMARC 8700, Rev. 0, and NRC RG 1.155 to evaluate it as "equivalent" to an AAC source. As a result of its review, the NRC staff imposed the following requirements on the Wilson Line and CTs:

1. The alternate source of ac power should not be normally connected to an offsite or onsite emergency ac power system.
2. No single point of vulnerability should exist whereby a single weather-related event or single active failure could disable any portion of the onsite emergency ac power sources or the normal offsite power sources and simultaneously fail the alternate source of ac power. Also, there should be no common cause failure mechanism or component that increases the likelihood of a failure between the normal electrical distribution system and the AAC source.
3. This alternate source of ac power should be available in a timely manner and it should have provisions to be manually connected to one or all of the redundant safety buses as

required. The time required for starting and connecting the AAC source to the safety buses should not be more than 1 hour as demonstrated by a test.

4. This source of power should have sufficient capacity to operate the systems necessary to cope with an SBO event (i.e., loss of all ac power).
5. This source of power should be inspected, maintained, and tested periodically to demonstrate operability and reliability. The reliability should be at least 95 percent.

In response to Item 1, the licensee stated that power from Plant Wilson via the underground line will not be normally connected to the VEGP electrical distribution system. Plant Wilson is isolated from the VEGP electrical system and no common mode failure mechanism exists that could fail Plant Wilson and the electrical distribution system at VEGP. Plant Wilson is approximately 1 mile away from the VEGP switchyard and is connected to the SAT through the 13.8 kV Wilson Line. The SAT is located in the VEGP switchyard; however, the SAT is not normally interconnected with the VEGP electrical distribution system. Additionally, protective relaying on the SAT assures faults are isolated and alarmed.

In response to Item 2, the licensee stated that Plant Wilson is a completely self-sufficient, independent generation facility. Plant Wilson has no common auxiliary power, fuel, equipment, or shared systems and/or components with VEGP. Consequently, there is no common cause mode failure mechanism that could simultaneously fail the offsite or onsite power system at VEGP and Plant Wilson. Additionally, protective relaying on both the RAT and SAT assures that faults are isolated and alarmed. If a fault were to occur on the normal alignment, the SAT could not be connected onto the faulted bus until the fault had been cleared. If failure occurred that rendered one preferred offsite power source (RAT) and the SAT unavailable for use on a train, another alternative is available whereby the unit's other RAT can be connected through an alternate 4.16 kV 1E safety bus tie breaker to provide offsite power to the safety bus.

The Wilson Line is protected from likely weather-related events such as a lightning and severe thunderstorms accompanied by high winds through the use of a direct buried cable. The structural integrity of the SAT cable bus work and disconnect switches can withstand these types of high winds. In accordance with standard licensee switchyard design, both Plant Wilson and VEGP's switchyard equipment and overhead lines follow the design requirements for light-to-medium loading as seen in National Electrical Safety Code, ANSI C2. Also, the distance that separates VEGP and Plant Wilson minimizes the likelihood of loose debris from VEGP, or the same weather-related event, causing Plant Wilson to be incapable of providing safe shutdown of VEGP. The underground connecting power feed from Plant Wilson and its associated transformer (SAT) share common disconnect switches, cable bus, and a 4.16 kV safety bus supply breaker with each of the VEGP preferred normal offsite power sources (RATs). However, it has been determined by the licensee that the only weather-related event, which could disable both the normal offsite power sources and remove all power routes from Plant Wilson, is a "direct strike" of an extremely severe tornado. It has been determined by the licensee that this is a very unlikely event based on the evaluation of tornado data reported in the VEGP area from the National Severe Storm Forecast Center between June 1951 and May 1993.

The cable bus located in the VEGP low voltage switchyard is designed for 40 years expected life, exposure to direct sunlight, a maximum normal ambient temperature of 40 degrees C, a maximum 24-hour average ambient temperature of 30 degrees C, and 120 mph winds. This cable bus is in a metal enclosed raceway except for the connections to the disconnect switches and the switchgear. The disconnect switches are designed for 60 mph winds, open-or-closed operation, 90 mph wind gusts, 80 mph winds, and 3.3 inches of snow or 1.5 inches of ice. The historical wind data recorded at the VEGP meteorological tower indicates the highest recorded wind speed at VEGP is 62 mph, which is within the design capabilities of the Wilson/SAT line and components.

As a precautionary measure, the licensee will consult extended weather forecasts prior to entering extended EDG AOTs. For the occurrence of a severe weather event such as a hurricane where it is not reasonable to foresee such an event for an extended period in advance, the licensee has in place administrative controls, which require the units to be placed in shutdown, to at least Mode 3, within 2 hours prior to projected 74 mph sustained winds reaching the site. This additional measure will help to minimize the risk of having a severe weather-related event during an extended EDG AOT.

In response to Item 3, the licensee stated that Plant Wilson can provide power to the VEGP switchyard either via the 230 kV Southern Electric System Grid or through any of the six, 60 MVA CTs that make-up the Plant Wilson Facility. The Plant Wilson Facility is a completely self-sufficient electrical generating facility that can be connected to any of the 4.16 kV safety buses within 1 hour. There are six, 60 MVA CTs, any of which can power all the necessary safety loads during accident conditions. Two of the CTs have black start capability, which will be tested and maintained at greater than or equal to 0.95 reliability. The VEGP staff has committed to demonstrate the complete enhanced black-start generation capability every 18 months. The appropriate operations personnel will be trained in the use of these procedures, and the procedures will be available to the appropriate operations personnel during the 14-day EDG AOT.

In response to Item 4, the licensee stated that the SAT can be connected to any safety bus to provide shutdown capacity during loss-of-offsite power (LOOP) or accident conditions. The SAT will receive power either from the 230 kV Southern Electric System Grid or by the CTs in the Plant Wilson Facility. Only one of the six, 60 MVA CTs is required to power the necessary safety loads during accident conditions.

In response to Item 5, the licensee stated that during the extended EDG AOT, the Wilson Line and SAT will be continuously energized via the 230 kV Southern Electric System Grid. As stated previously, if the 230 kV line is unavailable, Plant Wilson is equipped with two black start CTs, either of which has the capacity to power the required loads during accident conditions. Additionally, the licensee has made a commitment to maintain the reliability of the black start CTs greater than or equal to 0.95. The initial reliability is based on a minimum of 20 tests on each black start CT and appropriate support systems. Quarterly testing will be performed to assure that the required reliability is being maintained. If the reliability of the CTs cannot be maintained, the licensee reserves the option of starting and running any CT during the extended EDG AOT.

3.2 AOT Extension

In considering an EDG AOT extension from 72 hours to 14 days for one EDG inoperable at VEGP, the staff requested that the licensee propose the following conditions:

1. The TSs should include verification that the required systems, subsystems, trains, components, and devices that depend on the remaining diesel generators as a source of emergency power are operable before removing an EDG from service for preventative maintenance (PM). In addition, positive measures should be provided to preclude subsequent testing or maintenance activities on these systems, subsystems, trains, components, and devices while an EDG is inoperable.
2. The TS should contain requirements to demonstrate, before taking an EDG out for an extended period, that the AAC power source or equivalent power source is functional by demonstrating that this source of power starts and reaches the required voltage and frequency.
3. Voluntary entry into the EDG AOT limiting condition for operation (LCO) action statement should not be abused by repeated entry into and exit from the LCO.
4. Removal from service of safety systems and important nonsafety equipment, including offsite power sources, should be avoided during the EDG AOT.
5. Any component testing or maintenance that increases the likelihood of a plant transient should be avoided; plant operation should be stable during the EDG AOT.
6. Entry into an LCO for extended maintenance activities on the EDG should not be scheduled when adverse weather conditions are expected.

In response to Condition 1, the licensee stated that the TSs and administrative controls will ensure that a review will be conducted to verify that the required systems, subsystems, trains, components, and devices that depend on the remaining diesel generators as a source of emergency power are operable before removing an EDG for PM. Additionally, administrative controls will preclude subsequent testing or maintenance activities on required systems, subsystems, trains, components, and devices that depend on the remaining diesel generators as a source of emergency power.

In response to Condition 2, the licensee stated the changes to the TSs will include verifying that the SAT, Wilson Line, and a black start CT (including support systems) are available and functional within 72 hours before an EDG is removed from service for extended maintenance.

In response to Condition 3, the licensee stated that entry into the 14-day LCO is for the purpose of performing preventative maintenance on the EDGs. The completion of EDG maintenance during power operation provides a critical benefit of reducing the need to remove EDGs from service during shutdown conditions. The proposed 14-day LCO, is of sufficient duration to allow completion of the required maintenance without repetitive entry into, and exit from, the LCO.

In response to Condition 4, the licensee stated that administrative controls will be implemented to avoid removing safety systems and important nonsafety equipment from service during the extended EDG AOT. Additionally, offsite power sources (RATs) will not be removed from service during the EDG extended AOT.

In response to Conditions 5 and 6, the licensee stated that no further elective equipment maintenance or testing, which increase the likelihood of a plant transient, will be performed during the EDG AOT and that an extended EDG AOT will not be entered for scheduled maintenance purposes if severe weather conditions are expected.

The NRC staff's deterministic review of VEGP's "equivalent" alternate source of ac power used as justification for extending its current EDG AOT concludes that it meets the applicable requirements of NUMARC 8700. Based on this equivalent AAC source and the compensatory measures, the staff has concluded that it is acceptable to extend the current EDG AOT from 72 hours to 14 days.

3.3 Probabilistic Risk Assessment (PRA)

The NRC staff reviewed the licensee's request for a new 14-day (replacing the 72-hour) AOT for one inoperable EDG except for conditions where the SAT is unavailable, or the electrical power generation capability of (the site-adjacent combustion turbine generator) Plant Wilson becomes unavailable or unreliable during the time that an EDG is out of service. The NRC staff used a three-tiered approach to evaluate the risk associated with the proposed license amendment. The first tier evaluated the PRA model and the impact of the change on plant operational risk. The second tier addressed the need to preclude potentially high risk configurations, should additional equipment outages occur during the AOT period. The third tier evaluated the licensee's configuration risk management program (CRMP), to ensure that equipment removed from service prior to entering, or during, the proposed AOT will be appropriately assessed from a risk perspective. Each tier and associated findings are discussed below.

Tier 1: PRA Evaluation of AOT Extensions

The licensee used traditional PRA methodology to evaluate the requested AOT extension for EDGs. The Tier 1 NRC staff review of the licensee's PRA involved two aspects: (i) evaluation of the PRA model and application to the proposed AOT extension, and (ii) evaluation of PRA results and insights stemming from the application. The review did not warrant an assessment of any unconventional PRA practices or unique features that could significantly impact the PRA findings and conclusions.

(i) Evaluation of PRA Model and Application to the AOT Extension

The staff's review focussed on the capability of the licensee's PRA model to analyze the risk stemming from the proposed AOT changes for EDGs, and did not involve an in-depth review of the licensee's PRA. This review was based on the staff's initial screening process where the staff examined the licensee's internal events PRA results, recent operational experience regarding loss of offsite power and EDG reliability and availability, and plant-specific features

such as EDG configurations, offsite sources, and other systems critical to mitigation of an LOOP power event. The staff concludes that the licensee's PRA results are reasonable, and the scope and depth of the PRA analysis support such a finding. Recent data for EDG and offsite ac power reliability and availability did not indicate any adverse trends. The six combustion turbine generators at Plant Wilson are fully capable of safely shutting down the plant given an LOOP. The staff notes the level of redundancy of design and reasonableness of the PRA insights supports the proposed EDG AOT extension from 3 to 14 days, except when the SAT or Plant Wilson is unavailable/unreliable.

The licensee's PRA includes both a Level 1 and Level 2 analysis. Vogtle, Units 1 and 2 used the linked fault tree methodology based on the Electric Power Research Institute's Computer Aided Fault Tree Analysis (CAFTA) suite of software to perform core damage analysis. The analysis modeled both generic and plant-specific initiators, including internal flooding, and dependencies that exist between initiating events and the associated mitigating systems. These initiators are consistent with those identified in previous PRAs. The licensee used both generic and plant-specific data. Generic data sources and plant-specific data were incorporated into the model by updating generic data using Bayesian techniques. The licensee plans regular updates of the PRA, which would include the use of an updated data base, and changes to fault tree models made to reflect modifications made since the original PRA. The staff recognizes that the SBO contribution to core damage frequency (CDF) has decreased due to the SAT/Plant Wilson availability.

Since the common cause failure (CCF) of EDGs is potentially a dominant contributor to the plant SBO risk, the staff examined the licensee's CCF analysis. The licensee used the multiple Greek letter (MGL) method and generic data for treating CCFs. The CCF probability of EDGs is reasonable and the beta factors (of the MGL) used are consistent with those used in previous PRAs.

(ii) Evaluation of PRA Results and Insights

The current estimated plant CDF ($3.64E-05$ /yr with 4-hour battery depletion time) for internal events at Vogtle is comparable to that for other pressurized water reactors. The licensee's PRA originally identified SBO as the largest contributor 61 percent to the CDF relative to other contributors; however, with the inclusion of the SAT/Plant Wilson, the licensee estimates the SBO contribution to the CDF declined to 5.6 percent.

The following baseline CDFs were calculated by the licensee, with the most current PRA model, including SAT/Plant Wilson benefit:

Nonhurricane season:	CDF = $3.620E-05$ /yr
Hurricane season:	CDF = $3.798E-05$ /yr
Annual average:	CDF = $3.641 E-05$ /yr

The staff estimates the annual average CDF with the proposed 14-day AOT to be $3.66E-05$ /yr., an approximate increase of 1 percent within the guidelines published in DG-1061.

The large early release frequency calculated by the licensee is $1.72E-06$ /yr.

Values of the incremental conditional core damage probability (ICCDP) calculated by the licensee are (including seismic effects and tornado):

Nonhurricane season, EDG-A in maintenance for 14 days, EDG-B not in maintenance:
ICCDP=3.29E-07.

Nonhurricane season, EDG-B in maintenance for 14 days, EDG-A not in maintenance:
ICCDP=4.05E-07.

Hurricane season, EDG-A in maintenance for 14 days, EDG-B not in maintenance:
ICCDP=4.21E-07.

Hurricane season, EDG-B in maintenance for 14 days, EDG-A not in maintenance:
ICCDP=5.41E-07.

All of the above ICCDP values are below or very near the staff guideline value of 5E-07, published in DG-1065. The incremental conditional large early release probability was calculated to be negligibly small, and also within that published in DG-1065.

Additionally, the licensee will implement, prior to implementation of the extended (14-day) EDG AOT, a procedure that will prohibit entry into the AOT for scheduled maintenance purposes, if severe weather conditions are expected. This commitment will be included in Appendix D to the Facility Operating Licenses for VEGP, Units 1 and 2, as addressed in the April 21, 1998, supplement to the January 22, 1998, application for license amendment.

The EDG unreliability and unavailability values used in the above calculations are historically based and listed below:

EDG random failure-to-run probability = 1.14E-02

EDG random failure-to-start probability = 6.33E-03

EDGs A and B common cause failure-to-run probability = 3.08E-04

EDGs A and B common cause failure-to-start probability = 1.71 E-04

EDG maintenance unavailability = 1.3E-02, i.e., 98.7 percent availability (Based on historical data: miscellaneous outages, i.e., testing and corrective maintenance during power operations).

For an EDG 14-day AOT, assuming 14 days per cycle per EDG out-of-service, the EDG at - power unavailability is expected to rise to 3.9E-2 or 96.1 percent availability, with a commensurate increase in shutdown EDG availability.

Currently, the licensee's maintenance rule EDG target unavailability is 1.52E-2 or 98.48 percent availability. With a 14-day EDG AOT, the new EDG maintenance rule unavailability performance criterion is expected to become 4.10E-2 or 95.9 percent availability. During the SBO rule implementation, the licensee committed to an EDG target reliability of 0.95.

Based on the preceding Tier 1 review and the related information presented, the staff concludes that the PRA model used for the proposed AOT extension for single inoperable EDGs is considered to be reasonable, and the risk impact of the change is small and supports the AOT extension.

Tier 2: Avoidance of Risk-Significant Plant Configurations

As required by license condition (Appendix D), the licensee will implement a procedure, prior to use of the EDG AOT, that will prohibit entry into an extended EDG AOT (14 days) for scheduled maintenance purposes, if severe weather conditions are expected, as described in the licensee's application dated January 22, 1998, as supplemented April 21, 1998.

The licensee will have TS Required Actions (3.8.1) for the condition with one EDG inoperable that require verifying availability of the SAT, and verifying that an enhanced black-start CTG and diesel generator starts and achieves steady state voltage and frequency, or requires starting and running at least one CTG while in this condition.

The staff has concluded that these restrictions are necessary to preclude high risk situations associated with having one EDG inoperable for greater than 72 hours.

Tier 3: Risk-Informed Plant Configuration Management

The licensee has provided reasonable assurance that risk-significant plant equipment outage configurations will not occur while the plant is subjected to the extended EDG AOT. The licensee utilizes its equipment-out-of-service (EOOS) risk monitor to provide planning and scheduling strategies to maximize equipment performance, reliability, and availability during the proposed EDG extended AOT. This process will be incorporated as part of the proposed Configuration Risk Management Program (CRMP).

EOOS will be used by the Central Scheduling Group to support the safety assessment of schedule EDG maintenance. As part of the plan-of-the-day report, a list of affected equipment tag numbers and scheduled maintenance dates is generated every weekday. This scheduled maintenance information will be used as an input to EOOS, and the resulting EOOS output will be used by central scheduling personnel in developing a safety assessment of scheduled EDG maintenance. The licensee plans to continue the current practice of scheduling system outages on only one safety significant system at a time. Central scheduling will inform plant management of risk insights generated using EOOS, whose quantification engine is the Vogtle PRA, which will be updated regularly to reflect plant changes.

An EOOS table provides management guidelines, including corrective actions based on configuration-specific Instantaneous Core Damage Frequency (CDFINST--the annual conditional CDF of any plant configuration) or the Plant Safety Index ($PSI = 10 [\text{Log}(\text{CDFINST}) \text{ divided by } \text{Log}(2.494\text{E-}05)]$). Also provided are Maximum Duration Limits associated with PSI color bands (DURmax) keyed to an ICCDP, along with staff/management approval levels, and corrective actions. The Risk Management Guidelines of this table will be included in procedure 00354-C and will be revised when needed to reflect changes to the

licensee's PRA. A licensee analysis of annual average core damage frequency with and without SAT availability and other equipment outages does not show large risk increments.

If equipment failure occurs during an EDG outage, the on-shift operations staff will respond to restore safety functions and provide compensatory measures to minimize the consequences of out-of-service equipment. The appropriate shift operations personnel will contact Outages and Planning for assistance in using EOOS software for evaluating the safety impact of the equipment failure(s).

The capabilities of EOOS provide one of many inputs to the development of safety assessments of scheduled EDG maintenance and coping with any additional equipment failures. The overall safety assessment of scheduled EDG maintenance and coping with any coincident equipment failures (emergent work) is performed, according to the licensee, by knowledgeable and experienced personnel who will continue to assert a key role in assuring that the scheduled EDG maintenance and any coincident emergent work does not place the plant in an unsafe condition. The safety assessment performed prior to the scheduled EDG maintenance includes a multidisciplinary review by operations, maintenance, and central scheduling personnel as part of the daily plan-of-the-day meetings. Uncertainties in EOOS calculations will be addressed by a qualitative assessment of the entire work scope by trained and experienced personnel. This will be a key element in assuring that scheduled work at Vogtle does not place the plant in an unsafe condition.

PRA Quality

The baseline PRA has undergone a review by an Independent Review Group (IRG) and the IRG consultant, PLG, Inc., who provided a peer review as part of the Individual Plant Examination (IPE) process. The purpose of the IRG was to provide a critical review of the IPE plan, results, and documentation by experienced personnel with diverse areas of plant expertise. This effort provided considerable confidence to the licensee that the results and conclusions of the IPE were applicable and representative of the plant. The original PRA submitted as part of this process has recently been converted to linked-fault tree methodology based on the EPRI CAFTA (Computer Aided Fault Tree Analysis) suite of software. Calculations performed as part of the baseline PRA and conversion to CAFTA are documented in calculation packages, which were originated and independently verified by qualified personnel in accordance with approved procedures. The PRA calculations performed in support of the proposed TS changes were also originated and independently verified by qualified personnel in accordance with approved procedures. A current revision zero (Rev. 0) to the PRA model now exists, with which the calculations referenced herein were performed. The licensee's approach is consistent with staff guidance on quality.

The EDG AOT CDF and LERF calculations were performed in accordance with licensee procedures including REES 2-6, "Performance of Risk-Based Analysis (RBA)." In accordance with this procedure, RBAs are originated and reviewed by fully qualified engineers assigned by licensee departmental management. The designated originator ensures that the model utilized has been properly developed, controlled, documented in accordance with other licensee departmental procedures, and is installed on a computer which has been verified to produce accurate results for the model selected. The reviewer in turn confirms that the RBA is: free of

errors; accurately represents the issue under consideration; utilizes an appropriately approved PRA model; is based on technically sound judgment; and is properly documented. The reviewer, if deemed appropriate, can expand the scope of the review. An RBA is considered a quality assurance (QA) record and is maintained in departmental files for a period of ten years following completion of the analysis. The licensee's approach is consistent with staff guidance on quality.

A focused staff audit of PRA accident sequences and cut sets did not indicate any irregularities. The staff's audit did not indicate any aspects of the accident initiation and progression analysis that would alter the licensee's core damage frequency or large early release frequency calculation results.

Conclusions Regarding the Licensee's Probabilistic Risk Analysis Used to Support the Proposed Amendment

Based on the three-tiered approach, the staff finds the following:

- The proposed EDG AOT modifications have only a minimal quantitative impact on plant risk. The calculated ICCDP for a single EDG AOT is small, primarily because of the redundancy in EDG configuration and the availability of the (six) Plant Wilson combustion turbine generators through the SAT.
- The licensee verifies availability of the SAT and functionality of an enhanced black-start CTG before the proposed extended EDG AOT is entered, as required by the TS. The licensee is required by license condition to implement a procedure that will prohibit entry into an extended EDG AOT for scheduled maintenance purposes if severe weather conditions are expected. The licensee's submittal also includes several compensatory measures and normal plant practices that help avoid potentially high risk configurations during the proposed extended EDG AOT.
- The licensee has proposed a risk-informed plant CRMP to assess the risk associated with the removal of equipment from service during the extended EDG AOT. The program provides the necessary assurances that appropriate assessments of plant risk configurations using the EOOS software, augmented by appropriate engineering judgment, are sufficient to support the proposed AOT extension request for EDGs.

Additionally, the staff notes that Procedure Number 11889-C, "Severe Weather Checklist," requires that if sustained hurricane inland winds are projected onsite to exceed 74 mph, Units 1 and 2 should be shut down to at least Mode 3 (Hot Standby) within 2 hours prior to projected 74 mph winds reaching the site.

The NRC staff concludes that the EDG AOT extension will result in an insignificant increase in plant risk. The licensee has a process for scheduling and controlling maintenance activities into which plant risk is incorporated; that compensates for the small risk increase and uncertainty associated with the proposed AOT change. The NRC staff, therefore, finds that the PRA insights support the proposed EDG AOT extension with the caveat that where the standby auxiliary transformer is unavailable, or the electrical power generation capability of (the site-

adjacent combustion turbine generator) Plant Wilson becomes unavailable or unreliable during the time that an EDG is out of service, the AOT remains 72 hours. It should be noted, however, that should the black start combustion/black start diesel reliability decline below 95 percent, deterministic considerations support the 14-day EDG AOT provided that the combustion turbines are run during this period.

3.4 CHANGES TO THE TECHNICAL SPECIFICATIONS

The licensee has proposed a change to TS 3.8.1, "AC Sources - Operating," to extend the EDG AOT, the Completion Time for Required Action B.6, from "72 hours AND 6 days from discovery of failure to meet LCO" to "14 days from discovery of failure to meet LCO." As stated above, this change in EDG AOT is acceptable in that it is supported by the NRC staff's finding that the "equivalent" alternate ac power meets the applicable requirements of NUMARC 8700. In the same manner, the licensee has proposed that the Completion Time for exiting LCO 3.8.1, associated with restoration of one required offsite circuit, Required Action A.3, would be increased from "6 days from discovery of failure to meet LCO" to "14 days from discovery of failure to meet LCO." This change is needed to allow the EDG AOT to be extended to 14 days; otherwise, LCO 3.8.1 would be required to be exited after only 6 days. Since the completion time for restoration of one required offsite circuit remains 72 hours, this AOT has not been increased. Accordingly, the proposed change to the Completion Time for Required Action A.3 is acceptable.

The licensee has proposed two new Required Actions/Completion Times for TS 3.8.1 to address the operability of the "equivalent" AAC. Proposed Required Action B.2 requires that, with one EDG inoperable, the licensee shall "Verify SAT available" with a Completion Time of "1 hour AND Once per 12 hours thereafter." The proposed Required Action and associated Completion Time assure that the SAT is promptly confirmed to be available and subsequently confirmed to be available on a frequency commensurate with its safety importance. Accordingly, the proposed Required Action B.2 and the associated Completion Time are acceptable.

The second new Required Action/Completion Time, B.5.1 and B.5.2, address the operability of the "equivalent" AAC power source, Plant Wilson. Proposed Required Action B.5.1 would require that, with one EDG inoperable, the licensee shall, "Verify an enhanced black-start CTG is functional by verifying the CTG and black-start diesel generator starts and achieves steady state voltage and frequency." The proposed Completion Time for B.5.1 is "72 hours OR Within 72 hours prior to entry into Condition B." Proposed Required Action B.5.2 would require that, with one EDG inoperable, the licensee shall, "Start and run at least one CTG while in Condition B." The proposed Completion Time for B.5.2 is "72 hours OR Prior to entry into Condition B for preplanned maintenance." The following note in the TS would determine whether B.5.1 or B.5.2 would be applicable: "Required Action B.5.1 is only applicable if the combined reliability of the enhanced black-start combustion turbine generators (CTG) and the black-start diesel is \geq 95%. Otherwise, Required Action B.5.2 applies." The requirements of B.5.1 and B.5.2 implement the licensee's commitment to maintain the "equivalent" AAC at a reliability of greater than or equal to 95 percent or run one CTG during extended (greater than 72 hours) EDG preplanned maintenance OR start, and run at least one CTG. The proposed Completion Times assure that the adequacy of the "equivalent" AAC is confirmed prior to an

extended EDG AOT. Accordingly, proposed Required Actions B.5.1 and B.5.2, and their associated Completion times, are acceptable.

The licensee has proposed a change to the remedial action requirements, and Completion Times, that are applicable to situations when Required Actions associated with one inoperable EDG (Condition B) cannot be met. Currently, TS 3.8.1, Condition G, requires that the reactor be placed in Mode 3 (Hot Standby) within 6 hours AND in Mode 5 (Cold Shutdown) within 36 hours when the Required Action and Completion Time for Condition B are not met. The licensee has proposed that Condition G be divided into two parts; the first being those conditions associated the "equivalent" AAC (Conditions B.2, B5.1, and B5.2), which would be incorporated in a new proposed Condition C. The second group of remedial actions, the remainder of existing Condition G, would be incorporated in a new proposed Action H. With regard to the new proposed Condition C, if the "equivalent" AAC cannot be made operable, the inoperable EDG would have to be restored to OPERABLE status within 72 hours; this requirement is the same as the previous design basis for the maximum allowable AOT for an inoperable EDG with no "equivalent" AAC. With regard to the new proposed Condition H, these remedial actions are the same as those previously contained in Condition C. Accordingly, proposed Conditions C and G are acceptable.

The licensee has proposed changes to TS 3.8.1 to accommodate the insertion of a new Condition C (e.g., existing Condition C becomes Condition D). Condition C specifies remedial action to be taken when the Required Actions associated with the "equivalent" AAC are not completed within the associated Completion Times. These changes to the TS are administrative, do not change any regulatory requirements, and are acceptable.

The licensee has proposed a new TS 5.5.18, "Configuration Risk Management Program." The Configuration Risk Management Program (CRMP) provides a proceduralized risk-informed assessment to manage the risk associated with equipment inoperability. The program applies to technical specification structures, systems, or components for which a risk-informed allowed outage time has been granted. The proposed program includes the following elements:

- a. Provisions for the control and implementation of a Level 1, at power, internal events, PRA-informed methodology. The assessment shall be capable of evaluating the applicable plant configuration.
- b. Provisions for performing an assessment prior to entering the LCO Condition for preplanned activities.
- c. Provisions for performing an assessment after entering the LCO Condition for unplanned entry into the LCO Condition.
- d. Provisions for assessing the need for additional actions after the discovery of additional equipment out-of-service conditions while in the LCO Condition.
- e. Provisions for considering other applicable risk significant contributors such as Level 2 issues and external events, qualitatively, or quantitatively.

As stated above, the CRMP is acceptable in that the program provides the necessary assurances that appropriate assessments of plant risk configurations using the EOOS software, augmented by appropriate engineering judgment, are sufficient to support the proposed AOT extension request for EDGs.

In addition, the CRMP is used to assess changes in core damage frequency resulting from applicable plant configurations. The CRMP uses the equipment out-of-service risk monitor, a computer based tool that may be used to aid in the risk assessment of online maintenance and to evaluate the change in risk from a component failure. The equipment out-of-service risk monitor uses the plant probabilistic risk assessment model to evaluate the risk of removing equipment from service based on current plant configuration and equipment condition. The CRMP is used when an EDG is intentionally taken out of service for a planned activity excluding short duration activities (e.g., performing an air roll on the EDG prior to a routine surveillance). In addition, the CRMP is used for unplanned maintenance or repairs of an EDG.

The licensee and the staff have agreed to implementation of the CRMP as described below.

The Configuration Risk Management Program (CRMP) includes the following key elements:

Key Element 1. Implementation of CRMP

The intent of the CRMP is to implement a (a)(3) of the Maintenance Rule (10 CFR 50.65) with respect to on-line maintenance for risk-informed technical specifications, with the following additions and clarifications:

- a. The scope of the structures, systems and components (SSCs) to be included in the CRMP will be those SSCs modeled in the licensee's plant PRA in addition to those SSCs considered risk significant in accordance with the VEGP Maintenance Rule Scoping Manual that are not modeled in the PRA.
- b. The CRMP is PRA informed, and may be in the form of either a risk matrix, an on-line assessment, or a direct PRA assessment.
- c. CRMP will be invoked as follows for:

Risk-Informed Inoperability: A risk assessment will be performed prior to entering the LCO Condition for preplanned activities. For unplanned entry into the LCO Condition, a risk assessment will be performed in accordance with plant procedures.

Additional SSC Inoperability and/or Loss of Functionality: When in the risk-informed Completion Time, if an additional SSC within the scope of the CRMP becomes inoperable/non-functional, a risk assessment shall be performed in accordance with plant procedures.

- d. Tier 2 commitments apply for planned maintenance only, but will be evaluated as part of the Tier 3 assessment for unplanned occurrences.

Key Element 2. Control and Use of the CRMP

- a. Plant modifications and procedure changes will be monitored, assessed, and dispositioned as part of the normal PRA update process:
 - Evaluation of changes in plant configuration or PRA model features can be dispositioned by implementing PRA model changes or by the qualitative assessment of the impact of the changes on the CRMP. This qualitative assessment recognizes that changes to the PRA take time to implement and that changes can be effectively compensated for without compromising the ability to make sound engineering judgments.
 - Limitations of the CRMP are identified and understood for each specific Completion Time extension.
- b. Procedures exist for the control and application of CRMP, including description of the process when outside the scope of the CRMP.

Key Element 3. Level 1 Risk-Informed Assessment

The CRMP is based on a Level 1, at power, internal events PRA model. The CRMP assessment may use any combination of quantitative and qualitative input. Quantitative assessments can include reference to a risk matrix, pre-existing calculations, or new PRA analyses.

- a. Quantitative assessments should be performed whenever necessary for sound decision making.
- b. When quantitative assessments are not necessary for sound decision making, or are beyond the scope of the PRA model, qualitative assessments will be performed. Qualitative assessments will consider applicable, existing insights from quantitative assessments previously performed.

Key Element 4. Level 2 Issues/External Events

External events and Level 2 issues are treated qualitatively and/or quantitatively.

The staff, therefore, concludes the licensee's Tier 3 approach is reasonable for the purpose of the proposed extended EDG AOT.

Planned activities involving an extended EDG AOT will be synchronized with other maintenance activities as much as possible in order to maximize equipment reliability while minimizing the time equipment is unavailable. In addition, Required Action B.3 requires that features supported by the inoperable DG be declared inoperable within 4 hours of discovery when redundant features are discovered to be inoperable. The combination of planned maintenance centered around the extended DG AOT, Required Action B.3, and use of the CRMP provides

an appropriate level of assurance that risk significant activities with an unacceptable risk achievement worth will be minimized during an extended DG AOT.

The staff expects the licensee to implement these TS changes in accordance with the three-tiered approach described above. The licensee has also indicated that the EDGs are currently in the 10 CFR 50.65(a)(2) maintenance rule category and has identified new EDG performance criteria to be effective with implementation of the proposed AOT change. The AOT extension will allow efficient scheduling of online maintenance within the boundaries established by implementing the maintenance rule. The licensee will monitor EDG performance in relation to the maintenance rule performance criteria. Therefore, application of these implementation and monitoring strategies will help to ensure that extension of the TS EDG AOT does not degrade operational safety over time and that the risk incurred when an EDG is taken out of service is minimized.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (63 FR 6998 dated February 11, 1998). Accordingly, the 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.

6.0 CONCLUSION

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

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