December 30, 1

Docket Nos. 50-280
and 50-281

Posted
Amdt. 165 to DPR-32

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

Dear Mr. Stewart:

SUBJECT: SURRY UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: ALLOWED OUTAGE TIMES (TAC NOS. 80159 AND 80160)

The Commission has issued the enclosed Amendment No. 165 to Facility Operating License No. DPR-32 and Amendment No. 164 to Facility Operating License No. DPR-37 for the Surry Power Station, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TS) in response to your application transmitted by letter dated November 8, 1990, as supplemented May 31, 1991 and clarified October 8, 1991.

These amendments provide allowed outage times (AOTs) and operator actions for the engineered safeguards instruments. In addition, the amendments incorporate the operability and surveillance requirements for the feedwater isolation/turbine trip instruments in accordance with Generic Letter 89-19.

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

Sincerely,
(Original Signed By)

Bart C. Buckley, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 165 to DPR-32
2. Amendment No. 164 to DPR-37
3. Safety Evaluation

cc w/enclosures:
See next page

*Previous Concurrence

OFC	:LA:PD22	:PE:PDII-2	:PM:PD22	:C:SICB:NRR*	:D:PDII-2	:OGC*	:
		13CB45	BCB				
N.	DMiller	:DDorman/jkd	:BBuckley	:SNewberry	:HBerkow	:	:
DATE	:12/ /91	:12/30/91	:12/30/91	: 7/23/91	:12/ /91	: 7/24/91	:

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Document Name: AMEND SURRY 80159/60

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

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-280

SURRY POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 165
License No. DPR-32

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

   A. The application for amendment by Virginia Electric and Power Company (the licensee) dated November 8, 1990, as supplemented May 31, 1991 and clarified October 8, 1991, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

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

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-32 is hereby amended to read as follows:

(B) Technical Specifications

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

3. This license amendment is effective as of the date of its issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 30, 1991

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

VIRGINIA ELECTRIC AND POWER COMPANY

DOCKET NO. 50-281

SURRY POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 164
License No. DPR-37

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

   A. The application for amendment by Virginia Electric and Power Company (the licensee) dated November 8, 1990, as supplemented May 31, 1991 and clarified October 8, 1991, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

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

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-37 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 164 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 30, 1991

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 165 FACILITY OPERATING LICENSE NO. DPR-32

AMENDMENT NO. 164 FACILITY OPERATING LICENSE NO. DPR-37

DOCKET NOS. 50-280 AND 50-281

Revise Appendix A as follows:

Remove Pages	Insert Pages
TS 3.7-1	TS 3.7-1
TS 3.7-2	TS 3.7-2
TS 3.7-2a	---
TS 3.7-2b	---
TS 3.7-12	TS 3.7-12
TS 3.7-13b	TS 3.7-13b
TS 3.7-13c	TS 3.7-13c
TS 3.7-13d	TS 3.7-13d
TS 3.7-14	TS 3.7-14
TS 3.7-15	TS 3.7-15
TS 3.7-16	TS 3.7-16
TS 3.7-17	TS 3.7-17
---	TS 3.7-17a
---	TS 3.7-17b
---	TS 3.7-17c
TS 4.1-1	TS 4.1-1
TS 4.1-8aa	---
TS 4.1-8b	TS 4.1-8b
TS 4.1-8c	TS 4.1-8c
---	TS 4.1-8d
---	TS 4.1-8e
TS 4.1-9	TS 4.1-9

3.7 INSTRUMENTATION SYSTEMS

Operational Safety Instrumentation

Applicability

Applies to reactor and safety features instrumentation systems.

Objectives

To provide for automatic initiation of the Engineered Safety Features in the event that principal process variable limits are exceeded, and to delineate the conditions of the plant instrumentation and safety circuits necessary to ensure reactor safety.

Specification

A. For on-line testing or in the event of a subsystem instrumentation channel failure, plant operation at rated power shall be permitted to continue in accordance with TS Tables 3.7-1 through 3.7-3.

B. The reactor trip system instrumentation channels and interlocks shall be operable as specified in TS Table 3.7-1.

C. The Engineered Safeguards Actions and Isolation Function Instrumentation channels and interlocks shall be operable as specified in TS Tables 3.7-2 and 3.7-3 respectively.

D. The Engineered Safety Features initiation instrumentation setting limits shall be as stated in TS Table 3.7-4.

E. The explosive gas monitoring instrumentation channels shown in Table 3.7-5(a) shall be operable with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.A.1 are not exceeded.

1. With an explosive gas monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, declare the channel inoperable and take the action shown in Table 3.7-5(a).

2. With less than the minimum number of explosive gas monitoring instrumentation channels operable, take the action shown in Table 3.7-5(a). Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, prepare and submit a Special Report to the Commission (Region II) to explain why this inoperability was not corrected in a timely manner.

F. The accident monitoring instrumentation for its associated operable components listed in TS Table 3.7-6 shall be operable in accordance with the following:

1. With the number of operable accident monitoring instrumentation channels less than the total number of channels shown in TS Table 3.7-6 items 1 through 10, either restore the inoperable channel(s) to operable status within 7 days or be in at least hot shutdown within the next 12 hours.

2. With the number of operable accident monitoring instrumentation channels less than the minimum channels operable requirement of TS Table 3.7-6 items 1 through 10, either restore the inoperable channel(s) to operable status within 48 hours or be in at least hot shutdown within the next 12 hours.

G. Deleted

H. The containment hydrogen analyzers and associated support equipment shall be operable in accordance with the following:

1. A reactor shall not be made critical nor be operated at power without two independent containment hydrogen analyzers operable.

2. During power operation or return to criticality from hot shutdown conditions, the following restrictions apply:

   a. With one hydrogen analyzer inoperable, restore the inoperable analyzer to operable status within 30 days or be in at least hot standby within the next 6 hours.

   b. With both hydrogen analyzers inoperable, restore at least one analyzer to operable status within 7 days or be in at least hot standby within the next 6 hours.

   Note: Operability of the hydrogen analyzers includes proper operation of the respective Heat Tracing System.

TABLE 3.7-1

REACTOR TRIP

INSTRUMENT OPERATING CONDITIONS

	FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	MINIMUM OPERABLE CHANNELS	CHANNELS TO TRIP	PERMISSIBLE BYPASS CONDITIONS	OPERATOR ACTION
17.	Low steam generator water level with steam/feedwater flow mismatch	2/loop-level and 2/loop-flow mismatch	1/loop-level and 2/loop-flow mismatch or 2/loop-level and 1/loop-flow mismatch	1/loop-level coincident with 1/loop-flow mismatch in same loop		7
18.	A. Reactor Trip Breakers	2	2	1		8
	B. Reactor Trip Bypass Breakers - Note C	2	1	1		
19.	Automatic Trip Logic	2	2	1		11
20.	Reactor Trip System Interlocks - Note D					
	a. Intermediate range neutron flux, P-6	2	2	1		13
	b. Low power reactor trips block, P-7					
	Power range neutron flux, P-10	4	3	2		13
	and Turbine impulse pressure	2	2	1		13
	c. Power range neutron flux, P-8	4	3	2		13
	d. Power range neutron flux, P-10	4	3	2		13
	e. Turbine impulse pressure	2	2	1		13

Note C - With the Reactor Trip Breaker open for surveillance testing in accordance with Specification Table 4.1-1 (Item 30)
Note D - Reactor Trip System Interlocks are described in Table 4.1-A

Amendment Nos. 165 and 164,

TS 3.7-12

TABLE 3.7-1 (Continued)

ACTION 4. With the number of channels OPERABLE one less than required by the Minimum OPERABLE Channels requirement and with the THERMAL POWER level:

a. Below P-6, (Block of Source Range Reactor Trip) setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 setpoint.

b. Above P-6, operation may continue.

ACTION 5. With the number of channels OPERABLE one less than required by the Minimum OPERABLE Channels requirement, verify compliance with the SHUTDOWN MARGIN requirements within 1 hour and at least once per 12 hours thereafter.

ACTION 6.A. With the number of OPERABLE Channels equal to the Minimum Operable Channels requirement, REACTOR CRITICAL and POWER OPERATION may proceed provided the following conditions are satisfied:

1. The inoperable channel is placed in the tripped condition within 6 hours.

2. The Minimum OPERABLE Channels requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.1.

6.B. With the number of OPERABLE Channels one less than required by the Minimum Operable Channels requirement, be in Hot Shutdown within 6 hours.

TABLE 3.7-1 (Continued)

ACTION 7. With the number of OPERABLE Channels equal to the Minimum Operable Channels, REACTOR CRITICAL and POWER OPERATION may proceed provided the following conditions are satisfied:

1. The inoperable channel is placed in the tripped condition within 6 hours.

2. The Minimum OPERABLE Channels requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.1.

ACTION 8.A. With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT SHUTDOWN within the next 6 hours. In conditions of operation other than REACTOR CRITICAL or POWER OPERATIONS, with the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour. However, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.1 provided the other channel is OPERABLE.

ACTION 8.B. With one of the diverse trip features (undervoltage or shunt trip device) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and apply Action 8.A. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status.

TABLE 3.7-1 (Continued)

ACTION 9. With one channel inoperable, restore the inoperable channel to OPERABLE status within 6 hours or reduce THERMAL POWER to below the P-8, (Block of Low Reactor Coolant Pump Flow and Reactor Coolant Pump Breaker Position) setpoint, within the next 2 hours. Operation below P-8 may continue pursuant to ACTION 10.

ACTION 10. With less than the Minimum Number of Channels OPERABLE, operation may continue provided the inoperable channel is placed in the tripped condition within 6 hours.

ACTION 11. With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT SHUTDOWN within the next 8 hours. In conditions of operation other than REACTOR CRITICAL or POWER OPERATIONS, with the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the reactor trip breakers within the next hour. However, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.1 provided the other channel is OPERABLE.

ACTION 12. With the number of OPERABLE channels less than the total number of channels, operation may continue provided the inoperable channels are placed in the tripped condition within 6 hours.

ACTION 13. With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or be in at least HOT SHUTDOWN within the following 6 hours.

TABLE 3.7-2

ENGINEERED SAFEGUARDS ACTION
INSTRUMENT OPERATING CONDITIONS

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	MINIMUM OPERABLE CHANNELS	CHANNELS TO TRIP	PERMISSIBLE BYPASS CONDITIONS	OPERATOR ACTIONS
1. SAFETY INJECTION					
a. Manual	2	2	1		21
b. High containment pressure	4	3	3		17
c. High differential pressure between any steam line and the steam header	3/steam line	2/steam line	2/steam line on any steam line	Primary pressure less than 2000 psig, except when reactor is critical	20
d. Pressurizer low-low pressure	3	2	2	Primary pressure less than 2000 psig, except when reactor is critical	20
e. High steam flow in 2/3 steam lines coincident with low T_{avg} or low steam line pressure					
1) Steam line flow	2/steam line	1/steam line	1/steam line any two lines	Reactor coolant T_{avg} less than 543° during heatup and cooldown	20
2) T_{avg}	1/loop	1/loop any two loops	1/loop any two loops	Reactor coolant T_{avg} less than 543° during heatup and cooldown	20
3) Steam line pressure	1/line	1/line any two loops	1/line any two loops	Reactor coolant T_{avg} less than 543° during heatup and cooldown	20
f. Automatic actuation logic	2	2	1		14

TABLE 3.7-2 (Continued)

ENGINEERED SAFEGUARDS ACTION
INSTRUMENT OPERATING CONDITIONS

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	MINIMUM OPERABLE CHANNELS	CHANNELS TO TRIP	PERMISSIBLE BYPASS CONDITIONS	OPERATOR ACTIONS
2. CONTAINMENT SPRAY					
a. Manual	1 set	1 set	1 set♦		15
b. High containment pressure (Hi-Hi)	4	3	3		17
c. Automatic actuation logic	2	2	1		14
3. AUXILIARY FEEDWATER					
a. Steam generator water level low-low					
1) Start motor driven pumps	3/steam generator	2/steam generator	2/steam generator any 1 generator		20
2) Starts turbine driven pump	3/steam generator	2/steam generator	2/steam generator any 2 generators		20
b. RCP undervoltage starts turbine driven pump	3	2	2		20
c. Safety injection - start motor driven pumps	See #1 above (all SI initiating functions and requirements)				
d. Station blackout - start motor driven pumps	1/bus 2 transfer buses/unit	1/bus 2 transfer buses/unit	2		21

♦ Must actuate 2 switches simultaneously

Amendment Nos. 165 and 164,

TS 3.7-1

TABLE 3.7-2 (Continued)

ENGINEERED SAFEGUARDS ACTION
INSTRUMENT OPERATING CONDITIONS

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	MINIMUM OPERABLE CHANNELS	CHANNELS TO TRIP	PERMISSIBLE BYPASS CONDITIONS	OPERATOR ACTIONS
AUXILIARY FEEDWATER (continued)					
e. Trip of main feedwater pumps - start motor driven pumps	2/MFW pump	1/MFW pump	2-1 each MFW pump		21
f. Automatic actuation logic	2	2	1		22
4. LOSS OF POWER					
a. 4.16 kv emergency bus undervoltage (loss of voltage)	3/bus	2/bus	2/bus		20
b. 4.16 kv emergency bus undervoltage (degraded voltage)	3/bus	2/bus	2/bus		20
5. NON-ESSENTIAL SERVICE WATER ISOLATION					
a. Low intake canal level	4	3	3		20
6. ENGINEERED SAFEGUARDS ACTUATION INTERLOCKS - Note A					
a. Pressurizer pressure, P-11	3	2	2		23
b. Low-low T_{avg}, P-12	3	2	2		23
c. Reactor trip, P-4	2	2	1		24

Note A - Engineered Safeguards Actuation Interlocks are described in Table 4.1-A

TABLE 3.7-3

INSTRUMENT OPERATING CONDITIONS FOR ISOLATION FUNCTIONS

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	MINIMUM OPERABLE CHANNELS	CHANNELS TO TRIP	PERMISSIBLE BYPASS CONDITIONS	OPERATOR ACTIONS
1. CONTAINMENT ISOLATION					
a. Phase I					
1) Safety Injection	See Item #1, Table 3.7-2 (all SI initiating functions and requirements)				
2) Automatic initiation logic	2	2	1		14
3) Manual	2	2	1		21
b. Phase 2					
1) High containment pressure	4	3	3		17
2) Automatic actuation logic	2	2	1		14
3) Manual	2	2	1		15
c. Phase 3					
1) High containment pressure (Hi-Hi setpoint)	4	3	3		17
2) Automatic actuation logic	2	2	1		14
3) Manual	1 set	1 set	1 set ♦		15
2. STEAMLINE ISOLATION					
a. High steam flow in 2/3 lines coincident with 2/3 low T_{avg} or 2/3 low steam pressures	See Item #1.e Table 3.7-2 for operability requirements				

♦ Must actuate 2 switches simultaneously

Amendment Nos. 165 and 164,

TS 3.7-1

TABLE 3.7-3 (Continued)

INSTRUMENT OPERATING CONDITIONS FOR ISOLATION FUNCTIONS

FUNCTIONAL UNIT	TOTAL NUMBER OF CHANNELS	MINIMUM OPERABLE CHANNELS	CHANNELS TO TRIP	PERMISSIBLE BYPASS CONDITIONS	OPERATOR ACTIONS
STEAMLINE ISOLATION (continued)					
b. High containment pressure (Hi-Hi setpoint)	4	3	3		17
c. Manual	1/steamline	1/steamline	1/steamline		21
d. Automatic actuation logic	2	2	1		22
3. TURBINE TRIP AND FEEDWATER ISOLATION					
a. Steam generator water-level high-high	3/steam generator	2/steam generator	2/in any one steam generator		20
b. Automatic actuation logic and actuation relay	2	2	1		22
c. Safety injection	See Item #1 of Table 3.7-2 (all SI initiating functions and requirements)				

Amendment Nos. 165 and 164,

TS 3.7-17a

TABLES 3.7-2 AND 3.7-3

TABLE NOTATIONS

ACTION 14. With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 30 hours. One channel may be bypassed for up to 8 hours for surveillance testing per Specification 4.1, provided the other channel is OPERABLE.

ACTION 15. With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 17. With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the tripped condition within 6 hours and the Minimum Channels OPERABLE requirement is met. One additional channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.1.

ACTION 19. With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the following 6 hours.

ACTION 20. With the number of OPERABLE channels one less than the Total Number of Channels, REACTOR CRITICAL and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours.

b. The minimum channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per specification 4.1.

TABLES 3.7-2 AND 3.7-3

TABLE NOTATIONS (Continued)

ACTION 21. With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirements, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 22. With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT SHUTDOWN within 10 hours and reduce pressure and temperature to less than 450 psig and 350° within the following 8 hours; however, one channel may be bypassed for up to 8 hours for surveillance testing per Specification 4.1 provided the other channel is OPERABLE.

ACTION 23. With less than the Minimum Number of Channels OPERABLE, within one hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or be in at least HOT SHUTDOWN within 6 hours.

ACTION 24. With the number of OPERABLE channels less than the total number of channels, restore the inoperable channels to OPERABLE status within 48 hours or reduce pressure and temperature to less than 450 psig and 350° within the following 12 hours.

4.1 OPERATIONAL SAFETY REVIEW

Applicability

Applies to items directly related to safety limits and limiting conditions for operation.

Objective

To specify the minimum frequency and type of surveillance to be applied to unit equipment and conditions.

Specification

A. Calibration, testing, and checking of instrumentation channels and interlocks shall be performed as detailed in Table 4.1-1 and 4.1-2.

B. Equipment tests shall be conducted as detailed below and in Table 4.1-2A.

1. Each Pressurizer PORV shall be demonstrated operable:

   a. At least once per 31 days by performance of a channel functional test, excluding valve operation, and
   b. At least once per 18 months by performance of a channel calibration.

2. Each Pressurizer PORV block valve shall be demonstrated operable at least once per 92 days by operating the valve through one complete cycle of full travel.

TABLE 4.1-1 (Continued)

MINIMUM FREQUENCIES FOR CHECK, CALIBRATIONS, AND TEST OF INSTRUMENT CHANNELS

	Channel Description	Check	Calibrate	Test	Remarks
39.	Steam/Feedwater Flow and Low S/G Water Level	S	R	M	
40.	Intake Canal Low (See Footnote 1)	D	R	M(1), Q(2)	1) Logic Test 2) Channel Electronics Test
41.	Turbine Trip and Feedwater Isolation				
	a. Steam generator water level high	S	R	M	
	b. Automatic actuation logic and actuation relay	N.A.	R	M(1)	1) Automatic actuation logic only, actuation relays tested each refueling
42.	Reactor Trip System Interlocks				
	a. Intermediate range neutron flux, P-6	N.A.	R(3)	M(4)	3) Neutron detectors may be excluded from the calibration
	b. Low power reactor trips block, P-7	N.A.	R(3)	M(4)	4) With power greater than or equal to the interlock setpoint, the required test shall consist of verifying that the interlock is in the required state by observing the permissive annunciator window
	c. Power range neutron flux, P-8	N.A.	R(3)	M(4)	
	d. Power range neutron flux, P-10	N.A.	R(3)	M(4)	
	e. Turbine impulse pressure	N.A.	R	R	

Footnote 1:

Check — Consists of verifying for an indicated intake canal level greater than 23'-6" that all four low level sensor channel alarms are not in an alarm state.

Calibration — Consists of uncovering the level sensor and measuring the time response and voltage signals for the immersed and dry conditions. It also verifies proper action of instrument channel from sensor to electronics to channel output relays and annunciator. Only the two available sensors on the shutdown unit would be tested.

Tests
1) The logic test verifies the three out of four logic development for each train by using the channel test switches for that train.
2) Channel electronics test verifies that electronics module responds properly to a superimposed differential millivolt signal which is equivalent to the sensor detecting a "dry" condition.

TABLE 4.1-1 (Continued)

MINIMUM FREQUENCIES FOR CHECK, CALIBRATIONS, AND TEST OF INSTRUMENT CHANNELS

Channel Description	Check	Calibrate	Test	Remarks
43. Engineered Safeguards Actuation Interlocks				
a. Reactor trip, P-4	N.A.	N.A.	R	
b. Pressurizer pressure, P-11	N.A.	R	R	
c. Low, low T_{avg}, P-12	N.A.	R	R	

S - Each Shift
D - Daily
N.A. - Not Applicable
Q - Every 90 effective full power days

M - Monthly
P - Prior to each startup if not done within the previous week
R - Each Refueling Shutdown

* See Specification 4.1.D

TABLE 4.1-A

REACTOR TRIP SYSTEM AND ENGINEERED SAFEGUARDS ACTION INTERLOCKS

DESIGNATION	CONDITION	FUNCTION
Reactor Trip (P-4)	1 of 2 breakers open	Reactor tripped - actuates turbine trip, allows auto closing of main feedwater valves on T_{avg} below setpoint, prevents the opening of the main feedwater valves which were closed by a safety injection or high steam generator water level signal.
Intermediate Range Neutron Flux (P-6)	1 of 2 Intermediate range above setpoint (increasing power level)	Allows manual block of source range reactor trip.
	2 of 2 Intermediate range below setpoint (decreasing power level)	Automatically defeats the block of source range reactor trip.
Power Range Neutron Flux (P-10)	2 of 4 Power range above setpoint (increasing power level)	Allows manual block of power range (low setpoint) and intermediate range reactor trips and intermediate range rod stop. Automatically blocks source range reactor trip.
	3 of 4 Power range below setpoint (decreasing power level)	Automatically defeats the block of power range (low setpoint) and intermediate range reactor trips and intermediate range rod stop.
		Input to P-7.
Low Power Reactor Trip Block (P-7)	2 of 4 Power range above setpoint or 1 of 2 Turbine Impulse chamber above setpoint (Power level increasing)	Allows reactor trip on: Low flow or reactor coolant pump breakers open in more than one loop, Undervoltage (RCP busses), Underfrequency (RCP busses), Turbine Trip, Pressurizer low pressure, and Pressurizer high level.
	3 of 4 Power range below setpoint and 2 of 2 Turbine Impulse chamber pressure below setpoint (Power level decreasing)	Prevents reactor trip on: Low flow or reactor coolant pump breakers open in more than one loop, Undervoltage (RCP busses), Underfrequency (RCP busses), Turbine Trip, Pressurizer low pressure, and Pressurizer high level.

TABLE 4.1-A (continued)

REACTOR TRIP SYSTEM AND ENGINEERED SAFEGUARDS ACTION INTERLOCKS

DESIGNATION	CONDITION	FUNCTION
Power Range Neutron Flux (P-8)	2 of 4 Power range above setpoint (Power level increasing)	Permit reactor trip on low flow or reactor coolant pump breaker open in a single loop.
	3 of 4 Power range below setpoint (Power level decreasing)	Blocks reactor trip on low flow or reactor coolant pump breaker open in a single loop.
Pressurizer Pressure (P-11)	2 of 3 Pressurizer pressure above setpoint (increasing pressure)	On increasing pressurizer pressure, P-11 automatically reinstates safety injection actuation on low pressurizer pressure.
	2 of 3 Pressurizer pressure below setpoint (decreasing pressure)	On decreasing pressure, P-11 allows the manual block of safety injection actuation on low pressurizer pressure.
Low, Low T_{avg} (P-12)	2 of 3 T_{avg} above setpoint (temperature increasing)	On increasing primary coolant loop temperature, P-12 automatically reinstates safety injection actuation on high steam flow coincident with either low-low T_{avg} or low steam line pressure, and provides an arming signal to the steam dump system.
	2 of 3 T_{avg} below setpoint (temperature decreasing)	On decreasing primary coolant loop temperature, P-12 allows the manual block of safety injection actuation on high steam flow coincident with either low-low T_{avg} or low steam line pressure and automatically removes the arming signal from the steam dump system.

Amendment Nos. 165 and 164,

TABLE 4.1-1A

EXPLOSIVE GAS MONITORING INSTRUMENTATION REQUIREMENTS

	CHANNEL DESCRIPTION	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1.	Waste Gas Holdup System Explosive Gas Monitoring System			
(a)	Hydrogen Monitor	D	Q(1)	M
(b)	Oxygen Monitor	D	Q(2)	M

(1) - The channel calibration shall include the use of standard gas samples containing a nominal:
1. one volume percent hydrogen, balance nitrogen, and
2. four volume percent hydrogen, balance nitrogen.

(2) - The channel calibration shall include the use of standard gas samples containing a nominal:
1. one volume percent oxygen, balance nitrogen, and
2. four volume percent oxygen, balance nitrogen.

D - Daily
M - Monthly
Q - Quarterly

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 165 TO FACILITY OPERATING LICENSE NO. DPR-32

AND AMENDMENT NO. 164 TO FACILITY OPERATING LICENSE NO. DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY

SURRY POWER STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-280 AND 50-281

1.0 INTRODUCTION

By letter dated November 8, 1990, as supplemented May 31, 1991 and clarified October 8, 1991, the Virginia Electric and Power Company (the licensee) proposed changes to the Technical Specifications (TS) for the Surry Power Station, Units 1 and 2. Specifically, the proposed changes would provide allowed outage times (AOTs) and operator actions for the engineered safeguards instruments in accordance with WCAP-10271, Supplement 2, Revision 1, "Evaluation of Surveillance Frequencies and Out of Service Times for the Engineered Safety Features Actuation System (ESFAS)," and the NRC Safety Evaluation Reports (SERs) dated February 22, 1989 and April 30, 1990. In addition, the proposed changes would incorporate the operability and surveillance requirements for the feedwater isolation/turbine trip instruments in accordance with Generic Letter 89-19, "Safety Implication of Control Systems in LWR Nuclear Power Plants." The May 31 and October 8, 1991 letters provided supplemental information that did not change the initial proposed no significant hazards consideration determination.

2.0 DISCUSSION

The following changes would be made to the Surry, Units 1 and 2 TS in order to provide the AOTs and operator actions for the engineered safeguards instruments and incorporate the operability and surveillance requirements for the feedwater isolation turbine trip instrumentation.

TS 3.7.B.2 and C - These specifications would be deleted and replaced with a standard operability statement for the instruments in Tables 3.7-2 and 3.7-3. TS 3.7.B.1 would be redesignated 3.7.B. TS 3.7.C would be rewritten to refer to TS Tables 3.7-2 and 3.7-3 for operability requirements.

TS 3.7.F.1 and 2 - Items 11 through 15 in Table 3.7-6 have action statements included on the table as notes, therefore, TS 3.7.F.1 and 3.7.F.2 would be corrected to address only items 1 through 10 in that table (the items which are applicable to these paragraphs). Pages 3.7-1 and 3.7-2 would be reformatted and pages 3.7-2a and 3.7-2b would be deleted.

Table 3.7-1, Reactor Trip Instrument Operating Conditions

Action statement 6.A would be modified to permit unit startup (REACTOR CRITICAL) with an instrument channel in trip as long as the minimum channel operable requirement is met. Action statement 7 would be modified to read:

> "With the number of OPERABLE Channels equal to the Minimum Operable Channels, REACTOR CRITICAL and POWER OPERATION may proceed provided the following conditions are satisfied:
>
> 1. The inoperable channel is placed in the tripped condition within 6 hours.
>
> 2. The Minimum OPERABLE Channels requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.1."

The existing action statement allows power operation with an inoperable channel in trip until the next scheduled channel functional test. Both WCAP-10271, Supplements 1 and 2, and the NRC SERs have eliminated the need for a time limit in this action statement, based on an insignificant increase in the core melt frequency when operating with a channel in trip. Therefore, the proposed action statement would permit unit startup (REACTOR CRITICAL) and power operation with an inoperable instrument channel in trip indefinitely.

Action statement 11 would be modified to allow 4 hours (vice 2 hours) to test the logic train. This would allow for the testing to be performed in a more controlled manner, thus reducing the probability of human error. The increased time to perform the surveillance testing is consistent with the increased time allotted for testing of the engineered safeguards action logic trains. This increase in the time allowed for testing has been addressed in the NRC's supplemental SER for WCAP-10271, Supplement 2, dated April 30, 1990.

The following will be added to Functional Unit 20, Reactor Trip System Interlocks:

a. Intermediate range neutron flux, P-6 - Total channels = 2
Minimum Operable Channels = 2
Channels to Trip = 1

b. Low power reactor trips block, P-7

Power range neutron flux, P-10 - Total channels = 4
Minimum Operable Channels = 3
Channels to Trip = 2

and

Turbine impulse pressure Total channels = 2
Minimum Operable Channels = 2
Channels to Trip = 1

c. Power range neutron flux, P-8
Total channels = 4
Minimum Operable Channels = 3
Channels to Trip = 2

d. Power range neutron flux, P-10
Total channels = 4
Minimum Operable Channels = 3
Channels to Trip = 2

e. Turbine impulse pressure
Total channels = 2
Minimum Operable Channels = 2
Channels to Trip = 1

In addition, "Note D - Reactor Trip System Interlocks are described in Table 4.1-A" would be added at the bottom of the table and refers to the new functional unit.

All operator actions for the new functional unit would be designated as action statement 13. This would be a new action, which would state:

> "With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or be in at least HOT SHUTDOWN within the following 6 hours."

Table 3.7-2 Engineered Safeguards Action Instrument Operating Conditions, and Table 3.7-3 Instrument Operating Conditions for Isolation Functions

Each functional unit in Tables 3.7-2 and 3.7-3 would be reformatted and provided with an action statement and AOT consistent with WCAP-10271, Supplement 2, and the staff's SERs for this document. The differences between the existing specification and the proposed specification for each functional unit are discussed below. Along with the interlocks, the automatic actuation logic for the protective functions (e.g., safety injection, containment isolation, auxiliary feedwater, etc.) is being included as a functional unit with operability requirements.

Table 3.7-2

Safety Injection

a. Manual would require two channels to be operable rather than one channel. Forty-eight hours would be provided to make repairs before requiring the unit to be in HOT SHUTDOWN within the next 6 hours and COLD SHUTDOWN within the following 30 hours. A condition of one less than the minimum channels operable previously required cold shutdown without a time allowance for making repairs.

b. High containment pressure would include action to place an inoperable channel in trip within 6 hours and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. This condition previously required cold shutdown.

c. High differential pressure between any steam line and the steam header would include action to place inoperable channel in trip within 6 hours and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. Also, it would allow a reactor startup and continued power operations with a channel in trip. This condition previously required cold shutdown.

d. Pressurizer low-low pressure would include action to place an inoperable channel in trip within 6 hours and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. Also, it would allow reactor startup and continued power operations with a channel in trip. This condition previously required cold shutdown.

e. High steam flow in 2/3 steam lines coincident with low Tavg or low steam line pressure would include action to place an inoperable channel in trip within 6 hours and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. Also, it would allow reactor startup and continued power operations with a channel in trip. This condition previously required cold shutdown.

f. Automatic actuation logic would be a new functional unit. The action would provide 12 hours for channel/train repair or complete a unit shutdown. The action statement would also establish a time limit to perform surveillance testing. In this case, 8 hours would be used to accommodate testing of the relay logic.

Containment Spray

a. Manual would provide 12 hours to repair a circuit or complete a unit shutdown. This action would be more conservative than the WCAP requirement. The plant has two switches which must be pushed simultaneously to initiate containment spray. This condition previously required cold shutdown.

b. High containment pressure (Hi-Hi) would include action to place an inoperable channel in trip within 6 hours and establish a time limit to preform surveillance testing on an additional channel with a channel inoperable and in trip. This condition previously required cold shutdown.

c. Automatic actuation logic would be a new functional unit. The action statement would provide 12 hours for channel/train repair or a complete unit shutdown. The action statement would also establish a time limit to perform surveillance testing.

Auxiliary Feedwater

a Steam generator water level low-low would include action to place an inoperable channel in trip within 6 hours (changed from 1 hour) and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. Also, it would allow reactor startup and continued power operations with a channel in trip.

b. RCP undervoltage starts turbine driven pump would include action to place an inoperable channel in trip within 6 hours (changed from 1 hour) and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. Also, it would allow reactor startup and continued power operations with a channel in trip. This logic scheme was reevaluated, found acceptable, and included in the staff's supplemental SER for WCAP-10271, Supplement 2, issued April 30, 1990.

c. Safety injection - start motor driven pumps would refer to safety injection instrument requirements described in items 1.a-1.f above. Functional units d. and e. remain the same as the current TS.

f. Automatic actuation logic would be a new functional unit. It would provide 10 hours to repair a circuit or switch or complete a unit shutdown, and then 8 hours to cool down to less than 350 degrees and 450 psig. The overall time requirement to reach a condition where this function is not necessary would not change and would remain consistent with the WCAP and the staff's SER.

However, the time to hot shutdown would be changed from 12 to 10 hours and the time to reach 350 degrees and 450 psig would increase from 6 to 8 hours. This would provide additional time to borate in order to establish the shutdown margin required by the TS and would permit a more orderly plant shutdown.

Loss of Power

a. 4.16 kv emergency power undervoltage (loss of voltage) would include an action statement to place an inoperable channel in trip within 6 hours (changed from 1 hour) and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. Also, it would allow reactor startup and continued power operations with a channel in trip.

b. 4.16 kv emergency power undervoltage (degraded voltage) would include an action statement to place an inoperable channel in trip within 6 hours (changed from 1 hour) and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. Also, it would allow reactor startup and continued power operations with a channel in trip.

Non-Essential Service Water

a. Low intake canal level would include an action statement to place an inoperable channel in trip within 6 hours (changed from 1 hour) and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. Also, it would allow a reactor startup and continued power operations with a channel in trip. This is a Surry-specific instrument that performs a safety function. It would also remove the "Permissible Bypass Condition" which currently allows 2 hours with one train blocked for logic testing.

Engineered Safeguards Actuation Interlocks

This would add a new requirement providing operability requirements for each interlock.

Table 3.7-3

The table functions would be reorganized by phase isolation functional units.

Containment Isolation

a. Phase 1

1) Safety injection would remain the same as the existing TS.

2) Automatic actuation logic would be a new functional unit. The action would provide 12 hours for channel/train repair or to complete a HOT SHUTDOWN, with COLD SHUTDOWN in the following 30 hours. The action statement would also establish a time limit to perform surveillance testing. In this case, 8 hours would be used to accommodate testing of the relay logic.

3) Manual would provide 48 hours to repair the circuit/switch prior to requiring that the unit be placed in HOT SHUTDOWN within the next 6 hours and COLD SHUTDOWN within the next 30 hours. The existing TS requires only HOT SHUTDOWN.

b. Phase 2

1) High containment pressure would include an action statement to place an inoperable channel in trip within 6 hours and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. The existing TS required COLD SHUTDOWN.

2) Automatic actuation logic would be a new functional unit. The action would provide 12 hours for channel/train repair or to complete a HOT SHUTDOWN, with COLD SHUTDOWN in the following 30 hours. The action statement would also establish a time limit to perform surveillance testing. In this case, 8 hours would be used to accommodate testing of the relay logic.

3) Manual would provide 12 hours to repair circuit/switch or complete a unit shutdown, followed by cold shutdown within the following 30 hours.

c. Phase 3

1) High containment pressure (Hi-Hi setpoint) would include an action statement to place an inoperable channel in trip within 6 hours and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. The existing TS requires COLD SHUTDOWN.

2) Automatic actuation logic would be a new functional unit. The action would provide 12 hours for channel/train repair or to complete a HOT SHUTDOWN, with COLD SHUTDOWN in the following 30 hours. The action statement would also establish a time limit to perform surveillance testing. In this case, 8 hours would be used to accommodate testing of the relay logic.

3) Manual would provide 12 hours to repair circuit/switch or complete a unit shutdown, followed by cold shutdown within the following 30 hours.

Steamline Isolation

a. High steam flow would include an action statement to place an inoperable channel in trip within 6 hours and establish a time limit to perform surveillance testing on an additional channel with one channel inoperable and in trip. The existing TS requires COLD SHUTDOWN.

b. High containment pressure (Hi-Hi setpoint) would include an action statement to place an inoperable channel in trip within 6 hours and establish a time limit to perform surveillance testing on an additional channel with a channel inoperable and in trip. The existing TS requires COLD SHUTDOWN.

c. Manual would provide 48 hours to repair circuit/switch prior to requiring that the unit be placed in HOT SHUTDOWN within the next 6 hours and COLD SHUTDOWN within the following 30 hours. This is consistent with the WCAP even though the identical action statement would not be used.

d. Automatic actuation logic would be a new functional unit. It would provide 10 hours to repair circuit/switch or complete a HOT SHUTDOWN and then 8 hours to cool down to less than 350 degrees and 450 psig. The overall time requirement to reach a condition in which this function is not necessary would not change and would remain consistent with the above-cited WCAP and NRC SERs. However, the time to HOT SHUTDOWN would be changed from 12 hours in the WCAP to 10 hours, and the time to reach 350 degrees and 450 psig would be increased from 6 hours in the WCAP to 8 hours. This would provide additional time to borate to establish the shutdown margin required by the Technical Specifications and permit a more orderly plant cooldown.

Feedwater Isolation

Feedwater isolation would be included under the turbine trip and feedwater isolation function.

Turbine Trip and Feedwater Isolation

a. Steam generator water level high-high would be a new item in response to Generic Letter 89-19, "Request for Action Related to Resolution of Unresolved Safety Issue A-47 'Safety Implication of Control Systems in LWR Nuclear Power Plants'" pursuant to 10 CFR 50.54(f). Operability and surveillance of this instrument would now be required by the TS. An inoperable channel would be required to be placed in trip within 6 hours and unit startup and power operations could continue indefinitely.

b. Automatic actuation logic and actuation relay would also be a new item. This would be necessary to maintain a consistent format with the other ESF and containment isolation instruments. This item would have the same action statement as the other logics associated with auxiliary feedwater and main steam isolation.

c. Safety injection would remain the same as the existing TS.

TS 4.1A.1 and 2

TS 4.1A.2 would be deleted and TS 4.1A.1 is renumbered as TS 4.1A. This would eliminate the requirement to test the interlocks prior to each startup if they have not been tested in the previous 92 days. Neither WCAP-10271 Supplements 1 nor 2 require the additional interlock operability test if not performed in the previous 92 days. Therefore, eliminating the test will not impact the core damage frequency determination in the WCAP.

Table 4.1-1

Surveillance requirements for the reactor protection and the engineered safeguards action interlocks would be included in this table. This addition to this table would delineate the actual surveillance test requirements for the interlocks. In addition, the surveillance requirements for the feedwater isolation and turbine trip instruments and logic circuit are included in accordance with Generic Letter 89-19. Also, the page numbers for Table 4.1-1, 4.1-A, 4.1-1A, and 4.1-1B would be changed.

Tables 4.1-A and 4.1-B

A description of the engineered safeguards action interlocks would be included in Table 4.1-A with the reactor protection interlocks. The only change to Table 4.1-B is a new page number.

3.0 EVALUATION

The proposed changes conform to WCAP-10271, the associated NRC SERs and Generic Letter 89-19. Therefore, based on our evaluation of the licensee's submittal, the staff finds these changes to be acceptable.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

These amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has

previously issued a proposed finding that these amendments involve no significant hazards consideration and there has been no public comment on such finding (56 FR 24222). Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

5.0 CONCLUSION

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

Principal Contributor: D. Dorman

Date: December 30, 1991