

March 23, 1999

Mr. Otto L. Maynard
President and Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
Post Office Box 411
Burlington, Kansas 66839

SUBJECT: AMENDMENT NO. 121 TO FACILITY OPERATING LICENSE NO. NPF-42 -
WOLF CREEK GENERATING STATION, UNIT 1 (TAC NO. MA0804)

Dear Mr. Maynard:

The Commission has issued the enclosed Amendment No. 121 to Facility Operating License No. NPF-42 for the Wolf Creek Generating Station, Unit 1. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated February 4, 1998, as supplemented by letter dated October 20, 1998.

The amendment revises the Wolf Creek Unit 1 TS Tables 3.3-3, 3.3-4, and 4.3-2 requirements regarding the engineered safety features actuation system (ESFAS) Functional Unit 6.f, "Loss of Offsite Power - Start Turbine-Driven Pump," by establishing separate requirements for the analog and digital portions of the associated circuit. The amendment also adds a note to TS Table 4.3-2 to clarify that the verification of time delays associated with ESFAS Functional Units 8.a and 8.b, "Loss of Power," is only performed as part of the channel calibration.

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

Sincerely,
Original Signed By

Kristine M. Thomas, Project Manager
Project Directorate IV-2
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosures: 1. Amendment No. 121 to NPF-42
2. Safety Evaluation

cc w/encls: See next page

*For previous concurrences
see attached ORC

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Mr. Otto L. Maynard

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March 23, 1999

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

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION, UNIT 1

DOCKET NO. 50-482

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 121
License No. NPF-42

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Wolf Creek Nuclear Operating Corporation (WCNOC, the licensee) dated February 4, 1998, as supplemented by letter dated October 20, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. NPF-42 is hereby amended to read as follows:

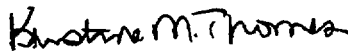
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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 121 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Kristine M. Thomas, Project Manager
Project Directorate IV-2
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: March 23, 1999

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 121 TO FACILITY OPERATING LICENSE NO. NPF-42

DOCKET NO. 50-482

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. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE

3/4 3-17
3/4 3-21a
3/4 3-26
3/4 3-37
3/4 3-38

INSERT

3/4 3-17
3/4 3-21a
3/4 3-26
3/4 3-37
3/4 3-38

TABLE 3.3-3 (Continued)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
6. Auxiliary Feedwater					
a. Manual Initiation	3(1/pump)	1/pump	1/pump	1, 2, 3	24
b. Automatic Actuation Logic and Actuation Relays (SSPS)	2	1	2	1, 2, 3	29
c. Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	2	1	2	1, 2, 3	21
d. Stm. Gen. Water Level- Low-Low					
1) Start Motor-Driven Pumps	4/stm. gen.	2/stm. gen. in any opera- ting stm. gen.	3/stm. gen. in each operating stm. gen.	1, 2, 3	28*
2) Start-Turbine-Driven Pump	4/stm. gen.	2/stm. gen. in any 2 operating stm. gen.	3/stm. gen. in each operating stm. gen.	1, 2, 3	28*
e. Safety Injection - Start Motor-Driven Pumps	See Item 1. above for all Safety Injection initiating functions and requirements.				
f. Loss-of-Offsite Power - Start Turbine-Driven Pump					
1) 4kV Bus Undervoltage - Loss of Voltage	4/Bus	2/Bus	3/Bus	1, 2, 3	19*
2) Automatic Actuation Logic and Actuation Relays (LSELS and BOP ESFAS)	2	1	2	1, 2, 3	31

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
6. Auxiliary Feedwater (Continued)					
g. Trip of All Main Feedwater Pumps - Start Motor-Driven Pumps	4-(2/pump)**	2-(1/pump in same separation)	3	1	19***
h. Auxiliary Feedwater Pump Suction Pressure-Low (Transfer to ESW)	3	2	2	1. 2. 3	15*
7. Automatic Switchover to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays (SSPS)	2	1	2	1. 2. 3. 4	14
b. RWST Level - Low-Low Coincident With Safety Injection	4	2	3	1. 2. 3. 4	30
	See Item 1. above for Safety Injection initiating functions and requirements.				
8. Loss of Power					
a. 4 kV Bus Undervoltage -Loss of Voltage	4/Bus	2/Bus	3/Bus	1. 2. 3. 4	19*
b. 4 kV Bus Undervoltage -Grid Degraded Voltage	4/Bus	2/Bus	3/Bus	1. 2. 3. 4	19*

WOLF CREEK - UNIT 1

3/4 3-18

Amendment No. 29, 43, 117

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

- b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels per Specification 4.3.2.1.

- ACTION 20 -** With less than the Minimum 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 apply Specification 3.0.3.
- ACTION 21 -** With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.
- ACTION 22 -** 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 STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours.
- ACTION 23 -** 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 declare the associated valve inoperable and take the action required by Specification 3.7.1.5.
- ACTION 24 -** With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, declare the affected auxiliary feedwater pump inoperable and take the ACTION required by Specification 3.7.1.2.
- ACTION 25 -** With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, declare the affected diesel generator and off-site power source inoperable and take the ACTION required by Specification 3.8.1.1.
- ACTION 26 -** 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 initiate and maintain operation of the Control Room Emergency Ventilation System. During operation in MODE 5 and 6, the provisions of Specification 3.0.4 are not applicable.

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

- ACTION 27 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 12 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.
- ACTION 28 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP 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 4.3.2.1.
- ACTION 29 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is operable.
- ACTION 30 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:
- a. The inoperable channel is placed in the bypass condition within 6 hours.
 - b. The minimum channels OPERABLE requirement is met; however, one additional channel may be tripped for up to 4 hours for surveillance testing per Specification 4.3.2.1.
- ACTION 31 - With the number of OPERABLE channels less than the Total Number of Channels, restore the inoperable channel(s) to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TOTAL ALLOWANCE (TA)</u>	<u>Z</u>	<u>SENSOR ERROR (S)</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
5. Turbine Trip and Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	N.A.
b. Steam Generator Water Level-High-High	5.0	2.18	2.51	≤ 78% of narrow range instrument span	≤ 79.7% of narrow range instrument span
c. Safety Injection	See Item 1. above for all Safety Injection Trip Setpoints and Allowable Values.				
6. Auxiliary Feedwater					
a. Manual Initiation	N.A.	N.A.	N.A.	N.A.	N.A.
b. Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	N.A.
c. Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	N.A.	N.A.	N.A.	N.A.	N.A.
d. Steam Generator Water Level-Low-Low					
1) Start Motor-Driven Pumps	23.5	21.18	2.51	≥ 23.5% of narrow range instrument span	≥ 22.3% of narrow range instrument span

TABLE 3.3-4 (Continued)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TOTAL ALLOWANCE (TA)	Z	SENSOR ERROR (S)	TRIP SETPOINT	ALLOWABLE VALUE
6. Auxiliary Feedwater (Continued)					
2) Start Turbine-Driven Pumps	23.5	21.18	2.51	≥ 23.5% of narrow range instrument span	≥ 22.3% of narrow range instrument span
e. Safety Injection-Start Motor-Driven Pumps	See Item 1. above for all Safety Injection Trip Setpoints and Allowable Value.				
f. Loss of Offsite Power - Start Turbine-Driven Pump	See Item 8.a below for Trip Setpoints and Allowable Values.				
1) 4 kV Bus Undervoltage - Loss of Voltage					
2) Automatic Actuation Logic and Actuation Relays (LSELS and BOP ESFAS)	N.A.	N.A.	N.A.	N.A.	N.A.
g. Trip of All Main Feedwater Pumps - Start Motor-Driven Pumps	N.A.	N.A.	N.A.	N.A.	N.A.
h. Auxiliary Feedwater Pump Suction Pressure-Low (Transfer to ESW)	N.A.	N.A.	N.A.	≥21.60 psia	≥20.53 psia
7. Automatic Switchover to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	N.A.
b. RWST Level-Low-Low	3.4	1.21	1.86	≥ 36% of instrument span	≥ 35.1% of instrument span
Coincident with Safety Injection	See Item 1. above for Safety Injection Trip Setpoints and Allowable Values.				

TABLE 4.3-2 (Continued)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
6. Auxiliary Feedwater (Continued)								
c. Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	N.A.	N.A.	N.A.	N.A.	M(1)(2)	N.A.	N.A.	1,2,3
d. Steam Generator Water Level-Low-Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1,2,3
e. Safety Injection	See Item 1 above for all Safety Injection Surveillance Requirements							
f. Loss of Offsite Power - Start Turbine Driven Pump								
1) 4 kV Bus Under-voltage - Loss of Voltage	N.A.	R	N.A.	M	N.A.	N.A.	N.A.	1,2,3
2) Automatic Actuation Logic and Actuation Relays (LSELS and BOP ESFAS)	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1,2,3
g. Trip of All Main Feedwater Pumps	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1
h. Auxiliary Feedwater Pump Suction Pressure-Low	S	R	M	N.A.	N.A.	N.A.	N.A.	1,2,3
7. Automatic Switchover to Containment Sump								
a. Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1,2,3,4
b. RWST Level - Low-Low Coincident With Safety Injection	S	R	Q	N.A.	N.A.	N.A.	N.A.	1,2,3,4
	See Item 1 above for all Safety Injection Surveillance Requirements.							
8. Loss of Power								
a. 4 kV Undervoltage-Loss of Voltage	N.A.	R(4)	N.A.	M(4)	N.A.	N.A.	N.A.	1,2,3,4.
b. 4 kV Undervoltage-Grid Degraded Voltage	N.A.	R(4)	N.A.	M(4)	N.A.	N.A.	N.A.	1,2,3,4.

TABLE 4.3-2 (Continued)
ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
9. Control Room Isolation								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	All
b. Automatic Actuation Logic and Actuation Relays (SSPS)	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1,2,3,4
c. Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	N.A.	N.A.	N.A.	N.A.	M(1)(2)	N.A.	N.A.	All
d. Phase "A" Isolation	See Item 3.a above for all Phase "A" Isolation Surveillance Requirements.							
10. Solid-State Load Sequencer	N.A.	N.A.	N.A.	N.A.	M(1)(2)	N.A.	N.A.	1,2,3,4
11. Engineered Safety Features Actuation System Interlocks								
a. Pressurizer Pressure, P-11	N.A.	R	Q	N.A.	N.A.	N.A.	N.A.	1,2,3
b. Reactor Trip, P-4	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1,2,3

TABLE NOTATIONS

- (1) Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.
- (2) Continuity check may be excluded from the ACTUATION LOGIC TEST.
- (3) Except Relays K602, K620, K622, K624, K630, K740, and K741, which shall be tested at least once per 18 months during refueling and during each COLD SHUTDOWN exceeding 24 hours unless they have been tested within the previous 90 days.
- (4) Testing of the time delay relays is performed as part of the CHANNEL CALIBRATION.



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

**SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 121 TO FACILITY OPERATING LICENSE NO. NPF-42**

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION, UNIT 1

DOCKET NO. 50-482

1.0 INTRODUCTION

By application dated February 4, 1998, as supplemented by letter dated October 20, 1998, Wolf Creek Nuclear Operating Corporation (WCNOC, the licensee) requested changes to the Technical Specifications (TS) (Appendix A to Facility Operating License No. NPF-42) for the Wolf Creek Generating Station, Unit 1. The Wolf Creek TS Tables 3.3-3, 3.3-4, and 4.3-2 identify operational, setpoint, and surveillance requirements respectively for the engineered safety features actuation system (ESFAS). These TS tables identify requirements for the ESFAS by functional unit.

The licensee proposed changes to ESFAS Functional Unit 6.f, "Loss of Offsite Power - Start Turbine-Driven Pump" requirements listed in TS Tables 3.3-3, 3.3-4, and 4.3-2 to create separate requirements for the analog and digital portion of the circuits associated with start of the turbine driven pump on a loss of offsite power. The analog portion in each TS table would be listed under new Functional Unit 6.f.1 and the digital portion under new Functional Unit 6.f.2. Additionally, the licensee proposed a change to add a new action statement (#31) in TS Table 3.3-3 for Functional Unit 6.f.2, the digital functional unit. In their supplemental letter dated October 20, 1998, the licensee revised the proposed action statement #31 to address staff concerns regarding the allowable outage time provided therein.

In addition, the licensee requested changes to the TS Table 4.3-2 to add a note to ESFAS Functional Unit 8.a and 8.b under "Loss of Power." The note would be added to the channel calibration and trip actuating device operational test (TADOT) surveillance requirements. The note would indicate that the testing of time delays in the loss of power circuits would be completed as part of channel calibration surveillance requirements.

The October 20, 1998, supplemental letter provided additional clarifying information, did not expand the scope of the application as originally noticed and did not change the staff's original proposed no significant hazards consideration determination published in the Federal Register on March 25, 1998 (63 FR 14491).

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2.0 BACKGROUND

The ESFAS TS Table 3.3-3, 3.3-4, and 4.3-2 requirements under Functional Unit 6.f, "Loss of Offsite Power - Start Turbine-Driven Pump," are applicable to the circuitry that starts the turbine-driven auxiliary feedwater (TDAFW) pump on a loss of offsite power. The Wolf Creek ESFAS Functional Unit 6.f involves the following three instrumentation systems:

Loss of Offsite Power Instrumentation and Load Shedder and Emergency Load Sequencer (LSELS)

The emergency diesel generators are designed to provide a source of emergency power when offsite power is either unavailable or is insufficiently stable to allow safe unit operation. If a loss of voltage or degraded voltage condition occurs at the 4.16 kV engineered safety features (ESF) buses, the undervoltage protection system will:

- (1) trip the 4.16 kV preferred normal and alternate bus feeder breakers to remove the two deficient offsite power sources to protect the Class 1E equipment from damage;
- (2) shed all loads from the ESF buses, except the Class 1E 480Vac load centers, to prepare the buses for re-energization by the LSELS; and
- (3) generate an emergency diesel generator (EDG) start signal.

There are two sets of undervoltage protective circuits, one for each 4.16 kV Class 1E system bus. Each set consists of a loss of voltage and degraded voltage function. Four potential transformers on each bus provide the necessary input voltages to the protective devices used to perform these functions. Four instantaneous undervoltage relays with an associated time delay are provided for each 4.16 kV Class 1E system bus for detecting a loss of bus voltage. The outputs are combined in a two-out-of-four logic to generate an undervoltage signal if the voltage is below approximately 70 percent. A brief time delay is employed to prevent false trips arising from transient undervoltage conditions. For degraded voltage protection, the above potential transformers each provide an analog output signal of 0-120 volts. This signal (i.e., bistable output) is directed to logic circuits and processors that convert the analog signals into a two-out-of-four logic signal, whenever the signal drops below approximately 90 percent for a predetermined time.

Balance-of-Plant (BOP) ESFAS

The BOP ESFAS processes signals from the solid-state protection system, signal processing equipment, and plant radiation monitors to actuate certain ESF equipment. There are two redundant trains or separation groups, identified as BOP-ESFAS 1 and BOP-ESFAS 4. These trains provide actuation for the motor-driven auxiliary feedwater pumps and reposition automatic valves as required. A third separation group (BOP-ESFAS 2) actuates the TDAFW pump by repositioning automatic valves as required.

TDAFW Pump Start on Loss of Offsite Power (LOP)

A LOP is indicated by the undervoltage relays detecting (analog portion) a loss of voltage on each ESF bus, as discussed above. Upon satisfying the two-out-of-four loss of voltage logic (digital portion hereafter) in the LSELS cabinets, LSELS output relays feed the redundant separation groups 1 and 4 BOP-ESFAS cabinets. The separation groups 1 and 4 BOP-ESFAS cabinets perform several functions, but on a LOP signal, these cabinets perform only two functions (1) isolate the steam generator blowdown and sample lines, and (2) provide electrically isolated outputs to the separation group 2 BOP-ESFAS cabinet. The separation group 2 BOP-ESFAS cabinet is associated with the TDAFW pump alone and is considered to be part of that end device, i.e., the TDAFW pump. On a LOP signal, the turbine trip and throttle valve and turbine steam supply valves are opened to start the TDAFW pump.

The ESFAS Functional Unit 6.f, circuitry that starts the TDAFW pump on a loss of offsite power includes both digital and analog portions. The analog portion of Functional Unit 6.f consists of circuitry from the undervoltage relays on the two redundant 4kV Class 1E buses to the output relays in the LSELS cabinets in separation groups BOB-ESFAS 1 and 4. The digital portion of ESFAS Functional Unit 6.f consists of the output relays from the LSELS cabinets and that portion of the separation groups BOP-ESFAS 1, 2 and 4 circuits that are associated with the start of the TDAFW pump during a LOP.

The licensee has concluded that the current TS Table 3.3-3 provides operational requirements for Functional Unit 6.f written only for the digital portion of the circuitry. The licensee has also concluded that TS Table 4.3-2 provides surveillance requirements which can only be reasonably performed at the frequency specified for the analog portion of the Functional 6.f circuitry. Furthermore, TS Table 3.3-4 currently lists as "not applicable" setpoint requirements for Functional Unit 6.f. The licensee has concluded that setpoint requirements are not applicable to the digital portion of Functional Unit 6.f; however, setpoint requirements are applicable to the analog portion. The licensee has proposed changes to create separate digital and analog functional units for 6.f in these TS tables to correct these inconsistencies. Specifically, in TS Tables 3.3-3, 3.3-4, and 4.3-2, the licensee has proposed replacing the current Functional Unit 6.f, "Loss of Offsite Power-Start Turbine Driven Pump," with analog Functional Unit 6.f.1, "4 kV Bus Undervoltage - Loss of Voltage," and digital Functional Unit 6.f.2, "Automatic Actuation Logic and Actuation Relays (LSELS and BOP ESFAS)."

TS Table 4.3-2 also provides surveillance requirements for Functional Unit 8.a, "4 kV Undervoltage - Loss of Voltage," and Functional Unit 8.b, "4 kV Undervoltage - Degraded Grid Voltage." The licensee has proposed adding a note to Table 4.3-2 under these functional units to clarify that the associated time delay in these circuits is verified during the channel calibration surveillance.

3.0 EVALUATION

The staff has evaluated the changes to TS Tables 3.3-3, 3.3-4, and 4.3-2 to identify requirements applicable to the analog and digital portions of the ESFAS Functional Unit 6.f circuitry. The evaluation of the changes is presented by affected TS table in the following sections (Section 3.1, 3.2 and 3.3). Within each section, the changes are presented, followed by an evaluation of the proposed changes for the analog portion (6.f.1), and an evaluation of

the proposed changes for the digital portion of the circuitry (6.f.2). Section 3.4 concludes the evaluation with a review of proposed changes to ESFAS Functional Units 8.a and 8.b in TS Table 4.3-2.

3.1 Changes to TS Table 3.3-3

TS Table 3.3-3, Functional Unit 6.f, "Loss of Offsite Power - Start Turbine-Driven Pump," identifies operational requirements for the circuit in terms of total number of channels, channels to trip, channels required to be operable, applicable operating mode, and action to be taken if operability requirements are not met. Current requirements are lined through in the following excerpt from Table 3.3-3. The licensee has proposed replacing the current requirements with analog circuit (6.f.1) and digital circuit (6.f.2) requirements as shown.

TABLE 3.3-3 (Functional Unit 6.f only)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>CHANNELS OPERABLE</u>	<u>MINIMUM APPLICABLE MODES</u>	<u>ACTION</u>
6. Auxiliary Feedwater					
f. Loss-of-Offsite Power - Start Turbine-Driven pump	2	4	2	1,2,3	22
1) 4 kV Bus Undervoltage - Loss of Voltage	4/Bus	2/Bus	3/Bus	1,2,3	19*
2) Automatic Actuation Logic and Actuation Relays (LSELS and BOP ESFAS)	2	1	2	1,2,3	31

3.1.1 TS Table 3.3-3, Operational Requirements for Analog Circuitry (6.f.1)

In consideration of the design of the 4 kV undervoltage relays, its actuation logic (two-out-of-four), and accessibility for surveillance and maintenance, the licensee has determined that the 4 kV bus undervoltage relays comprise the analog portion of the circuitry. The licensee proposed a new Functional Unit 6.f.1, to provide requirements for this analog portion of the circuitry. Since TS Table 3.3-3 Functional Unit 8.a, "Loss of Power," already provides operational requirements for the 4 kV undervoltage relays, the licensee proposed these same requirements under Functional Unit 6.f.1. However, the differences in applicable operational mode between current Functional Unit 6.f and 8.a (Modes 1,2,3 verses Modes 1,2,3,4,5,6) require a separate entry in Table 3.3-3 for Functional Unit 6.f.1. The staff has reviewed the change for Functional Unit 6.f.1 and finds the requirements to be the same as Functional Unit 8.a for the same 4 kV

undervoltage relays, with an exception of applicable plant operational mode. Therefore, the staff concludes that the Functional Unit 6.f.1 is acceptable.

3.1.2 TS Table 3.3-3, Operational Requirements for Digital Circuitry (6.f.2)

The output relays for the LSELS cabinets and the portion of the separation group BOP-ESFAS 1, 4, and 2 circuitry associated with starting the TDAFW pump on a LOP are considered digital circuitry. The licensee has determined that the requirements currently provided in TS Table 3.3-3, Functional Unit 6.f address the digital portions of this circuitry. Therefore, the licensee has proposed that the current requirements in Functional Unit 6.f be moved to new Functional Unit 6.f.2, "Automatic Actuation Logic and Actuation Relays (LSELS and BOP ESFAS)." However, the licensee has proposed a new action statement (#31) in place of the current action statement (#22). (Action Statement 22 would still be used in other functional unit requirements in TS Table 3.3-3).

Action Statement 22 states:

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 STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours.

Action Statement 22 allows 48 hours to restore one inoperable channel (i.e., train) to operability, but results in entry into TS Limiting Condition for Operation (LCO) 3.0.3 if both channels are determined to be inoperable. LCO 3.0.3 allows only one hour to restore operability before initiating a plant shutdown. The licensee has proposed Action Statement 31 in Functional Unit 6.f.2 in place of the current Action Statement 22. Action Statement 31 would read as follows:

With the number of OPERABLE channels less than the Total Number of Channels, restore the inoperable channel(s) to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours.

Action Statement 31 would consider all of the digital circuitry that is associated with the TDAFW pump alone as a single functional unit, i.e., Functional Unit 6.f.2. The licensee's basis for the 48-hour allowable outage time (AOT) is that the 48-hour AOT would be a reasonable restoration time considering the nature of this functional unit and the available redundancy provided by the motor-driven auxiliary feedwater pumps. The 48-hour AOT is consistent with that allowed by the existing Action Statement 22 for the existing Functional Unit 6.f, as well as the AOT allowed by action statements for other automatically initiated functions. For the inoperability of any part or multiple parts of Functional Unit 6.f.2, a 48-hour AOT will be allowed in which to restore the entire Functional Unit 6.f.2 to operability. Thus, Action Statement 31 provides for the elimination of the transient imposed on the plant from an unnecessary shutdown under the requirements of Specification 3.0.3. On the basis of the foregoing discussion, the staff concludes that the changes to the digital portion (6.f.2) in Table 3.3-3 are acceptable.

3.2 Changes to TS Table 3.3-4

TS Table 3.3-4, Functional Unit 6.f, "Loss of Offsite Power - Start Turbine-Driven Pump," identifies trip setpoint requirements for the circuitry that accomplishes this function. Current requirements are lined through in the following excerpt from TS Table 3.3-4. The licensee has proposed replacing the current lined through setpoint requirements with analog circuit (6.f.1) and digital circuit (6.f.2) setpoint requirements as shown.

TABLE 3.3-4 (Functional Unit 6.f only)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>Total Allowance</u>	<u>Z</u>	<u>Sensor Error (s)</u>	<u>Trip Setpoint</u>	<u>Allowable Value</u>
6. Auxiliary Feedwater					
f. Loss-of-Offsite Power- Start Turbine - Driven Pump	N.A.	N.A.	N.A.	N.A.	N.A.
1) 4 kV Bus Undervoltage -Loss of Voltage	See item 8.a below for Trip Setpoints and Allowable Values.				
2) Automatic Actuation Logic and Actuation Relays (LSELS and BOP ESFAS)	N.A.	N.A.	N.A.	N.A.	N.A.

3.2.1 TS Table 3.3-4, Setpoint Requirements for Analog Circuitry (6.f.1)

For Functional Unit 6.f, Table 3.3-4 currently indicates setpoint requirements are "not applicable." The licensee has concluded that this is only appropriate for the digital portion of the circuitry. Setpoint requirements are applicable to the analog portion (4 kV undervoltage relays) of the circuit. Therefore the licensee has proposed trip setpoint and allowable value requirements for the 4kV undervoltage relays under a new Functional Unit 6.f.1. These requirements for trip setpoint and allowable value are the same as those already specified for the 4kV undervoltage relays under existing Functional Unit 8.a. Since the change (new line item 6.f.1) would not affect any existing analysis, there would be no need to change the current trip setpoints and allowable values. Therefore, the staff concludes that the change is acceptable.

3.2.2 TS Table 3.3-4, Setpoint Requirements for Digital Circuitry (6.f.2)

The current setpoint requirements in TS Table 3.3-4, Functional Unit 6.f are "not applicable." This is applicable to the digital portion of the circuit and is proposed to be transferred

unchanged to the new Functional Unit 6.f.2. The staff concludes that this is acceptable as the existing "N.A." requirement still pertains to the digital portion of the circuitry.

3.3 Changes to TS Table 4.3-2

TS Table 4.3-2, Functional Unit 6.f, "Loss of Offsite Power - Start Turbine-Driven Pump," identifies surveillance requirements. Current requirements are lined through in the following excerpt from Table 4.3-2. The licensee has proposed replacing the current requirements with analog circuit (6.f.1) and digital circuit (6.f.2) requirements as shown.

TABLE 4.3-2 (Functional Unit 6.f only)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

<u>Functional Unit</u>	<u>Chanl</u> <u>Check</u>	<u>Chanl</u> <u>Calib</u>	<u>Analog</u> <u>Chanl</u> <u>Operat</u> <u>Test</u>	<u>Trip</u> <u>Actuat</u> <u>Device</u> <u>Operat</u> <u>Test</u>	<u>Actuatn</u> <u>Logic</u> <u>Test</u>	<u>Mastr</u> <u>Relay</u> <u>Test</u>	<u>Slave</u> <u>Relay</u> <u>Test</u>	<u>Modes</u> <u>for Which</u> <u>Surveil is</u> <u>Required</u>
6. Auxiliary Feedwater								
f. LOOP								
Start Turbine - Driven Pump	N.A.	R	N.A.	M	N.A.	N.A.	N.A.	1, 2, 3
1) 4 kV Bus Undervoltage - Loss of Voltage	N.A.	R	N.A.	M	N.A.	N.A.	N.A.	1, 2, 3
2) Automatic Actuation Logic and Actuation Relays (LSELS and BOP ESFAS)	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3

3.3.1 TS Table 4.3-2, Surveillance Requirements for Analog Circuitry (6.f.1)

The surveillance requirements for the current Functional Unit 6.f require a channel calibration at least once per 18 months and a trip actuating device operational test (TADOT) at least once per 31 days. Since the performance of a trip actuation device operational test (TADOT) on the digital portion of the circuit at power is not possible without the use of jumpers and lifted leads, the licensee concluded that the current TS Table 4.3-2 surveillance requirement for Functional Unit 6.f are meant only for the analog circuitry (4 kV undervoltage relay circuitry). Therefore,

the licensee proposed that the current surveillance requirements under Functional Unit 6.f be separated into analog and digital line items, with the current surveillance requirements moved to new Functional Unit 6.f.1, which is applicable only to the analog portion of the circuitry.

The staff has reviewed the change that would move the current surveillance requirements of Functional Unit 6.f to new Functional Unit 6.f.1 as shown in Table 4.3-2. The staff finds that the surveillance requirements of Functional Unit 6.f.1 for the analog portion are identical to those of Functional Unit 8.a, "4 kV Undervoltage - Loss of Voltage." Therefore, the change represents no material change to current surveillance requirements. The staff concludes that moving the current Functional Unit 6.f to Functional Unit 6.f.1 is acceptable.

3.3.2 TS Table 4.3-2, Surveillance Requirements for Digital Circuitry (6.f.2)

The licensee proposed two changes to the existing surveillance requirements under the current Functional Unit 6.f line item as applied to the digital portion of the circuitry. First, the surveillance interval for the channel calibration surveillance requirement is revised from "R" (at least once per 18 months) to "N.A" (not applicable) since there is no channel calibration for digital circuitry. Second, under the TADOT surveillance requirement, the surveillance interval is revised from "M" (at least once per 31 days) to "R" (at least once per 18 months). This would require a refueling interval TADOT for the digital portion of the TDAFW pump start circuitry on a LOP. The licensee currently performs this TADOT surveillance as part of the 18-month diesel generator/sequencer surveillance testing. To be consistent, the licensee has proposed to revise the TADOT surveillance frequency in the new Functional Unit 6.f.2. The surveillance testing currently being completed will not be altered by this proposed change in surveillance test frequency. The staff finds that the changes to Table 4.3-2, Functional Unit 6.f.2 are editorial in nature because they do not change existing procedures and are, therefore, acceptable.

3.4 Changes to TS Table 4.3-2, ESFAS Functional Unit 8, "Loss of Power"

Functional Unit 8.a, "4 kV Undervoltage - Loss of Voltage" and 8.b, "4 kV Undervoltage - Degraded Grid Voltage," in TS Table 3.3-4 specify voltage trip setpoints and associated time delays, with tolerances, for the undervoltage relays that detect loss of voltage or degraded voltage conditions on the 4 kV Class 1E system buses. TS Table 4.3-2 identifies surveillance requirements for these ESFAS functional units. In TS Table 4.3-2, the licensee proposed to add notations to the 18 month channel calibration and monthly TADOT surveillance requirements for Functional Units 8.a and 8.b to clarify that the time delays for the 4 kV undervoltage relays would be tested as part of the channel calibration.

The licensee has tested the time delay relays as part of the 18 month channel calibration to ensure that safety-related systems, subsystems, and components would not be adversely affected by drift within the permissible tolerance band. The licensee's review of the data obtained from past surveillance supports that the time delay relays have remained within the TS tolerances. On this basis, the licensee concluded that the proposed change will not affect the ability of any safety-related equipment to perform its intended function, thus concluding that the proposed change is acceptable.

The staff reviewed the corresponding Surveillance Requirement 3.3.5.3 in NUREG-1431, Revision 1, "Standard Technical Specification - Westinghouse Plants," dated April 1995, and finds that the channel calibration, including voltage setpoint and time delay verification, is to be performed every 18 months. On this basis, the staff concludes that the notation that clarifies that verification of the time delay for Functional Units 8.a and 8.b is to be performed as part of the channel calibration is acceptable.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves 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 proposed findings that the amendment involves no significant hazards consideration, and there have been no public comment on such findings (63 FR 14491). Accordingly, the amendment meets 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 amendment.

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

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