WOLF CREEK
NUCLEAR OPERATING CORPORATION

Terry J. Garrett
Vice President, Engineering

December 18, 2007

ET 07-0052

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Reference: 1) Letter ET 07-0004, dated March 14, 2007, from T. J. Garrett, WCNOC, to USNRC

Subject: Docket No. 50-482: Response to Request for Additional Information Relating to Replacement of the Main Steam and Feedwater Isolation Valves and Controls

Gentlemen:

Reference 1 provided a license amendment request that proposed revisions to Technical Specification (TS) 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," TS 3.7.2, "Main Steam Isolation Valves (MSIVs)," and TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs)" based on a planned modification to replace the MSIVs and associated actuators, MFIVs and associated actuators, and replacement of the Main Steam and Feedwater Isolation System (MSFIS) controls.

The Nuclear Regulatory Commission (NRC) provided by electronic mail on October 17, 2007, a request for additional information related to proposed changes to Technical Specification (TS) Table 3.3.2-1, "Engineered Safety Feature Actuation System Instrumentation," provided in Attachment II of Reference 1. Attachment I provides a response to the request for additional information.

The additional information provided in the Attachments do not impact the conclusions of the No Significant Hazards Consideration provided in Reference 1. In accordance with 10 CFR 50.91, a copy of this submittal is being provided to the designated Kansas State official.

A001
NRR

This letter contains no commitments. If you have any questions concerning this matter, please contact me at (620) 364-4084, or Mr. Kevin Moles at (620) 364-4126.

Sincerely,

Terry J. Garrett

TJG/rlt

Attachment I – Response to NRC Request for Additional Information
II – Revised Markups of TS Table 3.3.2
III - Revised TS Bases Markups (for information only)

cc: E. E. Collins (NRC), w/a
T. A. Conley (KDHE), w/a
J. N. Donohew (NRC), w/a
V. G. Gaddy (NRC), w/a
Senior Resident Inspector (NRC), w/a

STATE OF KANSAS)
) SS
COUNTY OF COFFEY)

Terry J. Garrett, of lawful age, being first duly sworn upon oath says that he is Vice President Engineering of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the contents thereof; that he has executed the same for and on behalf of said Corporation with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By _____
Terry J. Garrett
Vice President Engineering

SUBSCRIBED and sworn to before me this 18th day of December, 2007.

_____
Notary Public

GAYLE SHEPHEARD
Notary Public - State of Kansas
My Appt. Expires 7/24/2011

Expiration Date 7/24/2011

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION

The Nuclear Regulatory Commission (NRC) provided by electronic mail on October 17, 2007, a request for additional information related to proposed changes to Technical Specification (TS) Table 3.3.2-1, "Engineered Safety Feature Actuation System Instrumentation," provided in Attachment II of the Wolf Creek Nuclear Operating Corporation (WCNOC) letter ET 07-0004. Letter ET 07-0004 provided a license amendment request that proposed revisions to TS 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," TS 3.7.2, "Main Steam Isolation Valves (MSIVs)," and TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs)" based on a planned modification to replace the MSIVs and associated actuators, MFIVs and associated actuators, and replacement of the Main Steam and Feedwater Isolation System (MSFIS) controls. The proposed response to question 1 below was further discussed with the NRC Project Manager on November 14, 2007. Provided below are responses to the questions in the request for additional information.

1. *Do the proposed changes and requirements in TS Table 3.3.2-1 for the proposed new Functions 4.b and 5.a for the MSFIS (i.e., the MSFIS part of the ESFAS functions of steam line and main feedwater line isolation) apply to the proposed MSFIS design, or to the current MSFIS design. Discuss why SR 3.3.2.4, the master relay test, is not proposed to be included in the surveillance requirements in TS Table 3.3.2-1 for the proposed new Functions 4.c and 5.b. Discuss why the SR 3.3.2.4 is included in the surveillance requirements for the revised Functions 4.b and 5.a in TS Table 3.3.2-1 for the solid state protection system (SSPS) part of the same ESFAS functions.*

Response: As discussed in Attachment I to ET 07-0004 (page 7), for existing Function 4.b (Automatic Actuation Logic and Actuation Relays – Steam Line Isolation) and Function 5.a (Automatic Actuation Logic and Actuation Relays – Turbine Trip and Feedwater Isolation), the MSFIS controls is considered part of the Solid State Protection System (SSPS) for TS considerations. The MSFIS valve control logic is in separate cabinets from the SSPS and supplied by separate vendors. The proposed changes to TS Table 3.3.2-1 for new Functions 4.c (Automatic Actuation Logic and Actuation Relays (MSFIS) – Steam Line Isolation) and 5.b (Automatic Actuation Logic and Actuation Relays (MSFIS) – Turbine Trip and Feedwater Isolation) apply to the existing MSFIS controls as well as to the replacement controls.

Attachment I to ET 07-0004 (page 9) indicated that Surveillance Requirement (SR) 3.3.2.3 (ACTUATION LOGIC TEST) and SR 3.3.2.6 (SLAVE RELAY TEST) are applicable to new Functions 4.c and 5.b. SR 3.3.2.4 is the performance of a MASTER RELAY TEST. The actuation of engineered safety features components is accomplished through master and slave relays. The SSPS energizes the master relays appropriate for the condition of the unit. Each master relay then energizes one or more slave relays, which then causes actuation of the end devices. The SSPS master relays are located within the SSPS cabinets and are considered as part of the SSPS actuation logic and actuation relays. As such, SR 3.3.2.4 is only applied to the SSPS Automatic Actuation Logic and Actuation Relays Function.

An ACTUATION LOGIC TEST (SR 3.3.2.3) is not currently performed on valve controls logic since the MSFIS is only processing the automatic actuation signal from SSPS to the valves. As such, WCNOC is revising the proposed TSs to delete SR 3.3.2.3 from new Functions 4.c and 5.b. WCNOC has determined that application of SR 3.3.2.6 remains the appropriate surveillance to be applied to new Functions 4.c and 5.b. The slave relays that send a signal

from SSPS to the MSFIS cabinets are located within the SSPS cabinets. For the existing system, when slave relay testing is performed, the slave relays (K634A/B, K743A/B, K744A/B, and K745A/B) are energized and the circuitry verified to the output relays of the MSFIS cabinets. For the replacement MSFIS controls, the slave relays would be energized and the circuitry verified to the input boards of the MSFIS cabinets. SR 3.7.2.2 and SR 3.7.3.2 verifies that the MSIV or MFIV closes on an actual or simulated actuation signal. The manual fast close (or all close) hand switch in the control room provides an actuation signal from the MSFIS cabinets to the valves. Figure 1 provides a drawing that identifies the surveillance tests associated with SSPS and MSFIS (existing and proposed).

Additionally, WCNOC is proposing to change the name of new Function 4.c and 5.b to Automatic Actuation Logic as there are no mechanical actuation relays associated with the replacement controls. Revised markups of TS Table 3.3.2 are provided in Attachment II.

In addition, the NRC Project Manager requested by telecon that this response also address why SR 3.3.2.14 is not applicable to new Function 5.b. SR 3.3.2.14 is the performance of a SLAVE RELAY TEST as described in SR 3.3.2.6, except that SR 3.3.2.14 has a Note specifying that it apply only to slave relay K620. Slave relay K620 is associated with the trip function for the main turbine and feedwater pump turbine. Slave relay K620 performs no function associated with the MSFIS controls. As such, SR 3.3.2.14 is not applied to new Function 5.b.

2. *It appears, since the existing TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs)," has the applicable Mode 3, that the corresponding ESFAS function for main feedwater line isolation (i.e., closing the MFIVs) in TS Table 3.3.2-1 should also be required to be operable in Mode 3. Is this why Mode 3 is proposed to be added to the revised Function 5.a (SSPS) and the new Function 5.b (MSFIS)? Is the proposed replacement of Condition H with Condition G the result of adding Mode 3 to these two functions? In other words, discuss if the proposed Condition G results from the need to have a required condition in TS Table 3.3.2-1 for the revised Function 5.a and new Function 5.b such that, if the functions are inoperable, the plant would be required to eventually enter a mode where the functions are not required to be operable. The proposed Condition G requires the plant to eventually enter Mode 4 and the existing Condition H only requires that the plant eventually enter Mode 3, whereas the revised Function 5.a and new Function 5.b are proposed to be operable in Mode 3.*

Response: As discussed in Attachment I to ET 07-0004 (page 7), Function 5.a is revised to include MODE 3 (including footnote (j)) and the applicable Condition is revised to Condition G to address the expanded Applicability in TS 3.7.3. Currently, Function 5.a requires 2 trains of Automatic Actuation Logic and Actuation Relays be OPERABLE in MODES 1 and 2 (including footnote (j) for MODE 2). It was determined that since current TS 3.7.3 required the MFIVs to be OPERABLE in MODE 3, the Applicable MODES of the instrumentation that provides an actuation signal should also be OPERABLE in MODE 3.

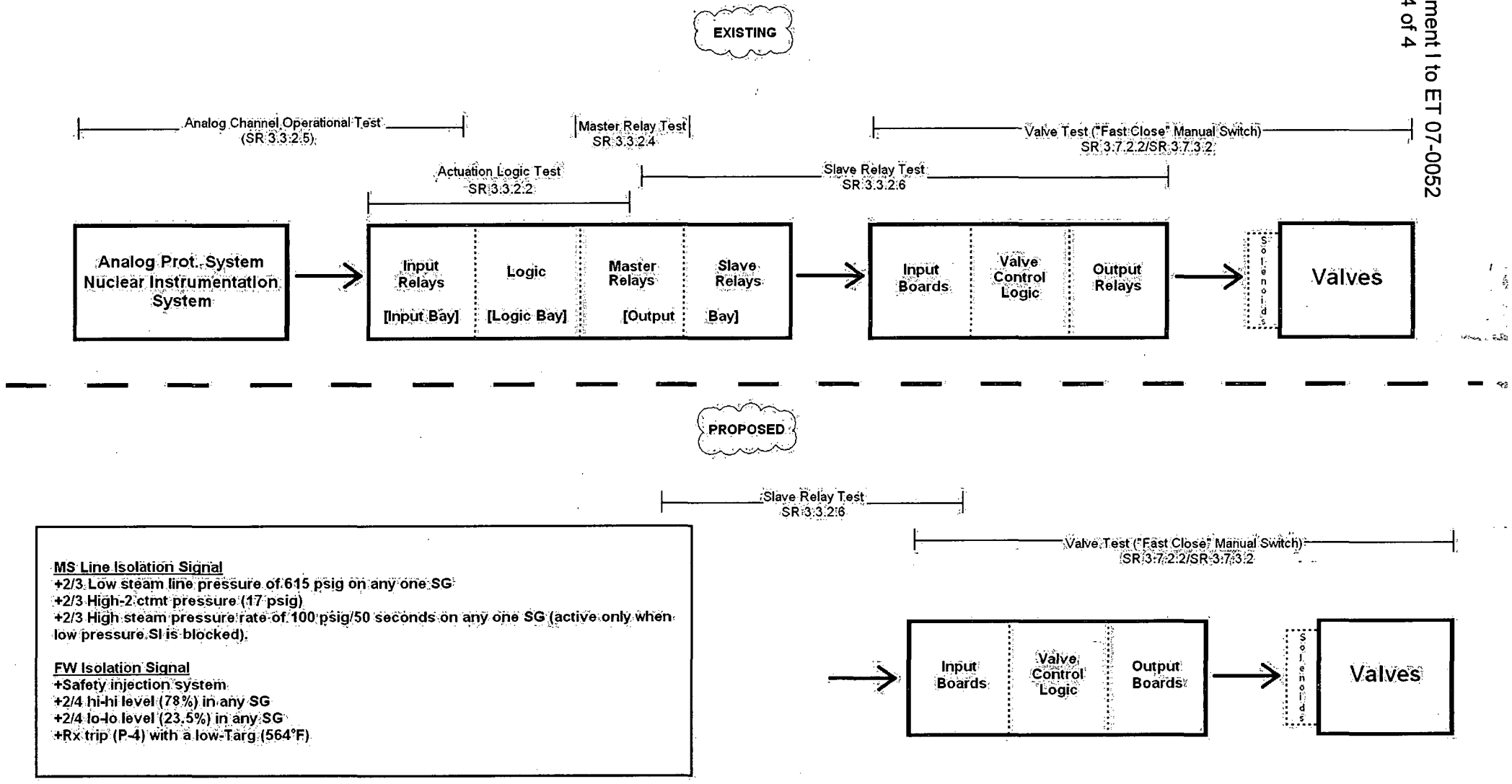
TS Section 1.3, Completion Time, states in part: "An ACTIONS Condition remain in effect and the Required Actions apply until the Condition no longer exists or the unit is not within the Limiting Conditions for Operation (LCO) Applicability." Conditions/Required Actions are written to either restore compliance with the LCO or to direct exiting the Applicability of the Specification. With the proposed addition of MODE 3 to Function 5.a, Required Action H.2 (Condition H) would not provide for exiting the Applicability of TS 3.3.2. Therefore, the

proposed use of Condition G provides the same actions but allows the option of exiting the Applicability. Condition G is applied to new Function 5.b to either restore compliance with the LCO or to direct exiting the Applicability.

3. *In the current TS Table 3.3.2-1, the exponent for the applicable Modes 2 and 3 for the proposed revised Function 5.a (SSPS) is the revised footnote j, and the exponent for the proposed Modes 2 and 3 for the new Function 5.b (MSFIS) is the new footnote k. It appears that the revised footnote j and new footnote k are to account for the proposed changes to TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs)," to include the main feedwater regulating valves (MFRVs) and MFRV bypass valves in TS 3.7.3. Address if this is correct and if the existing footnote j would be the exponent for Mode 3, as it currently is for Mode 2 in TS Table 3.3.2-1, for the revised Function 5.a and new Function 5.b if the proposed changes to LCO 3.7.3 are not made.*

Response: As discussed in the response to item 2 above, Function 5.a is revised to include MODE 3 (including footnote (j)). For Function 5.a, footnote (j) is applied to MODE 2 and the proposed addition of MODE 3. Current footnote (j) provides as exception to the Applicable MODES or Other Specified Conditions that allows the Turbine Trip and Feedwater Isolation Function 5.a (Automatic Actuation Logic and Actuation Relays) that allows the actuation logic and actuation relays to be inoperable in MODE 2 when all MFIVs are closed. Current Footnote (j) is revised to address the proposed addition of the Main Feedwater Regulating Valves (MFRVs) and MFRV bypass valves to TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs)." Further review has determined that an additional change is necessary to the proposed footnote (j). This additional change is necessary to ensure the exception accurately prescribes when Function 5.a is required to be OPERABLE. Function 5.a is required to be OPERABLE in MODES 1, 2, and 3 to isolate feedwater flow to the steam generators. The revised footnote (j) specifies that in MODES 2 and 3, the actuation logic and actuation relays are required to be OPERABLE except when all MFIVs are closed and de-activated; and all MFRVs are closed and de-activated or closed and isolated by a closed manual valve; and all MFRV bypass valves are closed and de-activated, or closed and isolated by a closed manual valve, or isolated by two closed manual valves. The actuation circuitry must be OPERABLE in the event any of these sets of valves should require an automatic closure signal. This is consistent with NUREG-1431, Rev. 3.1, "Standard Technical Specifications Westinghouse Plants."

New footnote (k) which is applied to MODE 2 and MODE 3 for new Function 5.b (Turbine Trip and Feedwater Isolation – Automatic Action Logic (MSFIS)) specifies that the actuation logic is required to be OPERABLE in MODE 2 and MODE 3 except when all MFIVs are closed and de-activated. Footnote (j) is not applicable to new Function 5.b as the MSFIS does not provide any control functions for the MFRVs or MFRV bypass valves. If the proposed changes to TS 3.7.3 were not made (i.e., the addition of the MFRVs, MFRV bypass valves, and the deactivation of a closed MFIV) and new Function 5.b were being added to TS Table 3.3.2-1, the existing footnote (j) would be appropriate for Function 5.b.



MS Line Isolation Signal
+2/3 Low steam line pressure of 615 psig on any one SG
+2/3 High-2 ctmt pressure (17 psig)
+2/3 High steam pressure rate of 100 psig/50 seconds on any one SG (active only when low pressure SI is blocked).

FW Isolation Signal
+Safety injection system
+2/4 hi-hi level (78%) in any SG
+2/4 lo-lo level (23.5%) in any SG
+Rx trip (P-4) with a low-Targ (564°F)

Figure 1

Revised Markups of TS Table 3.3.2 Pages

Table 3.3.2-1 (page 2 of 5)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE (a)
3. Containment Isolation					
a. Phase A Isolation					
(1) Manual Initiation	1,2,3,4	2	B	SR 3.3.2.8	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 SR 3.3.2.13	NA
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
b. Phase B Isolation					
(1) Manual Initiation	1,2,3,4	2 per train, 2 trains	B	SR 3.3.2.8	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA
(3) Containment Pressure - High 3	1,2,3	4	E	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 28.3 psig
4. Steam Line Isolation					
a. Manual Initiation	1,2(i), 3(i)	2	F	SR 3.3.2.8	NA
b. Automatic Actuation Logic and Actuation Relays (SSPS)	1,2(i), 3(i)	2 trains	G	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA
d, e Containment Pressure - High 2	1,2(i), 3(i)	3	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 18.3 psig
c. Automatic Actuation Logic (MSFIS)	1,2(i), 3(i)	2 trains	G	SR 3.3.2.6	NA

(continued)

(a) The Allowable Value defines the Limiting Safety System Setting. See the Bases for the Trip Setpoints.
(i) Except when all MSIVs are closed.

Table 3.3.2-1 (page 3 of 5)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE (a)
4. Steam Line Isolation (continued)					
e. Steam Line Pressure					
(1) Low	1,2(i), 3(b)(i)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 571 psig(c)
(2) Negative Rate - High	3(g)(i)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 125(h) psi
5. Turbine Trip and Feedwater Isolation			G		
a. Automatic Actuation Logic and Actuation Relays (SSPS)	1,2(j), 3(j)	2 trains	H	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6 SR 3.3.2.14	NA
b. SG Water Level -High High (P-14)	1,2(j)	4 per SG	I	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 79.7% of Narrow Range Instrument Span
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
b. Automatic Actuation Logic (MEFIS)	1,2(k), 3(k)	2 trains	G	SR3.3.2.6	NA

(continued)

(a) The Allowable Value defines the Limiting Safety System Setting. See the Bases for the Trip Setpoints.
(b) Above the P-11 (Pressurizer Pressure) Interlock and below P-11 unless the Function is blocked.
(c) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.
(g) Below the P-11 (Pressurizer Pressure) Interlock; however, may be blocked below P-11 when safety injection on low steam line pressure is not blocked.
(h) Time constant utilized in the rate/lag controller is ≥ 50 seconds.
(i) Except when all MSIVs are closed.
(j) Except when all MFIVs are closed and de-activated; and all MFRVs are closed and de-activated or closed and isolated by a closed manual valve; and all MFRV bypass valves are closed and de-activated, or closed and isolated by a closed manual valve, or isolated by two closed manual valves.

(k) Except when all MFIVs are closed and de-activated.

Revised TS Bases Changes (for information only)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

(3) Phase B Isolation - Containment Pressure (continued)

The basis for containment pressure MODE applicability and the Trip Setpoint are as discussed for ESFAS Function 2.c above.

4. Steam Line Isolation

Isolation of the main steam lines provides protection in the event of an SLB inside or outside containment. Rapid isolation of the steam lines will limit the steam break accident to the blowdown from one SG, at most. For an SLB upstream of the main steam isolation valves (MSIVs), inside or outside of containment, closure of the MSIVs limits the accident to the blowdown from only the affected SG. For an SLB downstream of the MSIVs, closure of the MSIVs terminates the accident as soon as the steam lines depressurize. Steam Line Isolation also mitigates the effects of a feed line break and ensures a source of steam for the turbine driven AFW pump during a feed line break.

a. Steam Line Isolation - Manual Initiation

Manual initiation of Steam Line Isolation (fast close) can be accomplished from the control room. There are two push buttons in the control room and either push button can initiate action to immediately close all MSIVs. The LCO requires two channels to be OPERABLE.

b. Steam Line Isolation - Automatic Actuation Logic and Actuation Relays (SSPS)

Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

INSERT B 3.3.2-19 →

Manual and automatic initiation of steam line isolation must be OPERABLE in MODES 1, 2, and 3 when there is sufficient energy in the RCS and SGs to have an SLB or other accident. This could result in the release of significant quantities of energy and cause a cooldown of the primary system. The Steam Line Isolation Function is required in MODES 2 and 3 unless all MSIVs are closed. In MODES 4, 5, and 6, there is insufficient energy in the

INSERT B 3.3.2-19

c. Steam Line Isolation – Automatic Actuation Logic (MSFIS)

The LCO requires two trains to be OPERABLE. The Steam Line Isolation signal from SSPS is provided to the Main Steam and Feedwater Isolation System (MSFIS) by four actuation signals per separation group. The Steam Line Isolation signals are provided by SSPS slave relays K634A and K634B. Actuation logic consists of the circuitry housed within the MSFIS cabinets and extends to the solenoids at the valves responsible for actuating the MSIVs.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

5. Turbine Trip and Feedwater Isolation

The primary functions of the Turbine Trip and Feedwater Isolation signals are to prevent damage to the turbine due to water in the steam lines and to stop the excessive flow of feedwater into the SGs. These Functions are necessary to mitigate the effects of a high water level in the SGs, which could result in carryover of water into the steam lines and excessive cooldown of the primary system. The SG high water level is due to excessive feedwater flows.

The Function is actuated when the level in any SG exceeds the high high setpoint and performs the following functions:

- Trips the main turbine;
- Trips the MFW pumps;
- Initiates feedwater isolation; and
- Shuts the MFW regulating valves and the bypass feedwater regulating valves.

This Function is actuated by SG Water Level - High High, or by an SI signal. The RTS also initiates a turbine trip signal whenever a reactor trip (P-4) is generated. In the event of SI, the unit is taken off line and the turbine generator must be tripped. The MFW System is also taken out of operation and the AFW System is automatically started. The SI signal was previously discussed.

a. Turbine Trip and Feedwater Isolation - Automatic Actuation Logic and Actuation Relays (SSPS)

Automatic Actuation Logic and Actuation Relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

INSERT B 3.3.2-23 → c.b.

Turbine Trip and Feedwater Isolation - Steam Generator Water Level - High High (P-14)

This signal provides protection against excessive feedwater flow. The ESFAS SG water level instruments provide input to the SG Water Level Control System. Therefore, the actuation logic must be able to withstand

INSERT B 3.3.2-23

b. Feedwater Isolation – Automatic Actuation Logic (MSFIS)

Automatic Actuation Logic in the MSFIS consists of the same features and operates in the same manner as described for ESFAS Function 4.c. The Feedwater Line Isolation signals are provided by SSPS slave relays K743A/B, K744A/B, and K745A/B.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

c.b. Turbine Trip and Feedwater Isolation - Steam Generator Water Level - High High (P-14) (continued)

both an input failure to the control system (which may then require the protection function actuation) and a single failure in the other channels providing the protection function actuation. Thus, four OPERABLE channels are required to satisfy the requirements with a two-out-of-four logic.

The transmitters (d/p cells) are located inside containment. However, the events that this Function protects against cannot cause a severe environment in containment. Therefore, the Trip Setpoint reflects only steady state instrument uncertainties. The Trip Setpoint is ≤ 78% of narrow range span.

d.c. Turbine Trip and Feedwater Isolation - Safety Injection

Turbine Trip and Feedwater Isolation are also initiated by all Functions that initiate SI. The Feedwater Isolation Function requirements for these initiation Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead Function 1, SI, is referenced for all initiating functions and requirements.

INSERT B 3.3.2-24

Turbine Trip and Feedwater Isolation Functions must be OPERABLE in MODE 1 and in MODE 2 except when all MFIVs are closed. In MODES 3, 4, 5, and 6, the MFW System and the turbine generator are not in service and this Function is not required to be OPERABLE.

6. Auxiliary Feedwater

The AFW System is designed to provide a secondary side heat sink for the reactor in the event that the MFW System is not available when reactor power is less than 2% power. The system has two motor driven pumps and a turbine driven pump, making it available during normal unit operation during a loss of AC power, a loss of MFW, and during a Feedwater System pipe break. The normal source of water for the AFW System is the condensate

INSERT B 3.3.2-24

Turbine Trip and Feedwater Isolation Function 5.c, SG Water Level – High High must be OPERABLE in MODES 1 and 2 except when all MFIVs are closed and de-activated; and all MFRVs are closed and de-activated or closed and isolated by a closed manual valve; and all MFRV bypass valves are closed and de-activated, or closed and isolated by a closed manual valve, or isolated by two closed manual valves. In MODES 3, 4, 5, and 6, Function 5.c is not required to be OPERABLE. The Automatic Actuation Logic and Actuation Relays (SSPS) Function must be OPERABLE in MODE 1, MODE 2 (except when all MFIVs are closed and de-activated; and all MFRVs are closed and de-activated or closed and isolated by a closed manual valve; and all MFRV bypass valves are closed and de-activated, or closed and isolated by a closed manual valve, or isolated by two closed manual valves) and MODE 3 (except when all MFIVs are closed and de-activated; and all MFRVs are closed and de-activated or closed and isolated by a closed manual valve; and all MFRV bypass valves are closed and de-activated, or closed and isolated by a closed manual valve, or isolated by two closed manual valves). The Automatic Actuation Logic (MSFIS) Function must be OPERABLE in MODE 1, MODE 2 (except when all MFIVs are closed and de-activated), and MODE 3 (except when all MFIVs are closed and de-activated). In MODES 4, 5, and 6, the Automatic Actuation Logic (SSPS) and the Automatic Actuation Logic (MSFIS) are not required to be OPERABLE.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1 (continued)

that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.2.2.2

SR 3.3.2.2 is the performance of an ACTUATION LOGIC TEST. The SSPS is tested every 92 days on a STAGGERED TEST BASIS, using the semiautomatic tester. The train being tested is placed in the bypass condition, thus preventing inadvertent actuation. Through the semiautomatic tester, all possible logic combinations, with and without applicable permissives, are tested for each protection function. In addition, the master relay coil is pulse tested for continuity. This verifies that the logic modules are OPERABLE and that there is an intact voltage signal path to the master relay coils. The Frequency of every 92 days on a STAGGERED TEST BASIS is justified in Reference 13.

SR 3.3.2.3

In letter ET 07-0004, the wording in SR 3.3.2.3 was being replaced with different wording. Based on the changes in letter ET 07-0052, the existing wording is being retained.

SR 3.3.2.3 is the performance of an ACTUATION LOGIC TEST using the BOP ESFAS automatic tester. The continuity check does not have to be performed, as explained in the Note. This SR is applied to the balance of plant actuation logic. This test is required every 31 days on a STAGGERED TEST BASIS. The Frequency is adequate based on industry operating experience, considering instrument reliability and operating history data.

SR 3.3.2.4

SR 3.3.2.4 is the performance of a MASTER RELAY TEST. The MASTER RELAY TEST is the energizing of the master relay, verifying contact operation and a low voltage continuity check of the slave relay coil. Upon master relay contact operation, a low voltage is injected to the slave relay coil. This voltage is insufficient to pick up the slave relay, but

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.4 (continued)

large enough to demonstrate signal path continuity. This test is performed every 92 days on a STAGGERED TEST BASIS. The time allowed for the testing (4 hours) is justified in Reference 7. The Frequency of every 92 days on a STAGGERED TEST BASIS is justified in Reference 13.

SR 3.3.2.5

SR 3.3.2.5 is the performance of a COT.

A COT is performed on each required channel to ensure the channel will perform the intended Function. Setpoints must be found within the Allowable Values specified in Table 3.3.2-1.

The setpoint shall be left set consistent with the assumptions of the current unit specific setpoint methodology.

The Frequency of 184 days is justified in Reference 13.

SR 3.3.2.6

SR 3.3.2.6 is the performance of a SLAVE RELAY TEST. The SLAVE RELAY TEST is the energizing of the slave relays. Contact operation is verified in one of two ways. Actuation equipment that may be operated in the design mitigation MODE is either allowed to function, or is placed in a condition where the relay contact operation can be verified without operation of the equipment. Actuation equipment that may not be operated in the design mitigation MODE is prevented from operation by the slave relay blocking circuit. For this latter case, contact operation is verified by a continuity check of the circuit containing the slave relay. This test is performed every 92 days. The Frequency is adequate, based on industry operating experience, considering instrument reliability and operating history data. The SR is modified by a Note that excludes slave relays K602, K620, K622, K624, K630, K740, and K741 which are included in testing required by SR 3.3.2.13 and SR 3.3.2.14.

INSERT B 3.3.2-47

SR 3.3.2.7

SR 3.3.2.7 is the performance of a TADOT every 18 months. This test is a check of the Loss of Offsite Power function. The trip actuating devices tested within the scope of SR 3.3.2.7 are the LSELS output relays and

INSERT B 3.3.2-47

For Function 4.c (Steam Line Isolation – Automatic Actuation Logic (MSFIS)) and Function 5.b (Turbine Trip and Feedwater Isolation – Automatic Actuation Logic (MSFIS)), SR 3.3.2.6 is performed on the associated slave relays in the SSPS cabinets and includes verification that the slave relays are energized at the MSFIS cabinets.