

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	<p>C.2 -----NOTE----- Only required when the Power Range Neutron Flux input to QPTR is inoperable. -----</p> <p>Perform SR 3.2.4.2.</p>	<p>12 hours from discovery of THERMAL POWER > 75% RTP</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p>
<p>D. One channel inoperable.</p>	<p>D.1 -----NOTES-----</p> <ol style="list-style-type: none"> 1. For Functions with installed bypass test capability, one channel may be bypassed for up to 4 hours for surveillance testing and setpoint adjustment. 2. For Functions with no installed bypass test capability, the inoperable channel, except for Function 11 channel, may be bypassed for up to 4 hours for surveillance testing of other channels. <p>-----</p> <p>Place channel in trip.</p>	<p>6 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One Intermediate Range Neutron Flux channel inoperable.	E.1 Reduce THERMAL POWER to < P-6. <u>OR</u> E.2 Increase THERMAL POWER to > P-10.	24 hours 24 hours
F. Two Intermediate Range Neutron Flux channels inoperable.	F.1 -----NOTE----- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. ----- Suspend operations involving positive reactivity additions. <u>AND</u> F.2 Reduce THERMAL POWER to < P-6.	Immediately 2 hours
G. One Source Range Neutron Flux channel inoperable.	G.1 -----NOTE----- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. ----- Suspend operations involving positive reactivity additions.	Immediately
H. Two Source Range Neutron Flux channels inoperable.	H.1 Open reactor trip breakers (RTBs).	Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One Source Range Neutron Flux channel inoperable.	I.1 Restore channel to OPERABLE status.	48 hours
J. One train inoperable.	<p>J.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. -----</p> <p>Restore train to OPERABLE status.</p>	6 hours
K. One RTB train inoperable.	<p>K.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. -----</p> <p>Restore train to OPERABLE status.</p>	24 hours
L. One or more channels inoperable.	L.1 Verify interlock is in required state for existing unit conditions.	1 hour
M. One trip mechanism inoperable for one RTB.	M.1 Restore inoperable trip mechanism to OPERABLE status.	48 hours
N. Required Action and associated Completion Time of Condition D not met for Function 8.a, 9, 10, 11, 12, or 13.	N.1 Reduce THERMAL POWER to < P-7.	6 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One channel inoperable.	<p>D.1 -----NOTES-----</p> <ol style="list-style-type: none"> 1. For Functions with installed bypass test capability, one channel may be bypassed for up to 4 hours for surveillance testing. 2. For Functions with no installed bypass test capability, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. <p>-----</p> <p>Place channel in trip.</p>	6 hours
E. One channel inoperable.	<p>E.1 -----NOTE-----</p> <p>One additional channel may be bypassed for up to 4 hours for surveillance testing.</p> <p>-----</p> <p>Place channel in bypass.</p>	6 hours
F. One channel per bus inoperable.	F.1 Place channel in trip.	1 hour
G. One or more channels inoperable.	G.1 Verify interlock is in required state for existing unit condition.	1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>H. Required Action and associated Completion Time of Condition B not met for Function 6.g.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition D not met for Function 6.f.</p>	<p>H.1 Be in MODE 3.</p>	<p>6 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>I. Required Action and associated Completion Time of Condition B not met for Function 8.a.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition C not met for Function 4.b, 5.a, 6.a, 6.b, or 7.b.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition D not met for Function 1.c, 1.d, 1.e.(1), 1.e.(2), 4.d, 4.e, 5.b, 6.c, 7.c, or 8.c.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition E not met for Function 2.c, 3.b.(3), or 4.c.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition F not met for Function 6.e.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition G not met for Function 8.b.</p>	<p>I.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>I.2 Be in MODE 4.</p>	<p>6 hours</p> <p>12 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>J. Required Action and associated Completion Time of Condition B not met for Function 1.a, 2.a, 3.a.(1), 3.b.(1), or 7.a.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition C not met for Function 1.b, 2.b, 3.a.(2), or 3.b.(2).</p>	<p>J.1 Be in MODE 3.</p> <p>AND</p>	6 hours
	<p>J.2 Be in MODE 5.</p>	36 hours
<p>K. Required Action and associated Completion Time of Condition B not met for Function 4.a.</p>	<p>K.1 Declare associated steam generator stop valve (SGSV) inoperable.</p>	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----

Refer to Table 3.3.2-1 to determine which SRs apply for each ESFAS Function.

SURVEILLANCE	FREQUENCY
<p>SR 3.3.2.1 Perform CHANNEL CHECK.</p>	12 hours
<p>SR 3.3.2.2 -----NOTE----- Verification of relay setpoints not required. ----- Perform TADOT.</p>	31 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.3	Perform ACTUATION LOGIC TEST.	92 days on a STAGGERED TEST BASIS
SR 3.3.2.4	Perform MASTER RELAY TEST.	92 days on a STAGGERED TEST BASIS
SR 3.3.2.5	-----NOTE----- Verification of relay setpoints not required. ----- Perform TADOT.	92 days
SR 3.3.2.6	-----NOTE----- For Functions 1.c, 2.c, 3.b.(3), 4.c, and 7.c, the associated transmitters shall be exercised during the performance of SR 3.3.2.6. ----- Perform COT.	184 days
SR 3.3.2.7	Perform CHANNEL CALIBRATION.	184 days
SR 3.3.2.8	Perform SLAVE RELAY TEST.	24 months
SR 3.3.2.9	Perform TADOT.	24 months
SR 3.3.2.10	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.2.11	Perform ACTUATION LOGIC TEST.	24 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.2.12</p> <p>-----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after \geq 850 psig in the steam generator. -----</p> <p>Verify ESF RESPONSE TIMES are within limit.</p>	<p>24 months on a STAGGERED TEST BASIS</p>

Table 3.3.2-1 (page 1 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Safety Injection (SI)					
a. Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
c. Containment Pressure - High	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≤ 1.17 psig
d. Pressurizer Pressure - Low	1,2,3 ^(a)	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≥ 1765 psig
e. Steam Line Pressure					
(1) Low	1,2,3 ^(b)	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≥ 481.3 ^(c) psig
(2) High Differential Pressure Between Steam Lines (per steam line)	1,2,3 ^(b)	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≤ 112 psig
2. Containment Spray					
a. Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
c. Containment Pressure - High High	1,2,3	4	E	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≤ 2.97 psig

(a) Above the P-11 (Pressurizer Pressure) interlock.

(b) Above the P-12 (T_{avg} - Low Low) interlock.

(c) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.

Table 3.3.2-1 (page 2 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. Containment Isolation					
a. Phase A Isolation					
(1) Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
(3) SI Input from ESFAS	1,2,3,4	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.			
b. Phase B Isolation					
(1) Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
(3) Containment Pressure – High High	1,2,3	4	E	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≤ 2.97 psig
4. Steam Line Isolation					
a. Manual Initiation (per steam line)	1,2 ^(d) ,3 ^(d)	2	B	SR 3.3.2.9	NA
b. Automatic Actuation Logic and Actuation Relays	1,2 ^(d) ,3 ^(d)	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
c. Containment Pressure - High High	1,2 ^(d) ,3 ^(d)	4	E	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≤ 2.97 psig
d. Steam Line Pressure - Low	1,2 ^(d) ,3 ^{(b)(d)}	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≥ 481.3 ^(c) psig

(b) Above the P-12 (T_{avg} - Low Low) interlock.

(c) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.

(d) Except when all SGSVs are closed.

Table 3.3.2-1 (page 3 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Steam Line Isolation					
e. High Steam Flow in Two Steam Lines (per steam line)	1,2 ^(d) ,3 ^{(b)(d)}	2	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	(e)
Coincident with T _{avg} - Low Low	1,2 ^(d) ,3 ^{(b)(d)}	1 per loop	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≥ 538.8°F
5. Turbine Trip and Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	1,2 ^(f) ,3 ^(f)	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
b. SG Water Level - High High (per SG)	1,2 ^(f) ,3 ^(f)	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≤ 68.0%
c. SI Input from ESFAS	1,2 ^(f) ,3 ^(f)	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.			
6. Auxiliary Feedwater					
a. Automatic Actuation Logic and Actuation Relays (Solid State Protection System)	1,2,3	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
b. Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS)	1,2,3	2 trains	C	SR 3.3.2.11	NA

(b) Above the P-12 (T_{avg} - Low Low) interlock.

(d) Except when all SGSVs are closed.

(e) Less than or equal to a function defined as ΔP corresponding to 1.56E6 lb/hr below 20% load, ΔP increasing linearly from 1.56E6 lb/hr at 20% load to 3.93E6 lb/hr at 100% load.

(f) Except when all main feedwater isolation valves or main feedwater regulating valves are closed and de-activated or isolated by a closed manual valve.

Table 3.3.2-1 (page 4 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
6. Auxiliary Feedwater					
c. SG Water Level - Low Low (per SG)	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≥ 4.0%
d. SI Input from ESFAS	1,2,3	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.			
e. Loss of Voltage (per bus)	1,2,3	3	F	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.7 SR 3.3.2.12	≥ 3238.9 V and ≤ 3332.6 V with ≥ 1.8 sec and ≤ 2.2 sec time delay
f. Undervoltage Reactor Coolant Pump	1,2	1 per bus	D	SR 3.3.2.5 SR 3.3.2.7 SR 3.3.2.12	≥ 2725 V
g. Trip of all Main Feedwater Pumps (per pump)	1,2	2	B	SR 3.3.2.9 SR 3.3.2.12	NA
7. Containment Air Recirculation/Hydrogen Skimmer (CEQ) System					
a. Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
c. Containment Pressure – High	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≤ 1.17 psig
8. ESFAS Interlocks					
a. Reactor Trip, P-4	1,2,3	1 per train	B	SR 3.3.2.9	NA
b. Pressurizer Pressure, P-11	1,2,3	3	G	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≤ 1915 psig
c. T _{avg} - Low Low, P-12	1,2,3 ^(b)	1 per loop	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≥ 538.8°F

(b) Above the P-12 (T_{avg} - Low Low) interlock.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	<p>C.2</p> <p>-----NOTE----- Only required when the Power Range Neutron Flux input to QPTR is inoperable. -----</p> <p>Perform SR 3.2.4.2.</p>	<p>12 hours from discovery of THERMAL POWER > 75% RTP</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p>
<p>D. One channel inoperable.</p>	<p>D.1</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. For Functions with installed bypass test capability, one channel may be bypassed for up to 4 hours for surveillance testing and setpoint adjustment. 2. For Functions with no installed bypass test capability, the inoperable channel, except for Function 11 channel, may be bypassed for up to 4 hours for surveillance testing of other channels. <p>-----</p> <p>Place channel in trip.</p>	<p>6 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>E. One Intermediate Range Neutron Flux channel inoperable.</p>	<p>E.1 Reduce THERMAL POWER to < P-6.</p> <p><u>OR</u></p> <p>E.2 Increase THERMAL POWER to > P-10.</p>	<p>24 hours</p> <p>24 hours</p>
<p>F. Two Intermediate Range Neutron Flux channels inoperable.</p>	<p>F.1 -----NOTE----- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. -----</p> <p>Suspend operations involving positive reactivity additions.</p> <p><u>AND</u></p> <p>F.2 Reduce THERMAL POWER to < P-6.</p>	<p>Immediately</p> <p>2 hours</p>
<p>G. One Source Range Neutron Flux channel inoperable.</p>	<p>G.1 -----NOTE----- Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM. -----</p> <p>Suspend operations involving positive reactivity additions.</p>	<p>Immediately</p>
<p>H. Two Source Range Neutron Flux channels inoperable.</p>	<p>H.1 Open reactor trip breakers (RTBs).</p>	<p>Immediately</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One Source Range Neutron Flux channel inoperable.	I.1 Restore channel to OPERABLE status.	48 hours
J. One train inoperable.	<p>J.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. -----</p> <p>Restore train to OPERABLE status.</p>	6 hours
K. One RTB train inoperable.	<p>K.1 -----NOTE----- One train may be bypassed for up to 4 hours for surveillance testing, provided the other train is OPERABLE. -----</p> <p>Restore train to OPERABLE status.</p>	24 hours
L. One or more channels inoperable.	L.1 Verify interlock is in required state for existing unit conditions.	1 hour
M. One trip mechanism inoperable for one RTB.	M.1 Restore inoperable trip mechanism to OPERABLE status.	48 hours
N. Required Action and associated Completion Time of Condition D not met for Function 8.a, 9, 10, 11, 12, or 13.	N.1 Reduce THERMAL POWER to < P-7.	6 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One channel inoperable.	D.1 -----NOTES----- 1. For Functions with installed bypass test capability, one channel may be bypassed for up to 4 hours for surveillance testing. 2. For Functions with no installed bypass test capability, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ----- Place channel in trip.	6 hours
E. One channel inoperable.	E.1 -----NOTE----- One additional channel may be bypassed for up to 4 hours for surveillance testing. ----- Place channel in bypass.	6 hours
F. One channel per bus inoperable.	F.1 Place channel in trip.	1 hour
G. One or more channels inoperable.	G.1 Verify interlock is in required state for existing unit condition.	1 hour

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>H. Required Action and associated Completion Time of Condition B not met for Function 6.g.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition D not met for Function 6.f.</p>	<p>H.1 Be in MODE 3.</p>	<p>6 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>I. Required Action and associated Completion Time of Condition B not met for Function 8.a.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition C not met for Function 4.b, 5.a, 6.a, 6.b, or 7.b.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition D not met for Function 1.c, 1.d, 1.e.(1), 1.e.(2), 4.d, 4.e, 5.b, 6.c, 7.c, or 8.c.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition E not met for Function 2.c, 3.b.(3), or 4.c.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition F not met for Function 6.e.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition G not met for Function 8.b.</p>	<p>I.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>I.2 Be in MODE 4.</p>	<p>6 hours</p> <p>12 hours</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.3	Perform ACTUATION LOGIC TEST.	92 days on a STAGGERED TEST BASIS
SR 3.3.2.4	Perform MASTER RELAY TEST.	92 days on a STAGGERED TEST BASIS
SR 3.3.2.5	<p>-----NOTE----- Verification of relay setpoints not required. -----</p> <p>Perform TADOT.</p>	92 days
SR 3.3.2.6	<p>-----NOTE----- For Functions 1.c, 2.c, 3.b.(3), 4.c, and 7.c, the associated transmitters shall be exercised during the performance of SR 3.3.2.6. -----</p> <p>Perform COT.</p>	184 days
SR 3.3.2.7	Perform CHANNEL CALIBRATION.	184 days
SR 3.3.2.8	Perform SLAVE RELAY TEST.	24 months
SR 3.3.2.9	Perform TADOT.	24 months
SR 3.3.2.10	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.2.11	Perform ACTUATION LOGIC TEST.	24 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.3.2.12</p> <p>-----NOTE----- Not required to be performed for the turbine driven AFW pump until 24 hours after \geq 850 psig in the steam generator. -----</p> <p>Verify ESF RESPONSE TIMES are within limit.</p>	<p>24 months on a STAGGERED TEST BASIS</p>

Table 3.3.2-1 (page 1 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Safety Injection (SI)					
a. Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
c. Containment Pressure - High	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≤ 1.17 psig
d. Pressurizer Pressure - Low	1,2,3 ^(a)	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≥ 1765 psig
e. Steam Line Pressure					
(1) Low	1,2,3 ^(b)	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≥ 481.3 ^(c) psig
(2) High Differential Pressure Between Steam Lines (per steam line)	1,2,3 ^(b)	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≤ 112 psig
2. Containment Spray					
a. Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
c. Containment Pressure - High High	1,2,3	4	E	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≤ 2.97 psig

(a) Above the P-11 (Pressurizer Pressure) interlock.

(b) Above the P-12 (T_{avg} - Low Low) interlock.

(c) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.

Table 3.3.2-1 (page 2 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. Containment Isolation					
a. Phase A Isolation					
(1) Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
(3) SI Input from ESFAS	1,2,3,4	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.			
b. Phase B Isolation					
(1) Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
(2) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
(3) Containment Pressure - High High	1,2,3	4	E	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≤ 2.97 psig
4. Steam Line Isolation					
a. Manual Initiation (per steam line)	1,2 ^(d) ,3 ^(d)	2	B	SR 3.3.2.9	NA
b. Automatic Actuation Logic and Actuation Relays	1,2 ^(d) ,3 ^(d)	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
c. Containment Pressure - High High	1,2 ^(d) ,3 ^(d)	4	E	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≤ 2.97 psig
d. Steam Line Pressure - Low	1,2 ^(d) ,3 ^{(b)(d)}	1 per steam line	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≥ 481.3 ^(c) psig

(b) Above the P-12 (T_{avg} - Low Low) interlock.

(c) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.

(d) Except when all SGSVs are closed.

Table 3.3.2-1 (page 3 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. Steam Line Isolation					
e. High Steam Flow in Two Steam Lines (per steam line)	1,2 ^(d) , 3 ^{(b)(d)}	2	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	(e)
Coincident with T _{avg} - Low Low	1,2 ^(d) , 3 ^{(b)(d)}	1 per loop	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≥ 538.8°F
5. Turbine Trip and Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	1,2 ^(f) , 3 ^(f)	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
b. SG Water Level - High High (per SG)	1,2 ^(f) , 3 ^(f)	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≤ 71.6%
c. SI Input from ESFAS	1,2 ^(f) , 3 ^(f)	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.			
6. Auxiliary Feedwater					
a. Automatic Actuation Logic and Actuation Relays (Solid State Protection System)	1,2,3	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
b. Automatic Actuation Logic and Actuation Relays (Balance of Plant ESFAS)	1,2,3	2 trains	C	SR 3.3.2.11	NA

(b) Above the P-12 (T_{avg} - Low Low) interlock.

(d) Except when all SGSVs are closed.

(e) Less than or equal to a function defined as ΔP corresponding to 1.75E6 lb/hr below 20% load, ΔP increasing linearly from 1.75E6 lb/hr at 20% load to 4.55E6 lb/hr at 100% load.

(f) Except when all main feedwater isolation valves or main feedwater regulating valves are closed and de-activated or isolated by a closed manual valve.

Table 3.3.2-1 (page 4 of 4)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
6. Auxiliary Feedwater					
c. SG Water Level - Low Low (per SG)	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≥ 20.8%
d. SI Input from ESFAS	1,2,3	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.			
e. Loss of Voltage (per bus)	1,2,3	3	F	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.7 SR 3.3.2.12	≥ 3207.2 V and ≤ 3302.7 V with ≥ 1.8 sec and ≤ 2.2 sec time delay
f. Undervoltage Reactor Coolant Pump	1,2	1 per bus	D	SR 3.3.2.5 SR 3.3.2.7 SR 3.3.2.12	≥ 2725 V
g. Trip of all Main Feedwater Pumps (per pump)	1,2	1	B	SR 3.3.2.9 SR 3.3.2.12	NA
7. Containment Air Recirculation/Hydrogen Skimmer (CEQ) System					
a. Manual Initiation	1,2,3,4	1 per train	B	SR 3.3.2.9	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	C	SR 3.3.2.3 SR 3.3.2.4 SR 3.3.2.8	NA
c. Containment Pressure – High	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10 SR 3.3.2.12	≤ 1.17 psig
8. ESFAS Interlocks					
a. Reactor Trip, P-4	1,2,3	1 per train	B	SR 3.3.2.9	NA
b. Pressurizer Pressure, P-11	1,2,3	3	G	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≤ 1915 psig
c. T _{avg} - Low Low, P-12	1,2,3 ^(b)	1 per loop	D	SR 3.3.2.1 SR 3.3.2.6 SR 3.3.2.10	≥ 538.8°F

(b) Above the P-12 (T_{avg} - Low Low) interlock.