

TABLE 3.3-5

ENGINEERED SAFETY FEATURES RESPONSE TIMES

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
1. <u>Manual</u>	
a. Safety Injection (ECCS)	Not Applicable
Feedwater Isolation	Not Applicable
Reactor Trip (SI)	Not Applicable
Containment Isolation-Phase "A"	Not Applicable
Containment Ventilation Isolation	Not Applicable
Auxiliary Feedwater Pumps	Not Applicable
Service Water System	Not Applicable
Containment Fan Cooler	Not Applicable
b. Containment Spray	Not Applicable
Containment Isolation-Phase "B"	Not Applicable
Containment Ventilation Isolation	Not applicable
c. Containment Isolation-Phase "A"	Not Applicable
Containment Ventilation Isolation	Not Applicable
d. Steam Line Isolation	Not Applicable
2. <u>Containment Pressure-High</u>	
a. Safety Injection (ECCS)	≤ 27.0 ⁽¹⁾
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 7.0 ≤ 10.0
d. Containment Isolation-Phase "A"	≤ 17.0 ⁽²⁾ /27.0 ⁽³⁾
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	≤ 13.0 ⁽²⁾ /48.0 ⁽³⁾

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TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
3. <u>Pressurizer Pressure-Low</u>	
a. Safety Injection (ECCS)	$\leq 27.0(1)/12.0(2)$
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 7.0 ≤ 10.0
d. Containment Isolation-Phase "A"	$\leq 18.0(2)$
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	$\leq 49.0(1)/13.0(2)$
4. <u>Differential Pressure Between Steam Lines-High</u>	
a. Safety Injection (ECCS)	$\leq 12.0(2)/22.0(3)$
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 7.0 ≤ 10.0
d. Containment Isolation-Phase "A"	$\leq 17.0(2)/27.0(3)$
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	$\leq 13.0(2)/48.0(3)$
5. <u>Steam Flow in two Steam Lines - High Coincident with T_{avg} --Low-Low</u>	
a. Safety Injection (ECCS)	$\leq 15.75(2)/25.75(3)$
b. Reactor Trip (from SI)	≤ 5.75
c. Feedwater Isolation	≤ 10.75 ≤ 15.0
d. Containment Isolation-Phase "A"	$\leq 20.75(2)/30.75(3)$
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 61.75
g. Service Water System	$\leq 15.75(2)/50.75(3)$
h. Steam Line Isolation	≤ 10.75

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
6. <u>Steam Flow in Two Steam Lines-High Coincident with Steam Line Pressure-Low</u>	
a. Safety Injection (ECCS)	≤ 12.0 ⁽²⁾ /22.0 ⁽³⁾
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 7.0 ≤ 10.0
d. Containment Isolation-Phase "A"	≤ 17.0 ⁽²⁾ /27.0 ⁽³⁾
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	≤ 14.0 ⁽²⁾ /48.0 ⁽³⁾
h. Steam Line Isolation	≤ 8.0
7. <u>Containment Pressure--High-High</u>	
a. Containment Spray	≤ 45.0
b. Containment Isolation-Phase "B"	Not Applicable
c. Steam Line Isolation	≤ 7.0
d. Containment Fan Cooler	≤ 40.0
8. <u>Steam Generator Water Level--High-High</u>	
a. Turbine Trip	≤ 2.5
b. Feedwater Isolation	≤ 11.0 ≤ 10.0
9. <u>Steam Generator Water Level --Low-Low</u>	
a. Motor-Driven Auxiliary Feedwater Pumps(4)	≤ 60.0
b. Turbine-Driven Auxiliary Feedwater Pumps(5)	≤ 60.0

CONTAINMENT ISOLATION VALVES

<u>VALVE NUMBER</u>	<u>FUNCTION</u>	<u>ISOLATION TIME (Seconds)</u>
D. FEEDWATER ISOLATION		
1. 21 BF 19#	Main Feedwater Isolation	≤5 Sec. ≤ 9 SEC.
2. 22 BF 19#	Main Feedwater Isolation	≤5 Sec. ≤ 9 SEC.
3. 23 BF 19#	Main Feedwater Isolation	≤5 Sec. ≤ 9 SEC.
4. 24 BF 19#	Main Feedwater Isolation	≤5 Sec. ≤ 9 SEC.
5. 21 BF 40#	Main Feedwater Isolation	≤5 Sec. ≤ 9 SEC.
6. 22 BF 40#	Main Feedwater Isolation	≤5 Sec. ≤ 9 SEC.
7. 23 BF 40#	Main Feedwater Isolation	≤5 Sec. ≤ 9 SEC.
8. 24 BF 40#	Main Feedwater Isolation	≤5 Sec. ≤ 9 SEC.
E. STEAM GENERATOR BLOWDOWN ISOLATION		
1. 21 GB 4#	Steam Generator Blowdown	≤10 Sec.
2. 22 GB 4#	Steam Generator Blowdown	≤10 Sec.
3. 23 GB 4#	Steam Generator Blowdown	≤10 Sec.
4. 24 GB 4#	Steam Generator Blowdown	≤10 Sec.
5. 21 SS 94#	SG Blowdown Sampling	≤10 Sec.
6. 22 SS 94#	SG Blowdown Sampling	≤10 Sec.
7. 23 SS 94#	SG Blowdown Sampling	≤10 Sec.
8. 24 SS 94#	SG Blowdown Sampling	≤10 Sec.
F. CONTAINMENT PURGE AND PRESSURE - VACUUM RELIEF		
1. 2 VC 1	Purge Supply	≤2 Sec.
2. 2 VC 2	Purge Supply	≤2 Sec.
3. 2 VC 3	Purge Exhaust	≤2 Sec.
4. 2 VC 4	Purge Exhaust	≤2 Sec.
5. 2 VC 5*	Pressure - Vacuum Relief	≤2 Sec.
6. 2 VC 6*	Pressure - Vacuum Relief	≤2 Sec.

TABLE 3.3-5

ENGINEERED SAFETY FEATURES RESPONSE ITEMS

INITIATING SIGNAL AND FUNCTION

RESPONSE TIME IN SECONDS

1. Manual

a. Safety Injection (ECCS)	Not Applicable
Feedwater Isolation	Not Applicable
Reactor Trip (SI)	Not Applicable
Containment Isolation-Phase "A"	Not Applicable
Containment Ventilation Isolation	Not Applicable
Auxiliary Feedwater Pumps	Not Applicable
Service Water System	Not Applicable
Containment Fan Cooler	Not Applicable
b. Containment Spray	Not Applicable
Containment Isolation-Phase "B"	Not Applicable
Containment Ventilation Isolation	Not Applicable
c. Containment Isolation-Phase "A"	Not Applicable
Containment Ventilation Isolation	Not Applicable
d. Steam Line Isolation	Not Applicable

2. Containment Pressure-High

a. Safety Injection (ECCS)	$\leq 27.0(1)$ —
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 7.0 ≤ 10.0
d. Containment Isolation-Phase "A"	$\leq 17.0(2)/27.0(3)$
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	$\leq 13.0(2)/48.0(3)$

TAB LE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

<u>INITIATING SIGNAL AND FUNCTION</u>	<u>RESPONSE TIME IN SECONDS</u>
3. <u>Pressurizer Pressure-Low</u>	
a. Safety Injection (ECCS)	$\leq 27.0(1)/12.0(2)$
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 7.0 ≤ 10.0
d. Containment Isolation-Phase "A"	$\leq 18.0(2)$
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	$\leq 49.0(1)/13.0(2)$
4. <u>Differential Pressure Between Steam Lines-High</u>	
a. Safety Injection (ECCS)	$\leq 12.0(2)/22.0(3)$
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 7.0 ≤ 10.0
d. Containment Isolation-Phase "A"	$\leq 17.0(2)/27.0(3)$
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	$\leq 13.0(2)/48.0(3)$
5. <u>Steam Flow in two Steam Lines - High Coincident</u> <u>with T_{avg} --Low-Low</u>	
a. Safety Injection (ECCS)	$\leq 15.75(2)/25.75(3)$
b. Reactor Trip (from SI)	≤ 5.75
c. Feedwater Isolation	≤ 10.75 ≤ 15.0
d. Containment Isolation-Phase "A"	$\leq 20.75(2)/30.75(3)$
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 61.75
g. Service Water System	$\leq 15.75(2)/50.75(3)$
h. Steam Line Isolation	≤ 10.75

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION

RESPONSE TIME IN SECONDS

6. <u>Steam flow in Two Steam Lines-High</u>	
<u>Coincident with Steam Line Pressure-Low</u>	
a. Safety Injection (ECCS)	$\leq 12.0(2)/22.0(3)$
b. Reactor Trip (from SI)	≤ 2.0
c. Feedwater Isolation	≤ 7.0 ≤ 10.0
d. Containment Isolation-Phase "A"	$\leq 17.0(2)/27.0(3)$
e. Containment Ventilation Isolation	Not Applicable
f. Auxiliary Feedwater Pumps	≤ 60
g. Service Water System	$\leq 14.0(2)/48.0(3)$
h. Steam Line Isolation	≤ 8.0
7. <u>Containment Pressure--High-High</u>	
a. Containment Spray	≤ 45.0
b. Containment Isolation-Phase "B"	Not applicable
c. Steam Line Isolation	≤ 7.0
d. Containment Fan Cooler	≤ 40.0
8. <u>Steam Generator Water Level--High-High</u>	
a. Turbine Trip	≤ 2.5
b. Feedwater Isolation	≤ 11.0 ≤ 10.0
9. <u>Steam Generator Water Level--Low-Low</u>	
a. Motor-Driven Auxiliary Feedwater Pumps(4)	≤ 60.0
b. Turbine-Driven Auxiliary Feedwater Pumps(5)	≤ 60.0

TABLE 3.6-1 (Contd.)

CONTAINMENT ISOLATION VALVES

<u>VALVE NUMBER</u>	<u>FUNCTION</u>	<u>ISOLATION TIME (Seconds)</u>
D. FEEDWATER ISOLATION		
1. 11 BF 19#	Main Feedwater Isolation	≤8 Sec. ≤ 9 SEC
2. 12 BF 19#	Main Feedwater Isolation	≤8 Sec. ≤ 9 SEC
3. 13 BF 19#	Main Feedwater Isolation	≤8 Sec. ≤ 9 SEC
4. 14 BF 19#	Main Feedwater Isolation	≤8 Sec. ≤ 9 SEC
5. 11 BF 40#	Main Feedwater Isolation	≤8 Sec. ≤ 9 SEC
6. 12 BF 40#	Main Feedwater Isolation	≤8 Sec. ≤ 9 SEC
7. 13 BF 40#	Main Feedwater Isolation	≤8 Sec. ≤ 9 SEC
8. 14 BF 40#	Main Feedwater Isolation	≤8 Sec. ≤ 9 SEC
E. STEAM GENERATOR BLOWDOWN ISOLATION		
1. 11 GB 4#	Steam Generator Blowdown	≤10 Sec.
2. 12 GB 4#	Steam Generator Blowdown	≤10 Sec.
3. 13 GB 4#	Steam Generator Blowdown	≤10 Sec.
4. 14 GB 4#	Steam Generator Blowdown	≤10 Sec.
5. 11 SS 94#	SG Blowdown Sampling	≤10 Sec.
6. 12 SS 94#	SG Blowdown Sampling	≤10 Sec.
7. 13 SS 94#	SG Blowdown Sampling	≤10 Sec.
8. 14 SS 94#	SG Blowdown Sampling	≤10 Sec.
F. CONTAINMENT PURGE AND PRESSURE - VACUUM RELIEF		
1. 1 VC 1	Purge Supply	≤2 Sec.
2. 1 VC 2	Purge Supply	≤2 Sec.
3. 1 VC 3	Purge Exhaust	≤2 Sec.
4. 1 VC 4	Purge Exhaust	≤2 Sec.
5. 1 VC 5*	Pressure - Vacuum Relief	≤2 Sec.
6. 1 VC 6*	Pressure - Vacuum Relief	≤2 Sec.