TABLE 3.3-5

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
1. Manual	
a. SIAS Safety Injection (ECCS)	Not Applicable
b. CSAS Containment Spray	Not Applicable
c. CIS Containment Isolation	Not Applicable
d. RAS Containment Sump Recirculation	Not Applicable
e. AFAS Auxiliary Feedwater Initiation	Not Applicable
2. Pressurizer Pressure-Low	
a. Safety Injection (ECCS)	≤ 30*/30**
3. Containment Pressure-High	
a. Safety Injection (ECCS)	≤ 30*/30**
b. Containment Isolation	≤ 30
c. Containment Fan Coolers	≤ 35*/10**
4. Containment Pressure-High	
a. Containment Spray	≤ 60*/60**(1)
5. Containment Radiation-High	
a. Containment Purge Valves Isolation	≤ 5

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
6. Steam Generator Pressure-Low	
a. Main Steam Isolation	≤6.9
b. Feedwater Isolation	≤80
7. Refueling Water Tank-Low	
a. Containment Sump Recirculation	≤80
8. Reactor Trip	
a. Feedwater Flow Reduction to 5%	≤20
9. Loss of Power	
a. 4.16 kv Emergency Bus Under-voltage (Loss of Voltage)	≤2.2***
b. 4.16 kv Emergency Bus Under-voltage (Degraded Voltage)	≤8.4***
10. Steam Generator Level - Low	
a. Steam Driven AFW Pump	≤54.5
b. Motor Driven AFW Pump	≤54.5*/14.5**
11. Steam Generator Δ P-High	
a. Auxiliary Feedwater Isolation	≤20.0

TABLE NOTATION

* Diesel generator starting and sequence loading delays included.

** Diesel generator starting and sequence loading delays not included. Offsite power available.

*** Response time measured from the incidence of the undervoltage condition to the diesel generator start signal.

(1) Header fill time not included.

TABLE 3.3-5

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
1. Manual	
a. SIAS Safety Injection (ECCS)	Not Applicable
b. CSAS Containment Spray	Not Applicable
c. CIS Containment Isolation	Not Applicable
d. RAS Containment Sump Recirculation	Not Applicable
e. AFAS Auxiliary Feedwater Actuation	Not Applicable
2. Pressurizer Pressure-Low	
a. Safety Injection (ECCS)	≤ 30*/30**
3. Containment Pressure-High	
a. Safety Injection (ECCS)	≤ 30*/30**
b. Containment Isolation	≤ 30
c. Containment Fan Coolers	≤ 35*/10**
4. Containment Pressure--High	
a. Containment Spray	≤ 60*/60**
5. Containment Radiation-High	
a. Containment Purge Valves Isolation	≤ 5

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
6. Steam Generator Pressure-Low	
a. Main Steam Isolation	≤ 6.9
b. Feedwater Isolation	≤ 80
7. Refueling Water Tank-Low	
a. Containment Sump Recirculation	≤ 80
8. Reactor Trip	
a. Feedwater Flow Reduction to 5%	≤ 20
9. Loss of Power	
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	≤ 2.2***
b. 4.16 kv Emergency Bus Undervoltage (Degraded Voltage)	≤ 8.4***
10. Steam Generator Level - Low	
a. Motor Driven AFW Pump	≤ 54.5* / 14.5**
b. Steam Driven AFW Pump	≤ 54.5
11. Steam Generator ΔP-High	
a. Auxiliary Feedwater Isolation	≤ 20.0

TABLE NOTATION

*Diesel generator starting and sequence loading delays included.

**Diesel generator starting and sequence loading delays not included. Offsite power available.

***Response time measured from the incidence of the undervoltage condition to the diesel generator start signal.

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
6. Steam Generator Pressure-Low	
a. Main Steam Isolation	≤ 6.9
b. Feedwater Isolation	≤ 80
7. Refueling Water Tank-Low	
a. Containment Sump Recirculation	≤ 80
8. Reactor Trip	
a. Feedwater Flow Reduction to 5%	≤ 20
9. Loss of Power	
a. 4.16 kv Emergency Bus Under-voltage (Loss of Voltage)	≤ 2.2***
b. 4.16 kv Emergency Bus Under-voltage (Degraded Voltage)	≤ 8.4***
10. Steam Generator Level-Low	
a. Steam Driven AFW Pump	≤ 180
b. Motor Driven AFW Pump	≤ 180
11. Steam Generator ΔP-High	
a. Auxiliary Feedwater Isolation	≤ 20.0

TABLE NOTATION

* Diesel generator starting and sequence loading delays included.

** Diesel generator starting and sequence loading delays not included. Offsite power available.

*** Response time measured from the incidence of the undervoltage condition to the diesel generator start signal.

(1) Header fill time not included.

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
6. Steam Generator Pressure-Low	
a. Main Steam Isolation	≤ 6.9
b. Feedwater Isolation	≤ 80
7. Refueling Water Tank-Low	
a. Containment Sump Recirculation	≤ 80
8. Reactor Trip	
a. Feedwater Flow Reduction to 5%	≤ 20
9. Loss of Power	
a. 4.16 kv Emergency Bus Under-voltage (Loss of Voltage)	≤ 2.2***
b. 4.16 kv Emergency Bus Under-voltage (Degraded Voltage)	≤ 8.4***
10. Steam Generator Level - Low	
a. Motor Driven AFW Pump	≤ 180
b. Steam Driven AFW Pump	≤ 180
11. Steam Generator ΔP-High	
a. Auxiliary Feedwater Isolation	≤ 20.0

TABLE NOTATION

* Diesel generator starting and sequence loading delays included.

** Diesel generator starting and sequence loading delays not included. Offsite power available.

*** Response time measured from the incidence of the undervoltage condition to the diesel generator start signal.