



INDIANA AND MICHIGAN POWER
D. C. COOK NUCLEAR PLANT
UPDATED FINAL SAFETY ANALYSIS REPORT

Revision: 27.0
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Engineered Safety Feature Actuation System Response Times¹

	Initiating Signal and Function	Response Time In Seconds
1.	<u>Containment Pressure - High</u>	
	a. Safety Injection (ECCS)	Less than or equal to 27.0 ² / 27.0 ³
	b. Reactor Trip (from SI)	Less than or equal to 3.0
	c. Essential Service Water System	Less than or equal to 47.0 ⁴
	d. Containment Air Recirculation Fan	Greater than or equal to 270.0 and less than or equal to 300.0 [Unit 1]; Greater than or equal to 108.0 and less than or equal to 132.0 [Unit 2]
	e. Feedline Isolation	Less than or equal to 44
2.	<u>Pressurizer Pressure - Low</u>	
	a. Safety Injection (ECCS)	Less than or equal to 27.0 ² / 27.0 ³
	b. Reactor Trip (from SI)	Less than or equal to 3.0
	c. Feedwater Isolation	Less than or equal to 8.0
	d. Essential Service Water	Less than or equal to 47.0 ⁴

¹ Response times previously in Technical Specifications 4.3.2.1.3 as documented in Reference 19.

² Diesel generator starting and sequence loading delays NOT included. Offsite power available. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps. Sequential transfer of charging pump suction from the VCT to the RWST (RWST valves open, then VCT valves close) is included.

³ Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging, SI and RHR pumps. Sequential transfer of charging pump suction from the VCT to the RWST (RWST valves open, then VCT valves close) is NOT included. For Unit 1 only, an additional allowance of 20 sec. is provided from the LOCA analysis (47.0 seconds total).

⁴ Essential Service Water System is implicitly assumed available for safety injection and containment spray pump operability in addition to heat exchangers ultimate heat sink.



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Engineered Safety Feature Actuation System Response Times¹

	Initiating Signal and Function	Response Time In Seconds
3.	<u>Steam Line Pressure - Low</u>	
	a. Safety Injection (ECCS)	Less than or equal to 27.0 ² / 37.0 ⁵
	b. Reactor Trip (from SI)	Less than or equal to 3.0
	c. Feedwater Isolation	Less than or equal to 8.0
	d. Steam Line Isolation	Less than or equal to 11.0
4.	<u>Containment Pressure - High-High</u>	
	a. Containment Spray	Greater than or equal to 244.0 and less than or equal to 300.0 [Unit 1]; Less than or equal to 45.0 [Unit 2]
	b. Steam Line Isolation	Less than or equal to 11.0
5.	<u>Steam Generator Water Level -High - High</u>	
	a. Turbine Trip	Less than or equal to 2.5
	b. Feedwater Isolation	Less than or equal to 11.0
6.	<u>Steam Generator Water Level-Low - Low</u>	
	a. Motor Driven Auxiliary Feedwater Pumps	Less than or equal to 60.0
	b. Turbine Driven Auxiliary Feedwater Pumps	Less than or equal to 60.0

⁵ Diesel generator starting and sequence loading delays included. Response time limit includes opening of valves to establish SI path and attainment of discharge pressure for centrifugal charging pumps. Sequential transfer of charging pump suction from the VCT to the RWST (RWST valves open, then VCT valves close) is included.



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Engineered Safety Feature Actuation System Response Times¹

	Initiating Signal and Function	Response Time In Seconds
7.	<u>4160 volt Emergency Bus Loss of Voltage</u>	
	a. Motor Driven Auxiliary Feedwater Pumps	Less than or equal to 60.0
8.	<u>Loss of Main Feedwater Pumps</u>	
	a. Motor Driven Auxiliary Feedwater Pumps	Less than or equal to 60.0
9.	<u>Reactor Coolant Bus Undervoltage</u>	
	a. Turbine Driven Auxiliary Feedwater Pumps	Less than or equal to 60.0