

TABLE 3.1.1 PROTECTIVE INSTRUMENTATION REQUIREMENTS (CONT'D)

Function	Trip Setting	Reactor Modes in which Function Must Be Operable				Min. No. of Operable or Operating [tripped] Trip Systems	Min. No. of Instrument Channels Per Operable Trip Systems	Action Required*
		Shutdown	Refuel	Startup	Run			
D. Core Spray								
1. Low-Low Reactor Water Level	**	X(t)	X(t)	X(t)	X	2	2	Consider the respective core spray loop inoperable, and comply with spec. 3.4
2. High Drywell Pressure	≤ 3.5 psig	X(t)	X(t)	X(t)	X	2(k)	2(k)	
3. Low Reactor Pressure (valve permissive)	≥ 285 psig	X(t)	X(t)	X(t)	X	2	2	
E. Containment Spray								
Comply with Technical Specification 3.4								
F. Primary Containment Isolation								
1. High Drywell Pressure	≤ 3.5 psig	X(u)	X(u)	X(u)	X	2(k)	2(k)	Isolate containment or place in cold shutdown condition
2. Low-Low Reactor Water Level	≥ 7'2" above top of active fuel	X(u)	X(u)	X(u)	X	2	2	

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		Shutdown	Refuel	Startup	Run				
6. IRM Upscale	≤ 108/125 fullscale		X	X		2	3		
7. a) water level high scram discharge volume North	≤ 14 gallons		X(z)	X(z)	X(z)	1	1 per instrum. volume		
b) water level high scram discharge volume South	≤ 14 gallons		X(z)	X(z)	X(z)	1	1 per instrum. volume		
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L. <u>Condenser Vacuum Pump Isolation</u>									
1. High Radiation in Main Steam Tunnel	≤ 10 x Normal background			During Startup and Run when vacuum pump 1 operating			2	2	Insert Control Rods
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M. <u>Diesel Generator load Sequence Timers</u>									
1. CRD pump	Time delay after energization of relay 60 sec ± 15%	X	X	X	X	2(m)	1(n)	Consider the pump inoperable and comply with Spec. 3.4.D (see Note q)	

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		Shutdown	Refuel	Startup	Run			
2. Service Water Pump (aa)	120 sec. ± 15% (SK1A) 10 sec. ± 15% (SK2A) (SK7A) (SK8A)	X	X	X	X	2(o)	2(p)	Consider the pump inoperable and comply within 7 days (See Note q)
3. Closed Cooling Water Pump (bb)	166 Sec. ± 15%	X	X	X	X	2(m)	1(n)	Consider the pump inoperable and comply within 7 days (See Note q)
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N. Loss of Power								
a. 4.16KV Emergency ** Bus Undervoltage (Loss of Voltage)		X(ff)	X(ff)	X(ff)	X(ff)	2	1	
b. 4.16 KV Emergency ** Bus undervoltage (Degraded Voltage)		X(ff)	X(ff)	X(ff)	X(ff)	2	3	See note ee

The containment spray system is provided to remove heat energy from the containment in the event of a loss-of-coolant accident. Actuation of the containment spray system in accordance with plant emergency operating procedures ensures that containment and torus pressure and temperature conditions are within the design basis for containment integrity, EQ, and core spray NPSH requirements. The flow from one pump in either loop is more than ample to provide the required heat removal capability(2). The emergency service water system provides cooling to the containment spray heat exchangers and, therefore, is required to provide the ultimate heat sink for the energy release in the event of a loss-of-coolant accident. The emergency service water pumping requirements are those which correspond to containment cooling heat exchanger performance implicit in the containment cooling description. Since the loss-of-coolant accident while in the cold shutdown condition would not require containment spray, the system may be deactivated to permit integrated leak rate testing of the primary containment while the reactor is in the cold shutdown condition.

The control rod drive hydraulic system can provide high pressure coolant injection capability. For break sizes up to 0.002 ft², a single control rod drive pump with a flow of 110 gpm is adequate for maintaining the water level nearly five feet above the core, thus alleviating the necessity for auto-relief actuation(3).

The core spray main pump compartments and containment spray pump compartments were provided with water-tight doors(4). Specification 3.4.E ensures that the doors are in place to perform their intended function.

Similarly, since a loss-of-coolant accident when primary containment integrity is not being maintained would not result in pressure build-up in the drywell or torus, the system may be made inoperable under these conditions. This prevents possible personnel injury associated with contact with chromated torus water.

References

1. NEDC-31462P, "Oyster Creek Nuclear Generating Station SAFER/CORECOOL/GESTR-LOCA Loss-of-Coolant Accident Analysis," August 1987.
2. Licensing Application, Amendment 32, Question 3
3. Licensing Application, Amendment 18, Question 1
4. Licensing Application, Amendment 18, Question 4
5. GPUN Topical Report 053, "Thermal Limits with One Core Spray Sparger" December 1988.
6. NEDE-30010A, "Performance Evaluation of the Oyster Creek Core Spray Sparger", January 1984.
7. Letter and enclosed Safety Evaluation, Walter A. Paulson (NRC) to P. B. Fiedler (GPUN), July 20, 1984.
8. APED-5736, "Guidelines for Determining Safe Test Intervals and Repair Times for Engineered Safeguards", April 1969.

TABLE 4.1.2

MINIMUM TEST FREQUENCIES FOR TRIP SYSTEMS

<u>Trip System</u>	<u>Minimum Test Frequency</u>
1) <u>Dual Channel</u> (Scram)	Same as for respective instrumentation in Table 4.1.1
2) <u>Rod Block</u>	Same as for respective instrumentation in Table 4.1.1
3) DELETED	DELETED
4) <u>Automatic Depressurization</u> , each trip system, one at a time	Each refueling outage
5) <u>MSIV Closure</u> , each closure logic circuit independently (1 valve at a time)	Each refueling outage
6) <u>Core Spray</u> , each trip system, one at a time	1/3 mo. and each refueling outage.
7) <u>Primary Containment Isolation</u> , each closure circuit independently (1 valve at a time)	Each refueling outage
8) <u>Refueling Interlocks</u>	Prior to each refueling operation
9) <u>Isolation Condenser Actuation and Isolation</u> , each trip circuit independently (1 valve at a time)	Each refueling outage
10) <u>Reactor Building Isolation and SGTS Initiation</u>	Same as for respective instrumentation in Table 4.1.1
11) <u>Condenser Vacuum Pump Isolation</u>	Prior to each startup
12) <u>Air Ejector Offgas Line Isolation</u>	Each refueling outage
13) <u>Containment Vent and Purge Isolation</u>	1/20 mo.

C. Containment Cooling System

<u>Item</u>	<u>Frequency</u>
2. Motor-operated valve operability	Every 3 months
3. Pump compartment water-tight doors closed	Once/week and after each entry

D. Emergency Service Water System

1. Pump Operability	Once/month. Also after major maintenance and prior to startup following a refueling outage.
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E. Control Rod Drive Hydraulic System

1. Pump Operability	Once/month. Also after major maintenance and prior to startup following a refueling outage.
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F. Fire Protection System

1. Pump and Isolation valve operability	Once/month. Also after major maintenance and prior to startup following a refueling outage.
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Bases:

It is during major maintenance or repair that a system's design intent may be violated accidentally. Therefore, a functional test is required after every major maintenance operation. During an extended outage, such as a refueling outage, major repair and maintenance may be performed on many systems. To be sure that these repairs on other systems do not encroach unintentionally on critical standby cooling systems, they should be given a functional test prior to startup.

Motor operated pumps, valves and other active devices that are normally on standby should be exercised periodically to make sure that they are free to operate. Motors on pumps should operate long enough to approach equilibrium temperature to ensure there is no overheat problem. Whenever practical, valves should be stroked full length to ensure that nothing impedes their motion. Engineering judgment based on experience and availability analyses of the type presented in Appendix L of the FDSAR indicates that testing these components more often than once a month over a long period of time does not significantly improve the system reliability. Also, at this frequency of testing wearout should not be a problem through the life of the plant.

During tests of the electromatic relief valves, steam from the reactor vessel will be discharged directly to the absorption chamber pool. Scheduling the tests in conjunction with the refueling outage permits the tests to be run at low power, prior to 5 percent power, enhancing the safety of the plant by assuring EMRV operability before higher power levels are reached.