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APPENDIX A TABLE 1

Boration Systems Flow Paths - Shutdown

System Requirements	Test Requirements	Frequency	Applicability
As a minimum, one of the following boron injecrion flow paths shall be OPERABLE and capable of being powered from an OPERABLE emergency power source : 1. A flow path from the boric acid tanks via either a boric acid transfer pump or a gravity feed connection and a charging pump to the reactor coolant system if the boric acid storage tank in FSAR Appendix A Table 3 System Requirements 1 is OPERABLE. 2. The flow path from the refueling water storage tank via a charging pump to the reactor coolant system if the refueling water storage tank in FSAR Appendix A Table 3 System Requirements 2 is OPERABLE.	At least one of the left column required flow paths shall be demonstrated OPERABLE : 1. Verifying that the temperature of the heat traced portion of the flow path is greater than or equal to [redacted] when a flow path from the boric acid tanks is used. 2. Verifying that each valve(manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position is in its correct position.	Once per 7 days Once per 31 days	MODES 4, 5, 6

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APPENDIX A TABLE 2

Boration Systems Flow Paths - Operating

System Requirements	Test Requirements	Frequency	Applicability
The following two boron injection flow paths shall be OPERABLE : 1. A flow path from the boric acid tanks via a boric acid transfer pump and a charging pump to the reactor coolant system. 2. The flow path from the refueling water storage tank via charging pumps to the reactor coolant system	The left column required flow paths shall be demonstrated OPERABLE : 1. Verifying that the temperature of the heat traced portion of the flow path from the boric acid tanks is greater than or equal to [redacted] when it is a required water source. 2. Verifying that each valve(manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position is in its correct position. 3. Verifying that each automatic valve in the flow path actuates to its correct position on a safety injection test signal. 4. Verifying that the flow path required by left column system requirement 1 delivers at least [redacted] to the reactor coolant system.	Once per 7 days Once per 31 days Once per 18 months during shutdown Once per 18 months	MODES 1, 2, 3*

* In accordance with specification 3.5.2 APPLICABILITY NOTE 2.

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APPENDIX A TABLE 3

Borated Water Source - Shutdown

System Requirements	Test Requirements	Frequency	Applicability
As a minimum, one of the following borated water sources shall be OPERABLE : 1. A boric acid storage system and at least one associated heat tracing system with : A. A minimum contained borated water volume of [redacted] B. Between [redacted] ppm of boron, and C. A minimum solution temperature of [redacted] 2. The refueling water storage tank with : A. A minimum contained borated water volume of [redacted] B. A minimum boron concentration of [redacted] ppm, and C. A minimum solution temperature of [redacted]	The left column required borated water source shall be demonstrated OPERABLE : 1. Verifying the boron concentration of the water 2. Verifying the contained borated water volume 3. Verifying the boric acid storage tank solution temperature when it is the source of borated water. 4. Verifying the RWST temperature when it is the source of borated water and the outside air temperature is less than [redacted]	Once per 7 days Once per 7 days Once per 7 days Once per 24 hours	MODES 5, 6

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Amendment 485
2013. 08. 08

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APPENDIX A TABLE 4

Borated Water Source - Operating

System Requirements	Test Requirements	Frequency	Applicability
As a minimum, the following borated water source shall be OPERABLE as required by FSAR Appendix A Table 2 System Requirements : 1. Each boric acid tank and at least one associated heat tracing system with : A. A minimum contained borated water volume of [redacted] B. Between [redacted] ppm of boron, and C. A minimum solution temperature of 22.9℃(73°F).	Each borated water source shall be demonstrated OPERABLE : 1. Verifying the boron concentration of the water 2. Verifying the contained borated water volume of the water source 3. Verifying the boric acid storage system solution temperature when it is the source of borated water.	Once per 7 days Once per 7 days Once per 7 days	MODES 1, 2, 3, 4

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Amendment 485
2013. 08. 08

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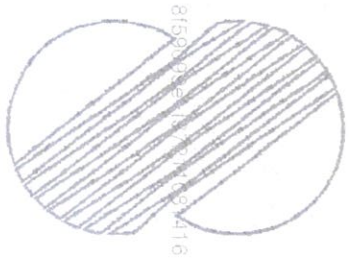
APPENDIX A TABLE 5
Position Indication system - Shutdown

System Requirements	Test Requirements	Frequency	Applicability
One rod position indicator (excluding demand position indication) shall be OPERABLE and capable of determining the control rod position within [redacted] for each shutdown or control rod not fully inserted.	Each of the left column required rod position indicator(s) shall be determined to be OPERABLE by performance of a CHANNEL FUNCTIONAL TEST.	Once per 18 months	MODES 3*#, 4*#, 5*#



* With the reactor trip system breakers in the closed position.
# See special Test Exceptions, FSAR APPENDIX A Table 23.

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APPENDIX A TABLE 6
Movable Incore Detectors

System Requirements	Test Requirements	Frequency	Applicability
The movable incore detection system shall be OPERABLE with : 1. At least 75 percent of the detector thimbles, 2. A minium of two detector thimbles per core ruadrant, and 3. Sufficient movable detectors, drive, and readout equipment to map these thimbles.	The movable incore detection system shall be demonstrated OPERABLE by determination of the detector plateau voltage when required for : 1. Recalibration of the excore neutron flux detection system, or 2. Monitoring the QUADRANT POWER TILT RATIO, or 3. Measurement of $F^N_{\triangle H,}$ $F_Q(Z)$, and F_{XY}.	Once per 24 hour	When the movable incore detection system is used for : 1. Recalibration of the excore neutron flux detection system, or 2. Monitoring the QUADRANT POWER TILT RATIO, or 3. Measurement of $F^N_{\triangle H,}$ $F_Q(Z)$, and F_{XY}.

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APPENDIX A TABLE 7
Seismic Instrumentation

System Requirements	Test Requirements	Frequency	Applicability
The seismic monitoring instrumentation shown in FSAR Appendix A Table 7-1 shall be OPERABLE.	1. Each of the left column seismic monitoring instruments shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION, and ANALOG CHANNEL OPERATIONAL TEST.	In accordance with FSAR Appendix A Table 7-2.	At all times
	2. Each of the left column seismic monitoring instruments actuated during a seismic event shall be restored to OPERABLE status , and	Within 24 hours	
	CHANNEL CALIBRATION performed. Data shall be retrieved from actuated instruments and analyzed to determine the magnitude of the vibratory ground motion.	Within 5 days following the seismic event	

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APPENDIX A TABLE 8

Loose-Part Detection Instrumentation

System Requirements	Test Requirements	Frequency	Applicability
Not Applicable	Each channel of the loose-part detection system shall be demonstrated OPERABLE by performance of : 1. A CHANNEL CHECK 2. A CHANNEL OPERATIONAL TEST. 3. A CHANNEL CALIBRATION	Once per 24 hours Once per 31 days Once per 18 months	MODES 1, 2

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APPENDIX A TABLE 9(sheet 1 of 2)

Turbine Overspeed Protection

System Requirements	Test Requirements	Frequency	Applicability	
At least one turbine overspeed protection system shall be OPERABLE.	The left column required turbine overspeed protection system shall be demonstrated OPERABLE :			
	1. Cycling each of the following valves through at least one complete cycle from the running position : A. Four high pressure turbine stop valves B. Four high pressure turbine governor valves C. Six low pressure turbine reheat stop valves D. Six low pressure turbine reheat intercept valves	Once per 92 days	MODES 1, 2*, 3*	435
	2. Direct observation of the movement of each of the above valves through one complete cycle from the running position.	Once per 92 days		435
	3. Performance of a CHANNEL CALIBRATION on the turbine overspeed protection system.	Once per 18 months		

* Test Requirements not applicable with all main steam isolation valves and associated bypass valves in the closed position.

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Amendment 435
2011. 03. 09

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APPENDIX A TABLE 9(sheet 2 of 2)

Turbine Overspeed Protection

System Requirements	Test Requirements	Frequency	Applicability
	4. Disassembling at least one of each of the below valves, performing a visual and surface inspection of valve seats, disks and stems and verifying no unacceptable flaws or corrosion.		NO MODE
	A. Four high pressure turbine stop valves	Once per 40 months	
	B. Four high pressure turbine governor valves	Once per 40 months	
	C. Six low pressure turbine reheat stop valves	Once per 40 months	
	D. Six low pressure turbine reheat intercept valves	Once per 40 months	

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Amendment 525
2015. 06. 26

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APPENDIX A TABLE 10
PRESSURIZER

System Requirements	Test Requirements	Frequency	Applicability
The pressurizer temperature shall be limited to : 1. A maximum heatup of [redacted] in any 1-hour period. 2. A maximum cooldown of [redacted] in any 1-hour period, and 3. A maximum spray water temperature differential of [redacted]	1. The pressurizer temperatures shall be determined shall be within the left column limit. 2. The spray water temperature differential shall be determined to be within the left column limit.	Once per 30 minutes during system heatup or cooldown. Once per 12 hours during auxiliary spray operation.	At all times

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APPENDIX A TABLE 11
ECCS FLOW BALANCE TEST

System Requirements	Test Requirements	Frequency	Applicability
Not Applicable	Each ECCS subsystem shall be demonstrated OPERABLE by performing a flow balance test and verifying that : 1. For centrifugal charging pump lines, with a single pump running : A. The sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to [redacted] and B. The total pump flow rate is less than or equal to [redacted] 2. For residual heat removal pump lines, with a single pump running, the sum of the injection line flow rates is greater than or equal to [redacted]	During shutdown, following completion of modifications to the ECCS subsystems that alter the subsystem flow characteristics.	MODES 1, 2, 3*

* In accordance with specification 3.5.2 APPLICABILITY NOTE 2.

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APPENDIX A TABLE 12

Boron Injection System Heat Tracing

System Requirements	Test Requirements	Frequency	Applicability
Not Applicable	Each heat tracing channel for the boron injection tank and associated flow path shall be demonstrated OPERABLE : 1. Energizing each heat tracing channel, and 2. Verifying the tank and flow path temperatures to be greater than or equal to [redacted] The tank temperature shall be determined by measurement. The flow path temperature shall be determined by either measurement or recirculation flow until establishment of equilibrium temperatures with the tank.	Once per 31 days Once per 24 hours	MODES 1, 2, 3

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APPENDIX A TABLE 13
Steam Generator Pressure / Temperature Limitation

System Requirements	Test Requirements	Frequency	Applicability
Not Applicable	The pressure in each side of the steam generator shall be determinied to be less than [redacted]	Once per 1 hour when the temperature of either the primary or secondary coolant is less than [redacted]	At all times

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APPENDIX A TABLE 14(sheet 1 of 2)

Sealed Source Contamination

System Requirements	Test Requirements	Frequency	Applicability
Not Applicable	---------- NOTES ---------- 1. Each sealed source shall be tested for leakage and/or contamination by the licensee, or Other persons specifically authorized by the ROK-AEB or an Agreement State. 2. The test method shall have a detection sensitivity of at least 0.005 microcuries per test sample. ---------- 1. Test Frequencies Each category of sealed sources (excluding startup sources and fission detectors previously subjected to core flux) shall be tested at the frequency described below. A. Sources in use - For all sealed sources containing radioactive materials : 1) With a half-life greater than 30 days(excluding Hydrogen 3), and 2) In any form other than gas.	Once per 6 months	At all times

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APPENDIX A TABLE 14(sheet 2 of 2)
Sealed Source Contamination

System Requirements	Test Requirements	Frequency	Applicability
Not Applicable	B. Stored sources not in use - Each sealed source and fission detector shall be tested prior to use or transfer to another licensee unless tested within the previous six months. Sealed sources and fission detectors transferred without a certificate indicating the last test date shall be tested prior to being placed into use.	Once per 6 months	At all times
	2. Startup source and fission detectors - Each sealed startup source and fission detector shall be tested.	Within 31 days prior to being subjected to core flux or installed in the core and following repair or maintenance to the source.	

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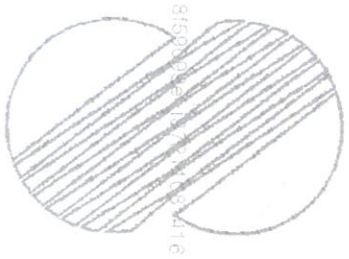
APPENDIX A TABLE 15
Safety - Related Instrument Air System

System Requirements	Test Requirements	Frequency	Applicability
The safety-related instrument air system shall be maintained at a minimum pressure of [redacted]	The safety-related instrument air system shall be determined within its left column limit.	Once per 12 hours	MODES 1, 2, 3, 4



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APPENDIX A TABLE 16

Diesel Generators

System Requirements	Test Requirements	Frequency	Applicability
Not applicable	1. Verifying that the auto-connected loads to each diesel generator do not exceed the 2000-hour rating of 7000 kW.	When the diesel generator runs ≥ 7000 kW	At all time
	2. Verifying that the following diesel generator lockout features prevent the diesel generator from starting only when required : A. Low lube oil pressure within time limit.	In accordance with specifications 3.8.1 and 3.8.2.	In accordance with specifications 3.8.1 and 3.8.2.
	3. by starting both diesel generator simultaneously, and verifying that both diesel generators accelerate to at least 450 rpm in less than or equal to 10 seconds	after any modifications which could affect diesel generator interdependence, during shutdown	In accordance with specifications 3.8.1 and 3.8.2.

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APPENDIX A TABLE 17(sheet 1 of 3)

Containment Penetration Conductor Overcurrent Protective Devices

System Requirements	Test Requirements	Frequency	Applicability
All containment penetration conductor overcurrent devices shown in FSAR Appendix A Table 17-1 shall be OPERABLE.	All containment penetration conductor overcurrent devices shown in FSAR Appendix A Table 17-1 shall be demonstrated OPERABLE.		
	1. By verifying that 13.8 kV circuit breakers are OPERABLE by performing the following : A. A CHANNEL CALIBRATION of the associated protective relays, and B. An integrated system functional test which includes simulated automatic actuation of the system, and verifying that each relay and associated circuit breaker and control circuits function as designed and as specified in FSAR Appendix A Table 17-1.	Once per 18 months.	MODES 1, 2, 3, 4
	2. By selecting and functionally testing a representative sample of at least 10 percent of each type of lower voltage circuit breakers. Circuit breakers selected for functional testing shall be selected on a rotating basis. For the lower voltage circuit breakers,	Once per 18 months.	

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APPENDIX A TABLE 17(sheet 2 of 3)

Containment Penetration Conductor Overcurrent Protective Devices

System Requirements	Test Requirements	Frequency	Applicability
	the nominal trip setpoint and short circuit response times are listed in FSAR Appendix A Table 17-1. Testing of these circuit breakers shall consist of injecting a current in excess of the breaker's nominal setpoint and measuring the response time. The measured response time will be compared to the manufactur's data to insure that the manufacturer. Circuit breakers found inoperable during functional testing shall be restored to OPERABLE status prior to resuming operation. For functional tests, an additional representative sample of at least 10 percent of all the circuit breakers of the inoperable type shall also be functionally tested until no more failures are found or all circuit breakers of that type have been functionally tested.		MODES 1, 2, 3, 4
	3. By selecting and functionally testing a representative sample of each type of fuse on a rotation basis. Each representative sample of fuses shall include at least 10 percent of all fuses of that type. The functional	Once per 18 months.	

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APPENDIX A TABLE 17(sheet 3 of 3)

Containment Penetration Conductor Overcurrent Protective Devices

System Requirements	Test Requirements	Frequency	Applicability
	~ continue ~		
	test shall consist of a nondestructive resistance measurement test which demonstrates that the fuse meets its manufacturer's design criteria. Fuses found inoperable during these functional tests shall be replaced with OPERABLE fuses prior to resuming operation. For each fuse found inoperable during these functional tests, an additional representative sample of at least 10 percent of all fuses of that type shall be functionally tested until no more failures are found or all fuses of that type have been functionally tested.		MODES 1, 2, 3, 4
	4. Subjecting each circuit breaker to an inspection and preventive maintenance in accordance with procedures prepared in conjunction with its manufacturer's recommendations.	Once per 60 months.	

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APPENDIX A TABLE 18

Motor - Operated Valves Thermal Overload Protection

System Requirements	Test Requirements	Frequency	Applicability
The thermal overload protection integral with the motor starter of each valve listed in FSAR Appendix A Table 18-1, shall be OPERABLE.	The left column required thermal overload protection shall be demonstrated OPERABLE : 1. The performance of a CHANNEL CALIBRATION of a representative sample of at least 25 percent of all thermal overload devices which are calibrated at least once per 6 years.	Once per 18 months	Whenever the motor-operated valve is required to be OPERABLE.

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APPENDIX A TABLE 19

Decay Time

System Requirements	Test Requirements	Frequency	Applicability
Not Applicable	The reactor shall be determined to have been subcritical for at least 100 hours by verification of the data and time of subcriticality.	Prior to movement of irradiated fuel in the reactor pressure vessel	During movement of irradiated fuel in the reactor pressure vessel.

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APPENDIX A TABLE 20

Communications

System Requirements	Test Requirements	Frequency	Applicability
Not Applicable	Direct communications between the control room and personnel at the refueling station shall be demonstrated.	Within 1 hour prior to the start of, and at least once per 12 hours during CORE ALTERATIONS.	During CORE ALTERATIONS

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APPENDIX A TABLE 21(sheet 1 of 2)

Refueling Machine Operability

System Requirements	Test Requirements	Frequency	Applicability
The refueling machine and auxiliary hoist shall be used for movement of drive rods or fuel assemblies and shall be OPERABLE with : 1. The refueling machine used for movement of fuel assemblies having : A. A minimum capacity of 2268 kg(5000 pounds). B. Automatic cutoffs with the following setpoints : 1) Primary overload is : a. 113.4 kg(250 pounds) above the indicated suspended weight for *wet conditions. b. 45.4 kg(100 pounds) above the indicated suspended weight for **dry conditions. 2) Secondary overload is : a. plus 68 kg(150 pounds) above the primary overload. 3) Load reduction is : a. 113.4 kg(250 pounds) below the suspended weight for *wet conditions. b. 158.8 kg(350 pounds) below the suspended weight for **dry conditions.	1. Each refueling machine used for movement of fuel assemblies within the reactor pressure vessel shall be demonstrated OPERABLE by performing a load test of at least 125 percent of the secondary automatic overload cutoff and by demonstrating an automatic load cutoff when the refueling machine load exceeds the setpoints of left column 1.B. 2. Each auxiliary hoist and associated load indicator used for movement of drive rods within the reactor pressure vessel shall be demonstrated OPERABLE by performing a load test of at least 567 kg(1250 pounds)	Within 100 hours prior to start of such operations Within 100 hours prior to start of such operations	During movement of drive rods or fuel assemblies within the reactor pressure vessel.

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*wet conditions : Those situations where the fuel assemblies are submerged in water while moving between the transfer system and the core (typically this condition exists during a refueling where the water level in the refueling pool is just below the operating deck).

**dry conditions : Those situations where the fuel assemblies are not submerged in water while moving between the transfer system and the core (typically this condition exists during first core loading where the water level in the vessel is at the vessel nozzles, the transfer canal is flooded to a level just above the tracks, and the remainder of the refueling pool and spent fuel pool are dry).

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2014. 10. 07

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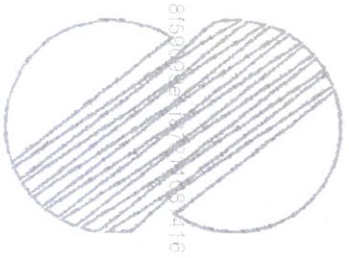
APPENDIX A TABLE 21(sheet 2 of 2)

Refueling Machine Operability

System Requirements	Test Requirements	Frequency	Applicability
2. The auxiliary hoist used for latching and unlatching drive rods and for thimble plug handling operations having : A. A minimum capacity of 1360.8 kg(3000 pounds), and B. A 453.6 kg(1000 pounds) load indicator which shall be used to monitor lifting loads for these operations.			

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APPENDIX A TABLE 22

Crane Travel - Spent Fuel Storage Pool Building

System Requirements	Test Requirements	Frequency	Applicability
Not Applicable	Crane interlocks and physical stops which prevent crane travel with loads in excess of 907.2 kg(2000 pounds) over fuel assemblies shall be demonstrated OPERABLE.	Within 7 days prior to crane use and at least once per 7 days thereafter during crane operation.	With fuel assemblies in the storage pool

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APPENDIX A TABLE 23

Position Indication System - Shutdown(Special Test Exceptions)

System Requirements	Test Requirements	Frequency	Applicability
The limitations of FSAR Appendix A Table 5 system requirements may be suspended during the performance of individual shutdown and control rod drop time measurements, provided : 1. Only one shutdown or control bank is withdrawn from the fully inserted position at a time, and 2. The rod position indicator is OPERABLE during the withdrawal of the rods.*	The left column required position indication systems shall be determined to be OPERABLE, by verifying the demand position indication system and the rod position indication system agree : 1. Within [redacted] when the rods are stationary, and 2. Within [redacted] during rod motion.	Within 24 hours prior to the start of, and at least once per 24 hours thereafter during rod drop time measurements	3,4,5 during performance of rod drop time measurements

* This requirement is not applicable during the initial calibration of the rod position indication system provided :
(1) Keff is maintained less than or equal to 0.95, and
(2) Only one shutdown or control rod bank is withdrawn from the fully inserted position at one time.

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APPENDIX A TABLE 24
Control Room Air Temperature

System Requirements	Test Requirements	Frequency	Applicability
Not Applicable	Verify control room air temperature is ≥ 20.0 ℃(68 °F) and 25.6 ℃(78 °F).	Once per 12 hours	All MODES

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APPENDIX A TABLE 25
Snubbers

System Requirements	Test Requirements	Frequency	Applicability
All snubbers shall be OPERABLE. The only snubbers excluded from the requirements are those installed on nonsafety-related systems and then only if their failure of the system on which they are installed would have no adverse effect on any safety-related system.	Each snubbers shall be demonstrated OPERABLE by performance of the requrements of the APPENDIX A TABLE 25-1.	in accordance with the APPENDIX A TABLE 25-1	MODES 1, 2, 3, 4. MODES 5 and 6 for snubbers located on systems required OPERABLE in those MODES.

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APPENDIX A TABLE 25-1

Snubbers (Sheet 1 of 5)

Test Requirements & Frequency

1. Inspection Types

As used in this Test Requirements, "type of snubber" shall mean snubbers of the same design and manufacturer, irrespective of capacity.

2. Visual Inspection

Snubbers are categorized as inaccessible or accessible during reactor operation. Each of these categories(inaccessible and accessible) may be inspected independently according to the schedule determined by APPENDIX A Table 25-2. The visual inspection interval for each type of snubber shall be determined based upon the criteria provided in APPENDIX A Table 25-2 and the first inspection interval determined using this criteria shall be based upon the previous inspection interval as established by the requirements in effect before this criteria.

3. Visual Inspection Acceptance Criteria

Visual inspection shall verify that :

(1) there are no visible indications of damage or impaired OPERABILITY,

(2) attachments to the foundation or supporting structure are functional, and

(3) fasteners for attachment of the snubber to the component and to the snubber anchorage are functional.

Snubbers which appear inoperable as a result of visual inspections shall be classified as unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, provided that :

(1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type(on that system) that may be generically susceptible, and

(2) the affected snubber is functionally tested in the as-found condition and determined OPERABLE per this Test Requirements item 6 (functional test acceptance criteria).

All snubbers found connected to an inoperable common hydraulic fluid reservoir shall be counted as unacceptable for determining the next inspection interval.(For those snubbers common to more than one system, the OPERABILITY of such snubbers shall be considered in assessing the surveillance schedule for each of the related system)

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APPENDIX A TABLE 25-1

Snubbers (Sheet 2 of 5)

Test Requirements & Frequency

4. Transient Event Inspection

An inspection shall be performed of all snubbers attached to sections of system that have experienced unexpected potentially damaging transients as determined from a review of operational data. A visual inspection of the systems shall be made within 6 months following such an event.
In addition to satisfying the visual inspection acceptance criteria, freedom-of-motion of mechanical snubbers shall be verified using at least one of the following :

(1) manually induced snubber movement, or
(2) evaluation of in-place snubber piston setting, or
(3) stroking the mechanical snubber through its full range of travel.

5. Functional Tests

During the first refueling shutdown and at least once per 18 months thereafter during shutdown, a representative sample of snubbers of each type shall be tested using one of the following sample plans. The sample plan for each type shall be selected prior to the test period and cannot be changed during the test period. AEB-MOST shall be notified in writing of the sample plan selected for each snubber type prior to the test period or the sample plan used in the prior test period shall be implemented :

(1) At least 10% of the total of each type of snubber shall be functionally tested either in-place or in a bench test. For each snubber of a type that does not meet the functional test acceptance criteria of this Test Requirements item 6(functional test acceptance criteria), an additional 10% of that type of snubber shall be functionally tested until no more failures are found or until all snubbers of that type have been functionally tested, or
(2) The 37 representative sample of each type of snubber shall be functionally tested in accordance with Figure Appendix A-1. "C" is the total number of snubbers of a type found not meeting the acceptance requirements of this Test Requirements item 6(functional test acceptance criteria). The cumulative number of snubbers of a type tested in denoted by "N". At the end of each day's testing, the new values of "N" and "C"(previous day's total plus current day's increments) shall be plotted on Figure Appendix A-1.

- continue -

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APPENDIX A TABLE 25-1

Snubbers (Sheet 3 of 5)

Test Requirements & Frequency
5. Functional Tests (2) - continue - If at any time the point plotted falls in the "Reject" region, all snubbers of that type shall be functionally tested. If at any time the point plotted falls in the "Accept" region, testing of snubbers of that type may be terminated. When the point plotted lies in the "Continue Testing" region, additional snubbers of that type shall be tested until the point falls in the "Accept" region or the 'Reject" region, or all the snubbers of that type have been tested, or (3) An initial representative sample of 55 snubbers shall be functionally tested. For each snubber type which does not meet the functional test acceptance criteria, another sample of at least one-half the size of the initial sample shall be tested until the total number tested is equal to the initial sample size multiplied by the factor, 1 + C/2, where "C" is the number of snubbers found which do not meet the functional test acceptance criteria. The results from this sample plan shall be plotted using an "Accept" line which follows the equation N = 55(1 + C/2). Each snubber point should be plotted as soon as the snubber is tested. If the point plotted falls on or below the "Accept" line, testing of that type of snubber may be terminated. If the point plotted falls above the "Accept" line, testing must continue until the point falls in the "Accept" region or all snubbers of that type have been tested. Testing equipment failure during functional testing may invalidate that day's testing and allow that day's testing to resume anew at a later time provided all snubbers tested with the failed equipment during the day of equipment failure are retested. The representative sample selected for the functional test sample plans shall be randomly selected from the snubbers of each type and reviewed before beginning the testing. The review shall ensure, as far as practicable, that they are representative of the various configurations, operating environments, range of size, and capacity of snubbers of each type. Snubbers placed in the same location as snubbers which failed the previous functional test shall be retested at the time of the next functional test but shall not be included in the sample plan. If during the functional testing, additional sampling is required due to failure of only one type of snubber, the functional test results shall be reviewed at that time to determine if additional samples should be limited to the type of snubber which has failed the functional testing.

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APPENDIX A TABLE 25-1

Snubbers (Sheet 4 of 5)

Test Requirements & Frequency

6. Functional Test Acceptance Criteria

The snubber functional test shall verify that :

(1) Activation(restraining action) is achieved within the specified range in both tension and compression,

(2) Snubber bleed, or release rate where required, is present in both tension and compression, within the specified range,

(3) For mechanical snubbers, the force required to initiate or maintain motion of the snubber is within the specified range in both directions of travel, and

(4) For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement.

Testing methods may be used to measure parameters indirectly or parameters other than those specified if those results can be correlated to the specified parameters through established methods.

7. Functional Test Failure Analysis

An engineering evaluation shall be made of each failure to meet the functional test acceptance criteria to determine the cause of the failure. The results of this evaluation shall be used, if applicable, in selecting snubbers to be tested in an effort to determine the OPERABILITY of other snubbers irrespective of type which may be subject to the same failure mode.

For the snubbers found inoperable, an engineering evaluation shall be performed on the components to which the inoperable snubbers are attached. The purpose of this engineering evaluation shall be to determine if the components to which the inoperable snubbers are attached were adversely affected by the inoperability of the snubbers in order to ensure that the component remains capable of meeting the designed service.

If any snubber selected for functional testing either fails to lock up or fails to move, i.e, frozen-in-place, the cause will be evaluated and, if caused by manufacturer or design deficiency, all snubbers of the same type subject to the same defect shall be functionally tested. This testing requirement shall be independent of the requirements stated in this Test Requirements item 5(functional tests) for snubbers not meeting the functional test acceptance criteria.

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APPENDIX A TABLE 25-1

Snubbers (Sheet 5 of 5)

Test Requirements & Frequency
8. Functional Testing of Repaired and Replaced Snubbers Snubbers which fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced. Replacement snubbers and snubbers which have repairs which might affect the functional test results shall be tested to meet the functional test criteria before installation in the unit. Mechanical snubbers shall have met the acceptance criteria subsequent to their most recent service, and the freedom-of-motion test must have been performed within 12 months before being installed in the unit.
9. Snubber Service Life Program The service life of hydraulic and mechanical snubbers shall be monitored to ensure that the service life is not exceeded between surveillance inspections. The maxium expected service life for various seals, springs, and other critical parts shall be determined and established based on engineering information and shall be extended or shortened based on monitored test results and failure history. Critical parts shall be replaced so that the maxium service life will not be exceeded during a period when the snubber is required to be OPERABLE.

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APPENDIX A TABLE 25-2

Snubber Visual Inspection Interval (Sheet 1 of 2)

Population or Category (Notes 1 and 2)	Number of Unacceptable Snubber		
	Column A Extend Interval (Notes 3 and 6)	Column B Repeat Interval (Notes 4 and 6)	Column C Reduce Interval (Notes 5 and 6)
1	0	0	1
80	0	0	2
100	0	1	4
150	0	3	8
200	2	5	13
300	5	12	25
400	8	18	36
500	12	24	48
750	20	40	78
1000 or greater	29	56	109

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APPENDIX A TABLE 25-2

Snubber Visual Inspection Interval (Sheet 2 of 2)

Note 1 : The next visual inspection for a snubber population or category size shall be determined based upon the previous inspection interval and the number of unacceptable snubbers found during that interval. Snubbers may be categorized, based upon their accessibility during power operation, as accessible. These categories may be examined separately or jointly. However, the licensee must take and document that decision before any inspection and shall use that decision as the basis upon which to determine the next inspection interval for that category.

Note 2 : Interpolation between population or category sizes and the number of unacceptable snubbers is permissible. Use next lower integer for the value of the limit for Columns A, B, or C if that integer includes a fractional value of unacceptable snubbers as determined by interpolation.

Note 3 : If the number of unacceptable snubbers is equal to or less than the number in column A, the next inspection interval may be twice the previous interval but not greater than 48 months.

Note 4 : If the number of unacceptable snubbers is equal to or less than the number in column B but greater that the number in column A, the next inspection interval shall be the same as the previous interval.

Note 5 : If the number of unacceptable snubbers is equal to or greater than the number in column C, the next inspection interval shall be two-thirds of the previous interval. However, if the number of unacceptable snubbers is less than the number in column C but greater than the number in column B the next interval shall be reduced proporationally by interpolation. That is, the previous interval shall be reduced by a factor that is one-third of the ratio of the difference between the number of unacceptable snubbers found during the previous interval and the number in column B to the difference in the number in columns B and C.

Note 6 : The provisions of specification surveillance requirement(SR) 3.0.2 are applicable for inspection intervals up to and including 48 months.

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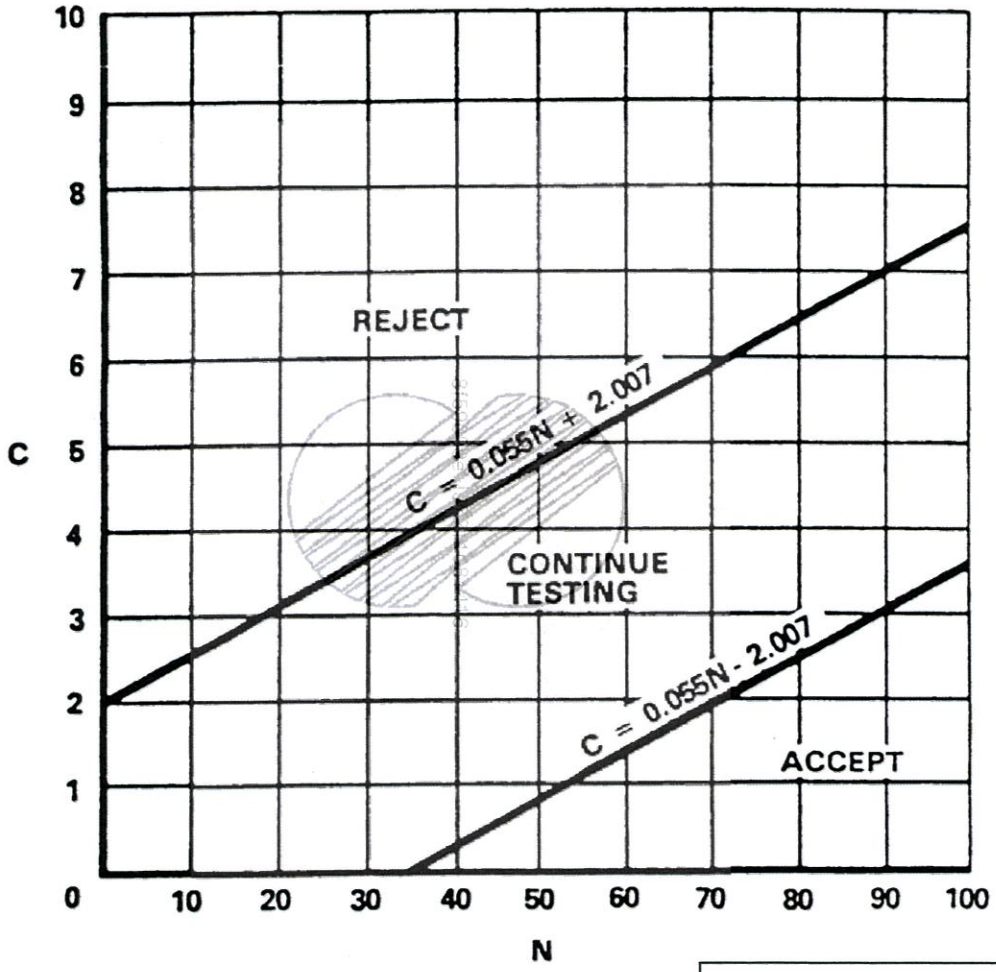

SAMPLE PLAN FOR SNUBBER FUNCTIONAL TEST

Figure APPENDIX A - 1

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Appendix A Table 7-1

Seismic Monitoring Instrumentation System Requirement(Sheet 1 of 2)

Instruments and Sensor Locations	Measurement Range or Setpoint	Minimum Instruments Operable	
1. Triaxial Time-History Accelerographs			
1) Strong Motion Accelerometers			
A. CTMT Base	± 1 G	1	595
B. CTMT OP Floor	± 1 G	1	
C. Aux Bldg Floor	± 1 G	1	
D. Free Field	± 1 G	1	
E. CTMT Intermediate Floor	± 1 G	1	
F. Control Bldg Floor	± 1 G	1	
2) Recorders			335
A. Control Room Panel	2.5 V	1	
B. Control Room Panel	2.5 V	1	
C. Control Room Panel	2.5 V	1	
D. Control Room Panel	2.5 V	1	
E. Control Room Panel	2.5 V	1	
F. Control Room Panel	2.5 V	1	
3) Seismic Triggers			375 595
A. CTMT Base*	H : 0.01 G V : 0.0067 G	1	
B. Aux Bldg Floor*	H : 0.01 G V : 0.0067 G	1	
C. Free Field*	H : 0.01 G V : 0.0067 G	1	

* With Control Room Indications and Alarm

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Appendix A Table 7-1

Seismic Monitoring Instrumentation System Requirement(Sheet 2 of 2)

Instruments and Sensor Locations	Measurement Range or Setpoint	Minimum Instruments Operable
2. Triaxial Peak Accelerographs		
"DELETE"	"DELETE"	"DELETE"
3. Triaxial Seismic Switches		
"DELETE"	"DELETE"	"DELETE"
4. Triaxial Response Spectrum Analyzer**	Frequency : 0.2 ~ 50Hz	1

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* With Control Room Indications and Alarm

** With Control Room Indications

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Appendix A Table 7-2

Seismic Monitoring Instrumentation Surveillance Frequency(Sheet 1 of 2)

Instruments and Sensor Locations	Channel Check	Channel Calibration	Analog Channel Operational Test
1. Triaxial Time-History Accelerographs			
1) Strong Motion Accelerometers			
A. CTMT Base			
B. CTMT OP Floor			
C. Aux Bldg Floor			
D. Free Field			
E. CTMT Intermediate Floor			
F. Control Bldg Floor			
2) Recorders			
A. Control Room Panel	"DELETE"	"DELETE"	"DELETE"
B. Control Room Panel			
C. Control Room Panel			
D. Control Room Panel			
E. Control Room Panel			
F. Control Room Panel			
3) Seismic Triggers*			
A. CTMT Base *			
B. Aux Bldg Floor *			
C. Free Field *			

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* With Control Room Indications and Alarm

Note. The maintenance of the seismic monitoring instrumentation shall be conducted in accordance with the KINS/RG-N04.06.

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Appendix A Table 7-2

Seismic Monitoring Instrumentation Surveillance Frequency(Sheet 2 of 2)

Instruments and Sensor Locations	Channel Check	Channel Calibration	Analog Channel Operational Test
2. Triaxial Peak Accelerographs			
"DELETE"			
3. Triaxial Seismic Switches	"DELETE"	"DELETE"	"DELETE"
"DELETE"			
4. Triaxial Response Spectrum Analyzer**			

* With Control Room Indications and Alarm

** With Control Room Indications

Note. The maintenance of the seismic monitoring instrumentation shall be conducted in accordance with the KINS/RG-N04.06.

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 1 of 20)

(A) 13.8 kV SWITCHGEAR REACTOR COOLANT PUMPS

Relay		Primary Protection (Breaker)					Relay		Backup Protection (Breaker)			
		Settings							Settings			
Type	Symbol	Tap (A)	Hi-Drop Inst. (A)	Instantane-ous (A)	Time Dial	Operating Time(1) (Sec)	Type	Symbol	Tap (A)	Instantane-ous (A)	Time Dial	Operating Time (Sec)
GE-12IAC 66K19A	250 251A	5	7.5	47	6	20	GE-12IAC 77A803A	251A	10	NA	9	1.25

NOTES :

1. The operating time is based on 600 percent of tap setting.
2. NA - Means not applicable.

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 2 of 20)

(B) 480V AC LOADS SUPPLIED FROM LOAD CENTERS

Load Tag	Primary Protection (Air Circuit Breaker)								Backup Protection (Fuse)		
	Breaker Type	Settings						Instrument (IT)	Fuse Type	Rating (A)	Operating Time (Sec) (2)
		Long Time (LT)			Short Time (ST)						
		Pickup Setting	Time Band	Operating Time(1) (Sec)	Pickup	Time Band	Operating Time (Sec)				
N-5E-GN-M014	LAF-800	A	3	17-26	NA	NA	NA	12X	A4J	200	30
N-5E-GN-M011	LAF-800	A	3	17-26	NA	NA	NA	12X	A4J	200	30
N-5E-GN-M012	LAF-800	A	3	17-26	NA	NA	NA	12X	A4J	200	30
N-5E-GN-M013	LAF-800	A	3	17-26	NA	NA	NA	12X	A4J	200	30
N-5E-ZCK001	LAF-800	C	3	17-25	5X	Min	0.1	NA	A4J	600	1.8

NOTES : 1. Operating time for long time is based on 300 percent of pickup setting.

2. Operating for fuse is based on 600 percent of fuse rating

3. NA - Means not applicable.

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APPENDIX A TABLE 17-1
CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES
(Sheet 3 of 20)

(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker		
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)
A-5J-GB-HV154	M	6.5	LO/(32)	-	15	400	1.3~5.5
A-5J-GB-HV155	M	6.5	LO/(32)	-	15	400	1.3~5.5
A-5J-BH-HV051	M	50	1/(196)	-	40	400	4.6~14
A-5J-EG-HV141	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-EG-HV144	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5E-GN-M008	M	100	2/(882)	-	150	1200	9~30
A-5E-GN-M007	M	100	2/(882)	-	150	1200	9~30
A-5J-BH-HV039	M	50	1/(196)	-	40	400	4.6~14
A-5J-EG-HV335	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-EG-HV337	M	6.5	LO/(32)	-	15	400	1.3~5.5
A-5J-BG-HV048	M	4.65	LO/(25)	-	15	400	1.3~5.5

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 4 of 20)

(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker		
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)
A-5J-GT-HV319	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-GT-HV107	M	11	2/(41)	-	15	400	1.3~5.5
A-5J-GT-HV125	M	30	5/(96)	-	15	400	1.3~5.5
A-5J-GT-HV301A	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-HG-HV101	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-HG-HV102	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-HG-HV103	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-BC-HV101	M	4.65	1/(65)	-	15	400	1.3~5.5
A-5J-BG-LV459	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-BG-HV039	M	4.65	LO/(25)	-	15	400	1.3~5.5

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

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(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker		
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)
A-5J-BG-HV047	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-BB-HV005	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-BG-HV042	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-BG-HV003	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-BB-HV007	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-GT-HV209	M	4.65	LO/(25)	-	15	400	1.3~5.5
A-5J-GT-HV317	M	4.65	LO/(25)	-	15	400	1.3~5.5
B-5J-BH-HV045	M	50	1/(196)	-	40	400	4.6~14
B-5J-EG-HV241	M	4.65	LO/(25)	-	15	400	1.3~5.5
B-5J-EG-HV244	M	4.65	LO/(25)	-	15	400	1.3~5.5
B-5E-GN-M010	M	100	2/(882)	-	150	1200	9~30

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 6 of 20)

C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker		
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)
B-5E-GN-M009	M	100	2/(882)	-	150	1200	9~30
B-5J-GT-HV418	M	4.65	LO/(25)	-	20	400	1.3~5.5
B-5J-GT-HV401A	M	4.65	LO/(25)	-	15	400	1.3~5.5
B-5J-GT-HV106	M	11	2/(41)	-	15	400	1.3~5.5
B-5J-GT-HV124	M	30	5/(96)	-	15	400	1.3~5.5
D-5J-BC-HV202	M	4.65	LO/(25)	-	15	400	1.3~5.5
B-5J-BC-HV201	M	18	LO/(102)	-	15	400	1.3~5.5
B-5J-BG-LV460	M	4.65	LO/(25)	-	15	400	1.3~5.5
B-5J-BG-HV038	M	4.65	LO/(25)	-	15	400	1.3~5.5
B-5J-BG-HV041	M	4.65	LO/(25)	-	15	400	1.3~5.5

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(Sheet 7 of 20)

(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker			
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	
B-5J-GT-HV147	M	4.65	LO/(25)	-	15	400	1.3~5.5	
B-5J-BG-HV001	M	4.65	LO/(25)	-	15	400	1.3~5.5	
B-5J-BG-HV002	M	4.65	LO/(25)	-	15	400	1.3~5.5	
B-5J-BB-HV006	M	4.65	LO/(25)	-	15	400	1.3~5.5	
N-5E-GB-HV158	M	3.2	20/(20)	-	15	400	1.5~6	
N-5E-GB-HV159	M	3.2	20/(20)	-	15	400	1.5~6	
N-5J-HG-HV042	M	3.2	32/(32)	-	15	400	1.5~6	527
N-5J-HG-HV044	M	3.2	32/(32)	-	15	400	1.5~6	
C-5J-BC-HV102	M	18	LO/(102)	-	15	400	1.3~5.5	
N-5J-GB-HV160	M	3.2	20/(20)	-	15	400	1.5~6	527

Amendment 527
20015.07.24

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(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker		
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)
N-5J-GB-HV161	M	3.2	20/(20)	-	15	400	1.5~6
N-5E-BB-Z001H	TM	15	400	1.5 ~ 6	15	400	1.5~6
N-5E-GN-M003	M	32	266/(266)	-	50	500	1.5~7
N-5E-GN-M004	M	32	266/(266)	-	50	500	1.5~7
N-5E-QA-F008	TM	125	1250	5.4 ~ 36	125	1250	5.4~36
N-5E-GN-M001	M	20	192/(192)	-	30	400	1.5~6
N-5E-GN-M002	M	20	192/(192)	-	30	400	1.5~6
N-5J-BM-HV105	M	3.2	20/(20)	-	15	400	1.5~6
N-5J-BM-HV106	M	3.2	20/(20)	-	15	400	1.5~6
N-5J-BM-HV205	M	3.2	20/(20)	-	15	400	1.5~6
N-5J-BM-HV206	M	3.2	20/(20)	-	15	400	1.5~6

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Amendment 527
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(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker			
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	
N-5J-EG-FV433	M	3.2	28/(28)	-	15	400	1.5~6	
N-5J-EG-FV435	M	3.2	28/(28)	-	15	400	1.5~6	
N-5E-NH-R009C N-5E-NH-R009D	TM	80	800	1.5~10.3	100	1000	1.5~10.3	
N-5E-HG-M017	M	50	360/(360)	-	60	600	1.5~10.3	
N-5E-HG-M018	M	50	360/(360)	-	60	600	1.5~10.3	527
N-5E-ZC-K004	TM	15	400	1.5~6	15	400	1.5~6	
N-5E-ZC-K003	TM	15	400	1.5~6	15	400	1.5~6	
N-5E-ZC-Z037A	TM	20	400	1.5~6	30	400	1.5~6	
N-5E-ZC-Z037B	TM	20	400	1.5~6	30	400	1.5~6	

Amendment 527
20015.07.24

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(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker		
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)
N-5E-HG-M023	M	32	266/(266)	-	50	500	1.5~7
N-5E-HG-M024	M	32	266/(266)	-	50	500	1.5~7
N-5E-BB-Z002	TM	15	400	1.5~6	15	400	1.5~6
N-5E-NH-R009A N-5E-NH-R009B	TM	80	800	1.5~10.3	100	1000	1.5~10.3
N-5E-GN-M005	M	20	192/(192)	-	30	400	1.5~6
N-5E-GN-M006	M	20	192/(192)	-	30	400	1.5~6
N-5E-ZC-K009	M	3.2	28/(28)	-	15	400	1.5~6
N-5E-ZC-Z001	TM	30	400	1.5~6	40	400	1.5~7
N-5J-HG-HV028	M	3.2	20/(20)	-	15	400	1.5~6

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Amendment 527
20015.07.24

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CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

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(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker			
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	
N-5J-HG-LV40A	M	3.2	20/(20)		15	400	1.5~6	
N-5E-QA-F010	TM	125	1250	5.4~ 36	125	1250	5.4~36	
N-5E-QA-F009	TM	80	800	1.5~10.3	80	800	1.5~10.3	
N-5E-BG-R221	TM	30	400	1.5~6	40	400	1.5~7	
N-5E-ZC-P003	TM	15	400	1.5~6	15	400	1.5~6	
N-5E-BB-Z003	TM	15	400	1.5~6	15	400	1.5~6	527
N-5E-NH-R010D N-5E-NH-R010C	TM	80	800	1.5~10.3	100	1000	1.5~10.3	
N-5E-ZC-K005	TM	15	400	1.5~6	15	400	1.5~6	
N-5E-NH-R010B N-5E-NH-R010A	TM	80	800	1.5~10.3	100	1000	1.5~10.3	
N-5E-BB-21,47,48	TM	90	850	1.2~6.5	90	850	1.2~6.5	499

Amendment 527
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(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker		
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)
N-5E-BB-26,53,54	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-31,59,60	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-36,65,66	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-41,71,72	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-46,77,78	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-19,20,45	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-23,49,50	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-28,55,56	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-33,61,62	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-38,67,68	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-43,73,74	TM	90	850	1.2~6.5	90	850	1.2~6.5

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개정 499 - 2014.07.24

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CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 13 of 20)

(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker		
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)
N-5E-BB-1,2,22	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-5,6,27	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-9,10,32	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-13,14,37	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-17,18,42	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-24,51,52	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-7E-BB-29,57,58	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-34,63,64	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-39,69,70	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-44,75,76	TM	90	850	1.2~6.5	90	850	1.2~6.5
N-5E-BB-3,4,25	TM	90	850	1.2~6.5	90	850	1.2~6.5

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 14 of 20)

(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker			
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	
N-5E-BB-11,12,35	TM	90	850	1.2~6.5	90	850	1.2~6.5	
N-5E-BB-15,16,40	TM	90	850	1.2~6.5	90	850	1.2~6.5	499
N-5E-BB- 7,8,30	TM	90	850	1.2~6.5	90	850	1.2~6.5	
N-5E-GN-M016	M	63	640/(640)	-	100	1000	1.5~10.3	
N-5E-HG-M019	M	32	266/(266)	-	50	500	1.5~7	
N-5E-HG-M047	M	32	266/(266)	-	50	500	1.5~7	
N-5E-HG-M020	M	32	266/(266)	-	50	500	1.5~7	527
N-5E-HG-M048	M	32	266/(266)	-	40	400	1.5~7	
N-5J-GB-HV016	M	3.2	20/(20)	-	15	400	1.5~6	
N-5E-GN-M015	M	63	640/(640)	-	100	1000	1.5~10.3	

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 15 of 20)

(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker			
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	
N-5E-HG-M021	M	32	266/(266)	-	50	500	1.5~7	
N-5E-HG-M022	M	32	266/(266)	-	50	500	1.5~7	527
N-5J-GB-HV015	M	3.2	20/(20)	1.5~6	15	400	1.5~6	
N-5E-QA-F030	TM	30	400	-	30	400	1.5~6	
N-5E-BB-M001A	M	20	192/(192)	-	30	400	1.5~6	
N-5E-BB-M002A	M	20	192/(192)	-	30	400	1.5~6	493
N-5E-BB-M003A	M	20	192/(192)	-	30	400	1.5~6	
N-5E-QA-F028	TM	125	1250	5.4~36	125	1250	5.4~36	
N-5J-EG-FV431	M	3.2	28/(28)	-	15	400	1.5~6	527

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 16 of 20)

(C) 480V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker			
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	
S-5J-BM-HV305	M	3.2	20/(20)	-	15	400	1.5~6	
N-5E-BM-HV306	M	3.2	20/(20)	-	15	400	1.5~6	527
N-5E-SE-R001	TM	15	400	1.5~6	15	400	1.5~6	
N-5J-BG-HV040	M	3.2	32/(32)	-	15	400	1.5~6	493
N-5E-ZC-K002	TM	30	400	1.5~6	30	400	1.5~6	

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 17 of 20)

(D) 120V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker			
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	
N-5E-GN-M006H, 016	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-HG-M019H	TM	16	145	0.01~6.6	16	145	0.01~6.6	527
N-5E-HG-M020H	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-GN-M016H	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-HG-M047H	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-HG-M048H	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-GN-M015H	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-HG-M021H	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-HG-M022H	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-HG-M023H	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-HG-M024H	TM	16	145	0.01~6.6	16	145	0.01~6.6	

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 18 of 20)

(D) 120V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker			
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	
N-5E-GN-HZ005, 015	TM	16	145	0.01~6.6	16	145	0.01~6.6	527
A-5E-GN-M008H	TM	15	180	2~5.6	15	180	2~5.6	
A-5E-GN-M007H	TM	15	180	2~5.6	15	180	2~5.6	
B-5E-GN-M010H	TM	15	180	2~5.6	15	180	2~5.6	
B-5E-GN-M009H	TM	15	180	2~5.6	15	180	2~5.6	
N-5J-BG-HV137	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-GN-M014H	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-GN-M001H	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-GN-HZ003, 004	TM	16	145	0.01~6.6	16	145	0.01~6.6	527
N-5J-GN-HZ11,11A,14,14A,	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5J-GN-HZ12,12A,13,13A,	TM	16	145	0.01~6.6	16	145	0.01~6.6	

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 19 of 20)

(D) 120V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker		
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)
N-5J-GN-M012H	TM	16	145	0.01~6.6	16	145	0.01~6.6
N-5J-GN-M013H	TM	16	145	0.01~6.6	16	145	0.01~6.6
N-5E-SE-R002	TM	16	145	0.01~6.6	16	145	0.01~6.6
N-5E-ZC-Z001L	TM	16	145	0.01~6.6	16	145	0.01~6.6
N-5E-ZC-Z001H	TM	16	145	0.01~6.6	16	145	0.01~6.6
N-5E-ZC-Z002H	TM	16	145	0.01~6.6	16	145	0.01~6.6
N-5J-GN-MT025A,B,D,E	TM	16	145	0.01~6.6	16	145	0.01~6.6
N-5J-GN-MT025G,K,P	TM	16	145	0.01~6.6	16	145	0.01~6.6
N-5J-GN-MT025C,F,M	TM	16	145	0.01~6.6	16	145	0.01~6.6
N-5J-GN-MT026J,L,M,N	TM	16	145	0.01~6.6	16	145	0.01~6.6
B-5J-GT-RE220	TM	15	180	2~5.6	15	180	2~5.6

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APPENDIX A TABLE 17-1

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

(Sheet 20 of 20)

(D) 120V AC LOADS SUPPLIED FROM MOTOR CONTROL CENTERS

Load Tag No.	Primary Breaker				Backup Breaker			
	Breaker Type (1)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	Breaker Trip Rating (A)	Breaker Setting (Magnetic Element Only) Setting/(A)(2)(4)	Operating Time (Thermal Element) (Sec) (3)	
N-5E-GN-001H, 002	TM	16	145	0.01~6.6	16	145	0.01~6.6	
N-5E-HG-M017H	TM	16	145	0.01~6.6	16	145	0.01~6.6	527
N-5E-HG-M018H	TM	16	145	0.01~6.6	16	145	0.01~6.6	

NOTES APPLICABLES TO TABLES C AND D ONLY:

1. Explanation of Breaker Type
   TM - Thermal Magnetic
   M - Magnetic
2. The maximum operating time for instantaneous operation is 2 cycles.
3. The operating time range for the thermal - magnetic breakers is based on current six times the breaker trip rating, e.g. for a 15A breaker, the operating time is given for a current of 90A.
4. Minimum and maximum instantaneous trip range for thermal - magnetic molded case breakers.

amp. rating	Frame Type	Range(A)	Remark
15-40	125, 480, 3P	320 ~ 480	Fixed
50	125, 480, 3P	400 ~ 600	Fixed
60	125, 480, 3P	480 ~ 720	Fixed
80	125, 480, 3P	640 ~ 960	Fixed
100	125, 480, 3P	800 ~ 1200	Fixed
125	125, 480, 3P	1000 ~ 1500	Fixed
150	250, 480, 3P	1200 ~ 1800	Fixed
175	250, 480, 3P	1400 ~ 2100	Fixed
16	63, 120, 1P	80 ~ 160	Fixed

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APPENDIX A TABLE 18-1

MOTOR-OPERATED VALVES WITH THERMAL OVERLOAD PROTECTION DEVICES

(Sheet 1 of 10)

SYSTEM	VALVE No	FUNCTION
AB	HV-151	Steam generator PORV isolation
AB	HV-251	Steam generator PORV isolation
AB	HV-351	Steam generator PORV isolation
AB	HV-551	Steam generator PORV isolation
AB	HV-651	Steam generator PORV isolation
AB	HV-751	Steam generator PORV isolation
AL	HV-112	Auxiliary feedwater pump discharge header isolation
AL	HV-212	Auxiliary feedwater pump discharge header isolation
AP	HV-102	Condensate storage tank to auxiliary feedwater system
AP	HV-202	Condensate storage tank to auxiliary feedwater system
BB	HV-005	Pressurizer to pressurizer relief tank
BB	HV-006	Pressurizer to pressurizer relief tank
BB	HV-007	Pressurizer to pressurizer relief tank
BC	HV-102	RCS hot leg loop 1 isolation valve
BC	HV-101	RCS hot leg loop 1 isolation valve
BC	HV-201	RCS hot leg loop 3 isolation valve

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APPENDIX A TABLE 18-1

MOTOR-OPERATED VALVES WITH THERMAL OVERLOAD PROTECTION DEVICES

(Sheet 2 of 10)

SYSTEM	VALVE No	FUNCTION
BC	HV-202	RCS hot leg loop 3 isolation valve
BC	HV-105	RHRS to CVCS isolation valve
BC	HV-205	RHRS to CVCS isolation valve
BC	FV-602A	RHR pump A-P024 miniflow
BC	FV-602B	RHR pump B-P025 miniflow
BC	HV-5	RHR pump B-P025 suction from RWST
BC	HV-8	RHR pump A-P024 suction from RWST
BG	HV-14	CVCS charging pumps suction header isolation valve
BG	HV-15	CVCS charging pumps suction header isolation valve
BG	HV-16	CVCS charging pumps suction header isolation valve
BG	HV-17	CVCS charging pumps suction header isolation valve
BG	HV-24	Charging pump A-P091 miniflow isolation
BG	HV-25	Charging pump B-P092 miniflow isolation
BG	HV-26	Charging pump S-P093 miniflow isolation
BG	HV-30	Charging pump miniflow header isolation

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APPENDIX A TABLE 18-1

MOTOR-OPERATED VALVES WITH THERMAL OVERLOAD PROTECTION DEVICES

(Sheet 3 of 10)

SYSTEM	VALVE No	FUNCTION
BG	HV-36	Charging line safety injection isolation valve
BG	HV-37	Charging line safety injection isolation valve
BG	HV-48	Seal water return containment isolation valve
BG	HV-49	Seal water return containment isolation valve
BG	HV-32	CVCS pumps discharge header isolation valve
BG	HV-33	CVCS pumps discharge header isolation valve
BG	HV-34	CVCS pumps discharge header isolation valve
BG	HV-35	CVCS pumps discharge header isolation valve
BG	HV-50	RC pump C CVCS seal injection isolation valve
BG	HV-51	RC pump B CVCS seal injection isolation valve
BG	HV-52	RC pump A CVCS seal injection isolation valve
BG	LV-115B	CVCS charging pumps RWST suction
BG	LV-115D	CVCS charging pumps RWST suction
BG	LV-115C	Volume control tank outlet isolation
BG	LV-115E	Volume control tank outlet isolation

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APPENDIX A TABLE 18-1

MOTOR-OPERATED VALVES WITH THERMAL OVERLOAD PROTECTION DEVICES

(Sheet 4 of 10)

SYSTEM	VALVE No	FUNCTION
BG	LV-460	Letdown stop valve
BG	LV-459	Letdown stop valve
BG	HV-38	Charging line isolation valve
BG	HV-39	Charging line isolation valve
BG	HV-40	Auxiliary spray line isolation
BG	HV-1	Letdown orifice isolation
BG	HV-2	Letdown orifice isolation
BG	HV-3	Letdown orifice isolation
BG	HV-4	Letdown containment isolation valve
BG	HV-47	Letdown containment isolation valve
BG	HV-41	Excess letdown isolation valve
BG	HV-42	Excess letdown isolation valve
BG	HV-137	Excess letdown heat exchanger outlet isolation
BG	HV-27	Emergency Boration valve
BG	HV-20	Emergency Boration valve
BH	HV-22	HH SIS to boron injection tank
BH	HV-23	HH SIS to boron injection tank
BH	HV-24	HH SIS from boron injection tank
BH	HV-25	HH SIS from boron injection tank

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APPENDIX A TABLE 18-1

MOTOR-OPERATED VALVES WITH THERMAL OVERLOAD PROTECTION DEVICES

(Sheet 5 of 10)

SYSTEM	VALVE No	FUNCTION
BH	HV-11	LHSI crossover line isolation valve for hot leg recirculation
BH	HV-14	LHSI crossover line isolation valve for hot leg recirculation
BH	HV-16	LHSI cold leg injection header isolation valve
BH	HV-13	LHSI cold leg injection header isolation valve
BH	HV-18	LHSI hot leg recirculation isolation valve
BH	HV-21	HH to RCS hot leg isolation valve
BH	HV-20	HH SIS to RCS cold leg isolation valve
BH	HV-19	HH SIS to hot let recirculation valve
BH	HV-17	Alternate emergency boration path isolation valve
BH	HV-101	Containment recirculation sump A isolation valve
BH	HV-102	Containment recirculation sump A isolation valve
BH	HV-201	Containment recirculation sump B isolation valve
BH	HV-202	Containment recirculation sump B isolation valve
BH	HV-39	Accumulator tank A discharge valve

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APPENDIX A TABLE 18-1

MOTOR-OPERATED VALVES WITH THERMAL OVERLOAD PROTECTION DEVICES

(Sheet 6 of 10)

SYSTEM	VALVE No	FUNCTION
BH	HV-45	Accumulator tank B discharge valve
BH	HV-51	Accumulator tank C discharge valve
BK	HV-108	Containment spray additive eductor A
BK	HV-208	Containment spray additive eductor B
BK	HV-107	Containment spray pump A-P028 discharge valve
BK	HV-207	Containment spray pump B-P029 discharge valve
BK	HV-111	Refueling water to CS pump A
BK	HV-211	Refueling water to CS pump B
BK	HV-101	Containment spray pump A-P028 recirculation suction
BK	HV-201	Containment spray pump B-P029 recirculation suction
EF	HV-125	Train A pump P103 discharge
EF	HV-126	Train A pump P104 discharge
EF	HV-225	Train B pump P105 discharge
EF	HV-226	Train B pump P106 discharge
EF	HV-104	Train A discharge isolation valve
EF	HV-204	Train B discharge isolation valve

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APPENDIX A TABLE 18-1

MOTOR-OPERATED VALVES WITH THERMAL OVERLOAD PROTECTION DEVICES

(Sheet 7 of 10)

SYSTEM	VALVE No	FUNCTION
EG	HV-134	CCW supply to containment fan coolers train A isolation valve
EG	HV-234	CCW supply to containment fan coolers train B isolation valve
EG	HV-144	Containment fan coolers A-F007 return valve
EG	HV-141	Containment fan coolers A-F008 return valve
EG	HV-147	Containment fan coolers train A return isolation
EG	HV-244	Containment fan coolers B-F009 return valve
EG	HV-241	Containment fan coolers B-F010 return valve
EG	HV-247	Containment fan coolers train B return isolation
EG	HV-301	CCW supply to containment penetration valve
EG	HV-152	RHR heat exchanger (train A) supply isolation valve
EG	HV-252	RHR heat exchanger (train B) supply isolation valve
EG	FV-435	RCPA thermal barrier isolation valve
EG	FV-433	RCPB thermal barrier isolation valve
EG	FV-431	RCPC thermal barrier isolation valve

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APPENDIX A TABLE 18-1

MOTOR-OPERATED VALVES WITH THERMAL OVERLOAD PROTECTION DEVICES

(Sheet 8 of 10)

SYSTEM	VALVE No	FUNCTION
EG	HV-335	CCW return containment penetration valve
EG	HV-336	CCW return containment penetration valve
EG	HV-337	CCW return from thermal barrier containment isolation valve
EG	HV-338	CCW return from thermal barrier containment isolation valve
EG	HV-159	Fuel pool heat exchanger A-X060 CCW supply valve
EG	HV-259	Fuel pool heat exchanger B-X061 CCW supply valve
EG	HV-135	CCW pump A-P065 discharge to surge tank
EG	HV-235	CCW pump A-P067 discharge to surge tank
EG	HV-136	CCW pump A-P066 discharge to surge tank
EG	HV-236	CCW pump A-P068 discharge to surge tank
EG	HV-132	CCW heat exchangers outlet cross-connection valve
EG	HV-232	CCW heat exchangers outlet cross-connection valve
EG	HV-133	CCW pump suction cross-connection valve
EG	HV-233	CCW pump suction cross-connection valve

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APPENDIX A TABLE 18-1

MOTOR-OPERATED VALVES WITH THERMAL OVERLOAD PROTECTION DEVICES

(Sheet 9 of 10)

SYSTEM	VALVE No	FUNCTION
GB	HV-155	Reactor cavity cooling units isolation valve
GB	HV-154	Reactor cavity cooling units isolation valve
GG	HZ-114	Fuel building exhaust isolation valve
GG	HZ-214	Fuel building exhaust isolation valve
GG	HZ-115	Fuel building inlet vane actuator
GG	HZ-215	Fuel building inlet vane actuator
GJ	HV-111	Control room emergency air handling unit A-F022 control valve
GJ	HV-211	Control room emergency air handling unit B-F025 control valve
GL	HZ-128	ESF pump room supply isolation valve
GL	HZ-228	ESF pump room supply isolation valve
GL	HZ-129	ESF pump room supply isolation valve
GL	HZ-229	ESF pump room supply isolation valve
GT	HV-107	Low volume purge exhaust air isolation valve
GT	HV-124	High volume purge supply air handling units isolation valve

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APPENDIX A TABLE 18-1

MOTOR-OPERATED VALVES WITH THERMAL OVERLOAD PROTECTION DEVICES

(Sheet 10 of 10)

SYSTEM	VALVE No	FUNCTION
GT	HV-125	High volume purge exhaust isolation valve
GT	HV-301A	Containment hydrogen recombiner return
GT	HV-106	Containment low volume purge supply isolation valve
GT	HV-401A	Containment hydrogen recombiner return
GT	HV-209	Containment atmosphere radiation monitor supply isolation valve
GT	HV-417	Containment hydrogen recombiner system B supply isolation
GT	HV-317	Containment hydrogen recombiner system A supply isolation
HG	HV-101	Containment normal sumps isolation
HG	LV-40A	RCDT N-T025 vent to GRS isolation valve
HG	HV-102	RCDT N-T025 drain to GRS isolation valve

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