DOCKET NO. 50-245

ATTACHMENT

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 1

PROPOSED TECHNICAL SPECIFICATION CHANGES FOR
STATION ELECTRIC DISTRIBUTION SYSTEM VOLTAGES

JULY, 1980

TABLE 3.2.2 (Continued)

INSTRUMENTATION THAT INITIATES AND CONTROLS THE EMERGENCY CORE COOLING SYSTEMS

Minimum Number of Operable Inst. Channels Per Trip System (1)	Trip Function	Trip Level Setting	Remarks
1	Timer Auto Blowdown	$\leq$ 120 seconds	1 - In conjunction with low low reactor water level and high drywell pressure and LP core cooling pump interlock.
2	Containment Spray Interlock	$4.5 \leq P \leq 5.5$ Psig	1 - Prevent inadvertent operation of containment spray.
2	APR LP Core Cooling Pump Interlock	$90 \leq P \leq 110$ Psig	1 - Defer APR actuation pending confirmation of LP core cooling system operation.
2 sets of 2 (Total)	Power Available on Emergency Buses	Normal for 120 Volt undervoltage relays (Monitor Buses 5 and 6)	1 - Permissive for auto-close of emergency power source on buses. 2 - Permissive to start core spray and LPCI pumps.
2 sets of 7 for breaker position logic OR 1 out of 2 Level 1 Relays with NSST-1 out of service.	Loss of Normal Power (Level 1)	82 Volts (±1%) Secondary. Corresponds to 246 kv (71%) in the switchyard. Time delay is 6.0 sec. at 50% of rated voltage (345 kv).	1 - Initiates start of emergency power sources. 2 - Strip loads from buses. 3 - Permissive for emergency power sources to close on buses.
1(2)	Degraded Voltage (Level 2) Coincident with ECCS initiation.	112 Volts (±5V) Secondary. Corresponds to 336 KV (97%) in the switchyard. Time delay is 1.0 sec.	1 - Initiates start of emergency power sources. 2 - Strip loads from buses. 3 - Permissive for emergency power sources to close on buses.

(1) If the first column cannot be met for one of the trip systems, that system may be tripped. If the first column cannot be met for both trip systems, immediately initiate an orderly shutdown to cold conditions.

(2) Normal scheme uses redundant sets of degraded voltage relays. Two out of two channels in either set must operate to initiate a degraded voltage signal. One channel may, at times, be bypassed, leaving a one-out-of-one logic for degraded voltage sensing.

MINIMUM TEST AND CALIBRATION FREQUENCY FOR CORE COOLING INSTRUMENTATION ROD BLOCKS AND ISOLATIONS

Instrument Channel	Instrument Functional Test (2)	Calibration	Instrument Check (2)
ECCS Instrumentation			
1. Reactor Low-Low Water Level	(1)	Once/3 Months	--
2. Drywell High Pressure	(1)	Once/3 Months	--
3. Reactor Low Pressure (Pump Start)	(1)	Once/3 Months	--
4. Reactor Low Pressure (Valve Permissive)	(1)	Once/3 Months	--
5. APR LP Core Cooling Pump Interlock	(1)	Once/3 Months	--
6. Containment Spray Interlock	(1)	Once/3 Months	--
7. Loss of Normal Power Relays	Refueling Outage	Refueling Outage	--
8. Power Available Relays	(1) (5)	None	
9. Reactor High Pressure		Once/3 Months	--
10. Degraded Voltage	Refueling Outage	Refueling Outage	--
Rod Blocks			
1. APRM Downscale	(1) (3)	Once/3 Months	(1)
2. APRM Flow Variable	(1) (3)	Once/3 Months	(1)
3. IRM Upscale	(6)	(6)	(6)
4. IRM Downscale	(6)	(6)	(6)
5. RBM Upscale	(1) (3)	Once/3 Months	(1)
6. RBM Downscale	(1) (3)	Once/3 Months	(1)
7. SRM Upscale	(6)	(6)	(6)
8. SRM Detector not in Startup Position	(6)	(6)	(6)
Main Steam Line Isolation			
1. Steam Tunnel High Temperature	Refueling Outage	Refueling Outage	--
2. Steam Line High Flow	(1)	Once/3 Months	Once/Day
3. Steam Line Low Pressure	(1) (3)	Refueling Outage	Nor
4. Steam Line High Radiation	(1) (3)	Once/3 Months (4)	Once/Day

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT

3.9 AUXILIARY ELECTRICAL SYSTEM

Applicability:

Applies to the auxiliary electrical power system.

Objective:

To assure an adequate supply of electrical power during plant operation.

Specification:

A. The reactor shall not be made critical unless all of the following conditions are satisfied:

1. One 345 kv line, associated switchgear, and auxiliary startup transformer capable of automatically supplying auxiliary power.

2. Both emergency power sources are operable.

3. An additional source of power consisting of one of the following:

a. The 23 kv line, associated switchgear, shutdown transformer to supply power to the emergency 4160 volt buses.

b. One 345 kv line fully operational and capable of carrying auxiliary power to the emergency buses.

4. a. 4160 volt buses five and six are energized ($\geq$ 3646 volts) and the associated 480 volt buses are energized.

4.9 AUXILIARY ELECTRICAL SYSTEM

Applicability:

Applies to the periodic testing requirements of the auxiliary electrical system.

Objective:

Verify the operability of the auxiliary electrical system.

Specification:

A. Emergency Power Sources

1. Diesel Generator

a. The diesel generator shall be started and loaded once a month to demonstrate operational readiness. The test shall continue until the diesel engine and the generator are at equilibrium temperature at full load output. During this test, the diesel starting air compressor will be checked for operation and its ability to recharge air receivers.

b. During each refueling outage, the conditions under which the diesel generator is required will be simulated and test conducted to demonstrate that it will start and be ready to accept load within 13 seconds. This test will demonstrate the sequence of Class 1E bus de-energization, load shedding, voltage restoration, and load sequencing. Additionally, the degraded voltage/loss-of-normal power trip system will be demonstrated.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
5. All station and switchyard 24 and 125 volt batteries and associated battery chargers are operable.	c. During the monthly generator test, the diesel fuel oil transfer pumps shall be operated.
B. When the mode switch is in Run, the availability of power shall be as specified in 3.9.A, except as specified below:	2. Gas Turbine Generator
1. From and after the date that incoming power is available from only one 345 kv line, reactor operation is permissible only during the succeeding seven days unless an additional 345 kv line is sooner placed in service.	a. The gas turbine generator shall be fast started and the output breakers closed within 48 seconds once a month to demonstrate operational readiness. The test shall continue until the gas turbine and generator are at equilibrium temperature at full load output. Use of this unit to supply power to the system electrical network shall constitute an acceptable demonstration of operability.
2. From and after the date that incoming power is not available from any 345 kv line, reactor operation shall be permitted provided both emergency power sources are operating and the isolation condenser system is operable. The NRC shall be notified, within 24 hours of the precautions to be taken during this situation and the plans for restoration of incoming power. The minimum fuel supply for the gas turbine during this situation shall be maintained above 20,000 gallons.	b. During each refueling outage, the conditions under which the gas turbine-generator is required will be simulated and a test conducted to verify that it will start and be able to accept emergency loads within 48 seconds. This test will demonstrate the sequence of Class 1E bus de-energization, load shedding, voltage restoration, and load sequencing. Additionally, the degraded voltage/loss-of-normal power trip system will be demonstrated.
3. From and after the date that either emergency power source or its associated bus is made or found to be inoperable for any reason, reactor operation is permissible according to Specification 3.5.F/4.5F unless such emergency power source and its bus are sooner made operable, provided that during such time two offsite lines (345 or 23 kv) are operable.	B. Batteries 1. Station Batteries a. Every week, the specific gravity and voltage of the pilot cell and temperature of adjacent cells and overall battery voltage shall be measured.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
	b. Every three months, the measurements shall be made of voltage of each cell to nearest 0.01 volt, specific gravity of each cell and temperature of every fifth cell.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
4. From and after the date that one of the two 125 volt or 24 volt battery systems if made or found to be inoperable for any reason reactor operation is permissible only during the succeeding seven days unless such battery system is sooner made operable.	c. At every refueling outage or at 18 month intervals, the station battery shall be subjected to a performance test in accordance with the procedures described in Section 5.4 in IEEE Standard 450-1972, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Stationary Type Power Plant and Substation Lead Storage Batteries".
C. Diesel and Gas Turbine Fuel There shall be a minimum of 20,000 gallons of diesel fuel supply onsite for the diesel and a minimum of 35,000 gallons onsite for the gas turbine, except as permitted in Specification 3.9.B.2.	2. Switchyard Batteries a. Every week, the specific gravity and voltage of the pilot cell and temperature of adjacent cells and overall battery voltage shall be measured. b. Every three months, the measurements shall be made of voltage of each cell to nearest 0.01 volt, specific gravity of each cell, and temperature of every fifth cell.
	C. The quantity of gas turbine generator and diesel generator fuel shall be logged weekly and after each operation of the unit. Once a month, a sample of the diesel and gas turbine fuel shall be taken from the underground storage tanks and checked for quality.
	D. During each refueling outage, the setpoint of each of the degraded voltage sensors shall be verified. The setpoint shall correspond to an offsite source voltage of 336 kv.

3.9 Bases:

A. The objective of the auxiliary electric power availability specification is to assure that adequate power will be available to operate the emergency safeguards equipment. Adequate power can be provided by any one of the following power sources: either of the two lines of the 345 kv system, the 23 kv system, the gas turbine-generator, and the diesel generator.

This specification assures that at least two offsite and two onsite power sources will be available before the reactor is started up. In addition to assuring power source operability, all of the associated switchgear and vital equipment must be operable as specified to assure that the emergency cooling equipment can be operated, if required, from the power sources. Operating with less than 3646 volts on the 4160-volt electrical system may endanger equipments or systems at the 480-volt level. The limiting voltage for 4160-volt equipment is 3620 volts.

B. Normally both 345 kv lines will be available to provide emergency power to the plant when the reactor is operating. However, adequate power is available with one of the two 345 kv lines out of service. Therefore, reactor operation is permitted for up to seven days with one of the two 345 kv lines out of service to accommodate necessary maintenance, etc.

In the event that both 345 kv lines are out of service, continued reactor operation is permitted provided both onsite emergency power sources are operating with an adequate fuel supply. Two operational power sources provide an adequate assurance of emergency power availability under these circumstances. In addition, the isolation condenser system is required to be operable as a standby heat removal system.

Normally, both the gas turbine-generator and diesel generator are required to be operable to assure adequate emergency power with no offsite power sources. However, due to the redundancy and reliability of offsite power, one of the two emergency onsite power sources may be out of service for limited periods of time providing two offsite power sources are available during these periods.

C. Either of the two station batteries has enough capability to energize the vital buses and power the other emergency equipment. Due to the high reliability of battery systems, one of the two batteries may be out of service for up to 7 days. This minimizes the probability of unwarranted shutdowns by providing adequate time for reasonable repairs.

D. The diesel fuel supply of 20,000 gallons will supply the diesel generator with about five days of full load operation. The gas turbine generator fuel supply of 35,000 gallons is sufficient to operate the unit for at least two and one-half days considering the fuel consumption vs. load and load vs. time requirements during the postulated accident. Reference Amendment 18. Additional fuel can be supplied to the site within twelve hours.

4.9 Bases:

A. The monthly test of the diesel generator and gas turbine generator is conducted to check for equipment failures and deterioration. Testing is conducted up to equilibrium operating conditions to demonstrate proper operation at these conditions. Operation of the gas turbine generator for peaking purposes may substitute for the monthly performance check. The units will be manually started, synchronized to the bus and load picked up. Generator experience at other generating stations indicates that the testing frequency is adequate to assure a high reliability of operation should the system be required. In addition, during the test when the generator is synchronized to the bus, it is also synchronized to the off-site power source and thus, not completely independent of this source. To maintain the maximum amount of independence, a thirty-day testing interval is also desirable.

Both the diesel generator and the gas turbine generator have air compressors and air receiver tanks for starting. It is expected that the air compressors will run only infrequently. During the monthly check of the units, the receivers will be drawn down below the point at which the compressor automatically starts to check operation and the ability of the compressors to recharge the receivers. Pressure indicators are provided on each of the receivers.

Following the tests or peaking operation of the units and at least weekly, the fuel volume remaining will be checked. At the end of the monthly load test of the diesel generator, the fuel oil transfer pump will be operated to refill the day tank and to check the operation of this pump. Peaking operation shall be controlled so that major maintenance operations on the gas turbine will not be scheduled during an operating cycle.

The test of the diesel and gas turbine generators during the refueling outage will be more comprehensive in that it will functionally test the system; i.e., it will check starting and closure of breakers and sequencing of loads. The units will be started by simulation of a loss of coolant accident. In addition, a loss of normal power condition will be imposed to simulate a loss of off-site power. Operation of the degraded voltage/loss-of-normal power scheme will be checked. The timing sequence will be checked to assure proper loading in the time required. Periodic tests between refueling outages check the capability of the units to run at full load. Periodic testing of the various components plus a functional test at a refueling interval are sufficient to maintain adequate reliability.

B. Although the station and switchyard batteries will gradually deteriorate with time, the surveillance specified is that which will provide an indication of all degradation long before the battery would have insufficient capacity to meet the design load which could be placed upon it. Battery cell replacements will be made in accordance with Section 6 of IEEE Standard 450-1972, "Battery Replacement Criteria".

C. Logging the diesel and gas turbine generator fuel supply weekly and after each operation assures that the minimum fuel supply requirements will be maintained.

D. Verifying the degraded voltage setpoint will assure that the preferred offsite power supply (RSST) is tripped, under accident conditions, at that value of degraded voltage where safeguards actions can no longer be assured due to low offsite voltage.