Docket No. 50-336
B17772

Attachment 3

Millstone Nuclear Power Station, Unit No. 2

Proposed Revision to Technical Specifications
Relocation of Selected Technical Specifications Related to Refueling Operations to the Technical Requirements Manual
Marked Up Pages

July 1999

~~June 4, 1992~~ 9

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November 26, 1990

REFUELING OPERATIONS

SPENT FUEL POOL TEMPERATURE

LIMITING CONDITION FOR OPERATION

3.9.3.2 The spent fuel pool bulk temperature shall be maintained at less than or equal to 140°F.

APPLICABILITY: Whenever irradiated fuel is stored in the spent fuel pool.

ACTION:

With the above conditions not satisfied;

a. Immediate initiate actions to restore the spent fuel pool temperature to less than or equal to 140°F, and

b. Within one hour, suspend all fuel movement in the spent fuel pool, and

c. Within one hour, isolate the spent fuel pool cleanup demineralizers, and

d. At least once per 4 hours, record the spent fuel pool bulk temperature.

SURVEILLANCE REQUIREMENTS

4.9.3.2 The spent fuel pool bulk temperature shall be verified to be less than or equal to 140°F at least once per 12 hours.

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December 19, 1986

REFUELING OPERATIONS

DECAY TIME

LIMITING CONDITION FOR OPERATION

3.9.3.3 The reactor shall be maintained in MODE 5 or 6 until the most recent 1/3 core offload* in the spent fuel pool has decayed for greater than 504 hours from subcriticality.

APPLICABILITY: MODES 5 and 6 with the most recent 1/3 core offload* decayed less than 504 hours from subcriticality.

ACTION:

With the above conditions not satisfied, immediately initiate actions to restore the reactor to MODE 5 or 6.

SURVEILLANCE REQUIREMENTS

4.9.3.3 Within 24 hours prior to entry into MODE 4, verify that the most recent 1/3 core offload* has decayed for greater than 504 hours from subcriticality.

*For the purposes of this specification, the most recent 1/3 core offload is defined as the fuel assemblies discharged at the end of the most recent fuel cycle. This specification does not apply to partial mid-cycle discharges resulting from defective or damaged fuel if the total decay heat load on the spent fuel pool cooling system resulting from such a discharge is less than the total decay heat load of the spent fuel pool at 504 hours after subcriticality of the most recent 1/3 core offload.

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REFUELING OPERATIONS

COMMUNICATIONS

LIMITING CONDITION FOR OPERATION

3.9.5 Direct communications shall be maintained between the control room and personnel at the refueling station during fuel or CEA movement within the reactor pressure vessel.

APPLICABILITY: MODE 6.

ACTION:

When direct communications between the control room and personnel at the refueling station cannot be maintained, suspend all operations involving fuel or CEA movement within the reactor pressure vessel.

SURVEILLANCE REQUIREMENTS

4.9.5 Direct communications between the control room and personnel at the refueling station shall be demonstrated within one hour prior to the start of and at least once per 12 hours during fuel or CEA movement within the reactor pressure vessel.

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~~August 1, 1975~~

REFUELING OPERATIONS

CRANE OPERABILITY - CONTAINMENT BUILDING

LIMITING CONDITION FOR OPERATION

3.9.6 The containment building cranes (refueling machine) used for movement of fuel assemblies shall be OPERABLE with:

a. A minimum capacity of 1600 pounds "in the fuel only" region,

b. An overload cut off limit $\leq$ 1700 pounds "in the fuel only" region,

c. A minimum capacity of 2900 pounds "in the fuel plus hoist" region, and

d. An overload cut off limit $\leq$ 3000 pounds "in the fuel plus hoist" region.

APPLICABILITY: DURING MOVEMENT OF FUEL ASSEMBLIES.

ACTION:

With the requirements of the above specification not satisfied, suspend all crane operations involving movement of fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.9.6 The containment building cranes used for movement of fuel assemblies shall be demonstrated OPERABLE within 72 hours prior to the start of moving fuel assemblies by performing applicable load tests of at least 1600 and 2900 pounds and demonstrating applicable automatic load cut offs when the crane loads exceed 1700 and 3000 pounds.

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REFUELING OPERATIONS

CRANE TRAVEL - SPENT FUEL STORAGE POOL BUILDING

LIMITING CONDITION FOR OPERATION

3.9.7 Loads in excess of 1800 pounds, with the exception of the consolidated fuel storage box, shall be prohibited from travel over irradiated fuel assemblies in the storage pool.

APPLICABILITY: DURING ALL CRANE OPERATION.

ACTION:

With the requirements of the above specification not satisfied, place load in a safe condition.

SURVEILLANCE REQUIREMENTS

4.9.7 Crane interlocks and/or physical stops which prevent crane travel with loads in excess of 1800 pounds over irradiated fuel assemblies shall be demonstrated OPERABLE within 72 hours prior to initiation of irradiated fuel handling operations and at least once per 7 days during irradiated fuel handling operations.

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For Information Only

3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: 1) the reactor will remain subcritical during CORE ALTERATIONS, and 2) sufficient boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the accident analyses. Reactivity control in the water volume having direct access to the reactor vessel is achieved by determining boron concentration in the refueling canal. The refueling canal is defined as the entire length of pool stretching from refuel pool through transfer canal to spent fuel pool.

For the Cycle 13 mid-cycle core offload activities, the boron concentration of the water volumes in the steam generators and connecting piping may be as low as 1300 ppm. During REFUELING and/or CORE ALTERATIONS, the water volumes in the steam generators and connecting piping are stagnant and do not readily mix with the water in the reactor vessel. The water volumes in the pressurizer and connecting piping, shutdown cooling system (including reactor vessel and connecting piping), and refueling pool shall be maintained greater than 1950 ppm.

A boron dilution analysis has been performed which accounts for dilution of the shutdown cooling system with the water volumes from the steam generators and connecting piping. This analysis demonstrates that, in the unlikely event in which all of the water in the steam generators and connecting piping mixes with the water in the shutdown cooling system, the resulting shutdown cooling system boron concentration will remain greater than the required refueling boron concentration.

The surveillance requirement to verify that the boron concentration in the steam generators is greater than 1300 ppm prior to entering MODE 6 is consistent with the assumptions of the boron dilution calculation. The sample points are only located on the cold leg side of the steam generators. These sample points are representative of the water volumes in the steam generators (both hot and cold legs) and their connecting piping, based on the fact that uniform mixing of these water volumes at a boron concentration of approximately 1320 ppm had occurred prior to shutting off the reactor coolant pumps. In March 1996, the reactor coolant system was drained and subsequently refilled with water having a boron concentration greater than or equal to 1320 ppm. The boron concentration of the water in the steam generators and connecting piping is greater than 1300 ppm.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the source range neutron flux monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

3/4.9.3 DECAY TIME

The minimum requirement for reactor subcriticality prior to movement of irradiated fuel ensures that sufficient time has elapsed to allow the radioactive decay of the short-lived fission products. This decay time is consistent with the assumptions used in the accident analyses.

~~August 13, 1996~~

The requirement that the spent fuel pool bulk temperature be maintained below 140°F ensures that high water temperature will not degrade resin in the spent fuel pool demineralizers and that the temperature and humidity above the pool are compatible with personnel comfort and safety requirements. Additionally, the requirement ensures that the design temperature of the fuel pool cooling system, liner/building structures, and racks are not exceeded.

The requirement for the reactor to remain in MODE 5 or 6 until the most recent 1/3 core offload has decayed 504 hours ensures that alternate cooling is available during this time to cool the spent fuel pool should a failure occur in the spent fuel pool cooling system. The shutdown cooling (SDC) system is a high capacity system; that is, one train is sufficient to cool both the core and the spent fuel pool should a failure occur in the spent fuel pool cooling system within 504 hours from reactor shutdown.

3/4.9.4 CONTAINMENT PENETRATIONS

The requirements on containment penetration closure and OPERABILITY ensure that a release of radioactive material within containment will be restricted from leakage to the environment. The OPERABILITY and closure restrictions are sufficient to restrict radioactive material release from a fuel element rupture based upon the lack of containment pressurization potential while in the REFUELING MODE.

3/4.9.5 ~~COMMUNICATIONS~~ DELETED

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity condition during fuel or CEA movement within the reactor pressure vessel.

DELETED

3/4.9.6 ~~CRANE OPERABILITY - CONTAINMENT BUILDING~~

The OPERABILITY requirements of the cranes used for movement of fuel assemblies ensures that: 1) each crane has sufficient load capacity to lift a fuel element, and 2) the core internals and pressure vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

3/4.9.7 ~~CRANE TRAVEL - SPENT FUEL STORAGE BUILDING~~ DELETED

The restriction on movement of loads in excess of the nominal weight of a fuel assembly and CEA over irradiated fuel assemblies ensures that no more than the contents of one fuel assembly will be ruptured in the event of a fuel handling accident. Specific analysis has been performed for the drop of a consolidated fuel storage box on an intact fuel assembly. This assumption is consistent with the activity release assumed in the accident analyses.

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION

The requirement that at least one shutdown cooling loop be in operation at ≥ 1000 gpm ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification, and (3) is consistent with boron dilution analysis assumptions.

The requirement to have two shutdown cooling loops OPERABLE when the refuel pool is unavailable as a heat sink ensures that a single failure of the operating shutdown cooling loop will not result in a complete loss of decay heat removal capability. With the reactor vessel water level at or above the vessel flange, the reactor vessel pit seal installed, and a combined available volume of water in the refueling pool and refueling water storage tank in excess of 370,000 gallons, a large heat sink is readily available for core cooling. Adequate time is thus available to initiate emergency procedures to provide core cooling in the event of a failure of the operating shutdown cooling loop.

3/4.9.9 and 3/4.9.10 CONTAINMENT RADIATION MONITORING AND CONTAINMENT PURGE VALVE ISOLATION SYSTEM

The OPERABILITY of these systems ensures that the containment purge valves will be automatically isolated upon detection of high radiation levels within the containment. The OPERABILITY of these systems is required to restrict the release of radioactive material from the containment atmosphere to the environment.

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