

Docket Nos. 50-423  
B16616

Attachment 1

Millstone Nuclear Power Station, Unit No. 3

Markup

July 1997

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April 12, 1995

REFUELING OPERATIONS

BASES

3/4.9.6 REFUELING MACHINE

The OPERABILITY requirements for the refueling machine ensure that: (1) refueling machines will be used for movement of drive rods and fuel assemblies, (2) each crane has sufficient load capacity to lift a drive rod or fuel assembly, and (3) the core internals and reactor 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 AREAS

The restriction on movement of loads in excess of the nominal weight of a fuel and control rod assembly and associated handling tool over other fuel assemblies in the storage pool ensures that in the event this load is dropped: (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the safety analyses.

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

3/4.9.8.1 HIGH WATER LEVEL

BACKGROUND

The purpose of the Residual Heat Removal (RHR) System in MODE 6 is to remove decay heat and sensible heat from the Reactor Coolant System (RCS), as required by GDC 34, to provide mixing of borated coolant and to prevent boron stratification. Heat is removed from the RCS by circulating reactor coolant through the RHR heat exchanger(s), where the heat is transferred to the Reactor Plant Component Cooling Water System. The coolant is then returned to the RCS via the RCS cold leg(s). Operation of the RHR system for normal cooldown or decay heat removal is manually accomplished from the control room. The heat removal is manually accomplished from the control room. The heat removal rate is adjusted by controlling the flow of reactor coolant through the RHR heat exchanger(s) and the bypass. Mixing of the reactor coolant is maintained by this continuous circulation of reactor coolant through the RHR system.

APPENDIX CABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to a loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to boron plating out on components near the areas of the boiling activity. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant would eventually challenge the integrity of the fuel cladding, which is fission product barrier. One train of the RHR system is required to be operational in MODE 6, with the water level  $\geq$  23 ft above the top of the reactor vessel flange to prevent this challenge. The LCO does permit deenergizing the RHR pump for short durations,

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### REFUELING OPERATIONS

#### BASES

##### 3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE AREAS

The restriction on movement of loads over fuel assemblies in the storage pool ensures that in the event the load is dropped: (1) the activity release will be less than the activity release assumed in the design basis fuel handling accident, and (2) the resulting geometry will not result in a critical array.

Docket Nos. 50-423  
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Attachment 2

Millstone Nuclear Power Station, Unit No. 3

Retype

July 1997

## REFUELING OPERATIONS

### BASES

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#### 3/4.9.6 REFUELING MACHINE

The OPERABILITY requirements for the refueling machine ensure that: (1) refueling machines will be used for movement of drive rods and fuel assemblies, (2) each crane has sufficient load capacity to lift a drive rod or fuel assembly, and (3) the core internals and reactor 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 AREAS

The restriction on movement of loads over fuel assemblies in the storage pool ensures that in the event the load is dropped: (1) the activity release will be less than the activity release assumed in the design basis fuel handling accident, and (2) the resulting geometry will not result in a critical array.

#### 3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

##### 3/4.9.8.1 HIGH WATER LEVEL

###### BACKGROUND

The purpose of the Residual Heat Removal (RHR) System in MODE 6 is to remove decay heat and sensible heat from the Reactor Coolant System (RCS), as required by GDC 34, to provide mixing of borated coolant and to prevent boron stratification. Heat is removed from the RCS by circulating reactor coolant through the RHR heat exchanger(s), where the heat is transferred to the Reactor Plant Component Cooling Water System. The coolant is then returned to the RCS via the RCS cold leg(s). Operation of the RHR system for normal cooldown or decay heat removal is manually accomplished from the control room. The heat removal is manually accomplished from the control room. The heat removal rate is adjusted by controlling the flow of reactor coolant through the RHR heat exchanger(s) and the bypass. Mixing of the reactor coolant is maintained by this continuous circulation of reactor coolant through the RHR system.

###### APPLICABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to a loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to boron plating out on components near the areas of the boiling activity. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant would eventually challenge the integrity of the fuel cladding, which is fission product barrier. One train of the RHR system is required to be operational in MODE 6, with the water level  $\geq$  23 ft above the top of the reactor vessel flange to prevent this challenge. The LCO does permit deenergizing the RHR pump for short durations,