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To All FSAR Copy Holders:

The attached Receipt Acknowledgement Form was inadvertently omitted from the Amendment 2 packages. Please sign the form and return it to Carol Shaffer using the envelope provided with your Amendment 2 package.

Also included in this package are FSAR corrected pages. Please destroy pages 6.3-1/2, 6.3-5/6, and 10.4-1/2 included in your Amendment 2 FSAR package, which were incorrectly numbered. Replace them with the corrected pages attached.*

*See attached corrected insertion instructions for changes.

NOTED APR 20 1983 W.Emerson

W E Emerson

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NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
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Hartford, CT 06101

SUBJECT:

Millstone Nuclear Power Plant, Unit 3
Acknowledgement of Distribution of NRC Questions and Responses
and Amendment 2 of ER/FSAR

NRC Questions and Responses and Amendment 2 of the Millstone Nuclear Power Plant, Unit 3 Environmental Report/Final Safety Analysis Report to Copy No._________ has been received.

____
Organization Name

____
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INSERTION INSTRUCTIONS FOR AMENDMENT 2 (Cont)

Remove	Insert	Location
6.2-3/4	6.2-3/4	S 6.2
6.2-7/8	6.2-7/8	
6.2-11/12	6.2-11/12	
	6.2-12a/Blank	
6.2-21/22	6.2-21/22	
6.2-23/24	6.2-23/24	
6.2-25/26	6.2-25/26	
6.2-43/44	6.2-43/44	
6.2-45/46	6.2-45/46	
6.2-47/48	6.2-47/48	
6.2-49/50	6.2-49/50	
6.2-51/52	6.2-51/52	
6.2-53/54	6.2-53/54	
	6.2-54a/Blank	
6.2-55/56	6.2-55/56	
6.2-57/58	6.2-57/58	
6.2-81/82	6.2-81/82	
T6.2-69 (1 of 2/2 of 2)	T6.2-69 (1 of 2/2 of 2)	
6.3-5/6	6.3-5/6	S 6.3
	6.3-6a/Blank	
6.3-19/20	6.3-19/20	
Notes to F6.3-1 (1 of 18/ 2 of 18)	Notes to F6.3-1 (1 of 18/ 2 of 18)	

INSERTION INSTRUCTIONS FOR AMENDMENT 2 (Cont)

Remove	Insert	Location
9.2-17/18	9.2-17/18	
9.2-19/20	9.2-19/20	
9.2-29/30	9.2-29/30	
9.2-31/32	9.2-31/32	
	9.2-32a/Blank	
9.2-35/36	9.2-35/36	
	9.2-36a/Blank	
	VOLUME 12	
9.4-55/56	9.4-55/56	S 9.4
EP10-1/Blank	EP10-1/Blank	After Ch. 10 Tab
10.4-47/48	10.4-47/48	S 10.4
10.4-51/52	10.4-51/52	
10.4-53/54	10.4-53/54	
	10.4-54a/Blank	
	VOLUME 13	
EP11-1/2	EP11-1/2	After Ch. 11 Tab
11-iii/iv	11-iii/iv	
T11.2-1/2 (1 of 7)	T11.2-1/2 (1 of 7)	S 11.2
11.4-1/2	11.4-1/2	S 11.4
	11.4-2a/Blank	
11.4-7/8	11.4-7/8	
	11.4-8a/Blank	
T11.5-1 (1 of 2/2 of 2)	T11.5-1 (1 of 2/2 of 2)	S 11.5

Accumulator gas pressure is monitored by indicators and alarms. The operator can take action as required to maintain plant operation within the requirements of the technical specification addressing accumulator operability.

6.3.2.2.2 Tanks

Refueling Water Storage Tank (RWST)

The RWST is used to provide a sufficient supply of borated water to the safety injection, charging, residual heat removal, during the injection mode of ECCS operation. All valves between the RWST and the safety injection system are normally aligned and open, or immediately receive an SIS to effect proper position and alignment to assure an immediate supply of water to the safeguards equipment when required. Redundant level indicators and alarms are provided with readouts on the main control board to:

1. Maintain the level within the minimum and maximum technical specification range

2. Allow the operator to complete switchover from the injection to recirculation phase

3. Indicate when the tank is empty

A further discussion of the RWST level indications is provided in Section 6.3.5.4.

The RWST supplies water to quench spray pumps (Section 6.2.2). | 2

The RWST also provides borated water for filling the refueling cavity for refueling operations.

6.3.2.2.3 Pumps

ECCS Pumps

Pump characteristic curves are shown on Figures 6.3-3, 6.3-4, and 6.3-5 with pump power requirements given in Table 6.3-1.

Available and required net positive suction head for ECCS pumps are shown in Table 6.3-1. The safety intent of Regulatory Guide 1.1 is met by the design of the ECCS such that adequate net positive suction head (NPSH) is provided to system pumps. In addition to considering the static head and suction line pressure drop, the calculation of available NPSH in the recirculation mode assumes that the vapor pressure of the liquid in the sump is equal to the containment pressure. This assures that the actual available net positive suction head is always greater than the calculated net positive suction head.

Residual Heat Removal Pumps

The (RHS) pumps are started automatically on receipt of an SIS signal. The pumps deliver water to the RCS from the RWST during the injection phase. Each pump is a single stage vertical position centrifugal pump.

A minimum flow bypass line is provided for the pumps to recirculate and return the pump discharge fluid to the pump suction downstream of the RHS heat exchangers should these pumps be started with their normal flow paths blocked. Once flow greater than 1,000 gpm is established to the RCS, the bypass line is automatically closed. This line prevents deadheading of the pumps and permits pump testing during normal operation.

The limiting NPSH available when pumping from the RWST, occurs for pump runout flow.

The available NPSH values for this case are:

Q440.4 RHS Pump A: 38.0 ft

2 RHS Pump B: 40.5 ft

The required NPSH for normal and runout flow conditions are given in Table 5.4-8.

The RHS pumps are discussed further in Section 5.4.7. A pump performance curve is given on Figure 6.3-3.

The pumps have a self-contained mechanical seal which is normally cooled by the component cooling water system. However, after a LOCA, cooling water will not be supplied or required, because the pumps will be pumping water having a maximum temperature of 50°F. The RHS pumps are not utilized in the recirculation phase.

Centrifugal Charging Pumps

In the event of an accident, the charging pumps are started automatically on receipt of an SIS and are automatically aligned to take suction from the RWST during injection. During recirculation, suction is provided from the containment recirculation pump discharge.

The charging pumps deliver flow to the RCS at the prevailing RCS pressure. Each centrifugal charging pump is a multistage centrifugal diffuser design (barrel-type casing) with vertical suction and discharge nozzles. The pump lubricating oil coolers are cooled by the charging pumps seal cooling subsystem (Section 9.2.2.4).

A minimum flow bypass line is provided on each pump discharge to recirculate flow to the pump suction after cooling via the seal water heat exchanger during normal plant operation. The minimum flow bypass line contains two valves in series which close on receipt of the SIS. This signal also closes the valves to isolate the normal charging line and volume control tank and opens the charging pump/refueling water storage tank suction valves to align the high

1. Loss of power (LOP)

2. Safety injection signal (SIS)

3. Containment depressurization actuation signal (CDA) 2

4. Two of four Low-Low water level signals in any one steam generator

The turbine-driven steam generator auxiliary feedwater pump starts automatically on loss of power or when there are two of four Low-Low water level signals in any two of four steam generators.

The steam generator auxiliary feedwater pumps start automatically or can be started manually from the main control board. In addition, the pumps can be started manually from the auxiliary shutdown panel (Section 7.4.3.1).

The auxiliary feedwater pump turbine drive receives steam from the main steam system (Section 10.3.2) piping through the steam generator auxiliary feedwater pump turbine steam supply header. The source of steam will not be interrupted by a loss of ac power (station blackout). When the turbine driven pump is started, it will initially be supplied with 990 psia steam. As the reactor cools and the steam pressure drops below 600 psia, the turbine drive speed decreases. However, sufficient pump capacity will be available until the steam pressure drops to 125 psia (reactor coolant temperature 350°F), at which condition the residual heat removal system is placed into service (Section 5.4.7) and the auxiliary feedwater system is manually secured.

Each motor-driven steam generator auxiliary feedwater pump receives power from a separate redundant emergency electrical bus.

Each auxiliary feedwater pump when operating recirculates a specified flow back to the DWST. The pumps are sized to supply the required flow to the steam generator plus this minimum recirculation. The turbine-driven pump requires 90 gpm recirculation and each motor-driven pump requires 45 gpm recirculation. This recirculation is continuous, eliminating the need for redundant recirculation controls normally required to ensure reliability of pumps which operate intermittently. Cooling water, required for pump and turbine bearing oil cooling, is supplied from the first stage casing of each pump. This provides a guaranteed source of cooling water under all conditions.

Each auxiliary feedwater pump normally takes suction through a separate supply line directly from the DWST. The DWST, sized at 340,000 total usable gallons, has sufficient capacity to satisfy the design basis of the auxiliary feedwater system. Makeup is provided to the DWST from the water treating system (Section 9.2.3).

An additional source of water (200,000 gallons) is provided to each auxiliary feedwater pump suction by the condensate storage tank

(Section 9.2.6). This source is not safety related and, therefore, is not considered available for safety related purposes. The normally closed air-operated valve connecting the condensate storage tank and each auxiliary feedwater pump suction is under administrative control.

The service water system is available as a long term safety grade source of auxiliary feedwater for the steam generators. Before the auxiliary feedwater pumps can take suction from the service water system, spool pieces must be added to connect the service water system to the auxiliary feedwater system. These spool pieces are provided, in lieu of permanent piping, to preclude inadvertant discharging of service water to the steam generators.

A connection from the domestic water system to the DWST fill line is provided to satisfy the requirement that auxiliary feedwater be available to support 72 hours of hot standby followed by a subsequent cooldown in the event of damaging fires. A removable spool piece must be placed in line prior to use of the domestic water system. During this activity water is available in the DWST and the condensate storage tank.

Feedwater from the steam generator auxiliary feedwater pumps is pumped to each steam generator through normally open control valves. Flow is monitored in each line connecting to the feedwater system (Section 10.4.2). Each control valve is manually adjusted from the control room as dictated by the steam generator water level and auxiliary feedwater flow rate. The control valves can also be manually adjusted from the auxiliary shutdown panel. In the event of a loss of power, these valves will remain open. The control valves will be equipped with handwheels and may be adjusted by hand.

Auxiliary feedwater flow to the steam generators is limited by flow venturis located in each auxiliary feedwater line. These venturis are sized to cavitate in order to maintain the minimum required flows to the intact steam generators and to prevent runout flow to a depressurized steam generator.

The auxiliary feedwater is discharged to the steam generators through a connection in each main feedwater line inside the containment structure and downstream of the main feedwater stop-check valves. This will prevent loss of auxiliary feedwater, should a main feedwater line rupture upstream of the main feedwater stop-check valve.

The design parameters for the auxiliary feedwater pumps are listed in Table 10.4-4.

10.4.9.3 Safety Evaluation

Each motor-driven steam generator auxiliary feedwater pump receives power from one of the emergency ac buses. One pump is available at all times in the event of the loss of one emergency bus. The turbine-driven pump is sufficiently sized to be used for residual