

MAIN COOLANT SYSTEM

SAFETY VALVES - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.2 At least the following safety and/or relief valves shall be OPERABLE;

- a. A minimum of one pressurizer code safety valve shall be OPERABLE with a lift setting of 2485 psig +3%, -3% or 2560 psig +3%, -3%.
- b. The Main Coolant System (MCS) pressurizer Power-Operated Relief Valve (PORV) PR-SOV-90 shall be OPERABLE in the low pressure mode whenever MCS temperature is $\leq 324^{\circ}\text{F}$.
- c. Shutdown Cooling System (SCS) Safety Valves SV-204 and SV-205 shall be OPERABLE whenever MCS temperature is $\leq 300^{\circ}\text{F}$.

APPLICABILITY: MODES 4 and 5.

ACTION:

- a. With no pressurizer code safety valve OPERABLE, immediately suspend all operations involving positive reactivity changes and place the Shutdown Cooling System into operation.
- b. With PR-SOV-90 inoperable and MCS temperature between 300°F and 324°F :
 1. Within 8 hours, either;
 - a. Raise the MCS temperature to $> 324^{\circ}\text{F}$, or
 - b. Lower the MCS temperature to $\leq 300^{\circ}\text{F}$ and place the SCS safety valves into operation by:
 1. Opening SC-MOV-551, 552, 553, and 554; and
 2. Verifying that the safety valves are lined up to discharge to either the Low Pressure Surge Tank (LPST) or the Primary Drain Collecting Tank (PDCT); and
 2. Restore PR-SOV-90 to OPERABLE status within 7 days; or
 3. Within the next 8 hours, depressurize and vent the MCS to the atmosphere, the LPST, or the PDCT.

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Amendment No. 59, 60, 85

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EMERGENCY CORE COOLING SYSTEMS

ECCS SUBSYSTEMS

LIMITING CONDITION FOR OPERATION

3.5.2 The ECCS subsystems shall be OPERABLE with:

- a. Three OPERABLE independent ECCS safety injection subsystems with each subsystem comprised of:
 1. One OPERABLE high pressure safety injection pump,
 2. One OPERABLE low pressure safety injection pump,
 3. An OPERABLE flow path capable of taking suction from the safety injection tank on a safety injection signal.
- b. An OPERABLE ECCS recirculation subsystem with an OPERABLE flow path capable of taking suction from the containment sump and recirculating to the safety injection header.
- c. An OPERABLE ECCS long term hot leg injection subsystem with an OPERABLE flow path capable of taking suction from the ECCS safety injection subsystem and discharging to the Main Coolant System #4 hot leg.

APPLICABILITY: MODES 1, 2, 3, 4* and 5*

ACTION:

- a. With one ECCS safety injection subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in at least HOT SHUTDOWN with Main Coolant pressure < 1000 psig within the next 12 hours.
- b. In the event the ECCS is actuated and injects water into the Main Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.6 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. The provisions of Specification 3.0.3 are not applicable.

*Main coolant pressure \geq 1000 psig.

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS

4.5.3.1* The ECCS subsystems shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.5.2.

4.5.3.2 The above specified HPSI and LPSI pumps shall be verified to be inoperable at least once per 12 hours whenever MCS temperature is $\leq 324^{\circ}\text{F}$ by determining that the associated power supply breakers are open and locked in the racked-out position or are removed from the cubicle.

4.5.3.3 The following valves shall be verified to be in the indicated positions at least once per 12 hours whenever MCS temperature is $\leq 324^{\circ}\text{F}$, the reactor vessel head is bolted on and both pressurizer code safety valves are installed as specified above.

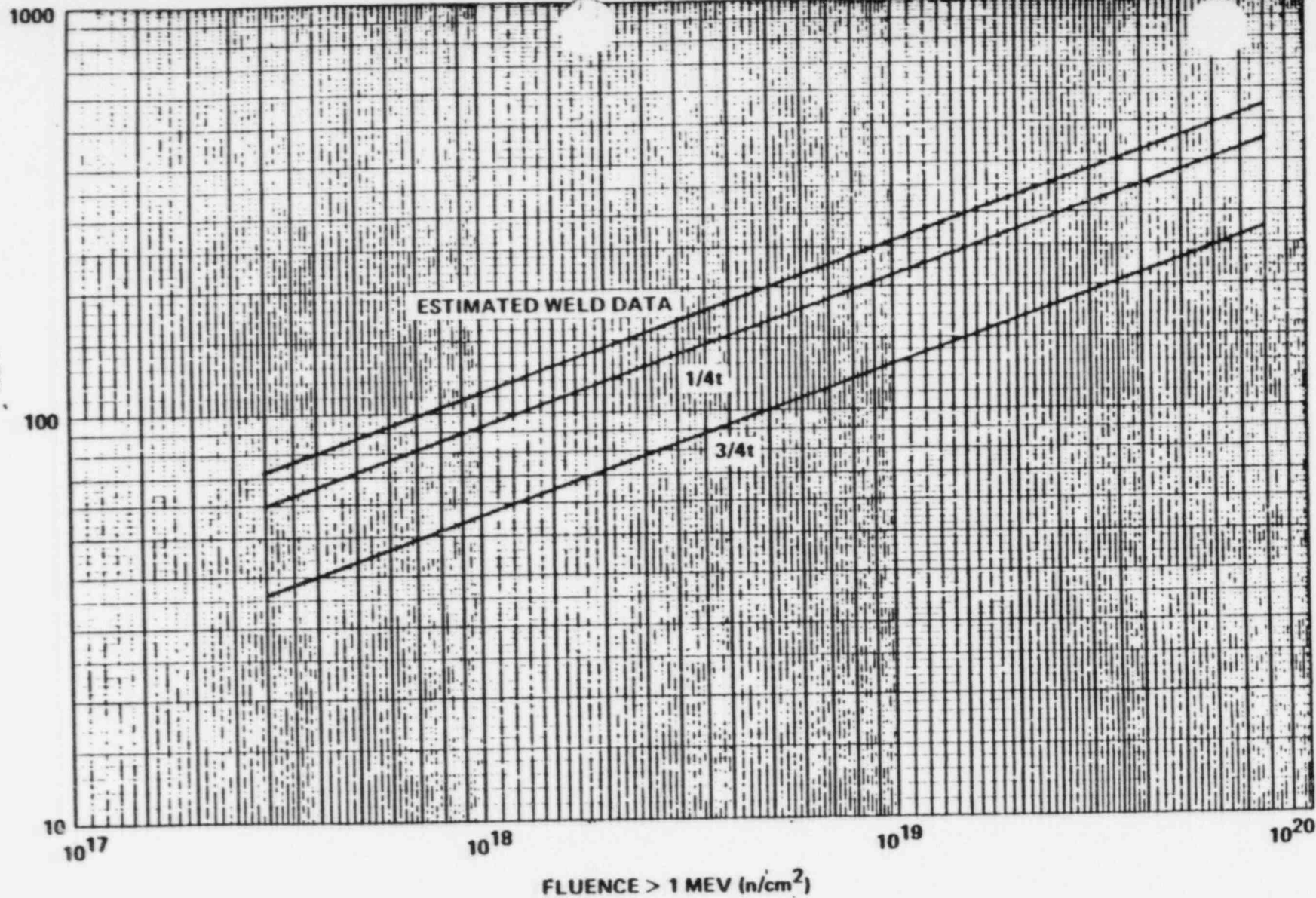
<u>Valve Number</u>	<u>Valve Position</u>
CS-MOV-536	Closed
CS-MOV-537	Closed
CS-MOV-538	Closed
CS-MOV-539	Closed
SI-MOV-22	Closed
SI-MOV-23	Closed
SI-MOV-24	Closed
SI-MOV-25	Closed
CS-MOV-532	Open

*Main coolant pressure < 1000 psig but ≥ 300 psig.

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SHIFT IN RT_{NDT} (°F)



SHIFT IN RT_{NDT} AS A FUNCTION OF VESSEL FLUENCE FOR WELD METAL, 1/4t AND 3/4t

BASES FIGURE B3/4 4-2

3/4.5 EMERGENCY CORE COOLING SYSTEMS

BASES

3/4.5.1 ACCUMULATOR

The OPERABILITY of the accumulator ensures that a sufficient volume of borated water will be immediately forced into the reactor core through each of the cold legs in the event the Main Coolant System pressure falls below the pressure of the accumulator. This initial surge of water into the core provides the initial cooling mechanism during large Main Coolant System pipe ruptures.

The limits on accumulator volume, boron concentration and pressure ensure that the assumptions used for accumulator injection in the accident analysis are met. A minimum useable water volume of 700 cubic feet require accumulator water volume to be at least 850 cubic feet.

The limits for operation with the accumulator inoperable for any reason except an isolation valve closed or pressurization system inoperable minimizes the time exposure of the plant to a LOCA event occurring concurrently which may result in unacceptable peak cladding temperatures. If a closed isolation valve cannot be immediately opened, the full capability of the accumulator is not available and prompt action is required to place the reactor in a MODE where this capability is not required.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

The OPERABILITY of three independent ECCS safety injection subsystems, the recirculation subsystem, and the long term hot leg injection subsystem ensures that sufficient emergency core cooling capability will be available in the event of a LOCA assuming the loss of one safety injection subsystem. Two safety injection subsystems operating in conjunction with the accumulator are capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes ranging from the double ended break of the largest Main Coolant System cold leg pipe downward. In addition, the safety injection subsystems, the recirculation subsystem and the long term hot leg injection subsystem provide long term core cooling and boron mixing capability during the accident recovery period.