LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.5.F Minimum Low Pressure Cooling Availability	4.5.F Minimum Low Pressure Cooling Availability
1. The following low pressure ECCS subsystems shall be OPERABLE when irradiated fuel is in the reactor vessel and the reactor is in the Cold Condition except when the reactor vessel head is removed, the spent fuel storage pool gates are removed, water level is at least 458 inches above reactor pressure vessel instrument zero and no work is being done with the potential for draining the reactor vessel: a. Two Core Spray (CS) subsystems with each subsystem comprised of: (1) Two OPERABLE motor driven pumps, and (2) Piping and valves capable of taking suction from the required water source and transferring the water through a spray sparger above the core to the reactor vessel. OR b. One CS subsystem comprised of the equipment specified in 3.5.F.1.a above, and one Low Pressure Coolant Injection subsystem comprised of: (1) One OPERABLE motor driven pump, and (2) Piping and valves capable of taking suction from the required water source and transferring the water to the reactor vessel.	1. At least once per 12 hours, verify for each required Low Pressure Coolant Injection (LPCI) subsystem that the suppression pool water level is at least 11.0 feet. 2. At least once per 12 hours, verify for each required Core Spray (CS) subsystem: (a) Suppression pool water level is at least 11.0 feet, or (b) Condensate storage tank water level is at least 17.3 feet.* 3. At least once per month, verify for each required CS and LPCI subsystem that the piping is filled with water from the pump discharge valve to the injection valve. 4. At least once per month, verify for each required CS and LPCI subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position.**

* Only one required CS subsystem may take credit for this option during operations with a potential for draining the reactor vessel.

** One LPCI subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.

3.5.E BASES (Cont'd.)

With one ADS valve known to be incapable of automatic operation, four valves remain operable to perform their ADS function. However, since the ECCS Loss-of-Coolant Accident analysis for small line breaks assumed that all five ADS valves were operable, reactor operation with one ADS valve inoperable is only allowed to continue for seven (7) days provided that the HPCI system is verified to be operable and that the actuation logic for the (remaining) four ADS valves is verified to be operable (see 4.5 Bases).

F. Minimum Low Pressure Cooling Availability

The purpose of Specification F is to assure that adequate core cooling capability is available while the reactor is in the Cold Condition. The long term cooling analyses following a design basis LOCA demonstrates that only one low pressure ECCS subsystem is required, post-LOCA, to maintain adequate reactor vessel water level in the event of an inadvertent vessel draindown. It is therefore reasonable to assume, based on engineering judgment, that while the reactor is in the Cold Condition one low pressure ECCS subsystem can maintain adequate reactor vessel water level. To provide redundancy, a minimum of two low pressure ECCS subsystems are required to be OPERABLE while the reactor is in the Cold Condition. ECCS subsystems are not required to be OPERABLE with the reactor in the Cold Condition with the spent fuel storage pool gates removed, the water level maintained at least 458 inches above reactor pressure vessel instrument zero, and no work is being done with the potential for draining the reactor vessel. This provides sufficient coolant inventory to allow operator action to terminate the inventory loss prior to fuel uncovery in case of an inadvertent draindown.

G. Maintenance of Filled Discharge Pipe

If the discharge piping of the core spray, LPCI subsystem, HPCI, and RCIC are not filled, a water hammer can develop in this piping when the pump and/or pumps are started. If a water hammer were to occur at the time at which the system were required, the system would still perform its design function. However, to minimize damage to the discharge piping and to ensure added margin in the operation of these systems, this Technical Specification requires the discharge lines to be filled whenever the system is in an operable condition.

4.5.K Minimum Critical Power Ratio (MCPR) - Surveillance Requirement

At core thermal power levels less than or equal to 25%, the reactor will be operating at minimum recirculation pump speed and the moderator void content will be very small. For all designated control rod patterns which may be employed at this point, operating plant experience indicated that the resulting MCPR value is in excess of requirements by a considerable margin. With this low void content, any inadvertent core flow increase would only place operation in a more conservative mode relative to MCPR. During initial start-up testing of the plant, a MCPR evaluation will be made at 25% thermal power level with minimum recirculation pump speed. The MCPR margin will thus be demonstrated such that future MCPR evaluation below this power level will be shown to be unnecessary. The daily requirement for calculating MCPR above 25% rated thermal power is sufficient since power distribution shifts are very slow when there have not been significant power or control rod changes. The requirement for calculating MCPR when a limiting control rod pattern is approached ensures that MCPR will be known following a change in power or power shape (regardless of magnitude) that could place operation at a thermal limit.

4.5.L MCPR Limits for Core Flows Other Than Rated

A flow dependent MCPR limit, MCPR(F), is necessary to assure that the safety limit MCPR is not violated during recirculation flow increase events. The design basis flow increase event is a slow-power increase event which is not terminated by scram, but which stabilizes at a new core power corresponding to the maximum possible core flow. Flow runout events are analyzed along a constant xenon flow control line assuming a quasi steady state heat balance.

The flow dependent MCPR limit, MCPR(F), is provided in the CORE OPERATING LIMITS REPORT. The MCPR(F) is independent of the rated flow limit provided in Specification 3.5.K.2 and 3.5.K.3. To verify applicability of this curve to PBAPS, recirculation flow runout events were analyzed with a PBAPS specific model at a typical mid cycle exposure condition. These flow runout events were simulated along the Maximum Extended Load Line Limit rod line tc the maximum core flow runout value of 105%. The results of the analyses indicated that application of the MCPR(F) curve will preclude a violation of the MCPR safety limit in the event of a recirculation flow runout. The MCPR(F) curve is cycle independent.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
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** One LPCI subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.

3.5.E BASES (Cont'd.)

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The purpose of Specification F is to assure that adequate core cooling capability is available while the reactor is in the Cold Condition. The long term cooling analyses following a design basis LOCA demonstrates that only one low pressure ECCS subsystem is required, post-LOCA, to maintain adequate reactor vessel water level in the event of an inadvertent vessel draindown. It is therefore reasonable to assume, based on engineering judgment, that while the reactor is in the Cold Condition one low pressure ECCS subsystem can maintain adequate reactor vessel water level. To provide redundancy, a minimum of two low pressure ECCS subsystems are required to be OPERABLE while the reactor is in the Cold Condition. ECCS subsystems are not required to be OPERABLE with the reactor in the Cold Condition with the spent fuel storage pool gates removed, the water level maintained at least 458 inches above reactor pressure vessel instrument zero, and no work is being done with the potential for draining the reactor vessel. This provides sufficient coolant inventory to allow operator action to terminate the inventory loss prior to fuel uncovery in case of an inadvertent draindown.

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