

3.0 LIMITING CONDITIONS FOR OPERATION

D. Control Rod Accumulators

Control rod accumulators shall be operable in the Startup, Run, or Refuel modes except as provided below.

If a control rod with an inoperable accumulator is inserted "full-in" and either its directional control valves are electrically disarmed or it is hydraulically isolated, it shall not be considered to have an inoperable accumulator.

1. In the Startup or Run Mode, a rod accumulator may be inoperable provided that no other control rod within two control rod cells in any direction has a:
 - (a) Inoperable accumulator, or
 - (b) Directional control valve electrically disarmed while in a non-fully inserted position.

3.3/4.3

4.0 SURVEILLANCE REQUIREMENTS

D. Control Rod Accumulators

Once per 12 hours check the status in the control room of the required Operable accumulator pressure and level alarms.

Bases 3.3/4.3 (Continued):

The scram times for all control rods will be determined during each operating cycle. The weekly control rod exercise tests serves as a periodic check against deterioration of the control rod system and also verifies the ability of the control rod drive to scram since if a rod can be moved with drive pressure, it will scram because of higher pressure applied during scram. The frequency of exercising the control rods under the conditions of two or more control rods out of service provides even further assurance of the reliability of the remaining control rods.

The occurrence of scram times within the limits, but significantly longer than the average, should be viewed as an indication of a systematic problem with control rod drives especially if the number of drives exhibiting such scram times exceeds six, the allowable number of inoperable rods.

D. Control Rod Accumulators

Requiring no more than one inoperable accumulator within two control rod cells in any direction is in accordance with the banked position withdrawal sequence (BPWS) analysis. An equivalent way to view this arrangement is that only one rod may be inoperable within a 5 x 5 square control rod cell array centered on the rod with the inoperable accumulator. This spacing requirement reduces the consequences of a rod drop event while the reactor is at low power (< 10%). At reactor pressures in excess of 800 psig, even those control rods with inoperable accumulators will be able to meet required scram insertion times due to the action of reactor pressure. In addition, they may be normally inserted using the control-rod-drive hydraulic system.

E. Reactivity Anomalies

During each fuel cycle excess operating reactivity varies as fuel depletes and as any burnable poison in supplementary control is burned. The magnitude of this excess reactivity is indicated by the integrated worth of control rods inserted into the core, referred to as the control rod inventory in the core. As fuel burnup progresses, anomalous behavior in the excess reactivity may be detected by comparison of actual rod inventory at any base equilibrium core state to predicted rod inventory at that state. Rod inventory predications can be normalized to actual initial steady state rod patterns to minimize calculational uncertainties. Experience with other operating BWR's indicates that the control rod inventory should be predictable to the equivalent of one per cent in reactivity.

3.0 LIMITING CONDITIONS FOR OPERATION

B. Core Monitoring

During core alterations two SRM's shall be operable, one in and one adjacent to any core quadrant where fuel or control rods are being moved. For an SRM to be considered operable, the following conditions shall be satisfied:

1. The SRM shall be inserted to the normal operating level. (Use of special moveable, dunking type detectors during initial fuel loading and major core alterations is permissible as long as the detector is connected into the normal SRM circuit.)
2. The SRM shall have a minimum of 3 CPS with all rods fully inserted in the core except when both of the following conditions are fulfilled:
 - a. No more than two fuel assemblies are present in the core quadrant associated with the SRM,
 - b. While in core, these fuel assemblies are in locations adjacent to the SRM.

C. Fuel Storage Pool Water Level

Whenever irradiated fuel is stored in the fuel storage pool, the pool water level shall be maintained at a level of greater or equal to 33 feet.

- D. The reactor shall be shutdown for a minimum of 24 hours prior to movement of fuel within the reactor.

4.0 SURVEILLANCE REQUIREMENTS

B. Core Monitoring

Prior to making any alterations to the core while more than two fuel assemblies are present in any reactor quadrant, the SRM's shall be functionally tested and checked for neutron response. Thereafter, the SRM's will be checked daily for response.

C. Fuel Storage Pool Water Level

Whenever irradiated fuel is stored in the fuel storage pool the pool level shall be recorded daily.

Bases 3.10/4.10:

A. Refueling Interlocks

During refueling operations, the reactivity potential of the core is being altered. It is necessary to require certain interlocks and restrict certain refueling procedures such that there is assurance that inadvertent criticality does not occur.

To minimize the possibility of loading fuel into a cell containing no control rod, it is required that all control rods are fully inserted when fuel is being loaded into the reactor core. This requirement assures that during refueling the refueling interlocks, as designed, will prevent inadvertent criticality. The core reactivity limitation of Specification 3.3 limits the core alterations to assure that the resulting core loading can be controlled with the reactivity control system and interlocks at any time during shutdown or the following operating cycle.

Addition of large amounts of reactivity to the core is prevented by operating procedures, which are in turn backed up by refueling interlocks on rod withdrawal and movement of the refueling platform. When the mode switch is in the "Refuel" position, interlocks prevent the refueling platform from being moved over the core if a control rod is withdrawn and fuel is on a hoist. Likewise, if the refueling platform is over the core with fuel on a hoist, control rod motion is blocked by the interlocks. With the mode switch in the refuel position only one control rod can be withdrawn.

For a new core the dropping of a fuel assembly into a vacant fuel location adjacent to a withdrawn control rod does not result in an excursion or a critical configuration, thus adequate margin is provided.

B. Core Monitoring

The SRM's are provided to monitor the core during periods of station shutdown and to guide the operator during refueling operations and station startup. Requiring two operable SRM's, one in and one adjacent to any core quadrant where fuel or control rods are being moved, assures adequate monitoring of that quadrant during such alterations. Requiring a minimum of 3 counts per second whenever criticality is possible provides assurance that neutron flux is being monitored. Criticality is considered to be impossible if there are no more than two assemblies in each quadrant and if these are in locations adjacent to the SRM. If it is not possible to achieve criticality, the SRM or dunking type detector count rate is permitted to be less than 3 counts per second and these detectors need not be demonstrated to be operable.

C. Fuel Storage Pool Water Level

To assure that there is adequate water to shield and cool the irradiated fuel assemblies stored in the pool, a minimum pool water level is established. The minimum water level of 33 feet is established because it would be a significant change from the normal level (37'9") and well above a level to assure adequate cooling.