

## DEFINITIONS

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### CORE ALTERATION

1.12 CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components within the reactor vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

### SHUTDOWN MARGIN

1.13 SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full length control element assemblies (shutdown and regulating) are fully inserted except for the single assembly of highest reactivity worth which is assumed to be fully withdrawn.

### IDENTIFIED LEAKAGE

1.14 IDENTIFIED LEAKAGE shall be:

- a. Leakage into closed systems, such as pump seal or valve packing leaks that are captured, and conducted to a sump or collecting tank, or
- b. Leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be PRESSURE BOUNDARY LEAKAGE.

### UNIDENTIFIED LEAKAGE

1.15 UNIDENTIFIED LEAKAGE shall be all leakage which is not IDENTIFIED LEAKAGE or CONTROLLED LEAKAGE.

### PRESSURE BOUNDARY LEAKAGE

1.16 PRESSURE BOUNDARY LEAKAGE shall be leakage (except steam generator tube leakage) through a non-isolable fault in a Reactor Coolant System component body, pipe wall or vessel wall.

### CONTROLLED LEAKAGE

1.17 CONTROLLED LEAKAGE shall be the water flow from the reactor coolant pump seals.

### 3/4.9 REFUELING OPERATIONS

#### 3/4.9.1 BORON CONCENTRATIONS

##### LIMITING CONDITION FOR OPERATION

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3.9.1 The boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained sufficient to ensure that the more restrictive of following reactivity conditions is met:

- a. Either a  $K_{\text{eff}}$  of 0.95 or less, or
- b. A boron concentration of greater than or equal to 1720 ppm.

APPLICABILITY: MODE 6.

<p>NOTE Only applicable to the refueling canal when connected to the Reactor Coolant System</p>
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##### ACTION:

With the requirements of the above specification not satisfied, within 15 minutes suspend all operations involving CORE ALTERATIONS or positive reactivity changes and initiate and continue boration at greater than or equal to 40 gpm of boric acid solution at or greater than the required refueling water storage tank concentration (ppm) until  $K_{\text{eff}}$  is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 1720 ppm, whichever is the more restrictive.

##### SURVEILLANCE REQUIREMENTS

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4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

- a. Removing or unbolting the reactor vessel head, and
- b. Withdrawal of any full length CEA in excess of 3 feet from its fully inserted position within the reactor pressure vessel.

4.9.1.2 The boron concentration of all filled portions of the reactor coolant system and the refueling canal shall be determined by chemical analysis at least once per 72 hours.

4.9.1.3 Deleted

## REFUELING OPERATIONS

### INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

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3.9.2 Two source range neutron flux monitors shall be OPERABLE, each with continuous visual indication in the control room and one with audible indication in the containment, and control room.

APPLICABILITY: MODE 6.

#### ACTION:

- a. With one of the above required monitors inoperable, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity additions.
- b. With both of the above required monitors inoperable, immediately initiate action to restore one monitor to OPERABLE status. Additionally, determine that the boron concentration of the Reactor Coolant System satisfies the requirements of LCO 3.9.1 within 4 hours and at least once per 12 hours thereafter.

#### SURVEILLANCE REQUIREMENTS

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4.9.2 Each source range neutron flux monitor shall be demonstrated OPERABLE by performance of:

- a. Deleted
- b. A CHANNEL CALIBRATION at least once per 18 months\*
- c. A CHANNEL CHECK and verification of audible counts at least once per 12 hours.

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\*Neutron detectors are excluded from CHANNEL CALIBRATION.

## REFUELING OPERATIONS

### WATER LEVEL - REACTOR VESSEL

#### LIMITING CONDITION FOR OPERATION

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3.9.11 As a minimum, 23.0 feet of water shall be maintained over the top of the reactor vessel flange.

APPLICABILITY: During CORE ALTERATIONS, except during latching and unlatching of control rod drive shafts.

During movement of irradiated fuel assemblies within containment.

#### ACTION:

With the water level less than that specified above, immediately suspend CORE ALTERATIONS and immediately suspend movement of irradiated fuel assemblies within containment.

#### SURVEILLANCE REQUIREMENTS

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4.9.11 The water level shall be determined to be within its minimum depth at least once per 24 hours.

### 3/4.9 REFUELING OPERATIONS

#### BASES

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### 3/4.9 REFUELING OPERATIONS

The ACTION requirements to immediately suspend various activities (CORE ALTERATIONS, fuel movement, CEA movement, etc.) do not preclude completion of the movement of a component to a safe position.

#### 3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that:

- 1) the reactor will remain subcritical during CORE ALTERATIONS, and
- 2) sufficient boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the accident analyses. Reactivity control in the water volume having direct access to the reactor vessel is achieved by determining boron concentration in the refueling canal. The refueling canal is defined as the entire length of pool stretching from refuel pool through transfer canal to spent fuel pool.

The applicability is modified by a Note. The Note states that the limits on boron concentration are only applicable to the refueling canal when this volume is connected to the Reactor Coolant System (RCS). When the refueling canal is isolated from the RCS, no potential path for boron dilution exists. Prior to re-connecting portions of the refueling canal to the RCS, Surveillance 4.9.1.2 must be met. If any dilution activity has occurred while the refueling canal was disconnected from the RCS, this surveillance ensures the correct boron concentration prior to communication with the RCS.

#### 3/4.9.2 INSTRUMENTATION

The OPERABILITY of the source range neutron flux monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.