

## REACTIVITY CONTROL SYSTEMS

### 3/4.1.3 MOVABLE CONTROL ASSEMBLIES

#### GROUP HEIGHT

#### LIMITING CONDITION FOR OPERATION

3.1.3.1 All rods (shutdown and control) shall be OPERABLE and positioned within  $\pm 12$  steps (indicated position) of their group step counter demand position.

APPLICABILITY: MODES 1\* and 2\*

#### ACTION:

The ACTION to be taken is based on the cause of inoperability of the control rods as follows:

<u>CAUSE OF INOPERABILITY</u>	<u>ACTION</u>	
	<u>One Rod</u>	<u>More Than One Rod</u>
a) Immovable as a result of excessive friction or mechanical interference or known to be untrippable.	(1)	(1)
b) Misaligned from its group step counter demand height or from any other rod in its group by more than $\pm 12$ steps (indicated position).	(4)	(2)
c) Inoperable due to a rod control urgent failure alarm or other electrical problem in the rod control system, but presumed trippable.	(3)	(3)

ACTION 1 - Determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in HOT STANDBY within 6 hours.

ACTION 2 - Be in HOT STANDBY within 6 hours.

ACTION 3 - Restore the inoperable rods to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours.

\* See Special Exceptions 3.10.2 and 3.10.4.

## REACTIVITY CONTROL SYSTEMS

### LIMITING CONDITION FOR OPERATION

ACTION 4 - POWER OPERATION may continue provided that within 2 hours either:

1. The rod is restored to OPERABLE status within the above alignment requirements, or
2. The rod is declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. POWER OPERATION may then continue provided that:
  - a) An analysis of the potential ejected rod worth is performed within 3 days and the rod worth is determined to be  $\leq 0.98\% \Delta k$  at zero power and  $\leq 0.21\% \Delta k$  at RATED THERMAL POWER for the remainder of the fuel cycle, and
  - b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours, and
  - c) The THERMAL POWER level is reduced to  $\leq 75\%$  of RATED THERMAL POWER WITHIN one hour and within the next 4 hours the high neutron flux trip setpoint is reduced to  $\leq 85\%$  of RATED THERMAL POWER, or
  - d) The remainder of the rods in the group with the inoperable rod are aligned to within  $\pm 12$  steps of the inoperable rod within one hour while maintaining the rod sequence and insertion limits of Figures 3.1-1 and 3.1-2; the THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.5 during subsequent operation.

### SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each rod shall be determined to be within the group demand limit by verifying the individual rod positions at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then verify the group positions at least once per 4 hours.

4.1.3.1.2 Each rod not fully inserted shall be determined to be OPERABLE by movement of at least 10 steps in any one direction at least once per 31 days.

## REACTIVITY CONTROL SYSTEMS

### BASES

#### 3/4.1.2 BORATION SYSTEMS (Continued)

With the RCS temperature below 200°F, one injection system is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity change in the event the single injection system becomes inoperable.

The boron inventory in the RWST or BAT is sufficient (a) to compensate for an inadvertent positive reactivity addition to the Reactor Coolant System of approximately 1 percent  $\Delta k/k$  while in MODE 5 at 200°F; and (b) to maintain a constant RCS reactivity while the temperature is decreased from 200°F to 80°F. In MODE 6, the BAT inventory is sufficient to increase the boron concentration to compensate for an inadvertent positive reactivity addition of approximately 1 percent  $\Delta k/k$  while in the refueling mode. These conditions require 8494 usable gallons of 7000-ppm borated water from the boric acid storage tanks or 23,432 usable gallons of 2000-ppm borated water from the refueling water storage tank.

The required boric acid storage tank volume of 8494 gallons has been increased to a value greater than the minimum level indicating range (741 gallons), to 9235 gallons. The required RWST volume of 23,432 gallons must be increased to account for nonusable volume due to tank geometry, letdown and vortexing considerations (78,000 gallons), to 101,432 gallons (rounded to 102,000 gallons).

#### 3/4.1.3 MOVABLE CONTROL ASSEMBLIES

The specifications of this section ensure that (1) acceptable power distribution limits are maintained, (2) the minimum SHUTDOWN MARGIN is maintained, and (3) the potential effects of a rod ejection accident are limited. OPERABILITY of the control rod position indicators is required to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits.

For purposes of determining compliance with Specification 3.1.3.1, any immovability of a control rod invokes ACTION Statement 3.1.3.1.a. Before utilizing ACTION Statement 3.1.3.1.c, the rod control urgent failure alarm must be illuminated or an electrical problem must be detected in the rod control system. The rod may then be presumed trippable if the rod was demonstrated OPERABLE during the last performance of Surveillance Requirement 4.1.3.1.2 and met the rod drop time criteria of Specification 3.1.3.3 during the last performance of Surveillance Requirement 4.1.3.3.

## REACTIVITY CONTROL SYSTEMS

### BASES

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#### 3/4.1.3 MOVABLE CONTROL ASSEMBLIES (Continued)

The ACTION statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original criteria are met. Misalignment of a rod requires measurement of peaking factors or a restriction of THERMAL POWER; either of these restrictions provides assurance of fuel rod integrity during continued operation. The reactivity worth of a misaligned rod is limited for the remainder of the fuel cycle to prevent exceeding the assumptions used in the accident analysis for a rod ejection accident.

The maximum rod drop time restriction is consistent with the assumed rod drop time used in the accident analyses. Measurement with  $T_{avg} \geq 550^{\circ}\text{F}$  and with all reactor coolant pumps operating ensures that the measured drop times will be representative of insertion times experienced during a reactor trip at operating conditions.

Control rod positions and OPERABILITY of the rod position indicators are required to be verified on a nominal basis of once per 12 hours with more frequent verifications required if an automatic monitoring channel is inoperable. These verification frequencies are adequate for assuring that the applicable LCO's are satisfied.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

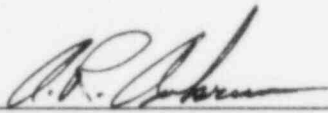
In the Matter of	)	
	)	
PORTLAND GENERAL ELECTRIC COMPANY,	)	Docket 50-344
THE CITY OF EUGENE, OREGON, AND	)	Operating License NPF-1
PACIFIC POWER & LIGHT COMPANY	)	
	)	
(TROJAN NUCLEAR PLANT)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of License Change Application 133 to the Operating License for Trojan Nuclear Plant, dated November 1, 1985, have been served on the following by hand delivery or by deposit in the United States mail, first class, this 1st day of November 1985:

Mr. Lynn Frank, Director  
State of Oregon  
Department of Energy  
Labor & Industries Bldg, Rm 102  
Salem OR 97310

Mr. Robert L. King  
Chairman of County Commissioners  
Columbia County Courthouse  
St. Helens OR 97051

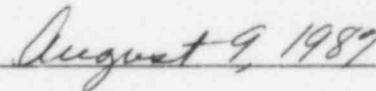
  
For G. A. Zimmerman, Manager  
Nuclear Regulation Branch  
Nuclear Safety & Regulation

Subscribed and sworn to before me this 1st day of November 1985.



  
Notary Public of Oregon

My Commission Expires:

  
August 9, 1987