

TR 3.1 REACTIVITY CONTROL SYSTEMS

TR 3.1.1 Boration Systems Flow Paths, Shutdown

- TR 3.1.1 One of the following boron injection flow paths shall be OPERABLE and capable of being powered from an OPERABLE emergency power source:
- a. A flow path from an OPERABLE boric acid storage system, through the boric acid transfer pump, through a charging pump to the Reactor Coolant System (RCS), or
  - b. A flow path from an OPERABLE RWST through a charging pump to the RCS.

APPLICABILITY: MODES 4, 5, and 6.

-----NOTE-----  
For MODE 4, Technical Specification LCO 3.0.4.b is not applicable to ECCS high head (centrifugal charging) subsystem.  
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ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Boration Systems flow path OPERABILITY requirements not met.	A.1 Suspend CORE ALTERATIONS.	Immediately
<u>OR</u>	<u>AND</u>	
Boration Systems flow path not capable of being powered by an OPERABLE emergency power source.	A.2 Suspend positive reactivity additions.	Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.1.1.1	<p>-----NOTE-----                      Only required if the flow path from the boric acid storage tanks is required OPERABLE.                      -----</p> <p>Verify temperature of the areas containing flow path components from the boric acid tanks is <math>\geq 63^{\circ}\text{F}</math>.</p>	12 hours
TSR 3.1.1.2	Verify, for the required OPERABLE flow path, that each manual, power operated, or automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days

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TR 3.1.2 Boration Systems Flow Paths, Operating

TR 3.1.2 Two of the following three boron injection flow paths shall be OPERABLE:

- a. One flow path from the boric acid tanks, through a boric acid transfer pump, through a charging pump to the Reactor Coolant System (RCS).
- b. Two flow paths from the Refueling Water Storage Tank (RWST), through charging pumps to the RCS.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required flow path inoperable.	A.1 Restore required flow path to OPERABLE status.	72 hours
	<u>OR</u>	
	A.2.1 Be in MODE 3.	78 hours
	<u>AND</u>	
	A.2.2 Borate to a SDM equivalent to $\geq 1\% \Delta k/k$ at 200°F.	78 hours
	<u>AND</u>	
	A.2.3 Restore required path to OPERABLE status.	246 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4.	6 hours

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.1.2.1	<p>-----NOTE----- Only required if the flow path from the boric acid tanks is required OPERABLE. -----</p> <p>Verify temperature of the areas containing portions of the required flow path from the boric acid tanks is <math>\geq 63^{\circ}\text{F}</math>.</p>	12 hours
TSR 3.1.2.2	Verify, for the required OPERABLE flow paths, each manual, power operated or automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	31 days
TSR 3.1.2.3	Demonstrate that each automatic valve in the flow path actuates to its correct position on an actual or simulated actuation signal.	18 months
TSR 3.1.2.4	Verify that the flow path from the boric acid tanks delivers $\geq 35$ gpm to the RCS.	18 months

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TR 3.1.3 Charging Pump, Shutdown

TR 3.1.3 One charging pump in the boron injection flow path required by TR 3.1.1 shall be OPERABLE and capable of being powered from an OPERABLE emergency power source.

APPLICABILITY: MODES 4, 5, and 6.

-----NOTE-----  
For MODE 4, Technical Specification LCO 3.0.4.b is not applicable to ECCS high head (centrifugal charging) subsystem.  
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ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required charging pump inoperable.	A.1 Suspend CORE ALTERATIONS.	Immediately
<u>OR</u>	<u>AND</u>	
Required charging pump not capable of being powered by an OPERABLE emergency power source.	A.2 Suspend positive reactivity additions.	Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.1.3.1 Verify required charging pump's developed head at the test flow point is $\geq$ the required developed head.	In accordance with Inservice Testing Program

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TR 3.1.4 Charging Pumps, Operating

TR 3.1.4 Two charging pumps shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required charging pump inoperable.	A.1 Restore required charging pump to OPERABLE status.	72 hours
	<u>OR</u>	
	A.2.1 Be in MODE 3.	78 hours
	<u>AND</u>	
B. Required Action and associated Completion Time of Condition A not met.	A.2.2 Borate to a SDM equivalent to $\geq 1\% \Delta k/k$ at 200°F.	78 hours
	<u>AND</u>	
	A.2.3 Restore required charging pump to OPERABLE status.	246 hours
	B.1 Be in MODE 4.	6 hours

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.1.4.1	Verify required charging pump's developed head at the test flow point is $\geq$ the required developed head.	In accordance with Inservice Testing Program

TR 3.1 REACTIVITY CONTROL SYSTEMS

TR 3.1.5 Borated Water Sources, Shutdown

TR 3.1.5 One of the following borated water sources shall be OPERABLE as required by TR 3.1.1:

- a. A Boric Acid Storage System, or
- b. The Refueling Water Storage Tank (RWST).

APPLICABILITY: MODES 4, 5, and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required borated water source inoperable.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u> A.2 Suspend positive reactivity additions.	Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. TSR 3.1.5.1, TSR 3.1.5.2 and TSR 3.1.5.3 are only required to be performed if the RWST is the required borated water source.
  2. TSR 3.1.5.4, TSR 3.1.5.5 and TSR 3.1.5.6 are only required to be performed if the Boric Acid Storage System is the required borated water source.
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SURVEILLANCE		FREQUENCY
TSR 3.1.5.1	<p>-----NOTE----- Only required when ambient air temperature is &lt; 60°F. -----</p> <p>Verify RWST solution temperature is <math>\geq 60^{\circ}\text{F}</math>.</p>	24 hours
TSR 3.1.5.2	Verify RWST boron concentration is $\geq 3,100$ ppm.	7 days
TSR 3.1.5.3	Verify RWST borated water volume is $\geq 62,900$ gallons.	7 days
TSR 3.1.5.4	Verify Boric Acid Tank (BAT) solution temperature is $\geq 63^{\circ}\text{F}$ .	24 hours
TSR 3.1.5.5	Verify BAT boron concentration is $\geq 6,120$ ppm and $\leq 6,990$ ppm.	7 days
TSR 3.1.5.6	Verify BAT borated water volume is $\geq 5,300$ gallons.	7 days

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TR 3.1.6 Borated Water Sources, Operating

TR 3.1.6 The following borated water sources shall be OPERABLE as required by TR 3.1.2:

- a. A Boric Acid Storage System, and
- b. The Refueling Water Storage Tank (RWST).

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required Boric Acid Storage System inoperable.	A.1 Restore Boric Acid Storage System, to OPERABLE status.	72 hours
	<u>OR</u>	
	A.2.1 Be in MODE 3.	78 hours
	<u>AND</u>	
	A.2.2 Borate to a SDM equivalent to $\geq 1\% \Delta k/k$ at 200°F.	78 hours
	<u>AND</u>	
	A.2.3 Restore Boric Acid Storage System to OPERABLE status.	246 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4.	6 hours

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. RWST boron concentration not within limits.  <u>OR</u>  RWST borated water temperature not within limits.	C.1 Restore RWST to OPERABLE status.	8 hours
D. RWST inoperable for reasons other than Condition C.	D.1 Restore RWST to OPERABLE status.	1 hour
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Be in MODE 3  <u>AND</u>  E.2 Be in MODE 4 with one or more RCS cold leg temperatures $\leq 310^{\circ}\text{F}$ .	6 hours  12 hours

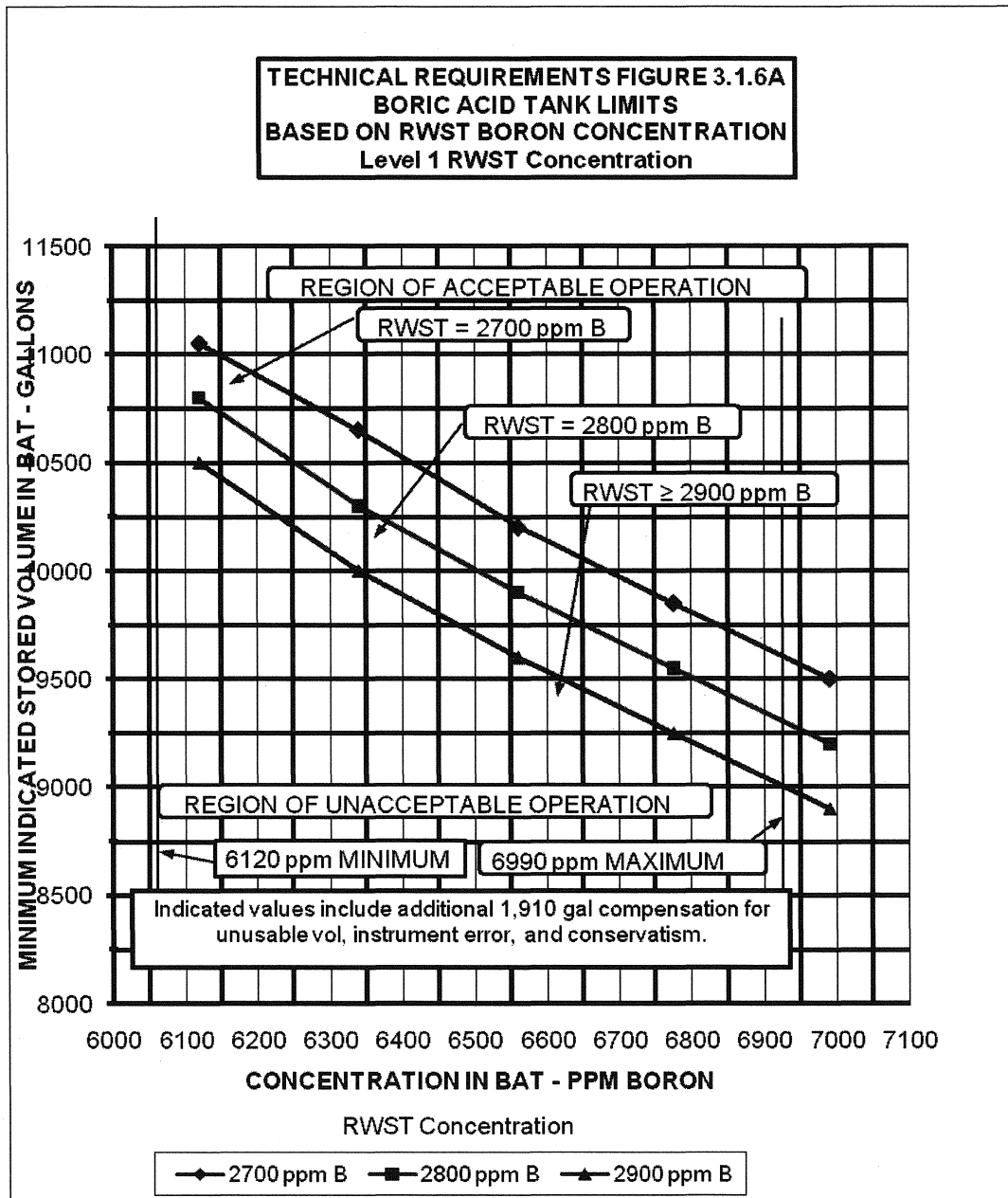
TECHNICAL SURVEILLANCE REQUIREMENTS

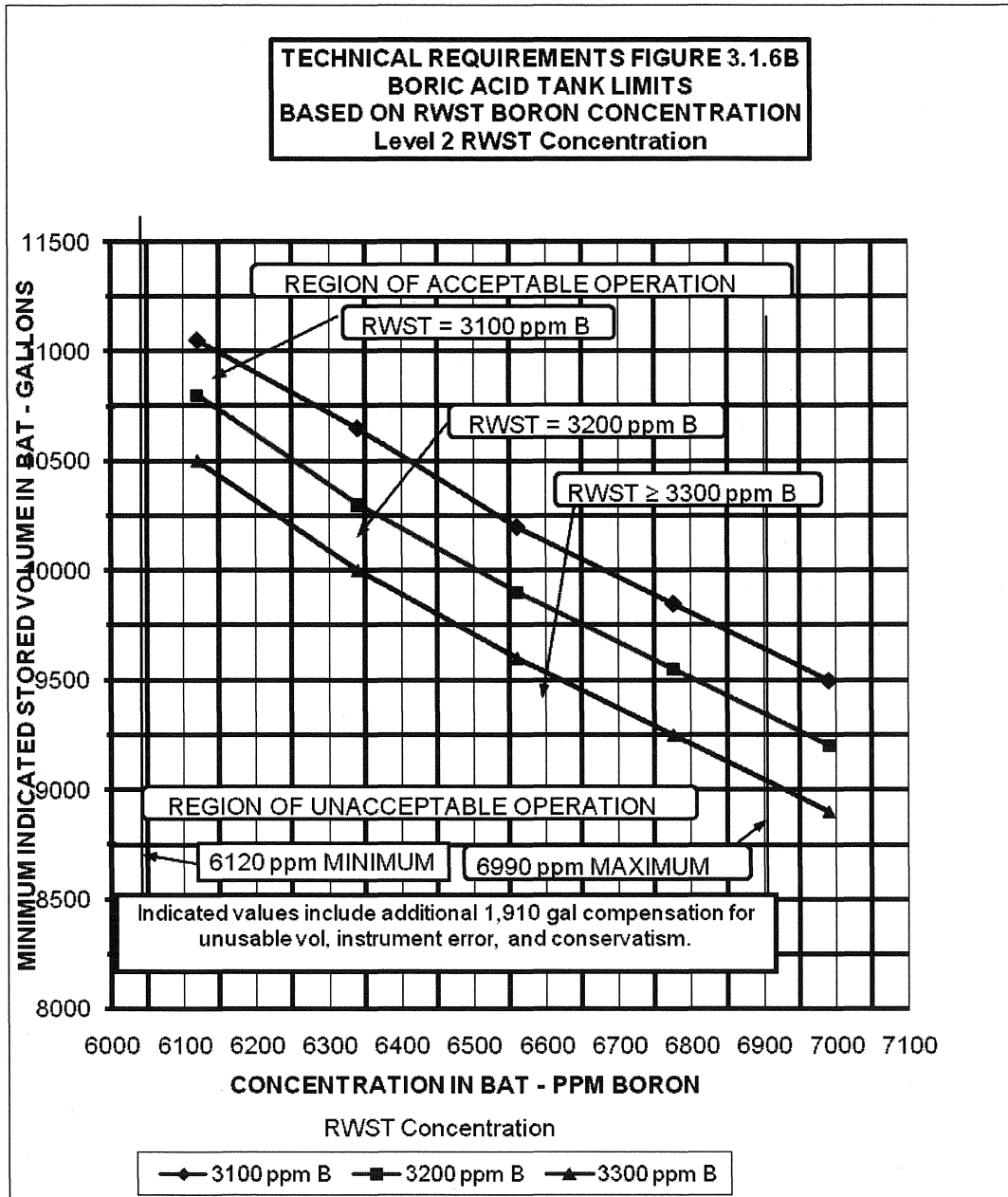
SURVEILLANCE	FREQUENCY
TSR 3.1.6.1 -----NOTE----- Only required when outside air temperature is $< 60^{\circ}\text{F}$ or $> 105^{\circ}\text{F}$ . ----- Verify RWST solution temperature is $\geq 60^{\circ}\text{F}$ and $\leq 105^{\circ}\text{F}$ .	24 hours
TSR 3.1.6.2 Verify RWST boron concentration is $\geq 3,100$ ppm and $\leq 3,300$ ppm.	7 days

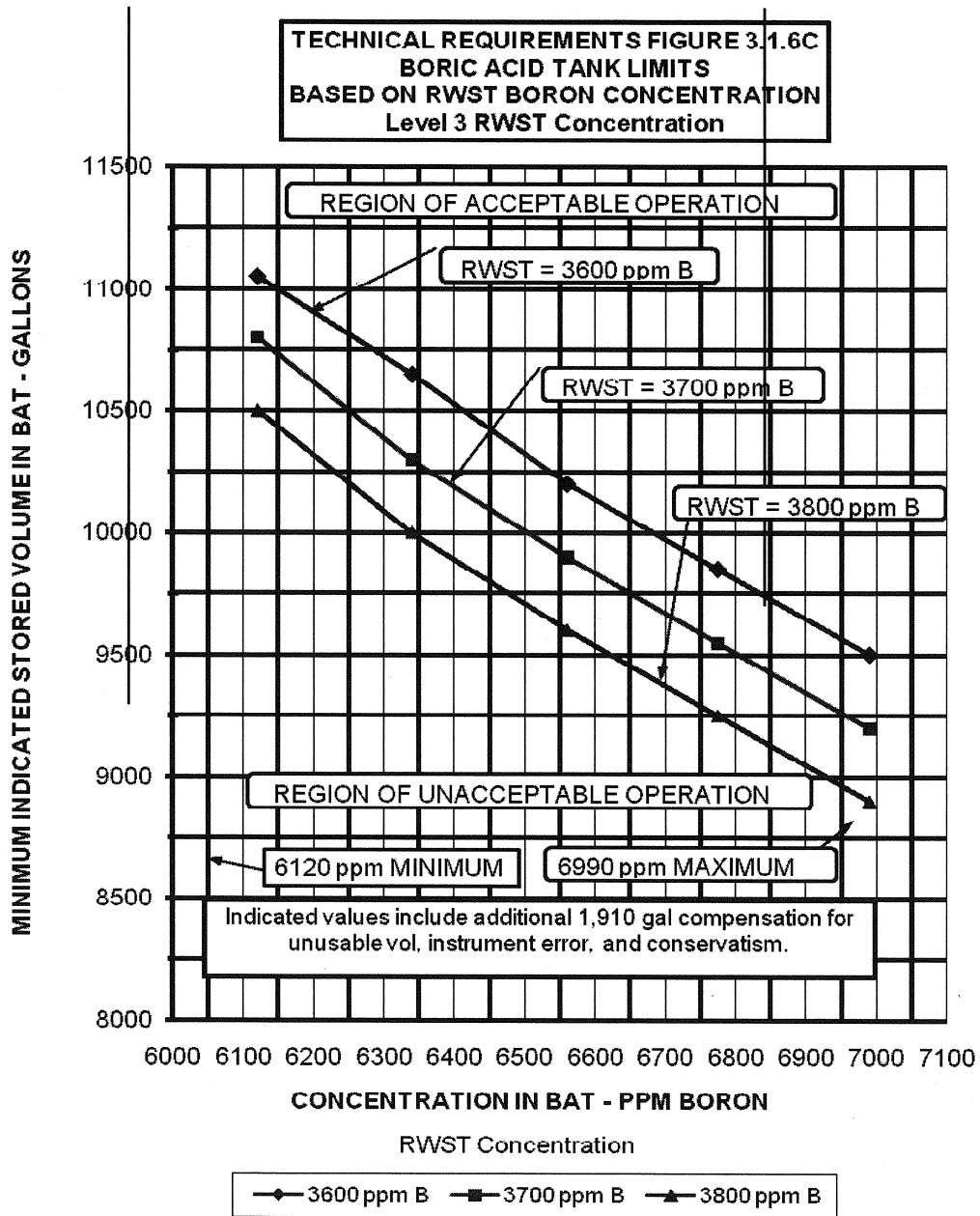
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TECHNICAL SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.1.6.3	Verify RWST borated water volume is $\geq 370,000$ gallons.	7 days
TSR 3.1.6.4	-----NOTE----- Only required if the BAT is required OPERABLE. -----  Verify Boric Acid Tank (BAT) solution temperature is $\geq 63^{\circ}\text{F}$ .	24 hours
TSR 3.1.6.5	-----NOTE----- Only required if the BAT is required OPERABLE. -----  Verify BAT boron concentration is in accordance with Figures 3.1.6A, 3.1.6B, and 3.1.6C.	7 days
TSR 3.1.6.6	-----NOTE----- Only required if the BAT is required OPERABLE. -----  Verify BAT borated water volume is in accordance with Figures 3.1.6A, 3.1.6B, and 3.1.6C.	7 days







TR 3.1 REACTIVITY CONTROL SYSTEMS

TR 3.1.7 Position Indication System, Shutdown

TR 3.1.7            The group demand position indicators shall be OPERABLE and capable of determining within  $\pm 2$  steps the demand position for each shutdown or control rod that is not fully inserted.

APPLICABILITY:    MODES 3, 4, and 5, when the reactor trip breakers are closed.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more group demand position indicators inoperable.	A.1      Open reactor trip breakers.	Immediately

TECHNICAL SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.1.7.1      Determine that each group demand position indicator is OPERABLE by movement of the associated shutdown or control rod 10 steps in any one direction.	Within 4 hours after closing the reactor trip breakers if not completed within previous 31 days.  <u>AND</u>  31 days thereafter