

Kewaunee Nuclear Power Plant

TITLE: Boric Acid Tank Level  
Instrument Test

SURVEILLANCE PROCEDURE

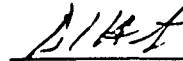
DATE: JAN 31 1984

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### 1.0 PLANT INITIAL CONDITIONS

This test may be performed at any plant power level.

### 2.0 PRECAUTIONS

- 2.1 This test may be performed on only one level instrument channel at a time. When one channel is being tested, the remaining channels must be in operation.
- 2.2 If any boric acid tank level alert is actuated during this test, except for the channel under test, the test must be terminated and the channel returned to the normal conditions.
- 2.3 When testing the level instrumentation of a boric acid tank the boric acid tank selector switch must be placed to the opposite tank position. This will select the operable boric acid tank on standby for Safety Injection System (SIS).
- 2.4 All steps in this procedure are to be performed in sequence. The procedure must be completed for the individual channel, prior to testing another channel.
- 2.5 If the "as found" value exceeds the required tolerance when testing a level channel, the Shift Supervisor must be notified immediately. This is basis for test failure and administrative action must be initiated by the Shift Supervisor prior to any instrumentation calibration. See data sheet for the required limits.

### 3.0 LIMITING CONDITIONS FOR OPERATION

There are no specific limiting conditions of operation associated with this SP. The Technical Specifications, section 3.2, should be referred to for operational status of the CVCS.

### 4.0 PROCEDURE

The data sheets must be completed as each step and/or substep is completed.

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- 4.1 On Mechanical Control Console C, verify or position BORIC ACID TANK SELECTOR switch (46328) to the boric acid tank position whose instrument loops are not being tested.

TABLE A

TANK	A	B
Channel	106	102
	172	171
	190	189
	196	197

- 4.2 Verify that the following annunciators are off:

- a. BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)
- b. BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)
- c. BORIC ACID TANK 1A LEVEL HIGH (4701713)
- d. BORIC ACID TANK 1B LEVEL HIGH (4701723)
- e. BORIC ACID TANK 1A LEVEL LOW (4701714)
- f. BORIC ACID TANK 1B LEVEL LOW (4701724)

- 4.3 On the applicable rack, for the channel under test, connect voltmeters to the applicable boric acid tank low and high level alarm terminals:

CHANNEL	RACK	TERMINALS
106	1 SA	L-9 and L-10 (Low)
		L-11 and L-12 (High)
172	RCS2	S-3 and S-4 (Low)
		S-5 and S-6 (High)
190	CVCS1	L-9 and L-10 (Low)
		L-11 and L-12 (High)
196	B-2	F-1 and F-2 (Low)
		F-4 and F-5 (High)
102	RCS2	S-9 and S-10 (Low)
		S-11 and S-12 (High)
171	1 SA	L-3 and L-4 (Low)
		L-5 and L-6 (High)
189	CVCS1	L-3 and L-4 (Low)
		L-5 and L-6 (High)
197	B-2	G-1 and G-2 (Low)
		G-4 and G-5 (High)

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- 4.4 On the applicable rack, Test Point Panel, for the channel under test, connect precision readout meters to the applicable test points.

CHANNEL	RACK	TEST POINT JACKS
106	1 SA	TP/LQ 106
172	RCS2	TP/LQ 172
190	CVCS1	TP/LQ 190
196	B-2	TP/LQ 196
102	RCS 2	TP/LQ 102
171	1 SA	TP/LQ 171
189	CVCS 1	TP/LQ 189
197	B-2	TP/LQ 197

- 4.5 Open the test panel cover on the rack for the channel under test. Verify that PROCESS PROTECT RACK \* CHANNEL TEST (47014\*) is on in the Control Room.

- \* I, 13 for channels 189, 190  
 II, 14 for channels 102, 172  
 III, 23 for channels 196, 197  
 IV, 24 for channels 106, 171

- 4.6 On the applicable rack for the channel under test, connect an analog simulator to test jacks and put test switches in test position and place the Bi-stable output test SW for LO-LO level for the channel under test to the test (up) position.

CHANNEL	RACK	SIG INJECT SWITCH	LO LO SWITCH
106	1 SA	L 106	L 106C
172	RCS2	L 172	L 172C
190	CVCS1	L 190	L 190C
196	B-2	L 196	L 196C
102	RCS2	L 102	L 102C
171	1 SA	L 171	L 171C
189	CVCS1	L 189	L 189C
197	B-2	L 197	L 197C

- 4.7 Verify that the following annunciators are operable during the performance of steps 4.8 and 4.9:

- BORIC ACID TANK 1A or 1B LEVEL LOW-LOW (4701715) or (4701725)
- BORIC ACID TANK 1A or 1B LEVEL HIGH (4701713) or (4701723)
- BORIC ACID TANK 1A or 1B LEVEL LOW (4701714) or (4701724)

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- 4.8 Increase the signal until the low-low level resets as shown by its bistable proving light and the low level bistables reset as shown by movement of the voltmeter connected to the alarm terminal. Continue increasing the signal until the high level bistable trips as shown by the voltmeter connected to the high level alarm bistables. Record the precision readout meter values on the data sheet.
- 4.9 Decrease the signal until the high level alarm bistable resets as indicated by the voltmeter in step 4.3. Continue decreasing the signal until the low and low-low alarm bistables trip as shown by the voltmeter of step 4.3 and bistable proving lamp. Record the precision readout meter values on the data sheet.
- 4.10 Disconnect all the voltmeters and precision readout meters connected in steps 4.3 and 4.4.
- 4.11 Return the test jack switch to its normal position and remove the analog simulator and return the Bi-stable output test switch for the channel under test to the normal (down) position.
- 4.12 Close the test panel cover on the rack for the channel under test. Verify that PROCESS PROTECT RACK \* CHANNEL TEST (47014 \*) is off.
- \* I, 13 for channels 189, 190  
II, 14 for channels 102, 172  
III, 23 for channels 196, 197  
IV, 24 for channels 106, 171
- 4.13 Place the BORIC ACID TANK SELECTOR switch to the desired position.

#### 5.0 PROBLEMS

Complete a Surveillance Procedure Exception Report for any problems encountered during the test and corrective action taken. For each problem, specify whether followup action is required.

#### 6.0 ACCEPTANCE CRITERIA

The test will be considered acceptable when the following items have been completed and signed off.

6.1 Test in section 4.0 has been completed for each channel, and properly signed off on the data sheets.

6.2 All problems encountered during the test have been properly resolved and signed off, except as noted by Surveillance Procedure Exception Report.

7.0 REFERENCES

Technical Specifications, Table TS 4.1-1, Item 15

DATA SHEET

Boric Acid Tank Level Instrument Test

The test has been satisfactorily completed for the following channels:

	Yes	No
106		
172		
190		
196		
102		
171		
189		
197		

Any problems encountered with the test? If yes, then not above for which channel and describe in an SP Exception Report.

PERFORMED BY \_\_\_\_\_ DATE \_\_\_\_\_ TIME \_\_\_\_\_

SHIFT SUPERVISOR \_\_\_\_\_ DATE \_\_\_\_\_

GROUP SUPERVISOR \_\_\_\_\_ DATE \_\_\_\_\_

MAINTENANCE SUPT \_\_\_\_\_ DATE \_\_\_\_\_

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 106 (Tank A)

Analog Simulator Instrument No. N/A

Precision Readout Meter Instrument No. \_\_\_\_\_

Voltmeter(s) Instrument No. N/A

Procedure Step		Required	Initials
4.1	Boric Acid Tank Selector Switch position	1B	
4.2	Annunciators:		
4.2a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Off	
4.2b	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Off	
4.2c	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Off	
4.2d	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Off	
4.2e	BORIC ACID TANK 1A LEVEL LOW (4701714)	Off	
4.2f	BORIC ACID TANK 1B LEVEL LOW (4701724)	Off	
4.3	Voltmeters connected to applicable low and high level terminals	Connected	
4.4	Precision readout meters	Connected	
4.5	Test Panel cover	Open	
	Ann PROCESS PROTECT RACK IV CHNL TEST (4701424)	On	
4.6	Analog Simulator	Connected	
	Test switches	Test	
4.7	Annunciators:		
4.7a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Operable	
4.7b	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Operable	
4.7c	BORIC ACID TANK 1A LEVEL LOW (4701714)	Operable	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 106 (Tank A)

Procedure Step		Required	Initials
4.8	Low-Low level bistable reset point	14.4 ± 0.2mA	
	As found	_____ mA	
	Low level bistable reset point	37.6 ± 0.2mA	
	As found	_____ mA	
4.9	High level bistable trip point	47.2 ± 0.2mA	
	As found	_____ mA	
	High level bistable reset point	46.8 ± 0.2mA	
	As found	_____ mA	
4.10	Low level bistable trip point	37.2 ± .2 mA	
	As found	_____ mA	
	Low-Low level bistable trip point	14.0 ± .2 mA	
	As found	_____ mA	
4.11	Meters	Removed	
4.11	Test switches	Normal	
	Analog simulator	Removed	
4.12	Test panel cover	Closed	
	Ann PROCESS PROTECT RACK IV CHNL TEST (4701424)	Off	
4.13	BORIC ACID TANK SELECTOR switch position	Desired	



DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 172 (Tank A)

Analog Simulator Instrument No. N/A

Precision Readout Meter Instrument No. \_\_\_\_\_

Voltmeter(s) Instrument No. N/A

Procedure Step		Required	Initials
4.1	Boric Acid Tank Selector Switch position	1B	
4.2	Annunciators:		
4.2a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Off	
4.2b	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Off	
4.2c	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Off	
4.2d	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Off	
4.2e	BORIC ACID TANK 1A LEVEL LOW (4701714)	Off	
4.2f	BORIC ACID TANK 1B LEVEL LOW (4701724)	Off	
4.3	Voltmeters connected to applicable low and high level terminals	Connected	
4.4	Precision readout meters	Connected	
4.5	Test Panel cover	Open	
	Ann PROCESS PROTECT RACK II CHNL TEST (4701414)	On	
4.6	Analog Simulator	Connected	
	Test switches	Test	
4.7	Annunciators:		
4.7a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Operable	
4.7b	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Operable	
4.7c	BORIC ACID TANK 1A LEVEL LOW (4701714)	Operable	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 172 (Tank A)

Procedure Step		Required	Initials
4.8	Low-Low level bistable reset point	14.4 $\pm$ 0.2mA	
	As found	_____ mA	
	Low level bistable reset point	37.6 $\pm$ 0.2mA	
	As found	_____ mA	
	High level bistable trip point	47.2 $\pm$ 0.2mA	
	As found	_____ mA	
4.9	High level bistable reset point	46.8 $\pm$ 0.2mA	
	As found	_____ mA	
	Low level bistable trip point	37.2 $\pm$ .2 mA	
	As found	_____ mA	
	Low-Low level bistable trip point	14.0 $\pm$ .2 mA	
	As found	_____ mA	
4.10	Meters	Removed	
4.11	Test switches	Normal	
	Analog simulator	Removed	
4.12	Test panel cover	Closed	
	Ann PROCESS PROTECT RACK II CHNL TEST (4701414)	Off	
4.13	BORIC ACID TANK SELECTOR switch position	Desired	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 190 (Tank A)

Analog Simulator Instrument No. N/A

Precision Readout Meter Instrument No. \_\_\_\_\_

Voltmeter(s) Instrument No. N/A

Procedure Step		Required	Initials
4.1	Boric Acid Tank Selector Switch position	1B	
4.2	Annunciators:		
4.2a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Off	
4.2b	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Off	
4.2c	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Off	
4.2d	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Off	
4.2e	BORIC ACID TANK 1A LEVEL LOW (4701714)	Off	
4.2f	BORIC ACID TANK 1B LEVEL LOW (4701724)	Off	
4.3	Voltmeters connected to applicable low and high level terminals	Connected	
4.4	Precision readout meters	Connected	
4.5	Test Panel cover	Open	
	Ann PROCESS PROTECT RACK I CHNL TEST (4701413)	On	
4.6	Analog Simulator	Connected	
	Test switches	Test	
4.7	Annunciators:		
4.7a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Operable	
4.7b	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Operable	
4.7c	BORIC ACID TANK 1A LEVEL LOW (4701714)	Operable	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 190 (Tank A)

Procedure Step		Required	Initials
4.8	Low-Low level bistable reset point	14.4 $\pm$ 0.2mA	
	As found	_____ mA	
	Low level bistable reset point	37.6 $\pm$ 0.2mA	
	As found	_____ mA	
	High level bistable trip point	47.2 $\pm$ 0.2mA	
	As found	_____ mA	
4.9	High level bistable reset point	46.8 $\pm$ 0.2mA	
	As found	_____ mA	
	Low level bistable trip point	37.2 $\pm$ .2 mA	
	As found	_____ mA	
4.10	Low-Low level bistable trip point	14.0 $\pm$ .2 mA	
	As found	_____ mA	
4.10	Meters	Removed	
4.11	Test switches	Normal	
	Analog simulator	Removed	
4.12	Test panel cover	Closed	
	Ann PROCESS PROTECT RACK I CHNL TEST (4701413)	Off	
4.13	BORIC ACID TANK SELECTOR switch position	Desired	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 196 (Tank A)

| Analog Simulator Instrument No. N/A

Precision Readout Meter Instrument No. \_\_\_\_\_

| Voltmeter(s) Instrument No. N/A

Procedure Step		Required	Initials
4.1	Boric Acid Tank Selector Switch position	1B	
4.2	Annunciators:		
4.2a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Off	
4.2b	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Off	
4.2c	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Off	
4.2d	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Off	
4.2e	BORIC ACID TANK 1A LEVEL LOW (4701714)	Off	
4.2f	BORIC ACID TANK 1B LEVEL LOW (4701724)	Off	
4.3	Voltmeters connected to applicable low and high level terminals	Connected	
4.4	Precision readout meters	Connected	
4.5	Test Panel cover	Open	
	Ann PROCESS PROTECT RACK III CHNL TEST (4701423)	On	
4.6	Analog Simulator	Connected	
	Test switches	Test	
4.7	Annunciators:		
4.7a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Operable	
4.7b	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Operable	
4.7c	BORIC ACID TANK 1A LEVEL LOW (4701714)	Operable	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 196 (Tank A)

Procedure Step		Required	Initials
4.8	Low-Low level bistable reset point	14.4 $\pm$ 0.2mA	
	As found	_____ mA	
	Low level bistable reset point	37.6 $\pm$ 0.2mA	
	As found	_____ mA	
	High level bistable trip point	47.2 $\pm$ 0.2mA	
	As found	_____ mA	
4.9	High level bistable reset point	46.8 $\pm$ 0.2mA	
	As found	_____ mA	
	Low level bistable trip point	37.2 $\pm$ .2 mA	
	As found	_____ mA	
	Low-Low level bistable trip point	14.0 $\pm$ .2 mA	
	As found	_____ mA	
4.10	Meters	Removed	
4.11	Test switches	Normal	
	Analog simulator	Removed	
4.12	Test panel cover	Closed	
	Ann PROCESS PROTECT RACK III CHNL TEST (4701423)	Off	
4.13	BORIC ACID TANK SELECTOR switch position	Desired	

DATA SHEET

Boric Acid Tank Level Instrument Test .

Date Performed \_\_\_\_\_

Channel Under Test LT 102 (Tank B)

Analog Simulator Instrument No. N/A

Precision Readout Meter Instrument No. \_\_\_\_\_

Voltmeter(s) Instrument No. N/A

Procedure Step		Required	Initials
4.1	Boric Acid Tank Selector Switch position	1A	
4.2	Annunciators:		
4.2a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Off	
4.2b	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Off	
4.2c	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Off	
4.2d	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Off	
4.2e	BORIC ACID TANK 1A LEVEL LOW (4701714)	Off	
4.2f	BORIC ACID TANK 1B LEVEL LOW (4701724)	Off	
4.3	Voltmeters connected to applicable low and high level terminals	Connected	
4.4	Precision readout meters	Connected	
4.5	Test Panel cover	Open	
	Ann PROCESS PROTECT RACK II CHNL TEST (4701414)	On	
4.6	Analog Simulator	Connected	
	Test switches	Test	
4.7	Annunciators:		
4.7a	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Operable	
4.7b	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Operable	
4.7c	BORIC ACID TANK 1B LEVEL LOW (4701724)	Operable	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 102 (Tank B)

Procedure Step		Required	Initials
4.8	Low-Low level bistable reset point	14.4 $\pm$ 0.2mA	
	As found	_____ mA	
	Low level bistable reset point	37.6 $\pm$ 0.2mA	
	As found	_____ mA	
	High level bistable trip point	47.2 $\pm$ 0.2mA	
	As found	_____ mA	
4.9	High level bistable reset point	46.8 $\pm$ 0.2mA	
	As found	_____ mA	
	Low level bistable trip point	37.2 $\pm$ .2 mA	
	As found	_____ mA	
4.10	Low-Low level bistable trip point	14.0 $\pm$ .2 mA	
	As found	_____ mA	
4.10	Meters	Removed	
4.11	Test switches	Normal	
	Analog simulator	Removed	
4.12	Test panel cover	Closed	
	Ann PROCESS PROTECT RACK II CHNL TEST (4701414)	Off	
4.13	BORIC ACID TANK SELECTOR switch position	Desired	



DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 171 (Tank B)

Analog Simulator Instrument No. N/A

Precision Readout Meter Instrument No. \_\_\_\_\_

Voltmeter(s) Instrument No. N/A

Procedure Step		Required	Initials
4.1	Boric Acid Tank Selector Switch position	1A	
4.2	Annunciators:		
4.2a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Off	
4.2b	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Off	
4.2c	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Off	
4.2d	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Off	
4.2e	BORIC ACID TANK 1A LEVEL LOW (4701714)	Off	
4.2f	BORIC ACID TANK 1B LEVEL LOW (4701724)	Off	
4.3	Voltmeters connected to applicable low and high level terminals	Connected	
4.4	Precision readout meters	Connected	
4.5	Test Panel cover	Open	
	Ann PROCESS PROTECT RACK I CHNL TEST (4701413)	On	
4.6	Analog Simulator	Connected	
	Test switches	Test	
4.7	Annunciators:		
4.7a	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Operable	
4.7b	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Operable	
4.7c	BORIC ACID TANK 1B LEVEL LOW (4701724)	Operable	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 171 (Tank B)

Procedure Step		Required	Initials
4.8	Low-Low level bistable reset point	14.4 ± 0.2mA	
	As found	_____ mA	
	Low level bistable reset point	37.6 ± 0.2mA	
	As found	_____ mA	
	High level bistable trip point	47.2 ± 0.2mA	
	As found	_____ mA	
4.9	High level bistable reset point	46.8 ± 0.2mA	
	As found	_____ mA	
	Low level bistable trip point	37.2 ± .2 mA	
	As found	_____ mA	
	Low-Low level bistable trip point	14.0 ± .2 mA	
	As found	_____ mA	
4.10	Meters	Removed	
4.11	Test switches	Normal	
	Analog simulator	Removed	
4.12	Test panel cover	Closed	
	Ann PROCESS PROTECT RACK IV CHNL TEST (4701424)	Off	
4.13	BORIC ACID TANK SELECTOR switch position	Desired	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 189 (Tank B)

| Analog Simulator Instrument No. N/A

Precision Readout Meter Instrument No. \_\_\_\_\_

| Voltmeter(s) Instrument No. N/A

Procedure Step		Required	Initials
4.1	Boric Acid Tank Selector Switch position	1A	
4.2	Annunciators:		
4.2a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Off	
4.2b	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Off	
4.2c	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Off	
4.2d	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Off	
4.2e	BORIC ACID TANK 1A LEVEL LOW (4701714)	Off	
4.2f	BORIC ACID TANK 1B LEVEL LOW (4701724)	Off	
4.3	Voltmeters connected to applicable low and high level terminals	Connected	
4.4	Precision readout meters	Connected	
4.5	Test Panel cover	Open	
	Ann PROCESS PROTECT RACK I CHNL TEST (4701413)	On	
4.6	Analog Simulator	Connected	
	Test switches	Test	
4.7	Annunciators:		
4.7a	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Operable	
4.7b	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Operable	
4.7c	BORIC ACID TANK 1B LEVEL LOW (4701724)	Operable	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 189 (Tank B)

Procedure Step		Required	Initials
4.8	Low-Low level bistable reset point	14.4 $\pm$ 0.2mA	
	As found	_____mA	
	Low level bistable reset point	37.6 $\pm$ 0.2mA	
	As found	_____mA	
	High level bistable trip point	47.2 $\pm$ 0.2mA	
	As found	_____mA	
4.9	High level bistable reset point	46.8 $\pm$ 0.2mA	
	As found	_____mA	
	Low level bistable trip point	37.2 $\pm$ .2 mA	
	As found	_____mA	
	Low-Low level bistable trip point	14.0 $\pm$ .2 mA	
	As found	_____mA	
4.10	Meters	Removed	
4.11	Test switches	Normal	
	Analog simulator	Removed	
4.12	Test panel cover	Closed	
	Ann PROCESS PROTECT RACK I CHNL TEST (4701413)	Off	
4.13	BORIC ACID TANK SELECTOR switch position	Desired	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 197 (Tank B)

Analog Simulator Instrument No. N/A

Precision Readout Meter Instrument No. \_\_\_\_\_

Voltmeter(s) Instrument No. N/A

Procedure Step		Required	Initials
4.1	Boric Acid Tank Selector Switch position	1A	
4.2	Annunciators:		
4.2a	BORIC ACID TANK 1A LEVEL LOW-LOW (4701715)	Off	
4.2b	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Off	
4.2c	BORIC ACID TANK 1A LEVEL HIGH (4701713)	Off	
4.2d	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Off	
4.2e	BORIC ACID TANK 1A LEVEL LOW (4701714)	Off	
4.2f	BORIC ACID TANK 1B LEVEL LOW (4701724)	Off	
4.3	Voltmeters connected to applicable low and high level terminals	Connected	
4.4	Precision readout meters	Connected	
4.5	Test Panel cover	Open	
	Ann PROCESS PROTECT RACK III CHNL TEST (4701423)	On	
4.6	Analog Simulator	Connected	
	Test switches	Test	
4.7	Annunciators:		
4.7a	BORIC ACID TANK 1B LEVEL LOW-LOW (4701725)	Operable	
4.7b	BORIC ACID TANK 1B LEVEL HIGH (4701723)	Operable	
4.7c	BORIC ACID TANK 1B LEVEL LOW (4701724)	Operable	

DATA SHEET

Boric Acid Tank Level Instrument Test

Date Performed \_\_\_\_\_

Channel Under Test LT 197 (Tank B)

Procedure Step		Required	Initials
4.8	Low-Low level bistable reset point	14.4 $\pm$ 0.2mA	
	As found	_____ mA	
	Low level bistable reset point	37.6 $\pm$ 0.2mA	
	As found	_____ mA	
	High level bistable trip point	47.2 $\pm$ 0.2mA	
	As found	_____ mA	
4.9	High level bistable reset point	46.8 $\pm$ 0.2mA	
	As found	_____ mA	
	Low level bistable trip point	37.2 $\pm$ .2 mA	
	As found	_____ mA	
4.10	Low-Low level bistable trip point	14.0 $\pm$ .2 mA	
	As found	_____ mA	
	Meters	Removed	
4.11	Test switches	Normal	
	Analog simulator	Removed	
4.12	Test panel cover	Closed	
	Ann PROCESS PROTECT RACK III CHNL TEST (4701423)	Off	
4.13	BORIC ACID TANK SELECTOR switch position	Desired	

KEWAUNEE NUCLEAR POWER PLANT  
SHIFT SUPERVISOR'S LOG

№ 5502

		Shift Supv. <i>MASARIK</i>	Day <i>TUESDAY</i>	Date <i>12/18/81</i>
Shift		C.R. Supv. <i>FRENCH</i>		
0700-1500		C.O. A <i>HARRINGTON</i>	C.O. B <i>BUKACZEWSKI</i>	
Line No.	Time	Aux. Oper. <i>BREZINSKI</i>	Equip. Oper. <i>CARTER</i>	
1	0700	RELIEVED P. MIELKE, RAN @ 100% PWR, 522 MW <sub>2</sub>		
2		EQUIP 005, 1B SFP EXH FAN, TURB THRUST BEARING		
3		TRIP, N-31, RC-402, BRA-112, Y-57, PR-2A		
4	0832	NFC. MWR. 48-28446 PWR RNG 204 OP FLUX RUDR		
5	0842	ATS MWR 35-28275 BATT TRENDSCAN TEMP MON TR B		
6	0850	ATS SP-136-1125 1B CVC MT		
7		ATS SP-136-1126 1A WCT		
8		ATS SP-136-112 ? 1B WCT		
9	0855	NFC. MWR 14-28534 Zone SV EXH FAN 1B DSCM <sup>DMP</sup> <del>TRK</del>		
10	0917	ISSUED MWR 35-28559 1A CHARGING PUMP		
11		ISSUED MWR 09-28520 AR-4A		
12	1005	ATS MWR 31-24108 CL AX 1A OUTLET MV 32121		
13		ATS MWR 35-27986 1D-6		
14		ATS MWR 02-27999 SW-10A		
15	1032	ATS MWR 08-28346 Fire Detection Zone 0302		
16	1119	NFC SP-55-155 ENG. SAFEGUARD		
17	1221	NFC. SP-136 1126 1A WCT		
18		NFC SP-136 1127 1B WCT		
19	1240	ATS MWR 14-28536 ZONE SV EXHAUST FAN 1A DSCM DMP		
20		ATS SP 35-147 BATT LEVEL		
21	1355	NFC SP 35-147 BATT LEVEL		
22	1420	NFC SP 136-1125 1B CVC MT		
23		1A AIR COMP 005 FOR MAINT		
24	1500	RELIEVED BY G. HOPPE		
25		<i>[Signature]</i>		
26				

*WJ 12-19-81*

KEWAUNEE NUCLEAR POWER PLANT  
REACTOR AND CONTROL RM. LOG

No 3442

Shift		Shift Supv.	Day	Date
		Maserik	Tuesday	12-18-84
		C.R. Supv.		
		French		
0700-1500		C.O. A	C.O. B	
		Harrington	Buraczewski	
Line No.	Time	Aux. Oper.	Equip. Oper.	
		Brezinski / Miller	Carter / Schmitt	
1	0700	R @ 100%, 545 MW, 9.5 D @ 220 steps, 164 ppm Boron, NOPT		
2	0742	Start SP 55-155 Engineered Safeguards Logic		
3		Channel Test. <i>(Signature)</i>		
4	0800	Commence partial SP 45-049.14 (MWR 14-28534)		
5		for retest. Radiation Monitoring system Test. <i>(Signature)</i>		
6	0805	Completed partial SP 45-049.14, SAT <i>(Signature)</i>		
7	0818	Started B.A Tank receive <i>(Signature)</i>		
8	1028	B.A Tank receive completed lineup returned to normal		
9	1030	Start A WET Disch. <i>(Signature)</i>		
10	1050	Completed A WET Disch. <i>(Signature)</i>		
11	1055	Start B WET Disch. <i>(Signature)</i>		
12	1115	Completed B WET Disch. <i>(Signature)</i>		
13	1117	Completed <del>SP 45</del> SP 55-155 <i>(Signature)</i>		
14	1120	Start Disch. B CVC Man. TK <i>(Signature)</i>		
15	1245	Start SP 35-147 Boric Acid Tank level Instrument To		
16	1230	LATE ENTRY: Brezinski and Carter <sup>to</sup> relieved by Miller		
17		and Schmitt as Aux and equipment operators <i>(Signature)</i>		
18	1340	1B Spent Fuel Pool Fan back in service. <i>(Signature)</i>		
19	1350	Completed B CVC Man TK Disch. <i>(Signature)</i>		
20	1420	1A Last Air Comp Out of Service for maint <i>(Signature)</i>		
21				
22				
23				
24				
25				
26				

*(Signature)*  
W.R. 12-18-84



ATTACHMENT 5

ACD 4.5

SHIFT OPERATION AND TURNOVER

REVIEWED BY

Dave Berg

APPROVED BY

Walter Stenmark

### 1.0 PURPOSE

This Administrative Control Directive establishes:

- 1.1 The Shift Organization
- 1.2 Control Room Operations
- 1.3 Shift Turnover

### 2.0 APPLICABILITY

This document is applicable to all plant Operating Crews.

### 3.0 DEFINITIONS

- 3.1 Operating Crew - a shift of Operations Department Personnel under the direction of a Shift Supervisor.
- 3.2 Control Room - an operator is considered to be out of the Control Room if he is in the kitchenette, lavatory, CAS, behind the vertical cabinets on the north wall.
- 3.3 SRO - NRC Licensed Senior Operator - defined by 10 CFR 55.4(e).
- 3.4 RO - NRC Licensed Operator - defined by 10 CFR 55.4(d).

### 4.0 RESPONSIBILITY

- 4.1 The Asst. Supt.-Operations has responsibility for assuring shift manning, operations, and turnover are performed in conformance with these requirements.
- 4.2 The Shift Supervisor has the responsibility and authority for assuring shift manning, operations, and turnover are performed in conformance with these requirements for his assigned shift.

## 5.0 RESPONSIBILITY

### 5.1 Shift Organization

5.1.1 Each on-duty shift Operating Crew shall consist of at least:

- One Shift Supervisor (SRO)
- One Control Room Supervisor (SRO)
- Two Control Operators (RO)
- One Auxiliary Operator
- One Equipment Operator

5.1.2 In the event that one of the Operating Crew becomes incapacitated due to illness or injury, reactor operations may continue with the reduced complement until his replacement arrives. In all but severe weather conditions, a replacement is required within two hours.

5.1.3 At least one licensed Control Operator (RO) shall be in the Control Room when fuel is in the reactor.

5.1.4 At least two licensed Control Operators (RO) shall be present in the Control Room during reactor startup, turbine generator synchronization to the grid, and during recovery from reactor trips.

NOTE: The Control Room for Step 5.1.5 is the total room including CAS, kitchenette, lavatory, behind vertical panels and computer panels, and the Shift Supervisors Office.

5.1.5 When the reactor is above cold shutdown, a licensed Senior Reactor Operator shall be in the Control Room at all times.

5.1.6 Refueling operations shall be directed by a licensed Senior Reactor Operator (SRO) assigned to the refueling operation who has no other concurrent responsibilities during the refueling operation. (TS 3.8)

5.1.7 The Auxiliary Operator and Equipment Operator have been trained in fire fighting and are members of the Fire Brigade. If a member of the fire brigade team becomes incapacitated due to illness or injury this requirement is deemed satisfied if a replacement arrives within two hours in all but the severest weather.

### 5.1.8 Shift Schedule

- 1) The normal work week for shift personnel shall start at 2300 Saturday.

- 2) There shall be three operating shifts and one relief shift.

2300-0700	First Shift
0700-1500	Second Shift
1500-2300	Third Shift
0700-1500	Relief Shift

- 3) Substitutions - without changing minimum total personnel requirements:

- a) The affected Shift Supervisor should arrange for the appropriate operator on the shift before to extend for 4 hours of overtime and the appropriate operator on the shift after to come in early for 4 hours of overtime, or
- b) The affected Shift Supervisor should arrange for the appropriate relief operator to substitute for the entire shift.
- c) Individuals with senior reactor operator license (SRO) may substitute for licensed operator (RO) or nonlicensed positions.
- d) Providing Step 5.1.7 is satisfied, individuals with a reactor operator license (RO) may substitute for non-licensed positions.

## 5.2 Control Room Operations

- 5.2.1 All major plant operations and activities shall be controlled from the Control Room in accordance with instructions from the Shift Supervisor and Control Room Supervisor.
- 5.2.2 The Shift Supervisor shall put into effect the orders he receives from the Assistant Superintendent-Operations.
- 5.2.3 The Control Operators are expected to give their full attention to the conditions of the plant at all times. He must remain alert in order to ensure that the plant is operating safely and must be capable of taking action to prevent any progress toward a condition that might be unsafe.
- 5.2.4 The Control Operator A and Control Operator B should normally be in the Control Room and shall be responsible for the direct operation of plant controls and equipment and the maintenance of the Control Room Operating Logs.
- 5.2.5 The Auxiliary Operator and Equipment Operator should normally be in the plant making rounds to observe operating equipment, recording operating data, and conducting routine operations and inspections.