SHIFT AND DAILY CHECKS

294

GENERATION MAINTENANCE SYSTEM
MANUAL PERFORMANCE FORM

DATE ISSUED

SCHED. DATE _____

REFERENCE MANUAL _____

_____

PROCEDURE NO. 2301-S1

DEPT RESP · _____

TASK NO. · _____

WORK ORDER NO. · _____

ACCOUNT NO. · _____

GC CODE · _____

COMPONENT NO. · _____

COMPONENT DESC · _____

PLANT CONDITION (MODE) SU(2) OP(1) HD(4) CD(5) RF(6) HS(3) LR(1)

FREQUENCY _____ COMPONENT STATUS _____

SPECIFIC DAY _____ INTERFERENCE _____

PRIORITY _____

COMP. LOCATION · BDG _____ LVL _____ GRID _____

PART NO	QUAN	SPEC EQUIPMENT

DEPENDENT TASKS	ASSIST DEPT

SHIFT FOREMAN APPROVAL TO COMMENCE WORK _____ SIGNATURE _____ DATE _____ RWP NO _____ TAG NO

QC NOTIFIED BEFORE STARTING WORK (IF APPLICABLE ONLY) _____ SIGNATURE _____ DATE

COMPONENT RETURNED TO SERVICE (SHIFT FOREMAN) _____ SIGNATURE _____ DATE

TXN. CD. (1-3)	ACT. (4)	COMPONENT NUMBER SYS. (5-8)	COMP. TYPE	COMP. ID.	LE (16)	LOCATION/UNIT (17-22)	TYPE TASK (23-24)	TASK IDENTIFICATION (25-32)	SCHEDULE NUMBER (33-39)
400	A	TMI	2301S	1		035002	TS	2301-S1	79 0186 M

RESULTS (51) COMPLETE THIS SECTION (401A) DATE PERFORMED (39) 03 MONTH 27 DAY 79 YEAR

CHECK ONE ONLY
- (X) 1 PERFORMED OK
- (X) 2 EXCEPTIONS
- ( ) 3 DEFICIENCIES
- ( ) 4 BOTH E S AND D S
- ( ) 5 NOT PERFORMED

ACTUAL MANHOURS (45) 0000.01

ACTION TAKEN CODE (52)

REASON NOT PERFORMED (54)

PERFORMED BY EMPLOYEE NUMBER (60) 05L464 SIGNATURE · _____

APPROVED BY EMPLOYEE NUMBER (65) 05E616 SIGNATURE · _____

WITNESSED BY EMPLOYEE NUMBER (70) SIGNATURE · _____

CORRECTIVE MAINTENANCE JOB TICKET NUMBER (75)

403A (1) DUPLICATE AS ABOVE (5-38)

402 (1) DUPLICATE AS ABOVE (5-38)

RESULTS DESCRIPTION

(39)

(61)

ASSISTING DEPARTMENTS 217 116

CODE (39)

HOURS (44)

404A (1) DUPLICATE AS ABOVE (5-38)

CODE (50)

HOURS (55)

(39)

(61)

TMI-105 12-78

Exception and Deficiency List

SURVEILLANCE PROCEDURE NAME Shift & Daily Checks

SURVEILLANCE PROCEDURE NUMBER 2301 S1

DATE DATA TAKEN _____. THIS SURVEILLANCE IS REQUIRED FOR MODE(S) _____

MODE(S) DATA TAKEN IN _____

Note: Use a separate form for [illegible]

COMPONENT DESIGNATOR SYS	TYPE	I.D.	Lu	LOCATION UNIT	TYPE TASK	TASK I.D.	SCHEDULE NO
TMI	2301	S[illegible]1		03 6002	TS	2301-S	179086M

	E/D NUMBER / PARAGRAPH OR SECT. / DESCRIPTION (If Appl.)
403A	01 3.5.2 DAV157 AND BREAKER REPOSITIONED
404C	01 RECIRCULATION OF BWST
403A	
404C	
403A	
404C	
403A	
404C	

RESOLUTION DESCRIPTION (If Appl.)

TXN No.	SEQ No.	Description
403A	02	RETURN TO REQUIRED POSITION WHEN EVOLUT
404C	02	COMPLETE
403A		
404C		
403A		
404C		

SHIFT SUPERVISOR COMPLETE SECTION BELOW:

YES	NO	QUESTION
✓		1. This E or D placed the Unit into an action statement.
	✓	2. This E or D was caused by Equipment Failure.
	✓	3. This E or D has caused the performance of this Surveillance to be unsatisfactory for Mode(s) _____ with regard to satisfying the intent of the Tech Spec.

Shift Supervisor Initials & Date: F. Eckenman for B.Z. 3/27/79
Initials Date

TEST COORDINATOR COMPLETE BE

The Resolution column has fully explained what has been done to close out this item. (If App.)

This E or D is closed:

217 117

Signature of the Test Coord. D

TMI 98 3

"TEMPORARY CHANGE" Work

SIDE 1

Three Mile Island Nuclear Station
Temporary Change Notice (TCN)

TCN NO. 2-79-030 (From TCN Log Index)

Unit No. 2

Date 2/1/79

1. Procedure 2102-51 Shift & Daily Checks
Title

2. Change (Include page numbers, paragraph numbers, and exact wording of change.)
Page 10 Section 3.2.5 (total flow) from Enclosure 1
Calculation of Appendix I & Figure 3 (See Attached)

3. Reason for Change
To incorporate heat balance calculation for RCS flow determination

4. Recommended by M L Benson 1/31/79
Date

5. M L Benson 1/31/79
Supervisor's Signature Date

6. Duration of TCN - No longer than ninety days from effective date of TCN or as in (a) or (b) below whichever occurs first.

(a) TCN will be cancelled by a procedure revision issued as a result of a Procedure Change Request to be submitted by M L Benson (Submit PCR as soon as possible) ☑
Supervisor Submitting TCN

(b) TCN is not valid after _____ ☐
(fill in circumstances which will result in TCN being cancelled)

7. (a) Is the procedure on the Nuclear Safety Related Procedure List? (Sec. AP 1001 – Appendix B)
If "Yes", complete Nuclear Safety Evaluation. (Side 2 of this Form) Yes ☑ No ☐

(b) Is the procedure on the Environmental Impact Procedure List? (Sec. AP 1001 – Appendix B)
If "Yes", complete Environmental Evaluation. (Side 2 of this Form) Yes ☑ No ☐

(c) Does the change effect the intent of the original procedure? Yes ☐ No ☑

NOTE: If all answers are "no" the change may be approved by the Shift Supervisor. If question (c) is answered "yes", the change must be reviewed by the PORC and approval by the Station/Unit Superintendent prior to implementation. If the answer to question (c) is "no" the change may be approved by two members of the plant management staff at least one of whom holds a senior reactor operators license on the unit affected in accordance with paragraph 3.6.4.2 of AP 1001.

8. Review and Approval

Block (c) "yes"

Approved _____ _____
Shift Supervisor/Foreman Date

Reviewed _____ _____

Members _____ _____
Of PORC

Contacted _____ _____
PORC Members Date

Approved _____ _____
Unit Superintendent Date

Block (c) "no"

Approved [signature] SRO License 2/1/79 Date
[signature] Member Plant Mgr. Staff 2/1/79 Date

Reviewed _____ _____
Chairman of PORC Date

Approved _____ _____
Unit Superintendent Date

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NOTE: The block (c) "Yes" review and approval chain may be followed at anytime.

9. Approval
Manager, Generation Quality Assurance _____ Date _____

NOTE: M.G.Q.A. approval required only on certain Administrative Procedures listed in Enclosure 7 of AP 1001

10. TCN is Cancelled _____ _____
Shift Supervisor/Shift Foreman Date

NISCELLANEOUS SURVEILLANCE ITEMS

2301-S1
Revision 12
11/09/78

PRESENT MODE

TECH SPEC ACTION	DATA DESCRIPTION	ACTUAL 1	ACTUAL 2	ACTUAL 3	REQUIRED
3.2.5	RCS PARAMETERS:				RCP's OPERATING: 4 / 3 / 2
3.2.5	RC Pressure NR Loop "A" (PSIG)				>2062 PSIG / >2058 PSIG / >2092 PSIG
3.2.5	RC Pressure NR Loop "B" (PSIG)				
3.2.5	RC Pressure NR Loop "A" (PSIG)				
3.2.5	RC Outlet Temp (^{o}F) Loop "A" TT1				≤ 609°F / ≤ 609°F / ≤ 609°F
3.2.5	RC Outlet Temp (^{o}F) Loop "A" TT4				
3.2.5	RC Outlet Temp (^{o}F) Loop "B" - TT1				
3.2.5	RC Outlet Temp (^{o}F) Loop "B" - TT4				
3.2.5	RCS Total Flow ~~(gpm)~~ Refer to APPENDIX I for Calculation				See Appendix I ~~[illegible]~~
____	Number of RC Pumps Operating				Rev. for above TS 3.2.5 Req 'M
3.2.1 *	Axial Pwr Imb Within Limits?				Per Compt Gp. 5 YES/NO
	NI Calibration				
4.3.1.1	Perform Heat Balance Calibration per 2302-S1				Rx ≥ 5% F.P.
	NOTE: Attach completed Data Sheet(s) for NI calibration.				
	* Required when >40% RTP				
	SURVEILLANCE CHECKS ARE AS REQUIRED? (YES/NO)				YES-NO FOLLOWU NO-FOLLOWUP RE
Performed By:	3 TIME 1		TIME 2		TIME

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APPENDIX I

REACTOR COOLANT FLOW CALCULATIONS

NOTE: ~~IF~~ AN ABBREVIATED FLOW METHOD PER SECTION I OR ~~IS UNSUCCESSFUL~~, THEN A DETAILED CALCULATION MAY BE PERFORMED PER SECTION II.

I. GENTILE TUBE FLOW DETERMINATION

A. Obtain the following computer points

(1) 1750 Core Power _____ MWt

(2) 1715 RC Flow Loop A _____ $\times 10^6$ lb/hr

(3) 1716 RC Flow Loop B _____ $\times 10^6$ lb/hr

(4) 0392 RC Inlet Temp A_1 _____

(5) 0393 RC Inlet Temp A_2 _____ °F

(6) 0395 RC Inlet Temp B_1 _____ °F

(7) 0396 RC Inlet Temp B_2 _____ °F

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B. CALCULATE THE AVERAGE RC INLET TEMPERATURE

(Pt 392 + Pt 393 + Pt 395 + Pt 396) ÷ 4 = _____ °F

(_____ + _____ + _____ + _____) ÷ 4 = _____ °F

C. Obtain the value for specific volume(ν) for the average RC Inlet Temp. calculated in step B. See Figure 3A or 3B. ft³/lb

D. SUBSTITUTE VALUES INTO THE FOLLOWING FORMULA BELOW TO DETERMINE RC FLOW IN "GALLONS PER MINUTE".

$$\text{FLOW(GPM)} = (\text{Pt 1715} + \text{Pt 1716}) \times \frac{7.4805\ \text{gal/ft}^3}{60\ \text{min/hr}} \times \left(\frac{\text{ft}^3/\text{lb}}{\text{lb}}\right)$$

$$\text{FLOW(GPM)} = \left[\_\_\_\_\_ \times 10^6\ \text{lb/hr}\right]\left[\frac{7.4805\ \text{gal/ft}^3}{60\ \text{min/hr}}\right]\left[\_\_\_\_\ \frac{\text{ft}^3}{\text{lb}}\right]$$

FLOW = _____ GPM.

E. MULTIPLY UNCORRECTED GPM (STEP D) BY 0.985 TO COMPENSATE FOR INSTRUMENT ERROR.

(step D) _____ GPM x 0.985 = _____ GPM

* CORRECTED TECH SPEC FLOW = _____ GPM

F. THE TOTAL RC FLOW must meet the following acceptance criteria from T.S. 3.2.5 (table 3.2-2)

217-12

FOUR RC PUMPS OPERATING:

≥ 370,496 GPM with Thermal Power ≤ 2717 MWt

≥ 373,120 GPM with Thermal Power ≤ 2744 MWt

≥ 377,000 GPM with Thermal Power ≤ 2772 MWt

THREE RC PUMPS OPERATING:

≥ 280,400 GPM

TWO RC PUMPS OPERATING:
≥ 182,800 GPM.

If UNABLE TO MEET ACCEPTANCE CRITERIA, PROCEED WITH ACTION STATEMENT FROM T.S. 3.2.5

II. DETAILED HEAT BALANCE FLOW CALCULATION

A. TYPE "RC FLOW" into the programmers typewriter
B. Printout Operator Group B.
C. The program requires 30 minutes to calculate RC Flow (See EXAMPLE 1)
D. (1) CHECK APPROPRIATE LINE FOR T.S. FLOW ACCEPTABILITY
(2) CRO initial
(3) SRO signature

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E: See SECTION I STEP F FOR T.S. ACCEPTANCE CRITERIA

* F. SEND (2) COPIES OF RC FLOW DATA TO NUCLEAR ENGINEER (TMI-2)

```
STOP      0

.!rcflow

interrupt at location   00000761
execution terminated

.!rcflow
RCS FLOW DETERMINATION
DATE:  1/31/79
TIME:  23:40: 0

      NOTE: TC AND FW PRESS ARE ASSUMED VALUES

      TEMPERATURE      PRESSURE    ENTHALPY

  THA   597.172          2150.       609.734
  THB   597.237          2150.       609.906
  TCA   565.977          2150.       567.609
  TCB   566.039          2150.       567.688
  TSA   594.250           899.984   1255.938
  TSB   594.695           901.609   1256.141
  TFA   417.375          1000.       394.676
  TFB   415.855          1000.       390.859

      AVERAGE RC TCOLD = 566.01   DENSITY= 45.708

      LOOP A FDW FLOW (KPPH)=  3350.22
      LOOP B FDW FLOW (KPPH)=  3401.94

      ***RC FLOW VALUES***
      LOOP A(MPPH)   LOOP B(MPPH)   TOTAL(MPPH)   MEASURED(MPPH)
         68.494         69.722        138.215        138.307

      RCS FLOW(GPM) 377000.

      PERCENT OF DESIGN FLOW = 107.101

      *** TECH SPEC GPM (CORRECTED) =371344.

      AVERAGE CORE THERMAL POWER (MWT) = 1694.

      DOES FLOW FOR PRESENT POWER/PUMPS MEET SPEC     YES ____   NO ____

      PERFORMED BY
                 ----------

      APPROVED BY
                 ----------

STOP      0

!
```

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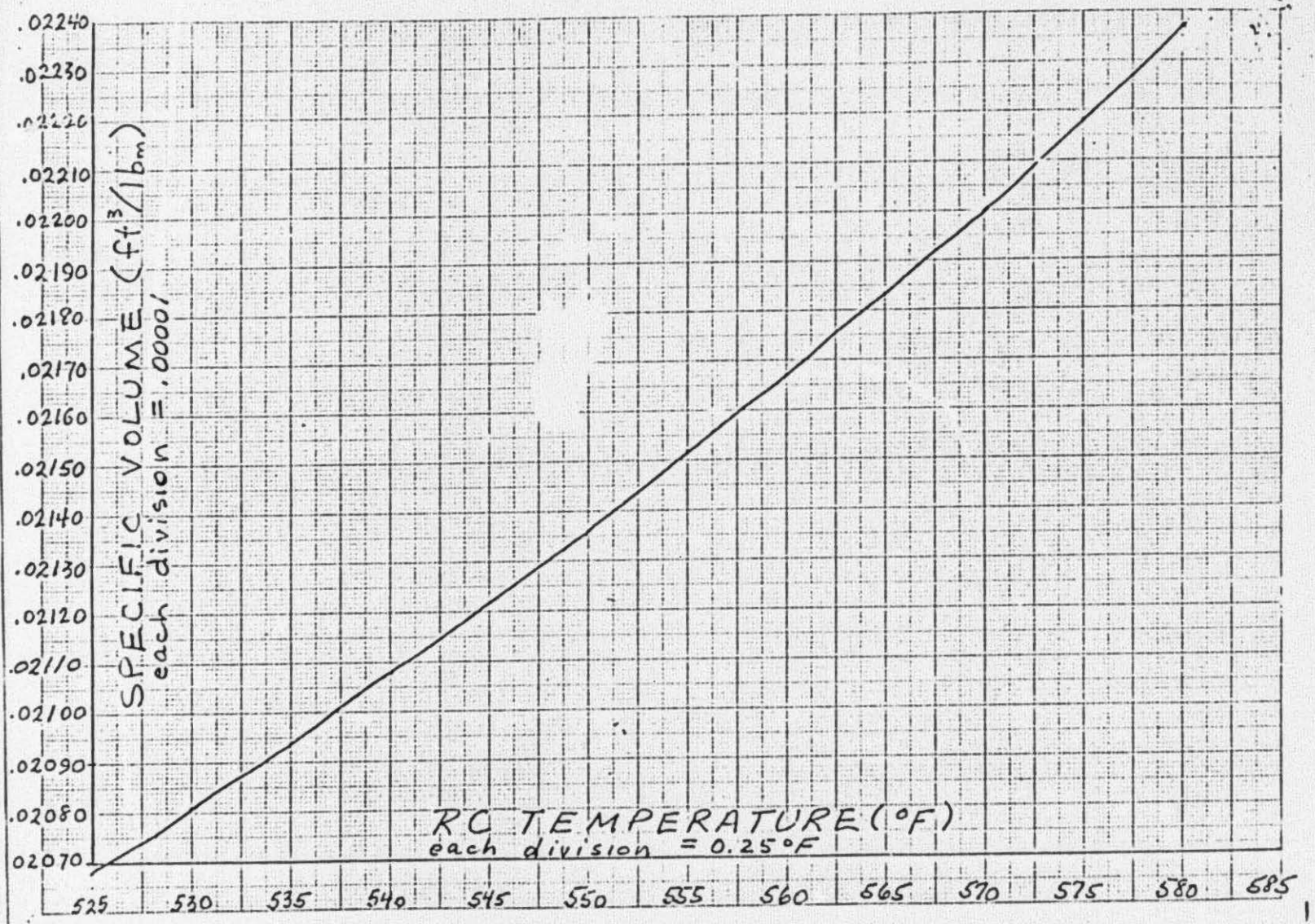
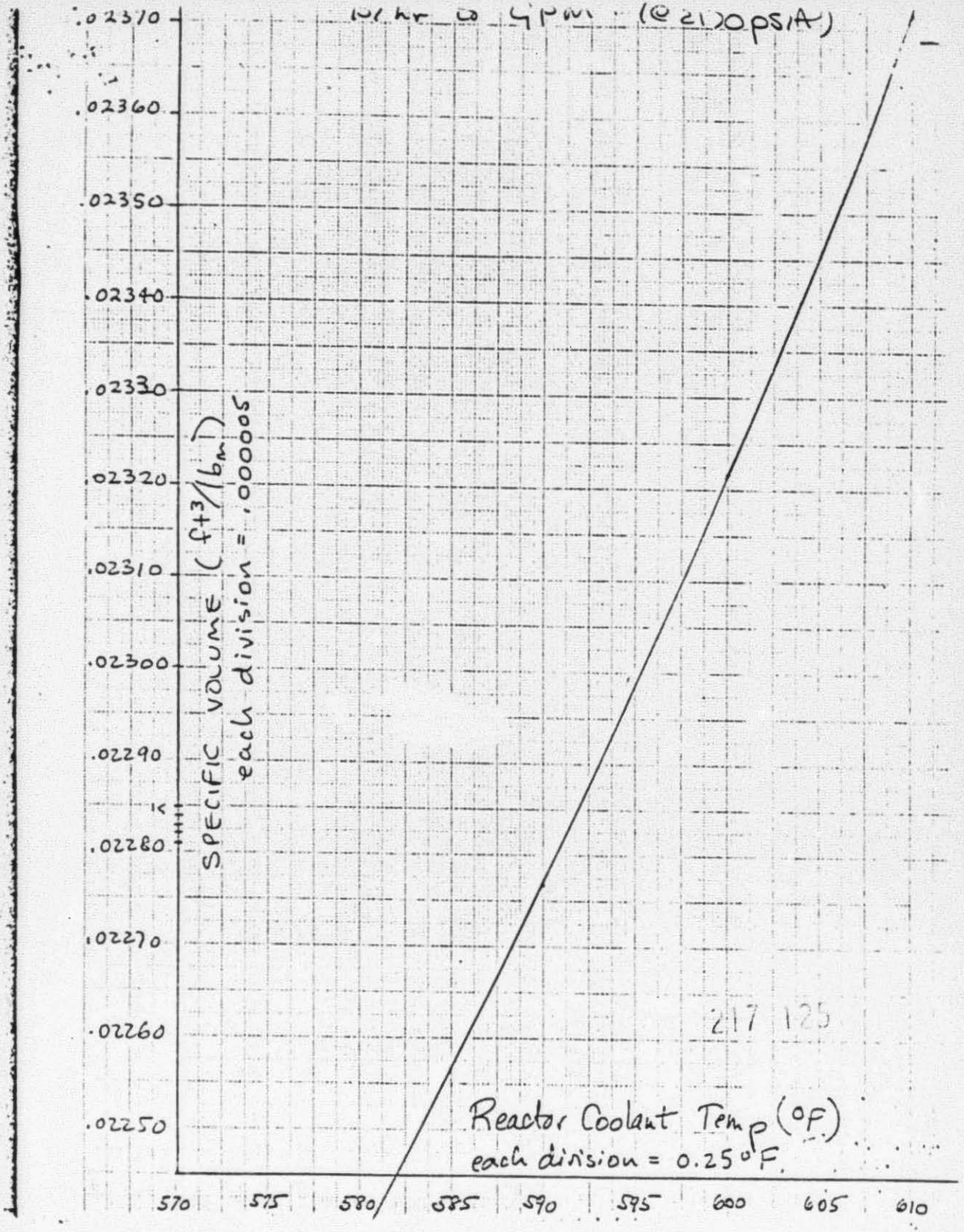
277 124


.02240
.02230
.02220
.02210
.02200
.02190
.02180
.02170
.02160
.02150
.02140
.02130
.02120
.02110
.02100
.02090
.02080
02070
SPECIFIC VOLUME (ft³/lbm)
each division = .00001
RC TEMPERATURE (°F)
each division = 0.25°F
525
530
535
540
545
550
555
560
565
570
575
580
685



Mhr to GPM (@2100psiA)
.02370
.02360
.02350
.02340
.02330
.02320
.02310
.02300
.02290
.02280
.02270
.02260
.02250
SPECIFIC VOLUME (ft³/lbm)
each division = .000005
Reactor Coolant Temp (°F)
each division = 0.25°F
570
575
580
585
590
595
600
605
610
217 125

CONTROLLED COPY
CONTROL ROOM
WORKING COPY

THREE MILE ISLAND NUCLEAR STATION
UNIT #2 SURVEILLANCE PROCEDURE 2301-S1
SHIFT AND DAILY CHECKS

Table of Effective Pages

Page	Date	Revision	Page	Date	Revision	Page	Date	Revision
1.0	12/22/77	2	25.0	08/15/77	0			
2.0	03/21/78	5	26.0	12/22/77	2			
3.0	08/15/77	0	27.0	12/22/77	2			
4.0	08/15/77	0	28.0	08/15/77	0			
4.1	03/09/78	4	29.0	08/15/77	0			
5.0	12/22/77	2	30.0	08/15/77	0			
6.0	02/05/79	14	31.0	08/15/77	0			
7.0	09/01/78	10	32.0	08/15/77	0			
8.0	08/15/77	0	33.0	05/24/78	7			
9.0	12/22/77	2	34.0	12/22/77	2			
10.0	11/09/78	12	35.0	01/12/79	13			
11.0	03/14/79	15	36.0	01/12/79	13			
12.0	06/12/78	8						
13.0	03/09/78	4						
14.0	03/14/79	15						
14.1	08/15/78	9						
15.0	11/09/78	12						
16.0	01/30/78	3						
17.0	01/30/78	3						
18.0	01/30/78	3						
19.0	03/09/78	4						
20.0	12/22/77	2						
21.0	06/12/78							
22.0	11/09/78	1						
23.0	12/22/77	2						
24.0	08/15/77	0						

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Unit 1 Staff Recommends Approval

Approval N/A Date —

Cognizant Dept. Head

Unit 2 Staff Recommends Approval

Approval N/A Date —

Cognizant Dept. Head

Unit 1 PORC Recommends Approval

N/A Date —

Chairman of PORC

Unit 2 PORC Recommends Approval

[signature] Date 3/14/79

Chairman of PORC

Unit 1 Superintendent Approval

N/A Date —

Unit 2 Superintendent Approval

[signature] Date 3/14/79

Manager Generation Quality Assurance Approval N/A Date —

THREE MILE ISLAND NUCLEAR STATION

UNIT #2 SURVEILLANCE PROCEDURE 2301-S1

SHIFT AND DAILY CHECKS

1.0 PURPOSE

1.1 To perform the required Shift and Daily Checks in compliance with the TMI Unit 2 Technical Specifications.

1.2 To review and implement Event Related Surveillance Requirements in compliance with the TMI Unit 2 Technical Specifications.

2.0 MODE/FREQUENCY REQUIREMENTS:

2.1 Refer to applicable attachments, Mode and frequency requirements of a given surveillance item.

3.0 LIMITS AND PRECAUTIONS

3.1 Each hourly log entry shall be recorded within one hour and 5 minutes of the previous entry.

3.2 Each bi-hourly log entry shall be recorded within 2 hours and 10 minutes of the previous entry.

3.3 Each shiftly log entry shall be recorded within 13 hours of the previous entry.

3.4 Each daily log entry shall be recorded within 26 hours of the previous entry.

3.5 Refer to the MODE applicability on each enclosure/appendix data sheet when recording data and implementing Tech Spec ACTION requirements.

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4.0 LOCATION

PARAMETER		INST. NO.	READOUT DESIGNATOR	LOCATION
RC Outlet Temp.	Loop A	RC-4ATT1	Loop A Th - (TT1)	Panel 4
		RC-4ATT4	Loop A Th - (TT4)	Panel 4
	Loop B	RC-4BTT1	Loop B Th - (TT1)	Panel 4
		RC-4BTT1	Loop B Th - (TT4)	Panel 4
RC Unit Outlet Temp.	Loop A	Selected Loop "A" TH	Loop A Th	RC-4TR Pnl. 4
	Loop B	Selected Loop "B" Th	Loop B Th	RC-4TR Pnl. 4
	Unit	Average Sel. Loop A & Loop B Th	Unit Th	RC-4TR-Pnl. 4
R. C. Press	Wide Range	RC-3A PR2	RC Press. W.R.	Panel 4
	Narrow Range A	RC-3A PR1	RC Press NR-A	Panel 4
	Narrow Range B	RC-3B PR1	RC Press NR-B	Panel 4
R.C. Press	SFAS Ch. 1	RC-3A PT3	RCS Press.	SFAS Cab. 124
	SFAS Ch. 2	RC-3A PT4	RCS Prsss.	SFAS B/X Cab. 125
	SFAS Ch. 3	RC-3B PT3	RCS Press.	SFAS B/S Cab. 126
R.C. Flow	Loop A	RC-14A-FI	R.C. Flow Loop A	Panel 4
	Loop B	RC-14B-FI	R.C. Flow Loop B	Panel 4
	Total	RC-14A + RC-14B FT	R.C. Flow Total	Panel 4
R.B. Press (Remote)	Wide Range	BS-PT4338-2	R.B. WR Prsss	BS-PR4338 Pnl 3
	Narrow Range	BS-PT1412-2	R.B. WR Press	BS-PR1412 Pnl 3
		BS-PT1412-1	R.B. NR Press	BS-PR1412 Pnl 3
		BS-PT4338-1	R.B. NR Press	BS-PR4338 Pnl 3
R.B. Pressure (Local Ind)	ESFAS	BS-PS-3260	R.B. Press Ch. A	Rack 455
	ESFAS	BS-PS-3988	R.B. Press Ch. A	Rack 455
	RPS	BS-PS-3571	R.B. Press Ch. A	Rack 455
	ESFAS	BS-PS-3987	R.B. Press Ch. B	Rack 472
	ESFAS	BS-PS-3259	R.B. Press Ch. B	Rack 472
	RPS	BS-PS-3570	R.B. Press Ch. B	Rack 472
	RPS	BS-PS-3572	R.B. Press Ch. C	Rack 467
	ESFAS	BS-PS-3261	R.B. Press Ch. C	Rack 467
	ESFAS	BS-PS-3989	R.B. Press Ch. C	Rack 467
	RPS	BS-PS-3573	R.B. Press Ch. D	Rack 452
BUS 2-1E U.V.		Relay 27XA/27XB	White Ind. Light	Panel 6A
BUS 2-2E U.V.		Relay 27XA/27XB	White Ind. Light	Panel 6B
BUS 2-3E U.V.		Relay 27X	White Ind. Light	BUS 2-3E ( )
BUS 2-4E U.V.		Relay 27X	White Ind. Light	BUS 2-4E ( )

PARAMETER	INST. NO	READOUT DESIGNATOR	LOCATION
Chlorine Monitor	AH-CIS-5484	Chl. Monitor - Air Intake Tunnel	281' Elev. of Serv. Bldg.
	AH-CIS-5188	Chl.Monitor-Control Room Supply Air	351' Elev. of Cont. Bldg.
ECCS Valves	NA	BS-V3A	MCC 2-11EA
		BS-V3B	MCC 2-21EA
		CF-V1A	MCC 2-11EB
		CF-V1B	MCC 2-21EB
		CF-V3A	MCC 2-32B
		CF-V3B	MCC 2-42B
Condensate Storage Tanks	CO-LI-072	CST 1A Level	Panel 5
	CO-LI-072	Local LI	At "A" CST
	Comp Pt. #93	CST 1A Level	Computer
	CO-LI-073	CST 1B Level	Panel 5
	CO-LI-073	Local LI	At "B" CST
	Comp Pt. #94	CST 1B Level	Computer
C.R. Air Temp.	AH-YMTR-5193	CR Air Temp.	Panel 25
BWST Temp.	DH-4TI	BWST Temp.	Panel 8
River Water Temp.	SR-TE1083	River Water Temp.	Comp Pt. #1031
	NR-TI2017	River Water Temp.	Riverwater Pump House
	NR-TI2018		
River Water Level	NA	NA	Unit 1 Screen House
Outside Air Temp.	AH [illegible]23	Air Temp.	Panel 10
Wind Speed & Direction	Reco	W.S. W.D.	Panel 10
Control Rod Position	Absolute	API	Panel 14
	Relative	API	Panel 14
	Group Avg.	Gp. Avg. PI	Panel 4
Axial Power Imbalance	NI-5	Δ Flux NI-5	Panel 4
	NI-6	Δ Flux NI-6	
	NI-7	Δ Flux NI-7	
	NI-8	Δ Flux NI-8	
Core Flood Tank Level	CF-2 LI1	CFT "A1" Level	Panel 8
	CF-2 LI2	A2 Level	
	CF-2 LI3	B1 Level	
	CF-2 LI4	B2 Level	

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PARAMETER	INST. NO	READOUT DESIGNATOR	LOCATION
Core Flood Tank Pressure	CF-PI1	A1 Press	Panel 8
	CF-PI2	A2 Press	
	CF-PI3	B1 Press	
	CF-PI4	B2 Press	
Pressurizer Level	RC-1 LT1	LT1 (RC-1LR)	Panel 4
	RC-1 LT2	LT2 (RC-1LR)	
	RC-1 LT3	LT3 (RC-1LR)	
OTSG Level (Operating Range)	SP-1A LT2	SP-1A LR	Panel 4
	SP-1A LT3	SP-1A LR	
	SP-1B LT2	SP-1B LR	
	SP-1B LT3	SP-1B LR	
RB Temp.	AH-YMTR-5017	Recorder Pt. 11 Recorder Pt. 12 Recorder Pt. 13 Recorder Pt. 14 Recorder Pt. 15 Recorder Pt. 16	Panel 25
Reactor Power	NI-5	Total Flux	RPS Cab A
	NI-6	Total Flux	RPS Cab B
	NI-7	Total Flux	RPS Cab C
	NI-8	Total Flux	RPS Cab D
Delta Flux	NI-5	Buffered Delta Flux	RPS Cab A
	NI-6	Buffered Delta Flux	RPS Cab B
	NI-7	Buffered Delta Flux	RPS Cab C
	NI-8	Buffered Delta Flux	RPS Cab D
RCS Flow	FT 1,2,3 & 4	Total Flow	RPS Cab A, B C & D
RCS Press	RC-3A PT1 & 2 RC-3B PT1 & 2	Pressure	RPS Cab A, B, C & D
RC Pumps		Pump/Flux Contact Monitor	RPS Cab A, B, C & D
Intermediate Range Power	NI-3 & 4	IR Flux	RPS Cab C & D
Intermediate Range Rate	NI-3 & 4	IR Rate	RPS Cab C & D
Source Range Flux	NI-1 & 2	SR Flux	RPS Cab A & B
Source Range Rate	NI-1 & 2	SR Rate	RPS Cab A & B
RB Sump Level	WDL-LI1316	RB Sump Level	Rad Waste Pnl. 301A

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OTSG "A" Outlet Press	SP-6A-PT1	OTSG "A: Press	Panel 4
	SP-6A-PT2	OTSG "A" Press	Panel 4
OTSB "B" Outlet Press	SP-6B-PT1	OTSG "B" Press	Panel 4
	SP-6B-PT2	OTSB "B" Press	Panel 4
Radiation Monitoring System	HP-R-215	Fuel Handling Bride Area	Panel 12
	HP-R-221B P	Fuel Handling Bldg Exh. Duct-Downstream of Filter	Panel 12
	HP-R-221B G		
	HP-R-227 P and G	R.B. Air Sample Line	Panel 12
	HP-R-229 P and G	R.B. Hydrogen Purge Duct	Panel 12
	HP-R-225 P, I and G	R.B. Purge Exhaust Duct "A"	Panel 12
	HP-R-226 P, I and G	R.B. Purge Exhaust Duct "B"	Panel 12
	HP-R-219 P, I and G	Station Vent Monitor	Panel 12

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5.0 ATTACHMENTS

5.1 Enclosures:

1. Miscellaneous Surveillance Items.
2. Rod Position Instrumentation.
3. RPS Instrumentation Channel Checks.
4. RMS Instrumentation Channel Checks.
5. Event Related Surveillance Requirements.

5.2 Appendix: (Event Related Data Sheets).

A. OTSG Press/Temp Limitations.
B. Flood Protection.
C. Asymmetric Rod Monitor Inoperable.
D. Regulating Rod Insertion Limits/Sequence.
E. Axial Power Imbalance Monitor Inoperable.
F. NSRW Source to Aux FW Pumps.
G. Quadrant Power Tilt Monitor Inoperable.
H. Boron Reduction in RCS.

Figures:

1. Control Rod Position Index vs Power Level.
2. Axial Power Imbalance Envelope.

6.0 PROCEDURE:

Data Sheets in this procedure are separated into ENCLOSURES and APPENDICES:

a. "Enclosure" data sheets are to be completed each shift as specified by MODE applicability identified on each individual data sheet.

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b. "Appendix" data sheets are EVENT RELATED and shall only be completed whenever an EVENT-RELATED-SURVEILLANCE-REQUIREMENT exists per Enclosure 5 (Event Related Surveillance Requirements).

c. Enclosure 5 - Event Related Surveillance Requirements - shall be used to determine if an EVENT-RELATED condition exists by reviewing unit conditions as described under "EVENT DESCRIPTION" column. Parameter data is NOT to be logged on this data sheet. However all parameters shall be monitored throughout shift and no entries made on this sheet until the end of the shift or until the event has occured.

Surveillance requirements are listed with the appropriate items on data sheet attachments to this procedure. Follow up each item NOT meeting requirements per applicable TECH SPEC ACTION Number.

6.1 Record appropriate data per Enclosure 1, MISCELLANEOUS SURVEILLANCE ITEMS, per MODE applicability identified on each data sheet. Follow up per applicable Tech Spec ACTION Number if required data is not within acceptance criteria.

6.2 Record control rod positions per Enclosure 2, ROD POSITION INSTRUMENTATION, and refer to Figure 1, as necessary, to ensure that required rod positions are satisfied. Follow up per applicable Tech Spec ACTION Number if required data is not within acceptance criteria.

6.3 Record appropriate data per Enclosure 3, RPS INSTRUMENTATION CHANNEL CHECKS, and determine channel OPERABILITY by comparison of the channel indication and/or status derived from independent instrument channels measuring the same parameter (i.e. Tech Spec definition of CHANNEL CHECK). Follow up per applicable Tech Spec ACTION Number if any channel is determined INOPERABLE.

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6.4 Record appropriate data per Enclosure 4, RMS INSTRUMENTATION CHANNEL CHECKS, and determine channel OPERABILITY by satisfactory performance of a CHANNEL CHECK. Follow up per applicable Tech Spec ACTION Number if any channel is determined INOPERABLE.

6.5 Complete Enclosure 5, EVENT RELATED SURVEILLANCE REQUIREMENTS, each shift, by reviewing Unit status in relation to the "EVENT DESCRIPTION" column of the data sheet and determine if an event requiring further surveillance exists:

a. If an event, as listed, does not exist, no followup action is required.

b. If an event, as listed, does exist, follow up per noted Tech Spec ACTION statement and/or appropriate Surveillance Procedure.

c. Log time and conditions of existing events requiring further surveillance in the Control Room Operators Log.

d. Notify Shift Supervisor/Foreman upon determination of an event related requirement.

e. Each subsequent shift shall document the initiation/continuation of all EVENT-RELATED surveillance activities in the Control Room Operators Log at the beginning of each shift.

NOTE: Event related surveillance requirements are to be implemented upon each event occurrance. Enclosure 5 should be referred to as often as necessary each shift to ensure that proper Tech Spec surveillance is being maintained.

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7.0 ACCEPTANCE CRITERIA

7.1 Readings are acceptable if within normal expected range for various plant conditions.

7.2 Appropriate Tech Spec ACTION paragraphs are implemented for items not meeting surveillance requirements.

7.3 Entries are made in the Control Room Operators Log of all implemented Event Releated surveillance requirements and all out-of-spec items identifying subsequent followup action.

7.4 All data sheets are completed, as applicable, by the data taken and approved by the Shift Supervisor/Foreman each shift.

7.5 Log entries are recorded within the time limits specified in section 3, Limits and Precautions.

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ENCLOSURE 1
SHIFT AND DAILY SURVEILLANCE CHECKS
MISCELLANEOUS SURVEILLANCE ITEMS

APPLICABLE MODES: 1,2,3,4,5,6 PRESENT MODE / / / DATE 3/27/79

TECH SPEC ACTION No.	DATA DESCRIPTION	ACTUAL 3	ACTUAL 1	ACTUAL 2	REQUIRED
3.3.3.4	100 Ft Wind Speed Recorder	✓			Sufficient Paper & Ink (✓)
3.3.3.4	100 Ft Wind Direction Recorder (From Unit I)	✓			
3.3.3.4	33-150 Ft Air Temp Delta T Recorder	✓			
3.1.2.8 3.1.3.9 3.5.4	BWST Temp	68			>40°F
3.7.6.1	River Water Level		291		<301 Ft.
SURVEILLANCE CHECKS ARE AS REQUIRED? (YES/NO)		yes	yes	yes	YES-No Followup NO-Followup per I

	3	Time	1	Time	2	Time
Performed by:	[signature]	0520	[signature]	0800	[signature]	1751
Approved by:	[signature]		[signature]		[signature]	

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MAR 27 1979

ENCLOSURE 1
SHIFT AND DAILY SURVEILLANCE CHECKS
MISCELLANEOUS SURVEILLANCE ITEMS

APPLICABLE MODES: 1, 2, 3, 4 Sn 1 of 2 PRESENT MODE 1 1 1 1

DATE_____

TECH SPEC ACTION NO.	DATA DESCRIPTION	ACTUAL 3	1	2	REQUIRED
3.3.3.6	Chlorine Det - Air Intake Tunnel, Conc.	Gr	G2	Gr	In Green or Yellow Band
3.3.3.6	Chlorine Det - Control Room Supply, Conc.	Gr	G2	Gr	In Green or Yellow Band
3.4.5	OTSG (A) Startup Level (In.)	160	160	161	OTSG water level is less than 390 i on tne full range, less than 99% on the operating ranc and greater than 18 inches on the Startup Range.
3.4.5	OTSG (B) Startup Level (In.)	164	164	165	
3.4.5	OTSG Level (A) Full Range (In.)	255	253	253	
3.4.5	OTSG Level (B) Full Range (In.)	258	257	257	
3.4.5	OTSG Level (A) LT-3 Oper. Range (%)	55	56	56	
3.4.5	OTSG Level (B) LT-3 Oper. Range (%)	55	55	56	
3.4.5	OTSG Level (B) LT-2 Oper. Range (%)	55	56	56	
3.4.5	OTSG Level (A) LT-2 Oper. Range (%)	57	55	56	
3.6.1.4	RB Press WR (Red)	0	0	0	RB Internal Pressure is between -2 and +3 PSIG
3.6.1.4	RB Press NR (Green)	-2	-2	-2	
3.6.1.4	RB Press WR (Red)	0	0	0	
3.6.1.4	RB Press NR (Green)	-2	-2	-2	
3.6.1.5	RB Average Air Temp.			115.3	The arithmetical average RB air temperature shall not exceed 130°F.
3.6.1.5	Location a. EL 353-1 AMB Rec. Pt. 11 Panel 25				
3.6.1.5	Location b. EL 353-2 AMB Rec. Pt. 12 Panel 25				
3.6.1.5	Location c. EL 330-1 AMB Rec. Pt. 13 Panel 25	119	120	119	
3.6.1.5	Location d. EL 330-2 AMB Rec. Pt. 14 Panel 25	119	120	119	
3.6.1.5	Location e. EL 310-1 AMB Rec. Pt. 15 Panel 25	102	103	103	
3.6.1.5	Location f. EL 310-2 AMP Rec. Pt. 16 Panel 25	97	97	97	
3.6.1.5	AVERAGE = $\frac{a+b+c+d+e+f}{6}$ =	115	115.3	$\frac{692}{6}$	
	SURVEILLANCE CHECKS ARE AS REQUIRED? (YES/NO)	Yes	Yes	Yes	YES-NO FOLLOW UP NO-FOLLOW UP PER

	3	1	2
Performed By:	Time 0541	Time 1110	Time 1125
Approved By:			

10.0

APPLICABLE MODES: 1,2,3,4 Sh 2of2 PRESENT MODE / / / DATE MAR 27 1979

TECH SPEC ACTION NO.	DATA DESCRIPTION		ACTUAL 3	ACTUAL 1	ACTUAL 2	REQUIRED
3.7.5.1	River Water Level			271.3		>271 ft.
3.7.5.1	River Water Temp			44.7		≤90°F
3.7.7.1	Control Room Air Temp		71	72	72	<100°F
3.5.2 3.5.3	DHR "A" Pump Suct. Vlv (DHV-102A)	OPEN	✓	✓	✓	Valve and breakers are positioned as indicated (✓). NOTE: In Mode 4, only one ECCS Subsystem is required
3.5.2 3.5.3	Valve DHV-102A Breaker (MCC2-11EA)	OPEN	✓	✓	✓	
3.5.2 3.5.3	DHR "B" Pump Suct. Vlv (DHV-102B)	OPEN	✓	✓	✓	
3.5.2 3.5.3	Valve DHV-102B Breaker (MCC2-21EA)	OPEN	✓	✓	✓	
3.5.2 3.5.3	BWST to S.F. Valve (DHV-157)	CLOSED	E-1 OP	E-1 OP	E-1 OP	
3.5.2 3.5.3	Valve DHV-157 Breaker (MCC2-32B)	OPEN	E-1 CL	E-1 CL	E-1 CL	
3.4.6.2	RB Sump Level		2.696	2.25	2.2	Within Operational Leakage Limits of T.S. 3.4.6.2
3.4.6.2	RB Sump Level Change Since Last Shift		.128	.45	-	
3.4.6.2	*No. of RB Sump Pump Starts Since Last Reading		3	2	2	
3.4.6.2	RB Sump Discharge. (Gals)		6.28	4.13	4.18	
	GAls = (28 ft³ x 7.48 gal/ft³ = Sump Pump Starts)					
	*No. of RB Sump Pump Starts since last reading. If computer is O.O.S, Place Control Switches for RB Sump Pumps in OFF. Monitor R.B. Sump Level every 4 hrs.(Log level in CRO Log every time reading is taken) If level gets to 4ft,Start a R.B. Sump Pump and reduce level by 16". (Record starts and use formula as if R.B. Sump Pumps started in AUTO) - in AUTO sump level varies by 16" - (16"=209 gal.)					
3.6.1.7	Accumulated RB Purge time while in Modes 1-4.		10:31	10:37	10:50	≤ 90 hrs. in proceeding 365 da.
3.6.5	AH-E-52A in operation (MCC-2-35) Yes/No		yes	YES	yes	At least one Reactor vessel skirt fan shall be in operation
3.6 5	AH-E-52B in operation (MCC-2-47) Yes/No		no	no	no	
	*Ref. Computer Alarm Printout (pts. 2726 and 2727)					
SURVEILLANCE CHECKS ARE AS REQUIRED? (Yes/NO)			E-1	E-1 YES	E-1 YES	YES-NO FOLLOWUP NO-FOLLOWUP PER

PERFORMED BY:	3 [signature]	TIME 0532	1 [signature]	TIME [illegible]	2 [signature]	TIME 1901	
APPROVED BY:	[signature]		[signature]		[signature]		

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SHIFT AND DAILY SURVEILLANCE CHECKS
MISCELLANEOUS SURVEILLANCE ITEMS

MAR 27 1979

APPLICABLE MODES: 1,2,3	PRESENT MODE	1	1	1	DATE
TECH SPEC ACTION NO.	DATA DESCRIPTION	ACTUAL 3	ACTUAL 1	ACTUAL 2	REQUIRED
3.4.4	Pressurizer Level LT-1	235	230	236	PZR Level is between 45 and 385 in.
3.4.4	Pressurizer Level LT-2	230	224	232	
3.4.4	Pressurizer Level LT-3	240	234	229	
3.5.1	Core Flood Tank "A" Level LT-1A1	13.1	13.1	13.1	CF Tank Level is between 12.55' and 13.45'
3.5.1	Core Flood Tank "B" Level LT-1B1	13	13	13	
3.5.1	Core Flood Tank "A" Level LT-2A2	13.1	13	13	
3.5.1	Core Flood Tank "B" Level LT-2B2	13	13	13	
3.5.1	Core Flood Tank "A" Pressure PT-1A1	590	595	595	CF Tank Nitrogen Pressure is between 575 and 625 (PSIG)
3.5.1	Core Flood Tank "B" Pressure PT -1B1	580	600	600	
3.5.1	Core Flood Tank "A" Pressure PT - 1A2	595	595	595	
3.5.1	Core Flood Tank "B" Pressure PT-2B2	580	605	600	
3.5.1	CF Tk "A" Isol Vlv (CF -1A) OPEN	✓	✓	✓	Valves are Positioned as indicated (✓). NOTE: Required when RCS Pressure is >750 PSIG
3.5.1	CF Tk "B" Isol Vlv (CF-V1B) OPEN	✓	✓	✓	
3.7.1.3	Condensate STorage Tank Level:				Combined Level >27.5 ft required whenever CSTS are source to the Aux FW Pumps
3.7.1.3	LT A Console Level Indicator	17	155	195	
3.7.1.3	LT A Local Level Indicator	17	15	195	
3.7.1.3	LT B Console Level Indicator 217 139	17	15	195	
3.7.1.3	LT B Local Level Indicator	17	15	195	
3.3.2.1	4KV Emerg Bus 2-1E Under Voltage	✓	✓	✓	White Ind. Light (27xA/27xB) Lit
3.3.2.1	4KV Emerg Bus 2-2E Under Voltage	✓	✓	✓	
3.3.2.1	4KV Emerg Bus 2-3E Under Voltage	✓	✓	✓	White Ind. Light (27x) Lit
3.3.2.1	4KV Emerg Bus 2-4E Under Voltage	✓	✓	✓	
SURVEILLANCE CHECKS ARE AS REQUIRED? (YES/NO)		YES	YES	YES	YES-NO FOLLOWUP NO-FOLLOWUP PER T
Performed By:		[3] TIME 2342	[1] TIME 10.0	[2] TIME 1748	
Approved By:					

ENCLOSURE 1

SHIFT AND DAILY SURVEILLANCE CHECKS
MISCELLANEOUS SURVEILLANCE ITEMS

03/09/78
2301-S1
Revision 4
DATE MAR 27 1979

APPLICABLE MODES: 1,2,3 | PRESENT MODE | / | / | /

TECH SPEC ACTION NO.	DATA DESCRIPTION	ACTUAL 3	1	2	REQUIRED
3.3.2.1	RCS Press Chan 1. (ES Cab No. 124)	2250	2250	2250	Channel check satisfactory by comparison of Readings. log indicated value.
3.3.2.1	RCS Press Chan. 2 (ES Cab No. 125)	2200	2200	2200	
3.3.2.1	RCS Press Chan. 3 (ES Cab No. 126)	2200	2200	2200	
3.3.2.1	RB Press (BS-PS-3261) Instrument Rack 467	.1	0	0	Each Channel Reading is to be compared with other channels indicating the same parameter and any deviations evaluated for malfunction of instrument or sensors.
3.3.2.1	RB Press (BS-PS-3989) Instrument Rack 467	0	0	0	
3.3.2.1	RB Press (BS-PS-3987) Instrument Rack 472	.1	0	0	
3.3.2.1	RB Press (BS-PS-3259) Instrument Rack 472	.1	.05	0	
3.3.2.1	RB Press (BS-PS-3260) Instrument Rack 455	0	0	0	
3.3.2.1	RB Press (BS-PS-3988) Instrument Rack 455	.1	0	0	In general, deviations >10% warrent further investigation and/or correctiv action.
	SURVEILLANCE CHECKS ARE AS REQUIRED? (YES/NO)	Yes	Yes	Yes	YES-NO FOLLOWUP NO-FOLLOWUP PER T

	3	1	2	
Performed By:	[signature]	[signature]	[signature]	TIME 2305
Approved By:	[signature]	[signature]	[signature]	

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ENCLOSURE 1
SHIFT AND DAILY SURVEILLANCE CHECKS
MISCELLANEOUS SURVEILLANCE ITEMS

2301-S1
Revision 15
03/14/79 MAR 27 1979

APPLICABLE MODES: 1 | PRESENT MODE | / | / | /

TECH SPEC ACTION NO.	DATA DESCRIPTION	ACTUAL 1	ACTUAL 2	ACTUAL 3	REQUIRED
3.2.5	DNB PARAMETERS:				RCP's OPERATING 4 / 3 / 2
3.2.5	RC Pressure NR Loop "A" (PSIG)	2150	2145	2200	≥2062 PSIG / ≥2058 PSIG / ≥ 2092 PSIG
3.2.5	RC Pressure NR Loop "B" (PSIG)	2150	2150	2150	
3.2.5	RC Pressure WR Loop "A" (PSIG)	2200	2200	2150	
3.2.5	RC Outlet Temp (°F) Loop "A" TT1	604	604	604.5	
3.2.5	RC Outlet Temp (°F) Loop "A" TT4	604	604	604.5	
3.2.5	RC Outlet Temp (°F) Loop "B" - TT1	605	605	605	≤ 609° F / ≤ 609°F / ≤ 609°F
3.2.5	RC Outlet Temp (°F) Loop "B" - TT4	605	605	605	
3.2.5	RCS Total Flow (%) (100% = 144.1E6 #/HR) See Appendix I TC 1 - 2 - 79 - 30	377 / 424	376 / 120	376 / 600	See Appendix I 95% / 70.1% / 43.1%
___	Number of RC Pumps Operating	4	4	4	Rev. for above TS 3.2.5 Req 'Mt.
3.2.1 *	Axial Pwr Imb Within Limits?	yes	yes	yes	Per Compt Gp. 55 YES/NO
	NI Calibration				
3.3.1.1	Perform Heat Balance Calibration	✓	✓	✓	Rx ≥15% F.P.
	per 2302-S1				
	NOTE: Attach completed Data Sheet(s) for NI				
	calibration.				
	* Required when >40% RTP				
	SURVEILLANCE CHECKS ARE AS REQUIRED? (YES/NO)	yes	yes	yes	YES-NO FOLLOWUP NO-FOLLOWUP PER

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Performed By:	3 [signature]	TIME 0545	1 [signature]	TIME 0530	2 [signature]	TIME 1737
Approved By:	[signature]		[signature]		[signature]	

ENCLOSURE 1
SHIFT AND DAILY SURVEILLANCE CHECKS
MISCELLANEOUS SURVEILLANCE ITEMS

2301-S1
Revision 9
08/15/78

MAR 27 1979

APPLICABLE MODES:	PRESENT MODE				
TECH SPEC ACTION NO.	DATA DESCRIPTION	ACTUAL 3	ACTUAL 1	ACTUAL 2	REQUIRED

Applicable Modes: 3, 4, 5 Present Mode

Tech Spec. Action No.		ACTUAL 3	ACTUAL 1	ACTUAL 2	REQUIRED
3.1.1.1	Determine SD Margin to be ≥ 1% Δk/k per S.P. 2311-F3				Complete 2311-F3 sd margin must be ≥ 1% Δ k/k

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SURVEILLANCE CHECKS ARE AS REQUIRED? (YES/NO)				YES-NO FOLLOWUP NO-FOLLOWUP PER
Performed By:	3 TIME	1 TIME	2 TIME	
Approved By:		14.1		

2301-51 11/09/78
Revision 12

MAR 27 1979

APPLICABLE MODES: 1,2 //// PRESENT MODE [3] [1] [ ] DATE ____

Gp-Rd	1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	3-1	3-2	3-3	3-4	3-5	3-6	3-
3	API	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	RPI	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1	API	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	RPI	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
2	API	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	RPI	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Gp-Rd	3-8	4-1	4-2	4-3	4-4	4-5	4-6	4-7	4-8	5-1	5-2	5-3	5-4	5-5	5-6	5-7	5-8	5-9	5-1
3	API	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	RPI	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1	API	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	RPI	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
2	API	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	RPI	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Gp-Rd	5-11	5-12	6-1	6-2	6-3	6-4	6-5	6-6	6-7	6-8	6-9	6-10	6-11	6-12	7-1	7-2	7-3	7-4	7-5
3	API	100	100	95	95	95	95	95	95	95	95	95	95	95	95	93	93	93	93
	RPI	100	100	95	95	95	95	95	95	95	95	95	95	95	93	93	93	93	93
1	API	100	100	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99
	RPI	100	100	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99
2	API	100	100	98	98	97.5	97.5	97	98	97	97	97.5	97	98	98	96	97.5	96	97	98
	RPI	100	100	97.5	97.5	97	97	97	97	96	96	97.5	97	98	98	97.5	97	97.5	96	97

Gp-Rd	7-6	7-7	7-8	7-9	8-1	8-2	8-3	8-4	8-5	8-6	8-7	8-8
3	API	93	93	93	93	96	96	96	96	96	96	96	96
	RPI	93	93	93	93	96	96	96	96	96	96	96	96
1	API	99			99	99	99	99	99	99	99	99	99
	RPI	99				99	99	99	99	99	99	99	99
2	API	96	97			97	95	96	96	96	97	97	97.5
	RPI	95	96	96	96	97	97	96	97	97.5	97	97	98

Performed by:

		TIME
3		0530
1		TIME
2		TIME

Approved by:

GROUP	1	2	3	4	5	6	7	8
3	100	100	100	100	100	95	95	96
1	100	100	100	100	100	99	99	99
2	100	100	99.5	99.5	99	98	98	97

AVG

COMMENTS:

TECH SPEC ACTION NO.	IS REQUIREMENT: 'YES' answer - No Further Action Req'd. 'NO' answer - Followup per T.S. Action No.	YES/NO 3	1	
3.1.1.1 **	S/D Margin ≥ 2 %δk/k (Reg Rods within limits of Fig. 1) (Applicable when Keff ≥1.0*)	YES	YES	
3.1.3.1	All Safety & Reg Rods agree within ± 6.5% of Gp AVG?	YES	YES	
3.1.3.2	All APSR AGREE within ± 6.5% of Group AVG?	YES	YES	
3.1.3.3	Each Rod API & RPI agrees within ± 6.5% 217 145	YES	YES	
3.1.3.6 *	All Safety Rods Fully Withdrawn?	YES	YES	
3.1.3.7 *	Reg Rod Groups Positioned Per Fig 1 with 25±5% Gp Overlap?	YES	YES	
	(** NOTE: Attach completed Data Sheet from Shutdown Calculations)			

* Keff ≥1.0

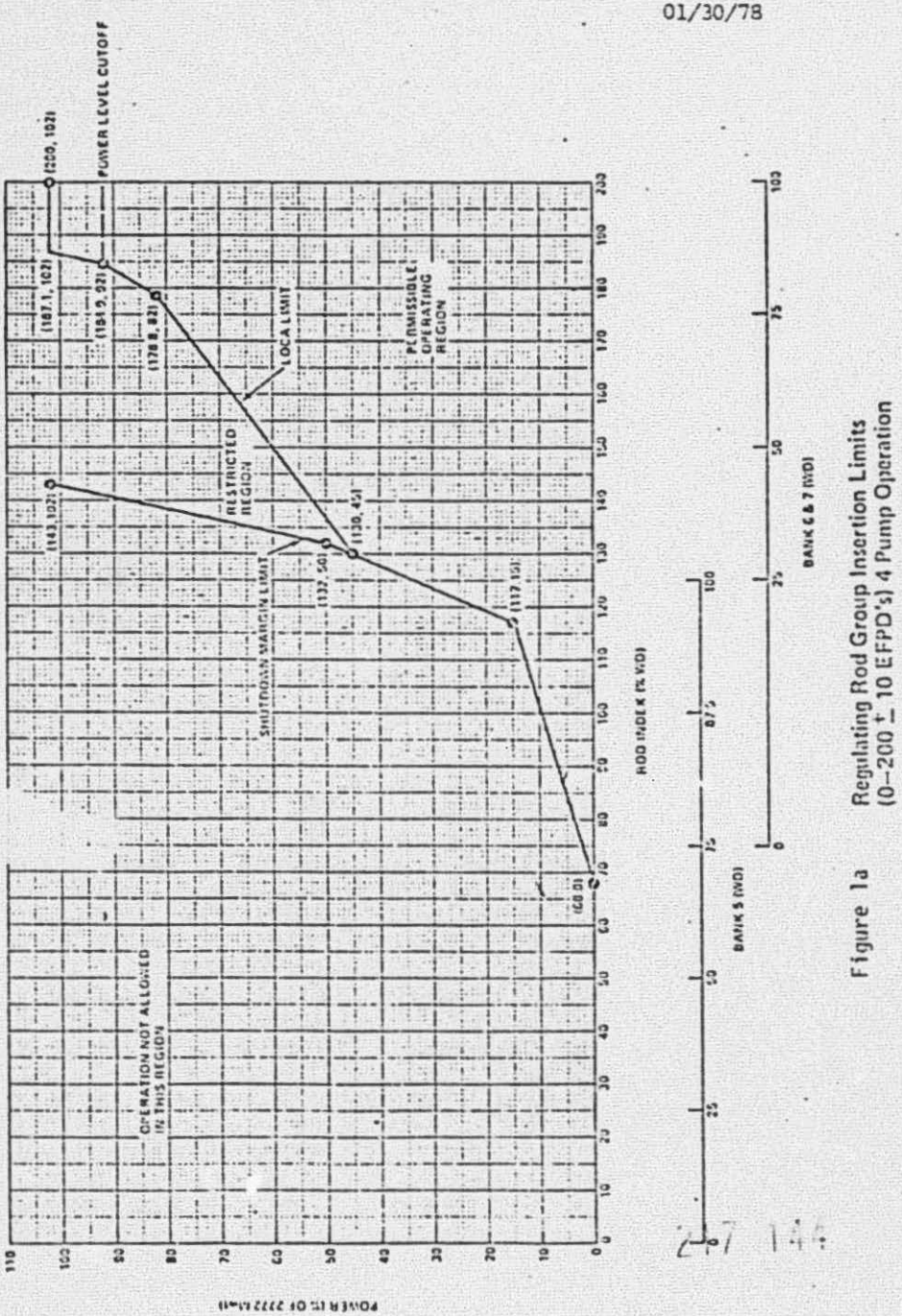

Figure 1a Regulating Rod Group Insertion Limits
(0–200 ± 10 EFPD's) 4 Pump Operation

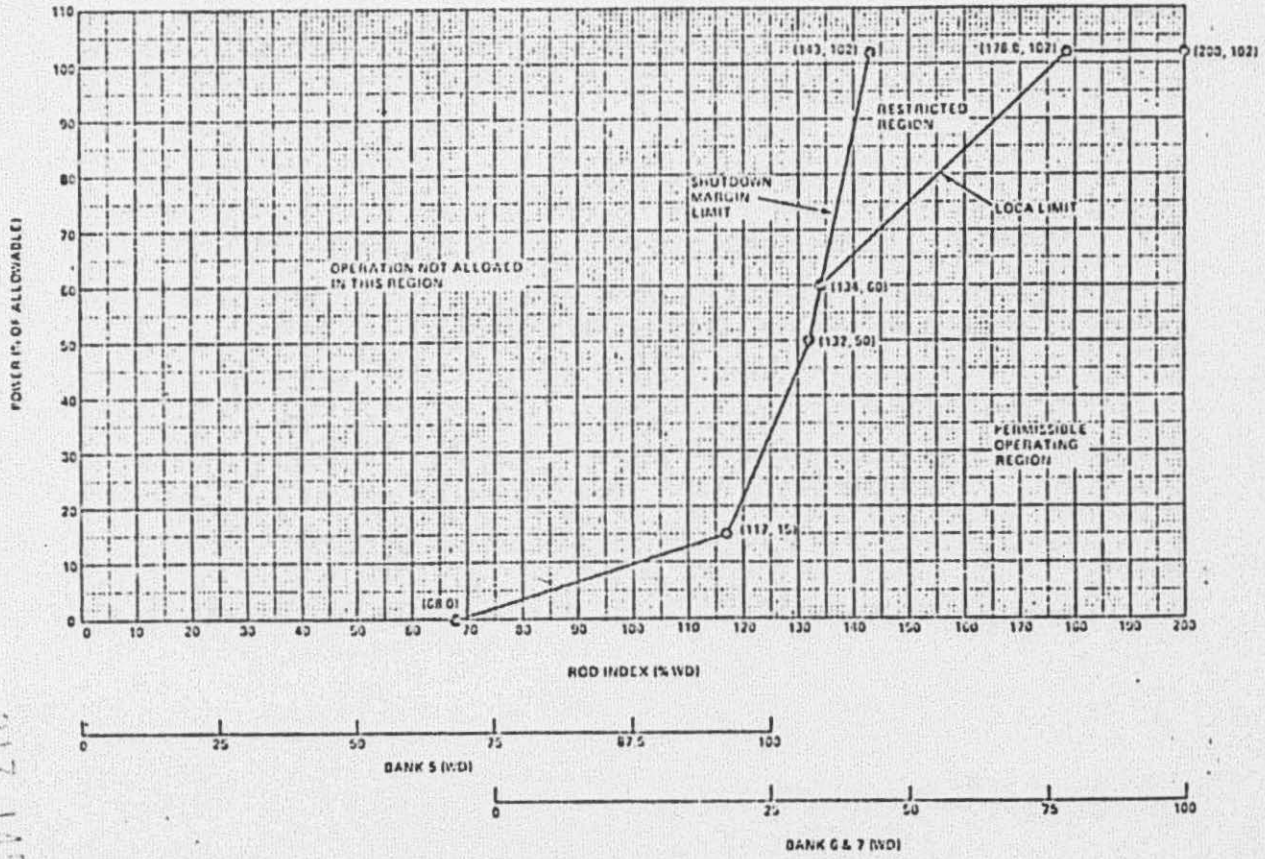

Figure 1-b Regulating Rod Group Insertion Limits
(0–200 ± 10 EFPD's) 3 Pump Operation

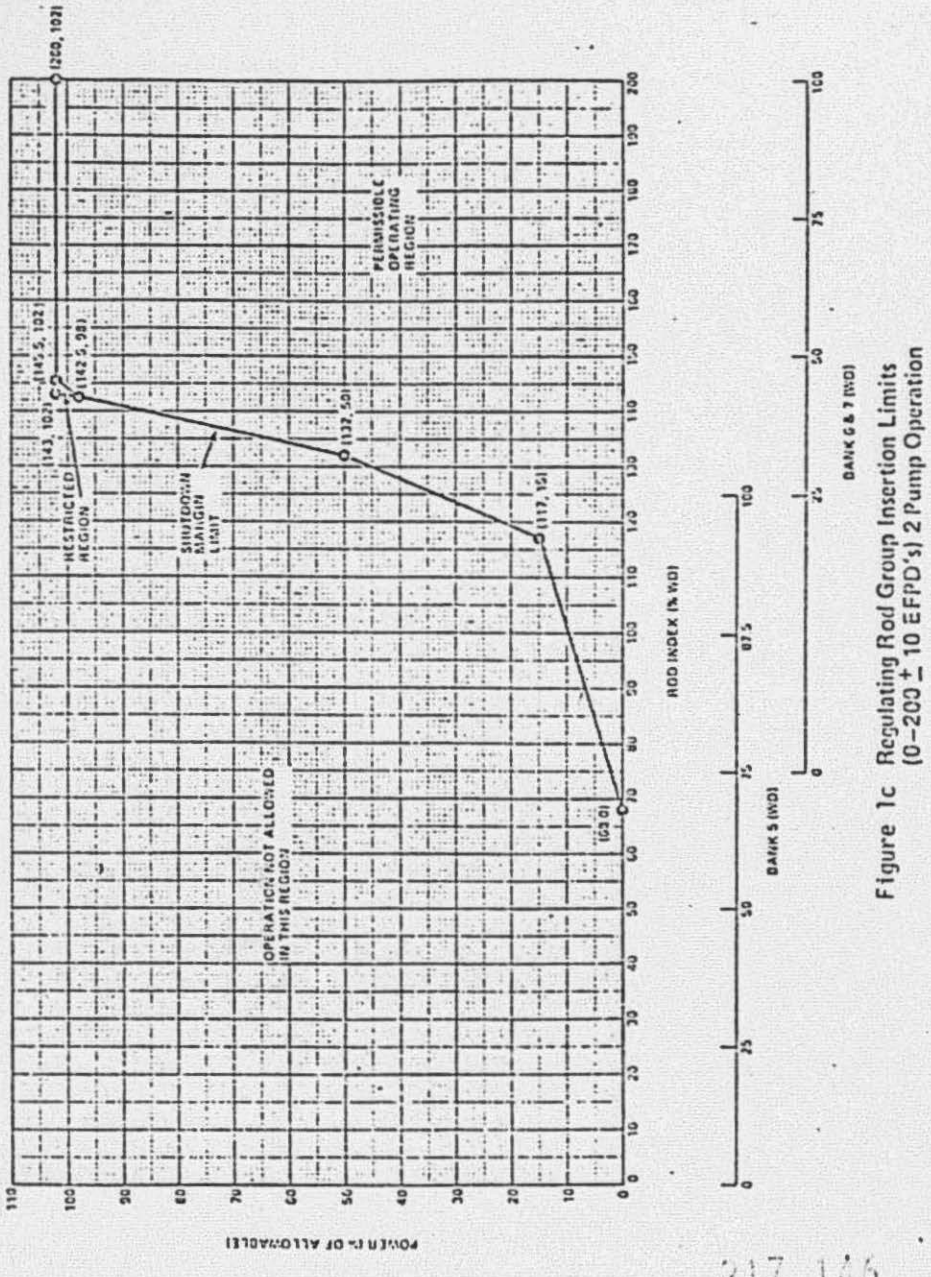

Figure 1c Regulating Rod Group Insertion Limits
(0-200 ± 10 EFPD's) 2 Pump Operation

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2301-S1
Revision 4
03/09/78

ENCLOSURE 3

SHIFT AND DAILY SURVEILLANCE CHECKS
RPS INSTRUMENTATION CHANNEL CHECKS

APPLICABLE MODES: 1, 2 | PRESENT MODE: 3 1 1 1 2 1

PARAMETER	RPS Cab.	A			B			C			D		
	Shift	3	1	2	3	1	2	3	1	2	3	1	2
TOTAL N Flux (% Power)		97	98	99	98	99	99	98	98	99	98	98	99
Buffered Delta Flux (% Power)		-3	-3	0	-4	-3	-1	-4	-3	-1	-4	-3	0
TOTAL RC Flow (Lbs/Hr x 10^6)		144	143	146	136	137	139	140	140	140	142	142	143
RC Pressure (PSIG)		2160	2160	2160	2160	2160	2165	2140	2150	2145	2130	2140	2145
Reactor Coolant Pressure/Temperature Comparitor	Temp (°F)	610	609	609	609	609	609	613	612	612	610	610	611
	Press (PSIG)	2010	2005	2005	2010	2005	2010	2020	2005	2015	2010	2000	2020
RB Press-Local Ind. (Ref. Sect. 4.D)		.1	.05	0	.1	0	0	.1	.1	0	.1	.1	.05
Pump/Flux Contact Monitor: (Circle the number corresponding to the bright lights)		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Required whenever the CRD Bkrs are CLOSED	IR Flux (Amps)							-4 1.5E	1.5E	1.5E	-4 1.5E	1.5E	1.5E
	IR Rate (DPM)							0	0	0	0		0

MODES 3,4, & 5

Shutdown Bypass (N - Normal) (B - Bypass)	N	N	N	N	N	N	N	N	N	N	N	N

MODES 2,3,4, & 5

Source Range Flux (CPS)	NA	N/A	NA	NA	N/A	NA
Source Range Rate (DPM)	↓	↓	↓	↓	↓	↓

COMMENTS:

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TECH SPEC. ACTION NO.	TECH SPEC REQUIREMENT: 'YES' - No further action req'd. 'NO' - Followup per T.S. Action No.	3	1	2
3.3.1.1	RPS Channels OPERABLE* per CHANNEL CHECK (yes/no)	yes	yes	yes

*Each Channel Reading is to be compared with other channels indicating the same parameter and any deviations evaluated for malfunction of instrument or sensors. In general, deviations >10% warrant further investigation and/or corrective action.

DATE: MAR 27 1979

SHIFT:	- 3 -		- 1 -		- 2 -	
Performed By:	[signature]	TIME 0555	[signature]	TIME 1000	[signature]	TIME 2306
Approved By:	[signature]		[signature]		[signature]	

Applicable Modes	Instrument	Source Check Sat 1st Shift	2nd Shift	3rd Shift	T/S Action	Comments
All	HP-R-219 (P) Stat. Vent	SAT	Sat	Sat	2.3.2(ETS) 3.3.	
	HP-R-219 Stat. Vent (I)	SAT	Sat	Sat	3.4. 3.4	
	HP-R-219 Stat. Vent (G)	SAT	Sat	Sat	3.4 3.	
	HP-R-225 R.B. Purge (P)	SAT	Sat	Sat	3. 3.4.6.2	
	HP-R-225 R.B. Purge (I)	SAT	Sat	Sat	3.4.6.1 3.4.6.2	
	HP-R-225 R.B. Purge (G)	SAT	Sat	Sat	3.4.6.1 3.4.6.2	
	HP-R-226 R.B. Purge (P)	SAT	Sat	Sat	3.4.6.1 3.4.6.2	
	HP-R-226 R.B. Purge (I)	SAT	Sat	Sat	3.4.6.1 3.4.6.2	
	HP-R-226 R.B. Purge (G)	SAT	Sat	Sat	3.4.6.1 3.4.6.2	
1,2,3,4	HP-R-227 RCS Leakage (P)	SAT	Sat	Sat	3.3.3.1 3.4.6.1	
	HP-R-227 RCS Leakage (G)	SAT	Sat	Sat		
Note (1)	HP-R-221B F.H. Bldg Vent (P)	N/A	N/A	N/A	3.3.3.1	
Note (2)	HP-R-215 Crit. Monit.	N/A	[illegible]			

The above radiation monitoring instrumentation is operable except as noted.

NOTE 1: Required whenever irradiated fuel is in spent fuel pool.

NOTE 2: Required whenever fuel is in S.F. Pool or in Fuel Handling Building.

	1st Shift	2nd Shfit	3rd Shift
PERFORMED BY:	[signature]	[signature]	[signature]
APPROVED BY:	C. Guthrie	[signature]	[signature]
	Date Time	12/27/79 Date 1700 Time	MAR 27 1979 Date 0554 Time

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ENCLOSURE 5

EVENT RELATED SURVEILLANCE REQUIREMENTS Page 1 of 3

2301-S1
DATE Revision 8
06/12/78

MODE						EVENT DESCRIPTION	EVENT EXISTS? YES/NO			PERFORM S.P. No.	RELATED T.S. ACTION No.	SURVEILLANCE REQUIREMENT
6	5	4	3	2	1		3	1	2			
✓	✓	✓	✓	✓	✓	Boron Reduction in RCS	YES	YES	YES	2301-S1 App II	3.1.1.2	RCS Flow ≥ 2800 GPM
✓	✓	✓	✓	✓	✓	Outside Air Temp < 40°F	YES	YES	YES	2301-S1 Encl. 1	3.1.2.8 3.1.2.9 3.5.4	BWST Temp ≥ 40°F
✓	✓	✓	✓	✓	✓	OTSG Press >237 psig, T-Ave <200°F	NO	NO	NO	2301-S1 App. A	3.7.2.1	OTSG Temp >110°F
✓	✓	✓	✓	✓	✓	River Water Level >301' MSL	NO	NO	NO	2301-S1 App. B	3.7.6.1	Monitor Level ea. 2 hours
✓	✓	✓	✓	✓	✓	PZR Aux Spray in Operation	NO	NO	NO	2311-7	3.4.9.2	Ck PZR/Spray ΔT <410°F ea. 2 hours
✓	✓	✓	✓	✓	✓	Irradiated fuel in Fuel Stg. Pool	NO	NO	NO	2315-R4	3.9.11	Water ≥23' over fuel
✓	✓	✓	✓	✓	✓	Irradiated fuel in Fuel Stg Pool and (1) HEPA/CHARCOAL Housing Maint. or (2) following painting, fire or chemical release in the FH Bldg ventilation area	NO	NO	NO	2303-R28	3.9.12	Verify cleanup performance
✓		✓	✓	✓	✓	RMS CHANNEL INOPERATIVE	NO	NO	NO	--	3.3.3.1	Refer to T.S. 3.3.3.1 ACTION STATEMENTS
	✓	✓	✓	✓	✓	Inoperable Control Rod	NO	NO	NO	2311-1	3.1.1.1.1	Verify S/D Margin within one hour & each 12 hrs per T.S. Req'mt 4.1.1.1.1
	✓	✓	✓	✓	✓	RPS Channel Inoperati...	NO	NO	NO	--	3.3.1.1	Refer to T.S. 3.3.1.1 ACTION STATEMENTS
	✓	✓	✓	✓	✓	Pri Spec Act. >1.0 μC Dose Equiv I-131 or 100/ε μCi/gm	NO	NO	NO	2304-3D2	3.4.8	Isotopic Anal for Iodine each 4 hours
		✓	✓	✓	✓	Establishing containment Integrity	NO	NO	NO	2311-5	3.5.2	Visual Inspection of RB
		✓	✓	✓	✓	Person. Airlock entry	NO	YES	NO	2311-5	3.6.1.1	Flow test door seal > 10 psig after each use, INSP.
						Equip Hatch Airlock entry (Seals broken yes/no)	NO	NO	NO		3.6.1.3	
		✓	✓	✓	✓	ESFAS Channel Inoperative	NO	NO	NO	--	3.3.2.1.1	Refer to T.S. 3.3.2.1. ACTION Statements
		✓	✓	✓	✓	R. B. Isol Valve Maintenance Repair or Replacement	NO	NO	NO	2303-M17	3.6.3.1.1	Check Valve for cycling and closure time

MODE						EVENT DESCRIPTION	EVENT EXISTS ?			PERFORM S.P NO.	RELATED TS ACTION NO.	SURVEILLANCE REQUIREMENTS
6	5	4	3	2	1		3	2	1			
		✓	✓	✓	✓	Control Rm HEPA/CHARCOAL housing Maint., or after painting, fire or chemical release in vent area	NO	NO	NO	2302-R25	3.7.7.1	Verify cleanup performance
		✓	✓	✓	✓	Sec. Sys. Gross Iodine Activity is ▶ 10% of Limit	NO	NO	NO	2304-3D2	3.7.1.4	Do Primary Isotopic Analysi for I-131 DOSE EQUIV ea 31
			✓	✓	✓	NRSW Source to Aux FW Pumps	NO	NO	NO	2301-S-1 App. F	3.7.1.3	Verify for one (10 NSRW Sys OPERABLE each 8 hours
			✓	✓	✓	CSTS Source to Aux FW Pumps	YES	YES	YES	2301-S1 Encl. 1	3.7.1.3	Verify level > ft ea 8 hr
			✓	✓	✓	Following a thermal power change exceeding 15% of the RTP within a 1hr period.	NO	NO	NO	2304-3D2	3.4.8	Do Primary Isotopic analysi for Iodine between 2 & 6 Hrs
			NOTE 2	✓	✓	CF TK VOL INC >1% of Capacity	NO	NO	NO	2304-M1	3.5.1	Verify Boron Conc within 6 hours.
					✓	RCS T-AVE ≤535°F	NO	NO	NO	2311-2	3.1.1.4	Verify T-ave >525°F as 1/2
				✓	✓	RC Pump Combination Change	NO	NO	NO	2311-6	3.4.1	Reset RPS Setpoint vs. RC Pump Comb within 4 hours
				✓	✓	CRD Maintenance/Modification	NO	NO	NO	2303-R1	3.1.3.5	Verify CRD DROP time
				✓	✓	CRD Patch Panel Testing/Maint	NO	NO	NO	2311-3	3.1.3.8	Verify CRD Programming
				✓	✓	RB HEPA/CHARCOAL housing maint., or after painting, fire or chemical release in ventilation area	NO	NO	NO	2303-R15	3.6.4.3	H Purge and Exhaust Performance evalulation
				✓	✓	Asym Rod Monitor INOPERATIVE	NO	NO	NO	2301-S1 APP. C	3.1.3.1 3.1.3.2 3.1.3.3	Verify idnividual and group Rod Positions ea. 4 hours
				✓	✓	Reg Rod INSERT Limit alarm INOP	NO	NO	NO	2301-S1 App. D	3.1.3.7	Verify reg groups within insert limits each 4 hours
				✓	✓	GRD Sequence Alarm INOP	NO	NO	NO	2301-S1 App. D	3.1.3.7	Verify SEQ adn OVERLAP in limits each 4 hours.
						217 170						

MODE 6	MODE 5	MODE 4	MODE 3	MODE 2	MODE 1	EVENT DESCRIPTION	EVENT EXISTS? YES/NO 3	1	2	PERFORM S.P. No.	RELATED TS ACTION No.	SURVEILLANCE REQUIREMENT
				✓	✓	Asym. Rod Monitor Inoperative	NO	NO	NO	2311-F2	3.1.3.1 (C.2.C)	Determine Power Distribution with 72 hours
				✓	✓	At RTP Equil. Boron Conc of 300 PPM	NO	NO	NO	2311-F4	3.1.1.3	Determine Mod. Temp. Coeff Within 7 days
				✓	✓	Init. OP>5% RTP after fuel load	NO	NO	NO	2311-F4	3.1.1.3	Determine Mod Temp Coeff.
					Note 4	Axial Pwr IMB Moniotr INOP	NO	NO	NO	2301-S1 App. E	3.2.1	Calc Axial Pwr IMB ea 1 hr.
					Note 3	Quad Pwr Tilt Monitor INOP	NO	NO	NO	2301-S1 App. G	3.2.4	Calc Quad Pwr Tilt ea. 1 hr.
					✓	Inc Therm Pwr > Pwr Level Cutoff	NO	NO	NO	2311-4	3.1.3.9	Determine Xenon Reactivity Equilibrium
					Note 5	Initial OPER > 75% RTP After each Fuel Loading	NO	NO	NO	2311-2	3.2.2 3.2.3	Determine Nuclear Heat Flux-Hot Channel Factor
					✓	Incore Det. Sys. Used for Surv. Axial Pwr IMB or Quad Pwr Tilt	NO	NO	NO	2302-R4	3.3.3.2	Calib Incore Detector Chan within 7 days prior to use.
					✓	After Ea. 31 EFPD accumulated	yes	NO	NO	2311-F1	3.1.1.1	Reactivity Anomally Check

MODES: 1,2,3,4,5,6 (As Indicated) PRESENT MODE yes 1 NO

	-3-	TIME	-1-	TIME	-2-	TIME
PERFORMED BY:	[signature]	[illegible]	[illegible]		[signature]	1755
APPROVED BY:	[signature]		[signature]		[signature]	

DATE: MAR 27 1979

COMMENTS:

NOTES:
1. With Keff ≥ 1.0
2. RC Press >800 PSIG.
3. When >15% of RTP
4. When >40% of RTP
5. When >20% but <75% of RTP

APPENDIX A
OTSG PRESSURE/TEMPERATURE LIMITATION

SURVEILLANCE REQUIREMENT: Data in this appendix is required at least once per hour when OTSG secondary pressure is >237 psig and T-ave is <200°F

PARAMETER \ TIME																									
OTSG A TT1, °F																									
OTSG A TT2, °F																									
OTSG B TT1, °F																									
OTSG B TT2, °F																									
OTSG A PT1, PSIG																									
OTSG A PT2, PSIG																									
OTSG B PT1, PSIG																									
OTSG B PT2, PSIG																									
RC Tave, °F																									

REQUIRED TECH SPEC ACTION:

Implement T.S. ACTION Paragraph 3.7.2.1 if OTSG Temperature ≤110°F whenever OTSG Pressure >237 PSIG.

COMMENTS: _____

MODES 1, 2, 3, 4, 5, 6

	PERFORMED BY:	APPROVED BY:
3		
1		
2		

DATE: _____

APPENDIX B

FLOOD PROTECTION

SURVEILLANCE REQUIREMENT:

Data in this appendix is required at least once per two (2) hours when River Water level is ≥ 301 feet Mean Sea Level.

TIME	RIVER WATER LEVEL (ft)	PERFORMED BY:	APPROVED BY:

MODE 1, 2, 3, 4, 5, 6 DATE: _____

TECH SPEC REQUIREMENT:

See T.S. ACTION No. 3.7.6.1 if the River Water level exceeds 302 ft MSL.

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APPENDIX C

ASYM ROD MONITOR INOP

SURVEILLANCE REQUIREMENT:

Data in this appendix is required at least once per four (4) hours if the ASYM Rod Monitor is INOPERATIVE.

TIME												
Gp-Rd	API	RPI	API	RPI	API	RPI	API	RPI	API	RPI	API	RPI
1-1												
1-2												
1-3												
1-4												
2-1												
2-2												
2-3												
2-4												
2-5												
2-6												
2-7												
2-8												
3-1												
3-2												
3-3												
3-4												
3-5												
3-6												
3-7												
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4-1												
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4-7												
4-8												
5-1												
5-2												
5-3												
5-4												
5-5												
5-6												
5-7												
5-8												
5-9												
5-10												
5-11												
5-12												
6-1												

TIME Gp-Rd	API	RPI	API	RPI	API	RPI	API	RPI	API	RPI	API	RPI
6-2												
6-3												
6-4												
6-5												
6-6												
6-7												
6-8												
6-9												
6-10												
6-11												
6-12												
7-1												
7-2												
7-3												
7-4												
7-5												
7-6												
7-7												
7-8												
7-9												
8-1												
8-2												
8-3												
8-4												
8-5												
8-6												
8-7												
8-8												

TIME Gp.	AVG	AVG	AVG	AVG	AVG	AVG
1						
2						
3						
4						
5						
6						
7						
8						

COMMENTS: _____

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DATE: _____

MODES 1 and 2

TECH SPEC ACTION No.	T.S. REQUIREMENT	TIME	YES/NO					
3.1.3.1	All Control Rods ±6.5% of Gp?							
3.1.3.2	All APSR ±6.5% of Gp?							
3.1.3.3	All Rods API ±4% of RPI ?							
"YES"-No Further Action "NO"-Followup per T.S. Action No.		PERFORMED BY:						
		APPROVED BY:						

APPENDIX D

REGULATING RODS INSERTION LIMITS/SEQUENCE

SURVEILLANCE REQUIREMENT: Data in this appendix is required at least once per four (4) hours if:

☐ Reg. Rod Insertion Limit Alarm is INOPERABLE.

☐ CRD Sequence Alarm is INOPER
(Check applicable EVENT)

_____Date of EVENT.

_____Time of EVENT

		DATE:						
		TIME:						
Regulating Rod Group Positions: (% W/D)		5						
		6						
		7						
T.S. ACTION No.	TECH SPEC REQUIREMENT:							
3.1.3.7	Reg Rods within Limits of Figure 1? YES/NO							
3.1.3.7	25 ± 5% OVERLAP of Gp 5 and Gp 6/7? YES/NO							
"YES" ANSWER: No Further Action Required. "NO" ANSWER: Followup per T.S. ACTION No.								
	PERFORMED BY:							
MODES 1 and 2	APPROVED BY:							

COMMENTS: _____

APPENDIX E

AXIA[illegible]R IMBALANCE MONITOR INOP

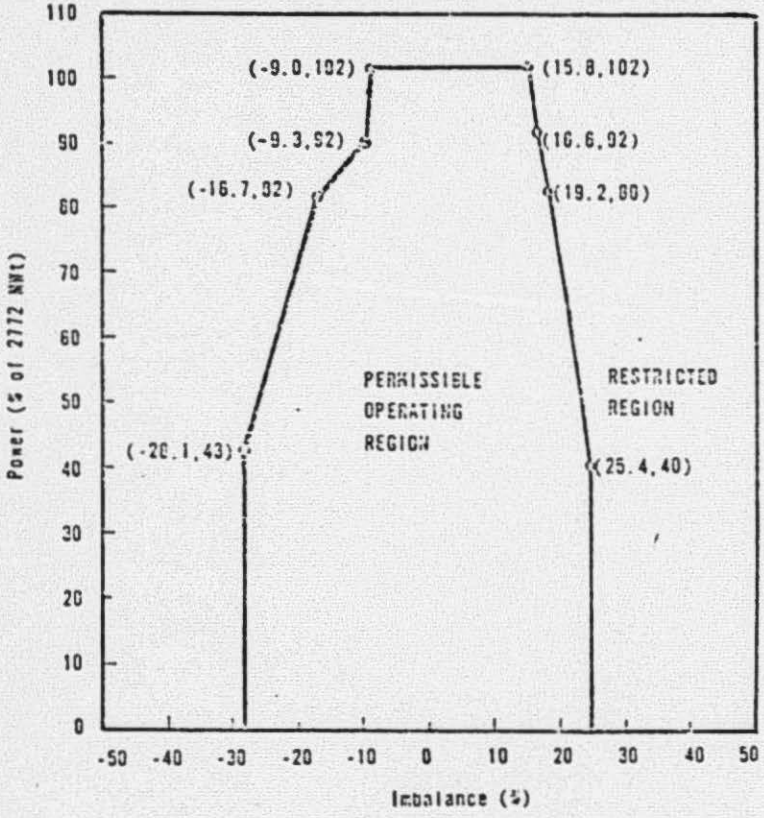
SURVEILLANCE REQUIREMENT: Data in this app[illegible] is required at least once per hour if the Axial Power Imblance Monitor is INOPERABLE.

TECH SPEC ACTION No.	TECH SPEC REQUIREM[illegible]	"YES" - No Further Action Required "NO" - Followup per T.S. ACTION No.
3.2.1	IS AXIAL POWER IMBALANCE WITHIN LIMITS OF FIGURE 2	

TIME	CONTROL CONSOLE INDICATORS								YES NO	PERFORMED BY:	TIME	CONTROL CONSOLE INDICATORS								YES NO	PERFORMED BY:
	NI-5		NI-6		NI-7		NI-8					NI-5		NI-6		NI-7		NI-8			
	Ø	IMB	Ø	IMB	Ø	IMB	Ø	IMB													

APPROVED BY: SHIFT -3- -1- -2- MODE: 1 (>40% RTP) DATE:

CALCULATION: (1) Determine average Power (Ø) = (NI-5 + NI-6 + NI-7 + NI-8) ÷ 4
(2) Using IMB reading and average Ø, refer to Figure 2 and verify that axial power imbalance is within allowable limits.
(3) Answer YES or NO in appropriate space.



CORE IMBALANCE VS POWER LEVEL
(0-200 ± 10 E.FD'S)

Figure 2

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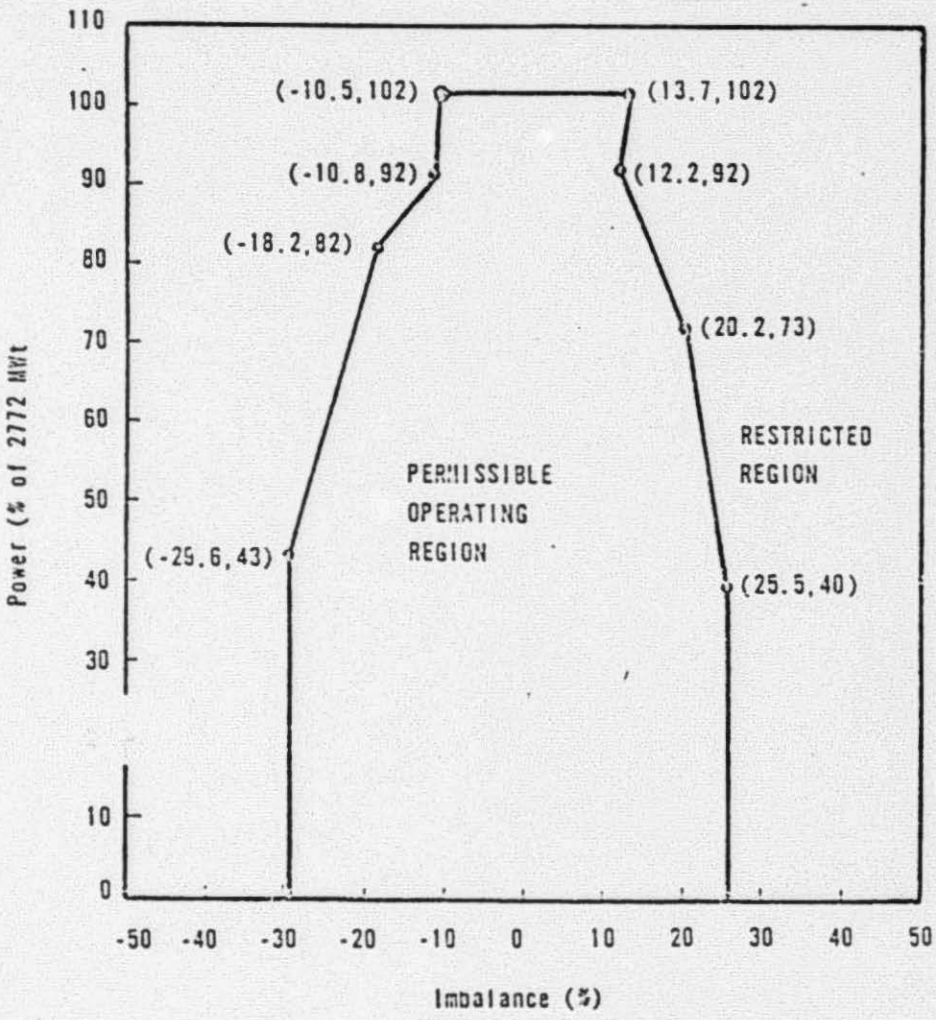

CORE IMBALANCE VS POWER LEVEL
(200-421 ± 10 EFPD'S)

Figure 2

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APPENDIX F

NSRW SOURCE TO AUX FW PUMPS

SURVEILLANCE REQUIREMENT: Data in this appendix is required at least once per shift whenever the Nuclear Services River Water System is the supply source for the auxiliary feedwater pumps.

			(✓) 3	1	2				(✓) 3	1	2
1.a	IS NR Loop A Operating	YES / NO				1.b	IS NR Loop B Operating	YES / NO			
2.a	If YES - Verify that the following valves are positioned as shown:					2.b	If YES - Verify that the following valves are positioned as shown:				
			INITIALS 3	1	2				INITIALS 3	1	2
	NR-V25A	OPEN					NR-V25B	OPEN			
	NR-V26A	OPEN					NR-V26B	OPEN			
	NR-V28A	CLOSED					NR-V28B	CLOSED			
	NR-V27A	CLOSED					NR-V27B	CLOSED			
3.a	Verify "A" Loop Operability by cycling NR-V27A OPEN then CLOSED		INITIALS 3	1	2	3.b	Verify "B" Loop Operability by cycling NR-V27B OPEN then CLOSED		INITIALS 3	1	2

TECH SPEC ACTION No.	TECH SPEC REQUIREMENT: "YES" - No Further Action Req'd. "NO" - Followup per T.S. ACTION No.		3	1	2
3.7.1.3	NR Loop "A" or "B" is OPERABLE	YES/NO			
		TIME:			

MODES: 1, 2, 3

Date: _____

SHIFT:	-3-	-1-	-2-
APPROVED BY:			

217 1.0

QUADRANT POWER TILT MONITOR INOP

SURVEILLANCE REQUIREMENT: Data in this appendix is required at least once per eight (8) hours if the Quadrant Power Tilt Monitor is INOPERATIVE.

DATE: _____

TECH SPEC ACTION No.	T.S REQUIREMENT: "YES" - No Further Action Required. "NO" - Followup per T.S. ACTION No.
3.2.4	Quadrant Power Tilt is within limits of Table G.

		SHIFT	-3-	-1-	-2-	
		TIME				
1	Calculate Quadrant Power Tilt per 2103-1.11 (enter results and attach Data Sheets)					
2	Is Quadrant Power Tilt within limits per Table G? (YES/NO)					
3	PERFORMED BY:					
4	APPROVED BY:					

TABLE G

QUADRANT POWER TILT LIMITS

	STEADY STATE LIMIT	TRANSIENT LIMIT	MAXIMUM LIMIT
Measurement Independent QUADRANT POWER TILT	3.69	9.74	20.0
QUADRANT POWER TILT as Measured by:			
Symmetrical Incore Detector System	2.30	7.71	20.0
Power Range Channels	0.96	5.88	20.0
Minimum Incore Detector System	1.72	3.71	20.0

APPENDIX II

2301-S1
Revision 2
12/22/77

BORON REDUCTION IN RCS

SURVEILLANCE REQUIREMENT: Data in this appendix is required at least once per hour whenever a boron reduction in the RC System is being made.

Reduction in RCS boron concentration began 2300/MAR 27 1979 (TIME/DATE), completed 2350/3/27/79 (TIME/DATE).

TECH SPEC ACTION NO.	DESCRIPTION	ACTUAL												
3.1.1.2	TIME: (HOURLY ± 7 min)	1200	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100
	≥2800 gpm (✓)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	TIME: (HOURLY ± 7 min)	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300		
	≥2800 gpm (✓)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

REQUIRED TECH SPEC ACTION

With RCS flow <2800 gpm, immediately suspend all operations involving a boron reduction of the RCS per Tech Spec ACTION No. 3.1.1.2

	- 3 -	- 1 -	- 2 -
PERFORMED BY:	Frederick	[illegible]	[illegible]
APPROVED BY:	[illegible]	C Guthrie	[illegible]

COMMENTS: _____

34.0

TCN 2-79-30

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APPENDIX I

RCS TOTAL FLOW

1. Obtain a current reading of computer points 1715 and 1716 (Average RC Flow A and B, respectively).

   NOTE: If computer is unavailable obtain flow rate from RC Total Flow Recorder on Panel 4 and use as X below in formula.

2. Add computer point values 1715 and 1716.

   X = 1715 + 1716 (Average RC Flow A + Avg. RC Flow B)

   X = R.C. Total Flow

3. Determine value for specific volume of RCS from Table I, its notation is in formula.

4. Substitute values in formula below to determine RC flowrate in GPM.

   $(X \frac{lbs.}{hr.}) (\frac{7.4805 \text{ gal/ft}^3}{60 \text{ min/hr}}) (\upsilon \frac{ft^3}{lb}) = \text{RC Flow (GPM)}$

5. RC Flow must be greater or equal to ($\geq$)

   382,655 GPM for 4 RC Pump Operation

   284,606 GPM for 3 RC Pump Operation

   185,542 GPM for 2 RC Pump Operation

   per Tech Spec 3.2.5

   NOTE: This includes 1.5% instrument error.

See TCN 0-79-30

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Table I: Specific Volume

PSIG / °F	2100	2110	2120	2130	2140	2150	2160	2170	2180
530	.02082	.02082	.02081	.02081	.02081	.02081	.02080	.02080	.02080
540	.02009	.02009	.02008	.02008	.02008	.02007	.02007	.02007	.02007
550	.02137	.02137	.02137	.02136	.02136	.02136	.02135	.02135	.02135
560	.02168	.02167	.02167	.02167	.02166	.02166	.02166	.02165	.02165
570	.02201	.02201	.02201	.02200	.02200	.02199	.02199	.02199	.02198
580	.02238	.02237	.02237	.02237	.02236	.02236	.02236	.02235	.02235
590	.02278	.0227	.	.02277	.02276	.02276	.02275	.02275	.02274
600	.02223	.02222	.02222	.02221	.02221	.02220	.02220	.02219	.02218
610	.02274	.02273	.02272	.02272	.02271	.02270	.02269	.02269	.02268

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21.

STOP 0

rcflow

RCS FLOW DETERMINATION
DATE: 3/26/79
TIME: 23:57: 0

NOTE: RC AND FW PRESS ARE ASSUMED VALUES

	TEMPERATURE	PRESSURE	ENTHALPY
THA	605.938	2150.	622.422
THB	606.073	2150.	622.625
TCA	557.742	2150.	557.063
TCB	557.695	2150.	557.000
TSA	595.523	921.547	1254.547
TSB	594.500	918.617	1254.016
TFA	453.688	1000.	445.910
TFB	459.835	1000.	441.566

AVERAGE RC TCOLD = 557.72 DENSITY= 46.259

LOOP A FDW FLOW (KPPH)= 5766.69
LOOP B FDW FLOW (KPPH)= 5723.75

RC FLOW VALUES

LOOP A(MPPH)	LOOP B(MPPH)	TOTAL(MPPH)	MEASURED(MPPH)
71.345	70.858	142.203	138.398

RCS FLOW(GPM)=383172.

PERCENT OF DESIGN FLOW = 108.854

ECH SPEC GPM (CORRECTED) =377424.

AVERAGE CORE THERMAL POWER (MWT) = 2697.

DOES FLOW FOR PRESENT POWER/PUMPS MEET SPEC YES ✓ NO ----

PERFORMED BY [signature]

APPROVED BY [signature]

STOP 0

!

217 165

GROUP 12
23:28:21
03/26/79

OPERATOR SPECIAL SUMMARY B

0390	RC LOOP A OUTLET TEMP	606.2
0589	RP LOOP A RC OUTLET TEMP 1 NRRW	606.2
0590	RP LOOP A RC OUTLET TEMP 2 NRRW	606.3
0392	RC LOOP A INLET TEMP NARROW 1	558.7
0393	RC LOOP A INLET TEMP NARROW 2	557.6
0391	RC LOOP B OUTLET TEMP	606.1
0591	RP LOOP B RC OUTLET TEMP 1 NRRW	606.4
0592	RP LOOP B RC OUTLET TEMP 2 NRRW	606.3
0395	RC LOOP B INLET TEMP NARROW 1	557.9
0396	RC LOOP B INLET TEMP NARROW 2	558.2
1685	WFFA SP FDWTR FL A DP (K LB/HR)	5762.
1686	WFFB SP FDWTR FL B DP (K LB/HR)	5679.
0605	RP LOOP A RC DELTA PRESS (INH2O)	642.0
0606	RP LOOP B RC DELTA PRESS (INH2O)	685.9
0586	RP LOOP A RC PRESS 2 NRRW	2152.
1713	TOUTA AVG TEMP REACTOR OUTLET A	606.1
1702	TINA SL REACTOR INLET TEMP A	557.8
1714	TOUTB AVG TEMP REACTOR OUTLET B	606.2
1703	TINB SL REACTOR INLET TEMP B	557.8
1778	TSTA AVG SP MAIN STEAM TEMP A	595.7
1780	PSTA AVG STEAM PRESSURE A PSIA	923.
1779	TSTB AVG SP MAIN STEAM TEMP B	594.7
1781	PSTB AVG STEAM PRESSURE B PSIA	919.
1776	TFWA AVG FEEDWATER TEMP A	463.5
1777	TFWB AVG FEEDWATER TEMP B	459.7
1715	WRCA AVG RC FLOW A (M LB/HR)	67.72
1716	WRCB AVG RC FLOW B (M LB/HR)	70.25
0478	SP FDWTR FLOW A DP (IN/H2O)	932.
0480	SP FDWTR FLOW B DP (IN/H2O)	891.
0134	3STG HTR B OUTLET PRESS	1012.
0135	3STG HTR A OUTLET PRESS	1005.
1750	CORPW CORE POWER THERMAL (MW)	2691.

217 166

cal

DATA SHEET #1 (2302-S1)

CALIBRATE OUT-OF-CORE DETECTORS

DATE: 3/26/79
TIME: 23:23:58

	NI5	NI6	NI7	NI8	CORE THERMAL OUTPUT	INCORE IMBALANCE
VALUE (%)	96.834	95.513	96.771	95.573	97.087	-0.377
ELP (%)	-0.253	-0.374	-0.316	-0.503		
IMBAL (%)	-0.085	-0.853	-0.500	-0.460		
O.S. (%) ERROR	0.405	-0.402	-0.034	0.013		
C.F. LA1	1.002	1.007	1.003	1.005		
C.F. LA2	1.003	1.005	1.003	1.005		
CONSOLE INDICATOR (%)	96.5	96.9	97.5	96		

IS THE ABSOLUTE VALUE OF ELP EQUAL TO OR LESS THAN 2 % FOR ALL CHANNELS ? ✓ YES --- NO ---

IS THE ABSOLUTE VALUE OF O.S. ERROR EQUAL TO OR LESS THAN 3.5 % FOR ALL CHANNELS ? ✓ YES --- NO ---

IS EACH CONSOLE INDICATOR WITHIN 2 % OF CORE THERMAL POWER ? ✓ YES --- NO ---

ACCEPTANCE CRITERIA : ALL ANSWERS YES

VOLTMETER MODEL AND SERIAL # --------------

LAST CAL --------------

DUE DATE --------------

OPERATOR: [signature]

APPROVED: [signature]

217 107

NOTE: IF OPERATOR ACTION DECREASES RCS VOLUME THE DATA ENTRY FOR THAT ACTION MUSTBE NEGATIVE,
...YOU MUST ENTER DEC. PT. WITH LEAKAGE VALUES...

DESIRED INTERVAL (1-8 HOURS)
1
ENTER OPERATOR CAUSED CHANGES TO THE RCDT FROM DS 4 (2301-3D1)
0
ENTER OPERATOR CAUSED CHANGES FROM DS 4 (2301-3D1)
300.
ENTER IDENTIFIED LEAKAGE FROM DS 3 (2301-3D1) (GPM)
-.75
ENTER PRIMARY TO SECONDARY OTSG TUBE LEAK (GPM)
0

TIME	TCA (F)	THA (F)	TCB (F)	THB (F)	TAVE (F)	PRZR LVL (IN)	MUTK LVL (IN)	RCDT LVL (INCHES)
5:47:19:	557.086	605.938	557.711	605.893	581.648	244.490	64.299	77.150
6:47:19:	557.273	606.219	558.023	606.148	581.906	229.713	68.028	81.212

GROSS LEAK RATE (<30 GPM): 7.9742 GPM

TOTAL IDENTIFIED RCS LEAK RATE (<10 GPM): 5.4588 GPM

NET UNIDENTIFIED LEAK RATE (<1 GPM): 2.5154 GPM .3691 corrected

OPERATOR:

APPROVED:

STOP 0

MOORE BUSINESS FORMS, INC. N
PRINTED IN U.S.A.

07:56:42 HIUM 1765 XPW XENON REACTIVITY (PCT) 99.99/- .25
07:56:51 LOUM 1765 XPW XENON REACTIVITY (PCT) -99.99/ .25
GROUP 12
08:27:26
03/27/79

OPERATOR SPECIAL SUMMARY B

0390	RC LOOP A OUTLET TEMP	606.0
0589	RP LOOP A RC OUTLET TEMP 1 NRRW	606.0
0590	RP LOOP A RC OUTLET TEMP 2 NRRW	606.1
0392	RC LOOP A INLET TEMP NARROW 1	558.7
0393	RC LOOP A INLET TEMP NARROW 2	557.2
0391	RC LOOP B OUTLET TEMP	606.0
0591	RP LOOP B RC OUTLET TEMP 1 NRRW	606.4
0592	RP LOOP B RC OUTLET TEMP 2 NRRW	606.3
0395	RC LOOP B INLET TEMP	557 7
0396	RC LOOP B INLET TEMP NARROW	55 .)
1685	WFFA SP FDWTR FL A DP (K LB/...)	5748.
1686	WFFB SP FDWTR FL B DP (K LB/HR)	5711.
0605	RP LOOP A RC DELTA PRESS (INH2O)	638.0
0606	RP LOOP B RC DELTA PRESS (INH2O)	687.3
0586	RP LOOP A RC PRESS 2 NRRW	2153.
1713	TOUTA AVG TEMP REACTOR OUTLET A	606.1
1702	TINA SL REACTOR INLET TEMP A	557.7
1714	TOUTB AVG TEMP REACTOR OUTLET B	606.2
1703	TINB SL REACTOR INLET TEMP B	557.7
1778	TSTA AVG SP MAIN STEAM TEMP A	595.5
1780	PSTA AVG STEAM PRESSURE A PSIA	923.
1779	TSTB AVG SP MAIN STEAM TEMP B	594.5
1781	PSTB AVG STEAM PRESSURE B PSIA	918.
1776	TFWA AVG FEEDWATER TEMP A	463.6
1777	TFWB AVG FEEDWATER TEMP B	459.9
1715	WRCA AVG RC FLOW A (M LB/HR)	67.90
1716	WRCB AVG RC FLOW B (M LB/HR)	70.35
0478	SP FDWTR FLOW A DP (IN/H2O)	939.
0480	SP FDWTR FLOW B DP (IN/H2O)	900.
0134	3STG HTR B OUTLET PRESS	1008.
0135	3STG HTR A OUTLET PRESS	1002.
1750	CORPW CORE POWER THERMAL (MW)	2701.

217 169

DATA SHEET #1 (2302-S1)

CALIBRATE OUT-OF-CORE DETECTORS

DATE: 3/27/79
TIME: 7:55:51

	NI5	NI6	NI7	NI8	CORE THERMAL OUTPUT	INCORE IMBALANCE
VALUE (%)	96.063	96.654	96.923	96.714	97.695	-2.008
ELP (%)	-0.732	-1.041	-0.772	-0.981		
IMBAL (%)	-2.273	-2.894	-2.595	-2.550		
O.S. (%) ERROR	0.281	-0.444	-0.114	-0.006		
C.F. LA1	1.007	1.012	1.008	1.010		
C.F. LA2	1.008	1.010	1.008	1.010		
CONSOLE INDICATOR (%)	97	97	97.5	97		

IS THE ABSOLUTE VALUE OF ELP EQUAL TO OR LESS THAN 2 % FOR ALL CHANNELS ? ✓ YES --- NO ---

IS THE ABSOLUTE VALUE OF O.S. ERROR EQUAL TO OR LESS THAN 3.5 % FOR ALL CHANNELS ? ✓ YES --- NO ---

IS EACH CONSOLE INDICATOR WITHIN 2 % OF CORE THERMAL POWER ? ✓ YES --- NO ---

ACCEPTANCE CRITERIA : ALL ANSWERS YES

VOLTMETER MODEL AND SERIAL # ----------

LAST CAL ----------

DUE DATE ----------

OPERATOR: [signature]

APPROVED: [signature]

STOP 0

217

RCS FLOW DETERMINATION
DATE: 3/27/79
TIME: 8:27: 0

NOTE: RC AND FW PRESS ARE ASSUMED VALUES

	TEMPERATURE	PRESSURE	ENTHALPY
THA	605.930	2150.	622.414
THB	606.117	2150.	622.688
TCA	557.766	2150.	557.086
TCB	557.563	2150.	556.836
TSA	595.344	923.367	1254.188
TSB	594.344	920.695	1253.625
TFA	463.699	1000.	445.922
TFB	459.906	1000.	441.645

AVERAGE RC TCOLD = 557.66 DENSITY= 46.273

LOOP A FDW FLOW (KPPH)= 5765.81
LOOP B FDW FLOW (KPPH)= 5708.75

RC FLOW VALUES

LOOP A(MPPH)	LOOP B(MPPH)	TOTAL(MPPH)	MEASURED(MPPH)
71.336	70.390	141.725	138.232

RCS FLOW(GPM)=381848.

PERCENT OF DESIGN FLOW = 108.479

*** TECH SPEC GPM (CORRECTED) =376120.

AVERAGE CORE THERMAL POWER (MWT) = 2705.

DOES FLOW FOR PRESENT POWER/PUMPS MEET SPEC YES ✓ NO ----

PERFORMED BY [signature]

APPROVED BY [signature]

STOP 0

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217 17

cal

DATA SHEET #1 (2302-S1)

CALIBRATE OUT-OF-CORE DETECTORS

DATE: 3/27/79
TIME: 16: 7:34

	NI5	NI6	NI7	NI8	CORE THERMAL OUTPUT	INCORE IMBALANCE
VALUE (%)	97.307	97.029	97.254	97.102	98.349	-0.927
ELP (%)	-1.042	-1.319	-1.095	-1.247		
IMBAL (%)	-1.317	-1.969	-1.576	-1.585		
O.S. (%)	-0.143	-0.847	-0.437	-0.417		
ERROR						
F. LA1	1.011	1.015	1.012	1.014		
C.F. LA2	1.010	1.012	1.010	1.012		
CONSOLE INDICATOR (%)	97.5	96.6	98	97		

IS THE ABSOLUTE VALUE OF ELP EQUAL TO OR LESS THAN 2 % FOR ALL CHANNELS ? YES --- NO ---

IS THE ABSOLUTE VALUE OF O.S. ERROR EQUAL TO OR LESS THAN 3.5 % FOR ALL CHANNELS ? YES --- NO ---

IS EACH CONSOLE INDICATOR WITHIN 2 % OF CORE THERMAL POWER ? YES --- NO ---

ACCEPTANCE CRITERIA : ALL ANSWERS YES

VOLTMETER MODEL AND SERIAL #

LAST CAL

DUE DATE

OPERATOR: H. [signature]

APPROVED: [signature]

217 172

rcflow

RCS FLOW DETERMINATION
DATE: 3/27/79

TIME: 15:54: 0

NOTE: RC AND PZ PRESS ARE ASSUMED VALUES

	TEMPERATURE	PRESSURE	ENTHALPY
THA	606.156	2150.	622.742
THB	606.390	2150.	623.094
TCA	557.875	2150.	557.227
TCB	557.828	2150.	557.164
TSA	595.625	923.273	1254.422
TSB	594.668	920.867	1253.906
TFA	463.883	1000.	446.129
TFB	460.125	1000.	441.895

AVERAGE RC TCOLD = 557.85 DENSITY= 46.260

LOOP A FDW FLOW (KPPH)= 5759.31

FDW FLOW (KPPH)= 5731.63

RC ... VALUES

LOOP A(MPPH)	LOOP B(MPPH)	TOTAL(MPPH)	MEASURED(MPPH)
71.054	70.591	141.643	138.383

RCS FLOW(GPM)=381736.

PERCENT OF DESIGN FLOW = 100.447

*** TECH SPEC GPM (CORRECTED) =376008.

AVERAGE CORE THERMAL POWER (MWT) = 2713.

DOES FLOW FOR PRESENT POWER/PUMPS MEET SPEC YES ✓ NO

PERFORMED BY [signature]

APPROVED BY [signature]

STOP 0

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217 1/2

GROUP 12
15:58:35
03/27/79

OPERATOR SPECIAL SUMMARY B

0390	RC LOOP A OUTLET TEMP	606.2
0589	RP LOOP A RC OUTLET TEMP 1 NRRW	606.0
0590	RP LOOP A RC OUTLET TEMP 2 NRRW	606.2
0392	RC LOOP A INLET TEMP NARROW 1	558.6
0393	RC LOOP A INLET TEMP NARROW 2	557.3
0391	RC LOOP B OUTLET TEMP	606.2
0591	RP LOOP B RC OUTLET TEMP 1 NRRW	606.5
0592	RP LOOP B RC OUTLET TEMP 2 NRRW	606.5
0395	RC LOOP B INLET TEMP NARROW 1	557.6
0396	RC LOOP B INLET TEMP NARROW 2	557.7
1685	WFFA SP FDWTR FL A DP (K LB/HR)	5757.
1686	WFFB SP FDWTR FL B DP (K LB/HR)	5735.
0605	RP LOOP A RC DELTA PRESS (IINH2O)	647.4
0606	RP LOOP B RC DELTA PRESS (IINH2O)	700.2
0586	RP LOOP A RC PRESS 2 NRRW	2155.
1713	TOUTA AVG TEMP REACTOR OUTLET A	606.1
1702	TINA SL REACTOR INLET TEMP A	557.7
1714	TOUTB AVG [illegible] OUTLET B	606.3
1703	TINB SL [illegible]	557.6
1778	TSTA AVG SP MA[illegible] TEM[illegible] A	595.4
1780	PSTA AVG STEAM PRESSURE A PSIA	922.
1779	TSTB AVG SP MAIN STEAM TEMP B	594.4
1781	PSTB AVG STEAM PRESSURE B PSIA	919.
1776	TFWA AVG FEEDWATER TEMP A	464.0
1777	TFWB AVG FEEDWATER TEMP B	460.3
1715	WRCA AVG RC FLOW A (M LB/HR)	68.08
1716	WRCB AVG RC FLOW B (M LB/HR)	70.84
0478	SP FDWTR FLOW A DP (IN/H2O)	926.
0480	SP FDWTR FLOW B DP (IN/H2O)	889.
0134	3STG HTR B OUTLET PRESS	999.
0135	3STG HTR A OUTLET PRESS	989.
1750	CORPW CORE POWER THERMAL (MW)	2704.

TMI DOCUMENTS

DOCUMENT NO: TM-0656

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Supervisor, Document Control, NRC

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217 115