

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

CAT A
A.1 (R1)

STATION: HOPE CREEK

SYSTEM: Plant Computer

TASK: Utilize A Periodic Core Evaluations Program Printout (P1) To Determine Plant Status With
Regards To Thermal Limits

TASK NUMBER: 2830030101

JPM NUMBER: 305H-JPM.ZZ-018-00

APPLICABILITY:

EO ☐ RO ☒ SRO ☒

K/A NUMBER: 2.1.19
IMPORTANCE FACTOR:

3.0	3.0
RO	SRO

EVALUATION SETTING/METHOD: Control Room/Walkthrough

REFERENCES: HC.OP-DD.ZZ-0020, Revision 05

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 7 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: _____

APPROVED:

N/A	N/A
PRINCIPAL TRAINING SUPERVISOR	OPERATIONS MANAGER

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:

1. Permission from the OS Or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION TIME: N/A

JPM PERFORMED BY: _____ GRADE: ☐ SAT ☐ UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ DATE: _____

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Plant Computer

TASK: Utilize A Periodic Core Evaluations Program Printout (P1) To Determine Plant Status With
Regards To Thermal Limits

TASK NUMBER: 2830030101

INITIAL CONDITIONS:

1. You have just relieved the Reactor Operator for a Short Term Relief.
2. The plant is operating at 100% power.
3. A rod pattern adjustment was completed a short time ago.

INITIATING CUE:

Review an hourly P1 edit in accordance with management's expectations for the NCO review.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

**OPERATOR TRAINING PROGRAM
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NAME: _____
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TASK: Utilize A Periodic Core Evaluations Program Printout (P1) To Determine Plant Status With Regards To Thermal Limits

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		START TIME: _____ Operator proceeds to the Computer Room to retrieve the P1.	Examiner Cue: Present the operator with the previous and new P1 Edits.		
		Operator obtains/locates procedure HC.OP-DD.ZZ-0020.	Operator obtains the correct procedure.		
		Operator determines beginning step of the procedure.	Operator determines correct beginning step to be 5.0.		
	5.0	The NCO review of the P1 edit should include, as a minimum, a check of the following parameters as well as an evaluation of any changes in these parameters.		N/A	N/A
	5.1	Core Megawatts Thermal (CMWT). This value should not exceed licensed thermal power level. A change in calculated thermal power between successive P1 edits should be carefully evaluated. If the APRMs do not show a corresponding change, there is the potential that the change in indicated power is a result of a bad input to the computer and not an actual power change. If the change is more that a few MW(th) and there has been no change in core flow or rod position, notify Reactor Engineering.	Operator reviews CMWT and determines: <ul style="list-style-type: none"> Value is less than the licensed thermal power level That there has been a change in MW but this could be due to the rod pattern change. Core flow has not changed. No additional bad inputs. <p>Examiner Note: Operator should note the change in CMWT, and attribute it to the rod pattern adjustment.</p>		

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# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.2	Gross Megawatts Electric (GWME). This value will fluctuate with ambient conditions but should be compared with previous values. Changes in GWME between successive P1 edits should be investigated especially if the change is large (>10 MW).	Operator reviews GMWE and determines that there is a small change since the last P1.		
	5.3	Core Maximum Fraction Of Critical Power (CMFCP). This is the inverse ratio of critical power to the critical power operating limit. A value greater than 1.00 requires action in accordance with the Technical Specifications. Any change between successive P1 edits greater than 0.010 is cause for alerting reactor engineering.	Operator reviews CMFCP and determines that no change has occurred since the previous P1.		
	5.4	Core Maximum Fraction of Limiting Power Density (CMFLPD). This is the ratio of maximum power density to the limit (14.4 kw/ft). A value greater than 1.00 requires action in accordance with the Technical Specifications. Any change between successive P1 edits greater than 0.010 is cause for alerting reactor engineering.	Operator reviews CMFLPD and determines all values are less than 1.00 and have not changed since the previous P1.		
	5.5	Core Maximum Average Planar Linear Heat Generation Rate (CMAPR). This is the ratio between the average planar linear heat generation rate (APLHGR) and the exposure based APLHGR limit. A value greater than 1.00 requires action in accordance with the Technical Specifications. Any change between successive P1 edits greater than 0.010 is cause for alerting reactor engineering.	Operator reviews CMAPR and determines all values are less than 1.00 and have not changed since the previous P1.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

SYSTEM: Plant Computer

TASK: Utilize A Periodic Core Evaluations Program Printout (P1) To Determine Plant Status With Regards To Thermal Limits

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	5.6	Control Rod Symmetry Flag (CRSYM). This value is normally 2 indicating the control rods are mirror symmetric. A value other than two may indicate a mispositioned control rod or a control rod with a bad position indication. This could lead to inaccurate Thermal Limits calculations.	Operator reviews CRSYM and determines the value to be 3. Contacts CRS/Reactor Engineering. [Reviews the rod positions and determines that rod 06-31 is not symmetrical and notifies the CRS.(Not required for task completion.)] Examiner Cue: Acknowledge as the CRS/Reactor Engineer the status of Control Rod Symmetry Flag, and direct the operator to continue with the review.		
*	5.7	Average Power Range Monitor Gain Adjustment Factor (APRM GAF). This is required to be between 0.98 and 1.02 unless a scaling factor is inserted. A value greater than 1.00 indicates the APRM is indicating lower than actual power.	Operator reviews all APRM GAFs and determines that APRM F is low (<0.98) and reports this to Reactor Engineering. Examiner Cue: Acknowledge as the CRS/Reactor Engineer the status of APRM GAF, and direct the operator to continue with the review.		
	5.8	Failed Sensors. This is a list of NSSS computer thermodynamic data inputs which are out of scan or bad. Reactor Engineering provides a list of known failed sensors. Any failed sensor added to the list may affect the core thermal power calculation. Reactor Engineering must be notified immediately of any new sensors indicating failed.	Operator reviews the list of failed sensors and determines that no new ones have been added since the previous P1.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

SYSTEM: Plant Computer

TASK: Utilize A Periodic Core Evaluations Program Printout (P1) To Determine Plant Status With Regards To Thermal Limits

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.9	Failed LPRM List. This is a list of LPRMs which P11 did not use in its power distribution calculations. Reactor Engineering should be notified any time a new LPRM shows up on this list. During off hours, Reactor Engineering notification can wait until day shift provided there is no change in thermal limits coincident with the failed LPRM.	Operator reviews the list of failed LPRMs and determines that no new ones have been added since the previous P1.		
	5.10	Base Crit Code. This is a list of LPRM strings which have seen a significant change in axial power shape since the last TIP was run through that channel. If core thermal power is greater than 90%, P1 edits with bas crit codes of 2 should not be used for surveillance purposes without Reactor Engineering approval. Base crits are typically limited to transient conditions when a reactor engineer is available to provide approval. If any thermal limit is greater than 0.950 and the P1 edit contains a base crit code of 2, contact reactor engineering before completing the surveillance.	Operator reviews the Base Crit Code and determines the value to be 2.		
	5.11	The remaining information of the P1 is more readily available to the NCO elsewhere (i.e., total core flow, control rod positions, etc.) or is included for reactor engineering analysis and is of very limited value in a real time situation. STOP TIME: _____	Operator reports the status of the review.		

Terminating Cue: Repeat back message from the operator on the status of P1 edit review, and then state, "This JPM is complete."

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- 1. You have just relieved the Reactor Operator for a Short Term Relief.**
- 2. The plant is operating at 100% power.**
- 3. A rod pattern adjustment was completed a short time ago.**

INITIATING CUE:

Review an hourly P1 edit in accordance with management's expectations for the NCO review.

JOB PERFORMANCE MEASURE SIMULATOR INSTRUCTIONS

Reset Simulator to IC-01 or comparable IC.

Ensure AGAFs between 0.99 and 1.01.

Run a P1 edit.

Perform rod swap:

Insert Group 10C to notch 12, except rod 06-31 to notch 10. Withdraw Group 9D and rod 30-31 to notch 48.

Adjust Recirculation Pump speed to cause a power output equivalent to the previous P1.

Adjust AGAFs again and APRM F AGAF to 0.97 using the following Remote Functions:

NM04A = 0.96

NM04B = 0.98

NM04C = 0.97

NM04D = 0.99

NM04E = 0.99

NM04F = 0.99

Run P1 edit.

04/09/00

DATE 04/09/00 TIME 1003 HCPECREEK UNIT 1 SEQ. NO. 100

PERIODIC ASS CORE PERFORMANCE LOG

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	
AXIAL REL PWR	.58	1.18	1.41	1.39	1.34	1.26	1.13	1.05	.91	.78	.60	.56	CRWT 3287.
REGION REL PWR	.87	.97	.87	.97	.75	.97	.87	.97	.87				PCT PWR 99.8
RING REL PWR	.54	1.06	.91	1.19	.95	1.06	.90	.62					GMWE 1104.
APRM GAF	1.00	1.00	1.00	1.00	1.00	1.00							CMFCP .774
													CMFLPD .909
													CMAPR .743
REGION	1	2	3	4	5	6	7	8	9				CMPP 2.193
MFLCPR	.672	.672	.672	.672	.774	.672	.672	.672	.672				CAEW .142
LCC	19-18	27-14	41-18	17-24	25-24	43-24	19-44	27-46	41-44				CAQA .144
FLCW	.1158	.1164	.1158	.1157	.1158	.1157	.1158	.1164	.1158				CAVP .420
PKF	1.39	1.40	1.39	1.40	1.39	1.40	1.39	1.40	1.39				CAPD 48.626
MFLPD	.688	.688	.688	.688	.909	.688	.688	.688	.688				CRD .106
LCC	19-18-6	27-14-6	41-18-6	17-24-6	25-24-6	43-24-6	19-44-6	27-46-6	41-44-6				CRSYM 2.
PKFL	2.29	2.27	2.29	2.28	2.30	2.28	2.29	2.27	2.27				FR 1017.97
MAPRAT	.563	.563	.563	.563	.743	.563	.563	.563	.563				DPC-M 14.02
LCC	19-18-6	27-14-6	41-18-6	17-24-6	25-24-6	43-24-6	19-44-6	27-46-6	41-44-6				DPC 19.57
PKFS	1.70	1.66	1.70	1.67	1.76	1.67	1.70	1.66	1.70				RWL 35.00
													DHS 20.71

FAILED SENSORS

FAILED LPRP LIST

BASE CRIT CODE

WPM 14.67
 WD 30.70
 WTSUP 7.10
 WIND 1.00
 WT 99.89
 PCTWTR 99.591
 WFLAG 2.688
 ITR 1.000
 IREL .000
 IREL 1.600
 IXYFLC .000
 CMFLX .693
 CAVEX 1.224.59
 CYLAP 379.000
 PCTLL 100.02

THE 12 MOST LIMITING BUNDLES

FOR MFLCPR				FOR MFLPD				FOR MAPRAT			
MFLCPR	LCC	MFLPD	MAPRAT	LCC	MFLPD	MAPRAT	LCC	MFLPD	MAPRAT	LCC	MAPRAT
.774	25-24	1.601	1.240	.909	25-24-6	12.18	13.40	.743	25-24-6	5.05	6.80
.774	35-24	1.601	1.240	.909	35-24-6	12.18	13.40	.743	35-24-6	5.05	6.80
.774	25-38	1.601	1.240	.909	25-38-6	12.18	13.40	.743	25-38-6	5.05	6.80
.774	35-38	1.601	1.240	.909	35-38-6	12.18	13.40	.743	35-38-6	5.05	6.80
.774	25-28	1.601	1.240	.909	25-28-6	12.18	13.40	.743	25-28-6	5.05	6.80
.774	37-26	1.601	1.240	.909	37-26-6	12.18	13.40	.743	37-26-6	5.05	6.80
.774	25-36	1.601	1.240	.909	25-36-6	12.18	13.40	.743	25-36-6	5.05	6.80
.774	37-38	1.601	1.240	.909	37-38-6	12.18	13.40	.743	37-38-6	5.05	6.80
.672	27-14	1.846	1.240	.688	27-14-6	9.23	13.40	.563	25-24-6	3.82	6.80
.672	33-14	1.846	1.240	.688	33-14-6	9.23	13.40	.563	35-24-6	3.82	6.80
.672	27-48	1.846	1.240	.688	27-48-6	9.23	13.40	.563	25-38-6	3.82	6.80
.672	33-48	1.846	1.240	.688	33-48-6	9.23	13.40	.563	35-38-6	3.82	6.80

THE NUMBER OF BUNDLES WITH MFLCPR GREATER THAN 1.0 = 0

THE NUMBER OF BUNDLES WITH MFLPD GREATER THAN 1.0 = 0

THE NUMBER OF BUNDLES WITH MAPRAT GREATER THAN 1.0 = 0

04709700

DATE 04/09/00 TIME 1003 HCPECREEK UNIT 1 SEQ. NO. 100

PERIODIC ASS CORE PERFORMANCE LOG

CONTROL ROD POSITION AND CALIBRATED LPRM READINGS

**=48

59 D	51 ++	++ 60 ++	++ 35 ++	++ 41 ++	
C	46	54	31	36	
B	50	59	35	40	
55 A	++ 40 ++	++ 47 ++	28 27 ++	++ 32 ++	++
51	40 ++	++ 60 ++	++ 55 ++	++ 68 ++	++ 67 ++
	41	58	58	60	60
	45	64	63	66	65
47	++ 35 ++	12 51 ++	24 50 ++	12 53 ++	24 52 ++
					12 40 ++
43	++ ++ 65 ++	++ 66 ++	++ 64 ++	++ 62 ++	++ 65 ++
	58	58	57	55	58
	64	64	62	60	63
39	++ ++ 51 ++	24 51 ++	10 50 ++	08 48 ++	10 50 ++
					24 51 ++
					++ 44 ++
35	++ ++ 65 ++	++ 67 ++	++ 57 36	++ 57 36	++ 58 ++
	58	60	50	51	52
	64	65	55	56	57
31	++ 28 51 ++	12 52 ++	08 44 ++	24 45 ++	08 45 ++
					12 49 ++
					28 51 ++
27	++ ++ 64 ++	++ 61 ++	++ 60 36	++ 58 36	++ 66 ++
	57	59	54	52	59
	62	59	59	57	65
23	++ ++ 50 ++	24 47 ++	10 47 ++	08 45 ++	10 52 ++
					24 52 ++
					++ 30 ++
19	++ ++ 52 ++	++ 65 ++	++ 65 ++	++ 69 ++	++ 68 ++
	46	58	58	62	61
	51	63	64	68	66
15	++ 40 ++	12 50 ++	24 51 ++	12 54 ++	24 53 ++
					12 53 ++
					++ 52
11 D	++ ++ 43 ++	++ 62 ++	++ 69 ++	++ 69 ++	++ 51 ++
C	58	60	61	61	65
B	42	66	68	67	49
07 A	++ 54 ++	++ 53 ++	28 54 ++	++ 53 ++	++ 39
03	++	++	++	++	++
02	06	10	14	18	22
					26
					30
					34
					38
					42
					46
					50
					54
					58

04/09/00

DATE 04/09/00 TIME 1007 HCFECREEK UNIT 1 S.G. NO. 100

PERIODIC NSS CORE PERFORMANCE LOG

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	
AXIAL REL PWR	.55	1.18	1.41	1.39	1.34	1.26	1.13	1.05	.91	.78	.80	.58	CMWT 3275.
REGION REL PWR	.90	.91	.90	.95	.73	.96	.90	.96	.90				PCT FWR 99.5
RING REL PWR	1.08	1.08	.91	1.19	.95	1.12	.88	.82					GMWE 1100.
APRM GAF	.99	1.00	.99	1.00	.99	.97							CMFOP .773
REGION	1	2	3	4	5	6	7	8	9				CMFLPD .900
MFLCPR	.670	.670	.670	.670	.773	.670	.670	.670	.670				CMAPR .735
LOC	19-18	27-14	41-18	17-24	25-24	43-24	19-44	27-46	41-44				CMPP 2.179
FLOW	.1158	.1164	.1158	.1157	.1158	.1157	.1158	.1164	.1158				CAEW .141
PKF	1.39	1.40	1.39	1.40	1.39	1.40	1.39	1.40	1.39				CAGA .143
MFLPD	.681	.681	.681	.681	.900	.681	.681	.681	.681				CAVI .420
LOC	19-18-6	27-14-6	41-18-6	17-24-6	25-24-6	43-24-6	19-44-6	27-46-6	41-44-6				CAPD 48.453
PKFL	2.29	2.27	2.29	2.28	2.30	2.28	2.29	2.27	2.29				CRD .095
MAPRAT	.557	.557	.557	.557	.735	.557	.557	.557	.557				CRSYM 3.
LOC	19-18-6	27-14-6	41-18-6	17-24-6	25-24-6	43-24-6	19-44-6	27-46-6	41-44-6				PK 1016.48
PKFS	1.70	1.66	1.70	1.67	1.76	1.67	1.70	1.66	1.70				LPC-M 14.02

FAILED SENSORS 34

FAILED LPRM LIST

BASE CRIT CODE

CMWT	3275.
PCT FWR	99.5
GMWE	1100.
CMFOP	.773
CMFLPD	.900
CMAPR	.735
CMPP	2.179
CAEW	.141
CAGA	.143
CAVI	.420
CAPD	48.453
CRD	.095
CRSYM	3.
PK	1016.48
LPC-M	14.02
LPC-C	17.57
RWL	31.00
DHS	20.67
WPK	11.01
WD	30.78
WTSUB	97.15
WTHD	1.60
WT	99.59
PCTWTR	99.591
WTFLEG	2.000
ITER	1.000
IREC	.000
IRML	1.000
IXYFLG	.000
CMFLEX	.593
CAVEX	12324.250
CYEXP	179.000
PCTLL	99.66

THE 12 MOST LIMITING BUNDLES

FOR MFLCPR				FOR MFLPD				FOR MAPRAT			
MFLCPR	LOC	MCPR	CFRLIM	MFLPD	LOC	MRPD	RPDLIM	MAPRAT	LOC	MAPLHGR	LIMLHGR
.773	25-24	1.605	1.240	.900	25-24-6	12.05	13.40	.735	25-24-6	5.00	6.80
.773	35-24	1.605	1.240	.900	35-24-6	12.05	13.40	.735	35-24-6	5.00	6.80
.773	25-38	1.605	1.240	.900	25-38-6	12.05	13.40	.735	25-38-6	5.00	6.80
.773	35-38	1.605	1.240	.900	35-38-6	12.05	13.40	.735	35-38-6	5.00	6.80
.773	25-26	1.605	1.240	.900	25-26-6	12.05	13.40	.735	25-26-6	5.00	6.80
.773	37-26	1.605	1.240	.900	37-26-6	12.05	13.40	.735	37-26-6	5.00	6.80
.773	23-36	1.605	1.240	.900	23-36-6	12.05	13.40	.735	23-36-6	5.00	6.80
.773	37-36	1.605	1.240	.900	37-36-6	12.05	13.40	.735	37-36-6	5.00	6.80
.670	27-14	1.850	1.240	.681	27-14-6	9.12	13.40	.557	25-24-6	3.78	6.80
.670	33-14	1.850	1.240	.681	33-14-6	9.12	13.40	.557	35-24-6	3.78	6.80
.670	27-48	1.850	1.240	.681	27-48-6	9.12	13.40	.557	25-38-6	3.78	6.80
.670	33-48	1.850	1.240	.681	33-48-6	9.12	13.40	.557	35-38-6	3.78	6.80

THE NUMBER OF BUNDLES WITH MFLCPR GREATER THAN 1.0 = 0

THE NUMBER OF BUNDLES WITH MFLPD GREATER THAN 1.0 = 0

THE NUMBER OF BUNDLES WITH MAPRAT GREATER THAN 1.0 = 0

04/09/00

DATE 04/09/00 TIME 1007 HOPECREEK UNIT 1 SEQ. AC. 100

PERIODIC NSS CORE PERFORMANCE LOG

CONTROL ROD POSITION AND CALIBRATED LPRM READINGS

++48

59 D	62 ++	++ 73 ++	++ 44 ++	++ 50 ++	
C	46	54	32	57	
B	45	53	32	36	
55 A	++ 36 ++	++ 43 ++	12 26 ++	++ 29 ++	++
51	55 ++	++ 79 ++	++ 78 ++	++ 82 ++	++ 81 ++
	41	58	52	60	46
	40	57	59	59	45
47	++ 32 ++	++ 46 ++	24 46 ++	12 48 ++	24 48 ++
				++ 37 ++	++
43	++ ++ 78 ++	++ 79 ++	++ 78 ++	++ 75 ++	++ 79 ++
	57	58	57	55	58
	56	57	56	54	57
39	++ ++ 46 ++	24 47 ++	10 46 ++	08 44 ++	10 46 ++
				24 47 ++	++ 41 ++
35	++ ++ 78 ++	++ 82 ++	++ 69 36	++ 71 36	++ 71 ++
	57	60	50	52	52
	56	59	50	51	51
31	++ 10 46 ++	12 48 ++	08 40 ++	++ 41 ++	08 41 ++
				12 46 ++	12 47 ++
27	++ ++ 76 ++	++ 73 ++	++ 73 36	++ 71 36	++ 79 ++
	56	54	54	55	58
	55	53	53	52	57
23	++ ++ 44 ++	24 43 ++	10 43 ++	08 42 ++	10 46 ++
				24 48 ++	++ 27 ++
19	++ ++ 61 ++	++ 78 ++	++ 79 ++	++ 84 ++	++ 82 ++
	45	57	58	62	60
	44	56	57	60	59
15	++ 36 ++	++ 45 ++	24 46 ++	12 49 ++	24 48 ++
				++ 49 ++	++ 30
11 D	++ ++ 51 ++	++ 81 ++	++ 83 ++	++ 83 ++	++ 81 ++
C	37	60	61	61	45
B	37	59	60	60	44
07 A	++ 30 ++	++ 48 ++	12 49 ++	++ 49 ++	++ 36
03	++ ++ ++	++ ++	++ ++	++ ++	
02	06	10	14	18	22
				26	30
				34	38
				42	46
				50	54
				58	

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

STATION: HOPE CREEK
SYSTEM: Administrative
TASK: Perform A Shift Turnover As On-Coming/Off-Going NCO

TASK NUMBER: 2990630301

JPM NUMBER: 305H-JPM.ZZ-012-00

APPLICABILITY:

EO ☐ RO ☒ SRO ☒

K/A NUMBER:	2.1.3	
IMPORTANCE FACTOR:	3.0	3.4
	RO	SRO

EVALUATION SETTING/METHOD: Simulator/Perform

REFERENCES: SH.OP-AP.ZZ-0107, Revision 0

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 9 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: _____

APPROVED:	N/A	N/A
	PRINCIPAL TRAINING SUPERVISOR	OPERATIONS MANAGER

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:

1. Permission from the OS Or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION TIME: N/A

JPM PERFORMED BY: _____ **GRADE:** ☐ SAT ☐ UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: _____ **DATE:** _____

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Administrative

TASK: Perform A Shift Turnover As On-Coming/Off-Going NCO

TASK NUMBER: 2990630301

INITIAL CONDITIONS:

1. You are the Off-going Day Shift Reactor Operator.
2. Preparations for shift relief are in progress.
3. Salem 1 and 2 are on line.
4. 10F104 Air Dryer is in service, 00F104 is in standby.

INITIATING CUE:

Complete the Equipment Status Checklist (Attachment 6), except for the Control Room Key Audit, in accordance with SH.OP-AP.ZZ-0107.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

SYSTEM: Administrative

TASK: Perform A Shift Turnover As On-Coming/Off-Going NCO

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Operator obtains/locates procedure SH.OP-AP.ZZ-0107.	Operator obtains the correct procedure.		
		Operator determines beginning step of the procedure.	Operator determines correct beginning step to be 5.2.3.		
	5.2.2	<p>START TIME: _____</p> <p>Each off-going operator should prepare a listing highlighting planned evolutions, comments, equipment abnormalities, and other items affecting plant operations to aid in the turnover. The appropriate attachment should be used to document this information.</p>	<p>Operator obtains a copy of Attachment 6, and commences to complete while walking-down the control room boards.</p> <p>Examiner Note: See attached for the completed attachment.</p>		
*			<p>Operator observes that RCIC flow controller is set at 500 gpm vice 600gpm.</p> <p>Examiner Cue: If asked, provide cue to set the RCIC flow controller to the desired flow rate. (Operator may wait until completion of attachment before informing CRS.)</p> <p>Operator sets the RCIC flow controller to 600 gpm.</p>		
*			<p>Operator observes that RHR Pump C Minimum Flow Valve, HV-F007, is closed.</p> <p>Examiner Cue: When asked, provide cue to place HV-F007 in the desired position. (Operator may wait until completion of attachment before informing CRS.)</p> <p>Operator opens HV-F007.</p>		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Administrative

TASK: Perform A Shift Turnover As On-Coming/Off-Going NCO

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		STOP TIME: _____	Operator reports the status of the checklist.		

Terminating Cue: Repeat back message from the operator on the status of checklist, and then state, "This JPM is complete."

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- 1. You are the Off-going Day Shift Reactor Operator.**
- 2. Preparations for shift relief are in progress.**
- 3. Salem 1 and 2 are on line.**
- 4. 10F104 Air Dryer is in service, 00F104 is in standby.**

INITIATING CUE:

Complete the Equipment Status Checklist (Attachment 6), except for the Control Room Key Audit, in accordance with SH.OP-AP.ZZ-0107.

**JOB PERFORMANCE MEASURE
SIMULATOR INSTRUCTIONS**

Reset Simulator to IC-01.

Set RCIC flow controller to 500 gpm.

Close the C RHR Pump Minimum Flow Valve, HV-F007.

ATTACHMENT 6 **EQUIPMENT STATUS CHECKLIST**

Page 1 of 5

CD-421Y

Current Shift X Days _____ Nights _____Date DATE

To be completed by the offgoing RO/PO for turnover to the oncoming RO/PO.
Circle designator for equipment in service,
X over designator for INOP/Bypassed equipment.

Cooling Water

SSWS:

A C B D

SACS:

A C B D

TACS Loop:

A B

RACS:

A B CRemarksCondenser/Condensate

CW

A B C D

SJAE:

A B

Offgas Train:

Unit 1 Common

PCP:

A B C

SCP:

A B C

HWCI:

RUN STOPReactor Feedwater

A RFP:

AUTO MANUAL

B RFP:

AUTO MANUAL

C RFP:

AUTO MANUAL

Startup Valves

AUTO MANUAL CLOSEDReactor

RWCU Pump:

A B

RWCU Filter-Demin:

A B

Reactor Recirc Pumps:

A B

Recirc Control:

AUTO MAN B AUTO MAN

CRD Pumps:

A B

CRD Stabilizer:

A B

CRD Flow Control:

A BNuclear Instrumentation

APRM:

A C E B D F

IRM:

A C E G B D F H

SRM:

A C B D

FLOW UNITS:

A C B D

RBM:

A B

RWM:

Operable Inoperable

ATTACHMENT 6 **EQUIPMENT STATUS CHECKLIST**

Page 2 of 5

<u>Turbine:</u>											<u>Remarks</u>
T/G Oil Pump OP111											
Motor Suction Pump OP108											
Emergency Bearing Oil Pump OP112											
EHC Pumps:	(A)									B	
Lift Pumps:	A	B	C	D	E	F	G	H	J		
Seals:	(SSE)									AUX	
<u>Main Generator:</u>											
Voltage Regulator:	(AUTO)									MANUAL	
Auto Track:	(ON)									OFF	
Stabilizer:	(ON)									OFF	
Stator Cooling:	(A)									B	
SALEM Units On-line:	(1)	(2)				3					
<u>Diesel Generator:</u>											
		A	B	C	D						
<u>Chilled Water:</u>											
Turbine Bldg (K111)	(A)	(B)	(C)		D						
TB CW Pumps:	(A)	(B)	(C)								
TSC Chiller (K403)		(A)				B					
Control Area Chiller (K400)		(A)				B					
<u>Ventilation:</u>											
CREP:	A					B					
FRVS Recirc:	A	C	E			B	D	F			
FRVS Vent:	A					B					
Fans In Lockout:										<u>NONE</u>	
<u>H2/O2 Analyzers:</u>	A					B					
<u>Fuel Pool Cooling Pumps:</u>	(A)					B					
<u>BOP System Bypass</u>	Yes					(No)				(Consistent With Plant Condition)	
<u>Feedwater Heaters:</u>	(Normal)										
<u>Air Systems:</u>											
Instrument Air Dryers:	(10F104)	00F104	1AF104								
Service Air:	(10K107)	00K107									
Emergency Instrument Air:	10K100										
PCIG:	(A)					(B)					
	AUTO/AULD	(AUTO/AULD)									
<u>Aux Boiler</u>	(A)	B				C					

ATTACHMENT 6
EQUIPMENT STATUS CHECKLIST
 Page 3 of 5

Core Spray

Component	I/D	Req	A	B	C	D	Remarks
Supp Pool Suct	HV-F001	O	O	O	O	O	
Pump Min Flow	HV-F031	O	O	O	N/A	N/A	
Full Flow Test	HV-F015	X	X	X	N/A	N/A	
Outbrd Inj.	HV-F004	O	O	O	N/A	N/A	
Inbrd Inj.	HV-F005	X	X	X	N/A	N/A	
Inbrd Inj	HV-F006	X	X	X	N/A	N/A	
Inbrd Isol.	HV-F007	O	O	O	N/A	N/A	
Pump	P206	STBY	STBY	STBY	STBY	STBY	

HPCI

Component	I/D	Req	Act	Remarks
Inbrd Stm Isln	HV-F002	O	O	
Stm Warmup	HV-F100	X	X	
Outbrd Stm Isln	HV-F003	O	O	
Stm admission	HV-F001	X	X	
Turb Exhaust	HV-F071	O	O	
CST Suct	HV-F004	O	O	
Supp Pool Suct	HV-F042	X	X	
Pump Min Flow	HV-F012	X	X	
Cooling Wtr Isln	HV-F059	X	X	
Pump Disch Isln	HV-F007	O	O	
Disch to F.W.	HV-8278	X	X	
Disch to C.S.	HV-F006	X	X	
Full Flow Test	HV-F008	X	X	
Common Test to CST	HV-F011	X	X	
Flow Controller	FIC-R600	AUTO	AUTO	
Aux Oil Pump		5600	5600	
		AUTO	AUTO	

ATTACHMENT 6
EQUIPMENT STATUS CHECKLIST
Page 4 of 5

RCIC

Component	I/D	Req	Act
Inbrd Stm Isln	HV-F007	O	O
Stm Warmup	HV-F076	X	X
Outbrd Stm Isln	HV-F008	O	O
Stm admission	HV-F045	X	X
Turb Exhaust	HV-F059	O	O
CST Suct	HV-F010	O	O
Supp Pool Suct	HV-F031	X	X
Pump Min Flow	SV-F019 / SV-4405	X	X
Cooling Wtr Isln	HV-F046	X	X
Pump Disch Isln	HV-F012	O	O
Disch to F.W.	HV-F013	X	X
Full Flow Test	HV-F022	X	X
Flow Controller	FIC-R600	AUTO 600	AVT 600
Trip and throttle (valve)	HV-F4282	O	O
Trip and Thrtl (actuator)	HV-F4282	ACTUATOR OPEN	ACTUATOR OPEN

Remarks

FOUND SET AT 600. ADJUSTED TO 600

ATTACHMENT 6 **EQUIPMENT STATUS CHECKLIST** Page 5 of 5

RHR

Component	I/D	Req	A	C	B	D
Supp Pool Suct	HV-F004	O	O	O	O	O
S/D Clg Suction	HV-F006	X	X	N/A	X	N/A
Pump Min Flow	HV-F007	O	O	O	O	O
RHR Hx Inlet	HV-F047	O	O	N/A	O	N/A
RHR Hx Bypass	HV-F048	O	O	N/A	O	N/A
RHR Hx Outlet	HV-F003	O	O	N/A	O	N/A
Full Flow Test	HV-F024	X	X	N/A	X	N/A
Full Flow Test	HV-F010	X	N/A	X	N/A	X
Outbrd Injection	HV-F017	X	X	X	X	X
Inbrd Injection	HV-F041	X	X	X	X	X
Inbrd Isolation	HV-F065	O	O	O	O	O
Outbrd DW Spray	HV-F016	X	X	N/A	X	N/A
Inbrd DW Spray	HV-F021	X	X	N/A	X	N/A
Pool Spray	HV-F027	X	X	N/A	X	N/A
Inbrd Head Spray	HV-F022	X	N/A	N/A	X	N/A
Outbrd Head Spray	HV-F023	X	N/A	N/A	X	N/A
S/D Clg Suct	HV-F008	X	X	N/A	N/A	N/A
S/D Clg Suct	HV-F009	X	N/A	N/A	X	N/A
S/D Clg Return	HV-F015	X	X	N/A	X	N/A
S/D Clg Return	HV-F050	X	X	N/A	X	N/A
Inbrd Isln	HV-F060	O	O	N/A	O	N/A
Pump	P202	STBY	STBY	STBY	STBY	STBY

Remarks

FOUND FOOTC CLOSED, OPENED FOOTC

Disc & Operator

Disc & Actuator

Performed the Control Room Key Audit

N/A

Initial

Checklist Performed By

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

CAT. A
A.2 (RO)

STATION: HOPE CREEK
SYSTEM: Reactor Recirc
TASK: Conduct Reactor Recirculation Single Loop Operation

TASK NUMBER: 2020140401

JPM NUMBER: 305H-JPM.ZZ-013-00

APPLICABILITY: EO ☐ RO ☒ SRO ☒

K/A NUMBER: 2.2.12
IMPORTANCE FACTOR:

3.0	3.4
RO	SRO

EVALUATION SETTING/METHOD: Simulator/Perform

REFERENCES: HC.OP-ST.BB-0007, Revision 06

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 12 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:

APPROVED:

N/A	N/A
PRINCIPAL TRAINING SUPERVISOR	OPERATIONS MANAGER

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:
1. Permission from the OS Or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME: N/A

JPM PERFORMED BY: GRADE: ☐ SAT ☐ UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: DATE:

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Reactor Recirc

TASK: Conduct Reactor Recirculation Single Loop Operation

TASK NUMBER: 2020140401

INITIAL CONDITIONS:

1. Recirculation Pump A has been removed from service.
2. Preparations for Single Loop Operations are in progress in accordance with HC.OP-IO.ZZ-0006.
3. Section 5.1, Jet Pump Operability Verification, of HC.OP-ST.BB-0007, Recirculation Jet Pump Operability-Single Loop-Daily, has been completed.

INITIATING CUE:

Perform Section 5.2, APRM Flow to Total Core Flow Comparison, of HC.OP-ST.BB-0007, Recirculation Jet Pump Operability-Single Loop-Daily.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

SYSTEM: Reactor Recirc

TASK: Conduct Reactor Recirculation Single Loop Operation

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		Operator determines beginning step of the procedure.	Operator determines correct beginning step to be 5.2.		
	5.2.1	START TIME: _____ LOG test start time in the Control Room Narrative log.	Operator requests that the start time be logged in the Control Room Narrative log. Examiner Cue: The start time has been logged Control Room Narrative log.		
	5.2.2	ENSURE that all prerequisites have been satisfied IAW Section 2.2 of this procedure.	Operator ensures that all prerequisites have been satisfied IAW Section 2.2 of this procedure.		
	5.2.3	ENSURE Attachment 1, Section 1.0 of the SNSS/NSS Data and Signature Sheet has been completed <u>and</u> Regular Surveillance <u>or</u> Retest is indicated.	Operator ensures Attachment 1, Section 1.0 of the SNSS/NSS Data and Signature Sheet has been completed and Regular Surveillance or Retest is indicated.		
* #	5.2.4	At APRM panel 10C608, at each APRM channel, PLACE the Meter Function Switch to FLOW.	Operator places the Meter Function Switch to FLOW for each APRM channel to FLOW.		
* #	5.2.5	RECORD the value indicated for each APRM's flow on Attachment 2.	Operator records the value indicated for each APRM's flow on Attachment 2.		
	5.2.6	RETURN the Meter Function Switch at each APRM to the AVERAGE position.	Operator returns the Meter Function Switch at each APRM to the AVERAGE position.		
*	5.2.7	Using the value of the highest APRM % Flow obtained in step 5.2.5, DETERMINE the established Total Core Flow from Attachment 10.	Operator determines the established Total Core Flow from Attachment 10 using the highest APRM % Flow obtained in step 5.2.5.		
	5.2.8	ENTER the value obtained in step 5.2.7 on Attachment 2.	Operator enters the value obtained in step 5.2.7 on Attachment 2.		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

SYSTEM: Reactor Recirc

TASK: Conduct Reactor Recirculation Single Loop Operation

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.2.9	ENTER the Total Core Flow obtained in step 5.1.4.F on Attachment 2.	Operator enters the Total Core Flow obtained in step 5.1.4.F on Attachment 2.		
*	5.2.10	COMPARE the Total Core Flow from step 5.2.9 to the Established Total Core Flow recorded in step 5.2.8 (the Total Core Flow must be greater than or equal to the Established Total Core Flow).	Operator compares the Total Core Flow from step 5.2.9 to the Established Total Core Flow recorded in step 5.2.8 and determines that the Total Core Flow is greater than the Established Total Core Flow.		
	5.2.11	ENTER SAT or UNSAT on Attachment 2.	Operator enters a SAT on Attachment 2.		
	5.2.12	LOG test end time in the Control Room Narrative Log. STOP TIME: _____	Operator requests that the test end time in the Control Room Narrative Log.		

Terminating Cue: Repeat back message from the operator on the status of HC.OP-ST.BB-0007, and then state, "This JPM is complete."

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- 1. Recirculation Pump A has been removed from service.**
- 2. Preparations for Single Loop Operations are in progress in accordance with HC.OP-IO.ZZ-0006.**
- 3. Section 5.1, Jet Pump Operability Verification, of HC.OP-ST.BB-0007, Recirculation Jet Pump Operability-Single Loop-Daily, has been completed.**

INITIATING CUE:

Perform Section 5.2, APRM Flow to Total Core Flow Comparison, of HC.OP-ST.BB-0007, Recirculation Jet Pump Operability-Single Loop-Daily.

JOB PERFORMANCE MEASURE SIMULATOR INSTRUCTIONS

Reset Simulator to IC-04.

Remove the A Recirculation Pump from service.

Insert Group 85 rods.

Raise Recirculation Pump B speed to 55%

Complete Section 5.1 of HC.OP-ST.BB-0007. Ensure data/plant conditions support successful completion of Section 5.2. Need to determine the Total Core Flow in step 5.1.4.F so that Total Core Flow is greater than or equal to the Established Total Core Flow.

HOPE CREEK GENERATING STATION

Page 1 of 1

HC.OP-ST.BB-0007(Q) - Rev. 6

RECIRCULATION JET PUMP OPERABILITY-SINGLE LOOP - DAILY

USE CATEGORY: I

REVISION SUMMARY:

REV. 6

1. The following changes were made in response to Revision Request OP-96-0416, to incorporate changes already made and approved in HC.OP-SO.BB-0002 (Q). These changes can be considered editorial based on an allowance in NC.NA-AP.ZZ-0001(Q), Attachment 4, for revising a procedure to include changes previously reviewed and approved.
 - Added new Note 5.1.4.F to explain whether the flow observed is forward or reverse.
 - Changed directions in steps 5.1.4.F.4 - 6 to account for both forward and reverse flows.
 - Revised Attachments 1, 2 and 3 to reflect the above changes and the splitting of certain steps to conform to the Writers Guide.
2. Made editorial changes to bring this procedure in line with the Writers Guide (removed action statements from Prerequisites section, changed action verbs to bold type, split steps so only one action is directed in each step, etc.).

IMPLEMENTATION REQUIREMENTS

This procedure revision is only effective for use after a paper copy is issued to the Control Room. The previous revision remains in effect until then, regardless of the approval date or the DCS update date

APPROVED: _____

Operations Manager

3/4/96
Date

APPLICANT'S COPY

RECIRCULATION JET PUMP OPERABILITY-SINGLE LOOP - DAILY

1.0 **PURPOSE**

The purpose of this test is to determine the operability of the Reactor Recirculation Jet Pumps IAW the requirements specified in Technical Specifications Section 4.4.1.2.b and performs a comparison of established core flow at the existing recirculation loop flow (APRM % flow) to total core flow IAW the requirements specified in Technical Specifications Table 4.3.1.1-1 item 2.b footnote g.

2.0 **PREREQUISITES**

2.1 **Jet Pump Operability Verification**

2.1.1 Permission to perform this procedure has been obtained from the SNSS/NSS and a signature on Attachment 1, has been obtained.

2.1.2 The NCO has been informed that the following test is to be performed and the following alarms, indications and functions will be observed.

A. Alarms

None

B. Indications

None

C. Functions

None

2.1.3 Plant is in Condition 1 or 2.

2.1.4 No other testing or maintenance is in progress that will adversely affect the performance of this test.

2.1.5 Recirculation pump A or B is operating in Local Manual Mode IAW HC.OP-SO.BB-0002(Q), Reactor Recirculation System Operation. (T.S. 3.4.1.1.a.1)

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Precautions

- CD-927E** 3.1.1 If at any time during the performance of this test, a step can not be completed or is observed to be unsatisfactory; IMMEDIATELY NOTIFY the NCO and SNSS/NSS.
- 3.1.2 Within NO MORE THAN 15 minutes prior to either THERMAL POWER increase or Recirculation Loop flow increase, verify the following differential temperature requirements are met if THERMAL POWER is $\leq 38\%$ (1251.3 MWTH) of RATED THERMAL POWER or the Recirculation Loop flow in the operating loop is $\leq 50\%$ (22.6 KGPM) of rated loop flow by performing Attachment 3v of HC.OP-DL.ZZ-0026(Q), Surveillance Log. The temperature requirements in steps 3.1.2.B and 3.1.2.C do not apply when the loop not in operation is isolated from the reactor pressure vessel:
- A. $\leq 145^{\circ}\text{F}$ between reactor vessel steam space coolant and bottom head drain line coolant.
 - B. $\leq 50^{\circ}\text{F}$ between the reactor coolant within the loop not in operation and the coolant in the reactor vessel.
 - C. $\leq 50^{\circ}\text{F}$ between the reactor coolant within the loop not in operation and the operating loop.
- 3.1.3 With total core flow $< 45\%$ but $> 40\%$ of rated core flow and THERMAL POWER $>$ the limit specified in Technical Specification figure 3.4.1.1-1, IMMEDIATELY NOTIFY the SNSS/NSS. Enter Action Statement 3.4.1.1.c and NOTIFY Reactor Engineering to perform HC.RE-ST.SE-0004(Q), Neutron Monitoring System Noise Surveillance.

3.2 Limitations

- 3.2.1 All steps of this procedure are to be completed in sequence unless otherwise specified.
- 3.2.2 The Surveillance requirements of Technical Specifications Section 4.4.1.2.b and Technical Specifications Table 4.3.1.1-1 item 2.b footnote g, can be satisfied using curves generated from data collected during previous operating cycles (ie., use current rev.), while new baseline data is being analyzed and processed into a new revision to this surveillance.

5.0 **PROCEDURE**

NOTE 5.0

Individual Jet Pump dp's are obtained on Panel 10C619, Aux Bldg Control Area El. 102'.

CAUTION 5.0

CD-927E

If at any time during the performance of this test a step cannot be completed **or** is observed to be unsatisfactory; **IMMEDIATELY NOTIFY** the NCO **and** the SNSS/NSS.

5.1 **Jet Pump Operability Verification**

- 5.1.1 **LOG** test start time in the Control Room Narrative log.
- 5.1.2 **ENSURE** that all prerequisites have been satisfied IAW Section 2.1 of this procedure.
- 5.1.3 **ENSURE** Attachment 1, Section 1 of the SNSS/NSS Data and Signature Sheet has been completed **and** Regular Surveillance **or** Retest is indicated.
- 5.1.4 **RECORD** the following information in the appropriate spaces on Attachment 2:
 - A. **ENTER** Recirculation Pump "A" speed if operating, otherwise N/A.
 - B. **ENTER** Recirculation Pump "B" speed if operating, otherwise N/A.
 - C. **ENTER** Recirculation Pump "A" flow if operating, otherwise N/A.
 - D. **ENTER** Recirculation Pump "B" flow if operating, otherwise N/A.

- 5.1.4. G. **ENTER SAT** if calculated Total Core Flow is within $\pm 10\%$ of the established curve (at given operating Recirc Pump flow) on Attachment 6, Recirculation Pump Flow "A" vs Total Core Flow Curve, or on Attachment 7, Recirculation Pump Flow "B" vs Total Core Flow Curve, (otherwise, UNSAT).

NOTE 5.1.5

- A. The constant motion of the individual jet pump d/p indicators makes data acquisition difficult. The recommended method is to take a high and a low reading and use their average. Noise is the most positive indication that the jet pump is operating.
- B. Jet Pump d/p indication accuracy and readability are marginal during periods of low Core flow. Attempt to maximize Recirc Pump speeds before performing the following steps.
- C. Jet pump data is only required for jet pumps 1 - 10 when "B" Recirc. Loop is in operation, and jet pumps 11 - 20 when "A" Recirc. Loop is in operation.

- 5.1.5 **COMPLETE** Attachment 3 for individual Jet Pumps in the operating Recirc. Loop only.
- 5.1.6 **DETERMINE** on Attachment 3 whether the % dp is within $\pm 20\%$ of the established curve for the appropriate operating Recirc Pump (at a given speed) on Attachment 8 or 9.
- 5.1.7 **RECORD** SAT or UNSAT on Attachment 3.
- 5.1.8 On Attachment 2 **ENTER SAT** if all individual Jet Pumps are recorded as SAT on Attachment 3 (otherwise, UNSAT).
- 5.1.9 **ENTER THERMAL POWER** from P1 or OD3 on Attachment 2.
- 5.1.10 **LOG** test end time in the Control Room Narrative log.
- 5.1.11 **SUBMIT** this procedure to the SNSS/NSS for review and completion of Attachment 1.

ATTACHMENT 1
SNSS/NSS DATA AND SIGNATURE SHEET
RECIRCULATION JET PUMP OPERABILITY-SINGLE LOOP - DAILY

1.0 PRETEST INFORMATION

1.1 Reason for the Test

1.1.1 Regular Surveillance TB
INITIALS

1.1.2 Retest _____
INITIALS

1.1.3 If not performing the complete test, list subsection(s) to be performed.

SUBSECTIONS

1.2 Plant Conditions

1.2.1 Operational Condition I

1.2.1 Reactor Power Level 60

1.2.1 GMWe 665

1.3 Permission to Perform the Test

1.3.1 Permission granted to perform this test.

Tom Brown / _____
SNSS/NSS DATE-TIME

1.3.2 Work Order No. 123456

ATTACHMENT 1
SNSS/NSS DATA AND SIGNATURE SHEET
RECIRCULATION JET PUMP OPERABILITY-SINGLE LOOP - DAILY

3.0 PROCEDURE PERFORMER(S) AND VERIFIER(S)

3.1 I have read and understand the steps of this procedure. (All Departments)

<u>PRINT NAME</u>	<u>SIGNATURE</u>	<u>INITIALS</u>	<u>DATE/TIME</u>
JOHN SMITH	<i>John Smith</i>	<i>JS</i>	

**ATTACHMENT 2
CONTROL ROOM DATA SHEET
RECIRCULATION JET PUMP OPERABILITY-SINGLE LOOP - DAILY**

2.2 APRM Flow to Total Core Flow Comparison

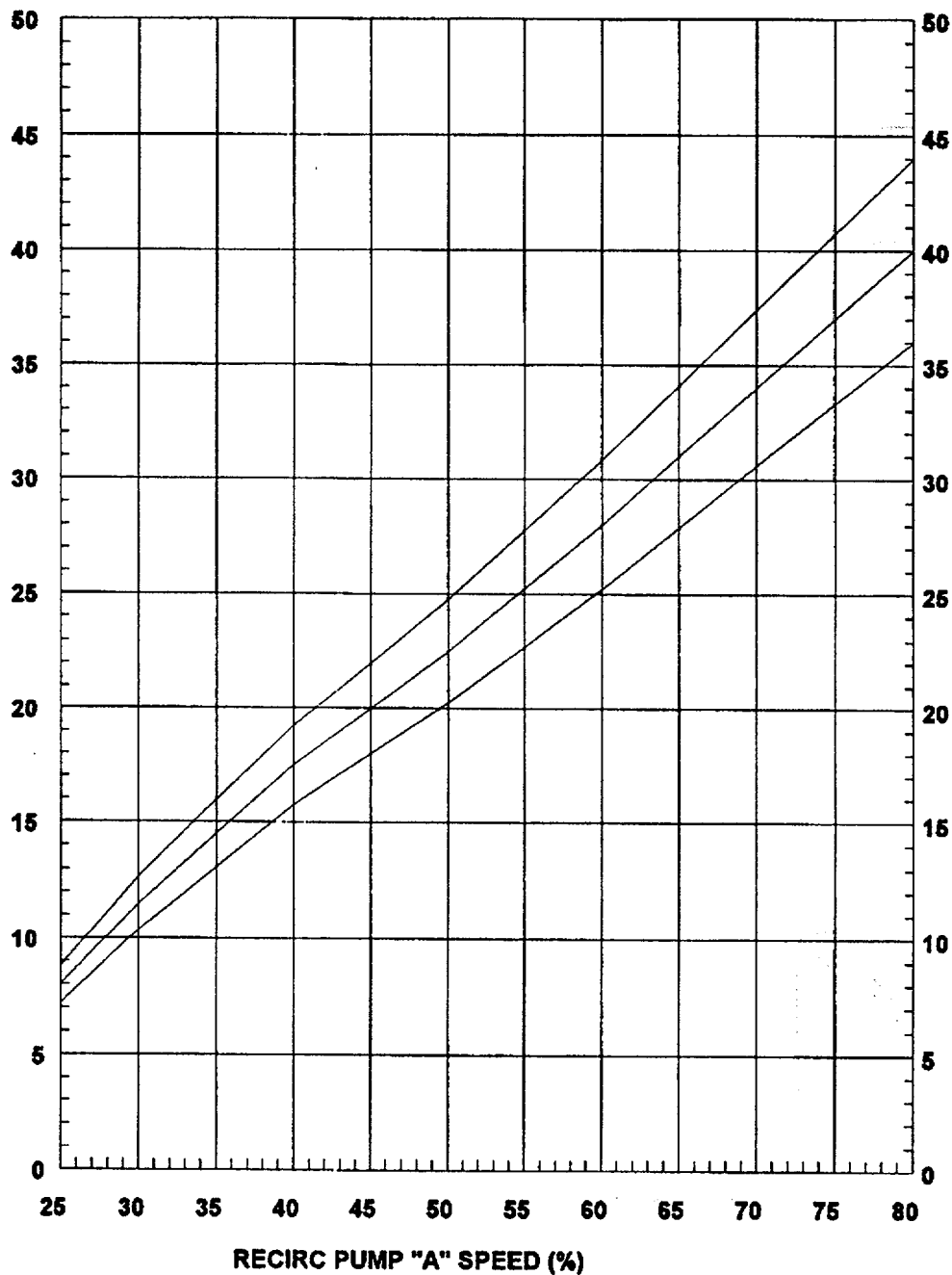
STEP	NOMENCLATURE	VALUE
5.2.5	APRM F % FLOW	
	APRM D % FLOW	
	APRM B % FLOW	
	APRM A % FLOW	
	APRM C % FLOW	
	APRM E % FLOW	
5.2.8	ESTABLISHED TOTAL CORE FLOW FOR HIGHEST APRM % FLOW (Attachment 10)	
5.2.9	TOTAL (CALCULATED) CORE FLOW	

STEP	NOMENCLATURE	SAT/UNSAT	PERF
5.2.11	TOTAL CORE FLOW (5.2.9) IS GREATER THAN OR EQUAL TO ESTABLISHED TOTAL CORE FLOW (5.2.8)		

* Acceptance Criterion - the SAT/UNSAT block must be marked SAT.

ATTACHMENT 4
PUMP SPEED/FLOW CURVE RECIRCULATION LOOP "A"

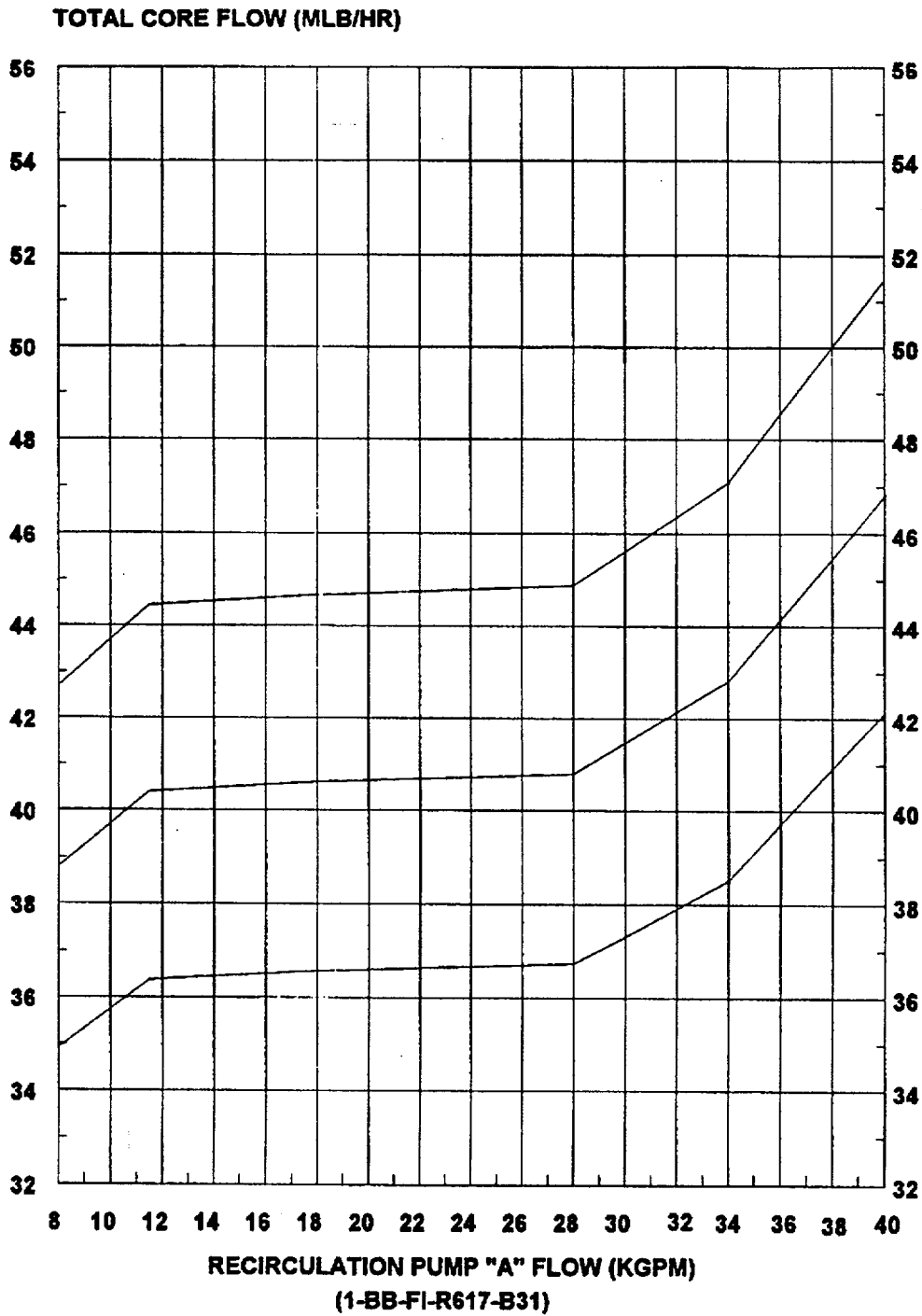
RECIRCULATION PUMP "A" FLOW (KGPM)



Cycle 5, SLO A

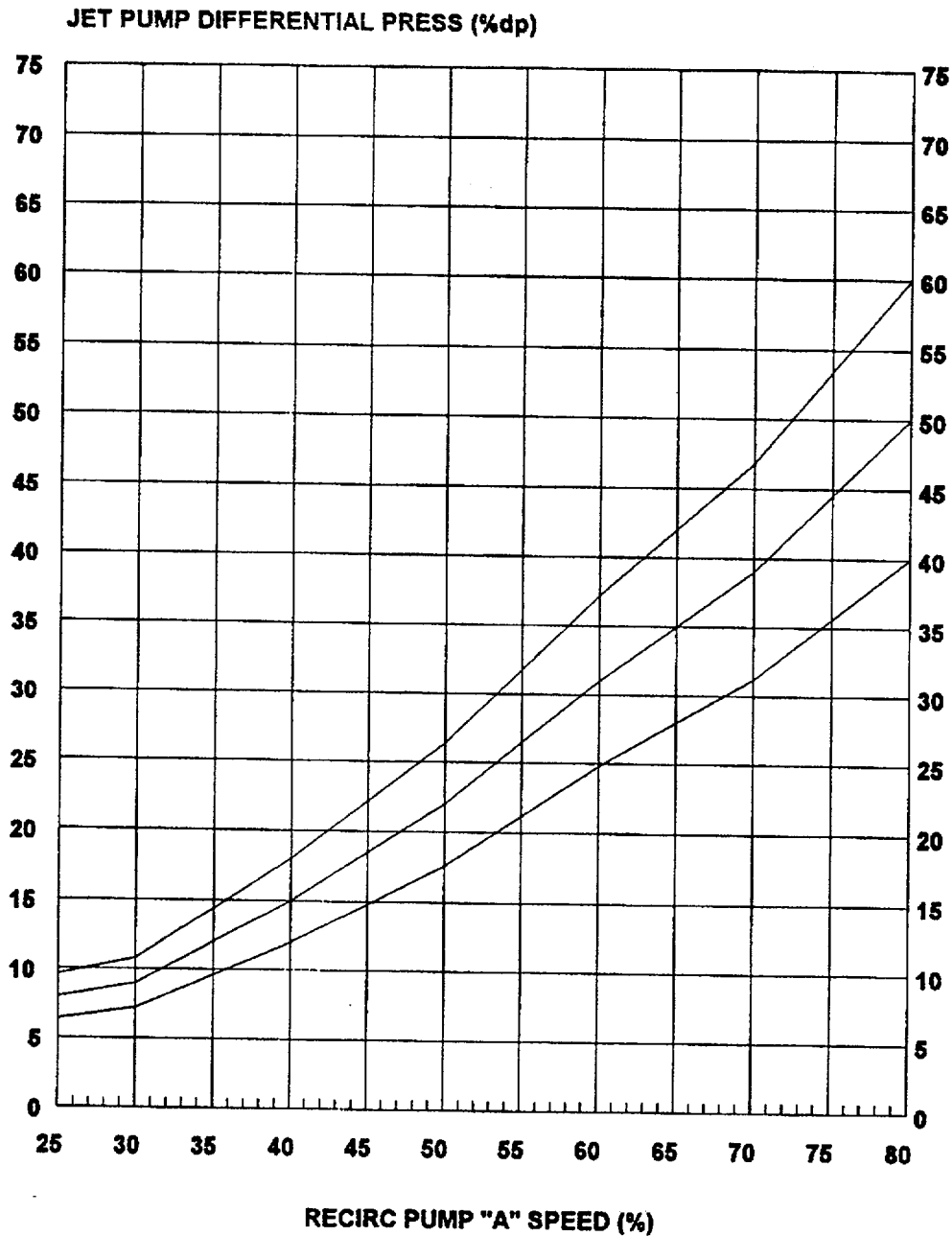
(1-BB-SIC-R621A)

ATTACHMENT 6
RECIRC PUMP "A" FLOW vs TOTAL CORE FLOW CURVE



ATTACHMENT 8
ESTABLISHED % dP GRAPH - "A" RECIRC PUMP OPERATING

JET PUMP 11

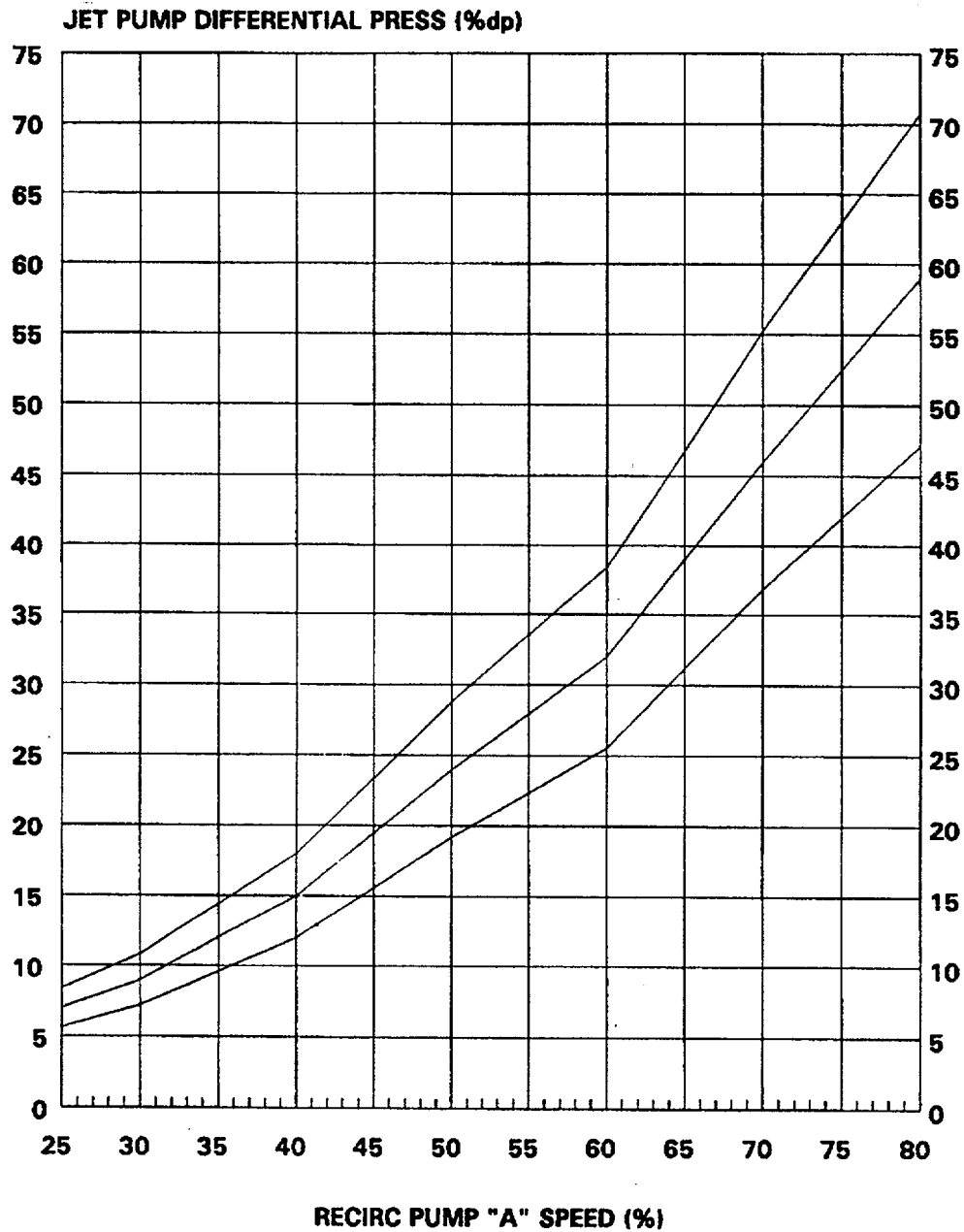


(1-BB-SIC-R621A)

Cycle 5, SLO A, JP11

ATTACHMENT 8
ESTABLISHED % dP GRAPH - "A" RECIRC PUMP OPERATING

JET PUMP 13



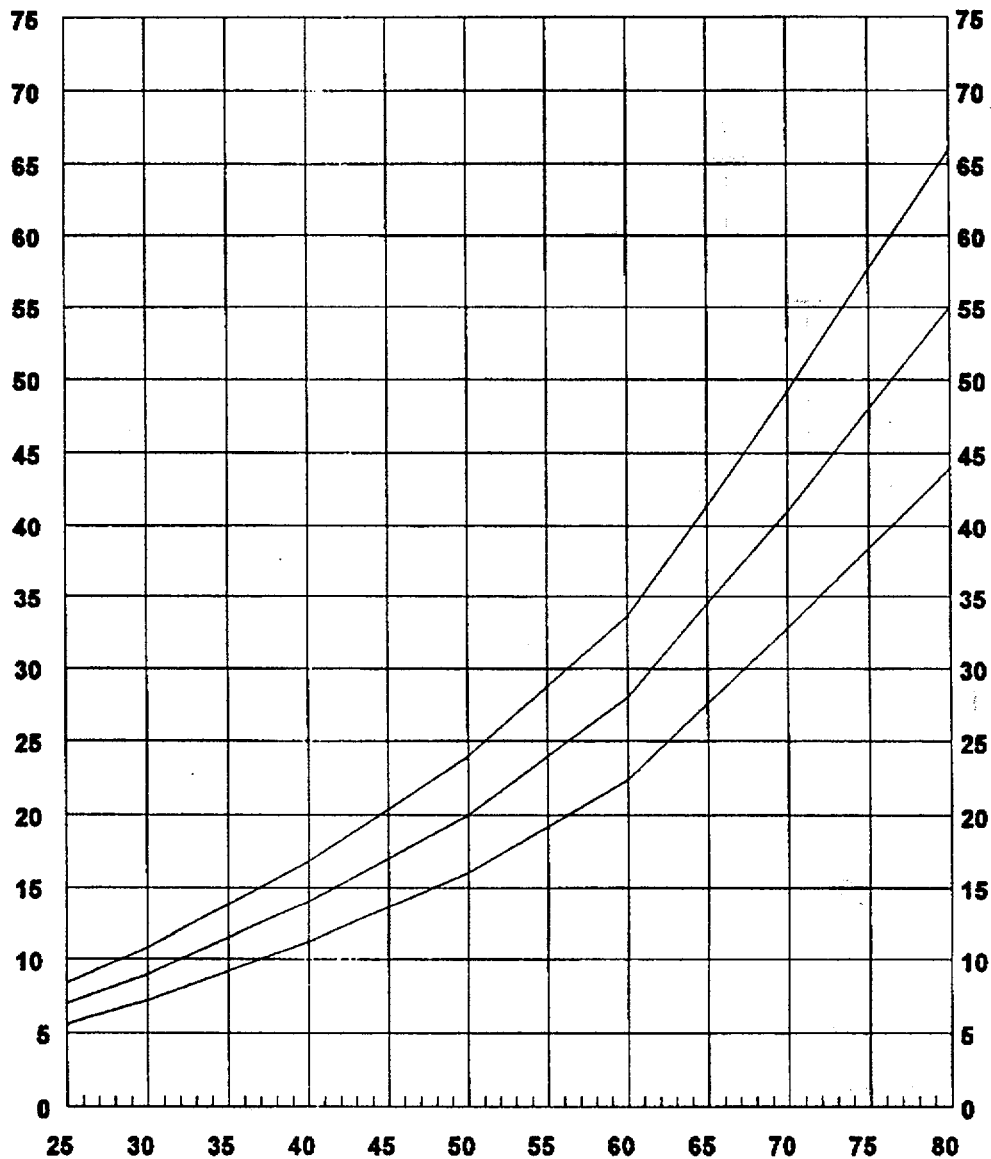
(1-BB-SIC-R621A)

Cycle 5, SLO A, JP13

ATTACHMENT 8
ESTABLISHED % dP GRAPH - "A" RECIRC PUMP OPERATING

JET PUMP 15

JET PUMP DIFFERENTIAL PRESS (%dp)

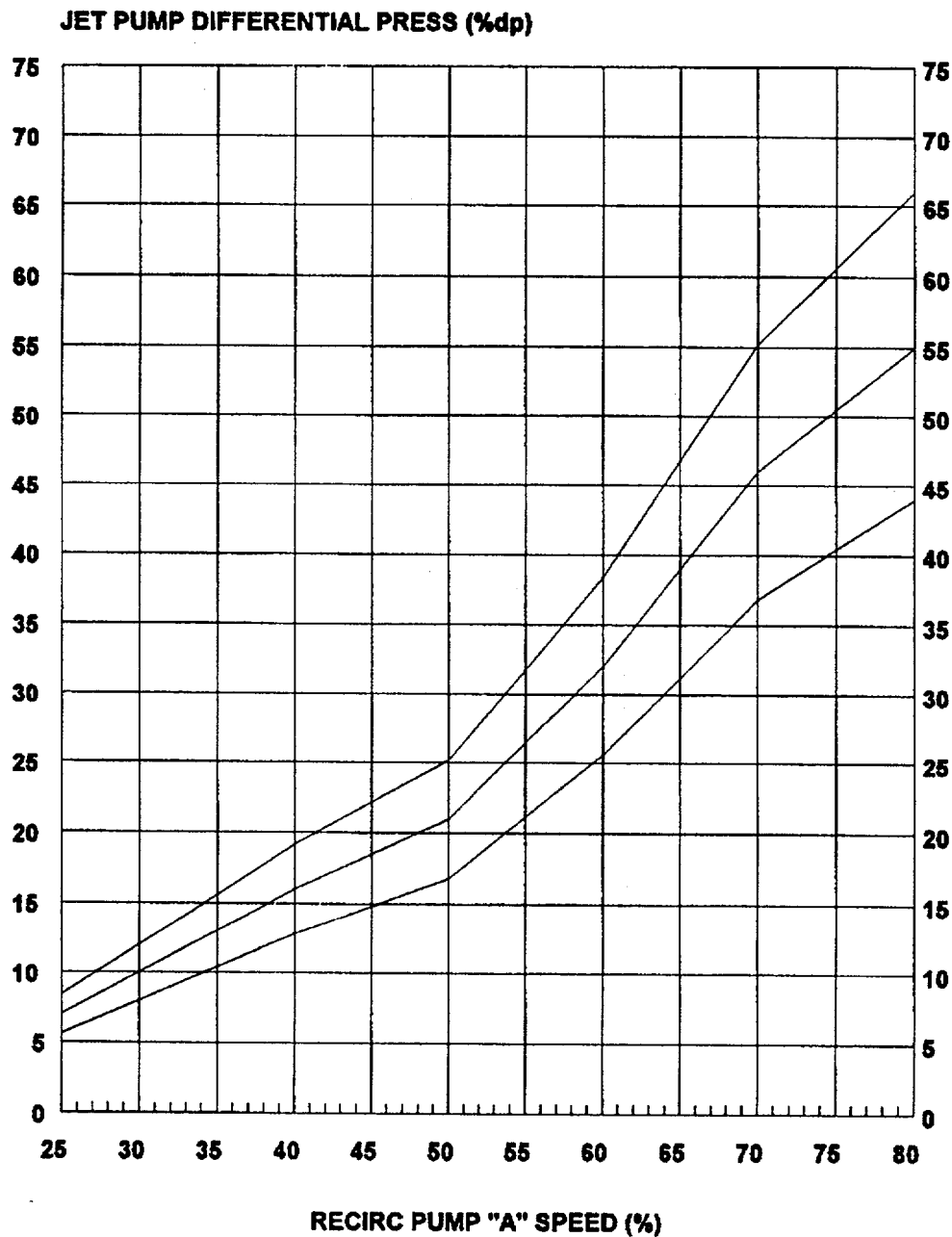


RECIRC PUMP "A" SPEED (%)
(1-BB-SIC-R621A)

Cycle 5, SLO A, JP15

ATTACHMENT 8
ESTABLISHED % dP GRAPH - "A" RECIRC PUMP OPERATING

JET PUMP 17



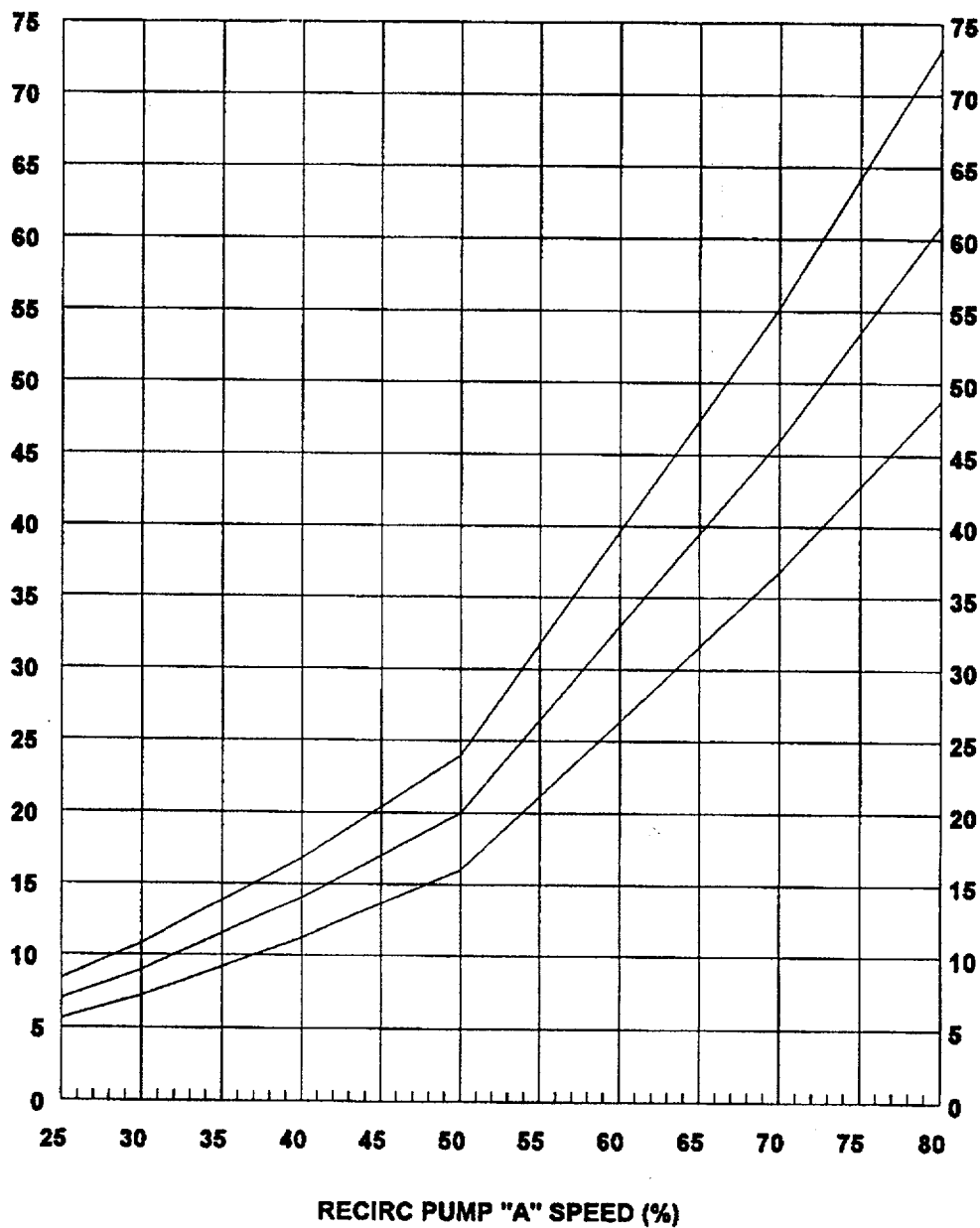
(1-BB-SIC-R621A)

Cycle 5, SLO A, JP17

ATTACHMENT 8
ESTABLISHED % dP GRAPH - "A" RECIRC PUMP OPERATING

JET PUMP 19

JET PUMP DIFFERENTIAL PRESS (%dp)



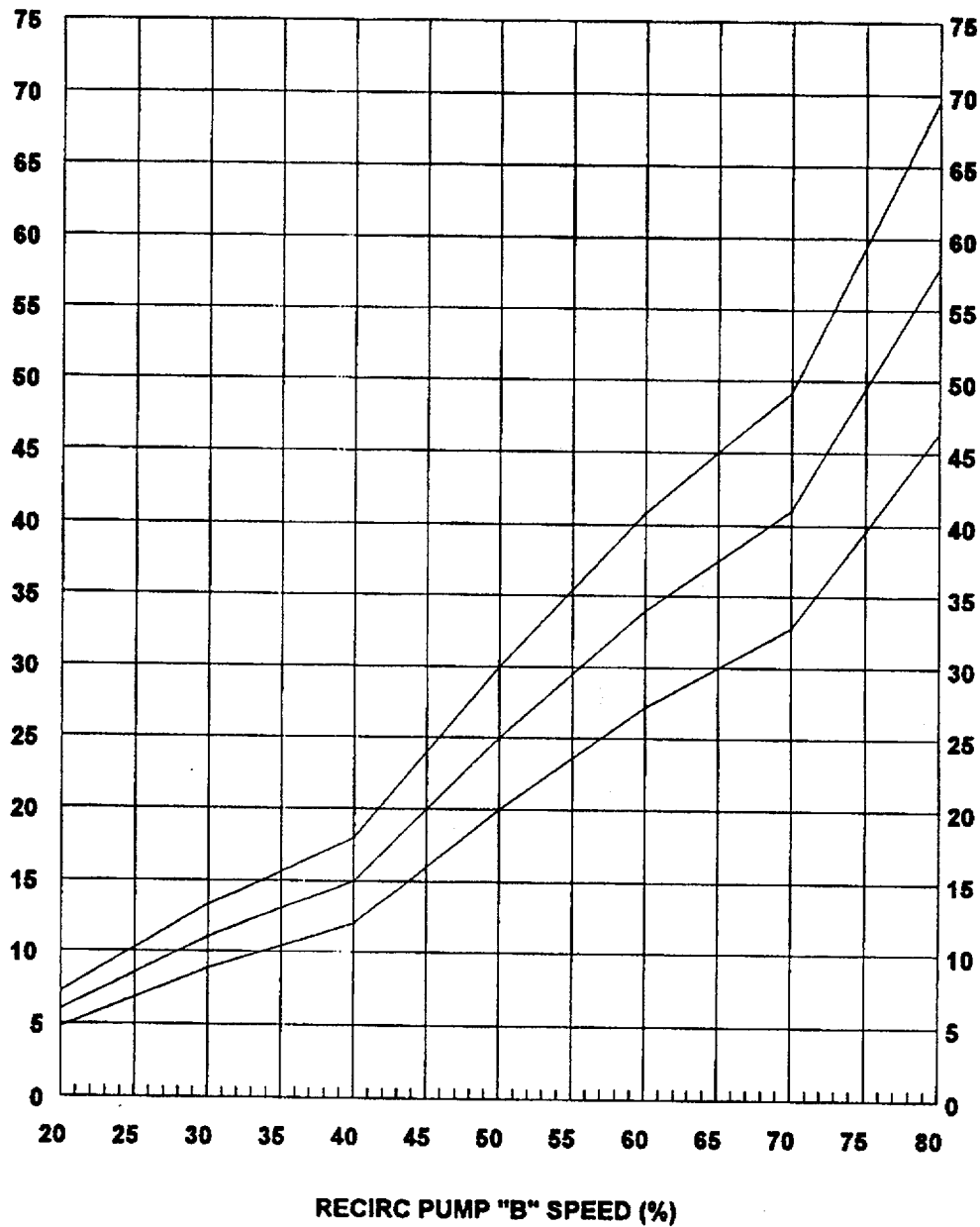
(1-BB-SIC-R621A)

Cycle 5, SLO A, JP19

ATTACHMENT 9
ESTABLISHED % dP GRAPH - "B" RECIRC PUMP OPERATING

JET PUMP 01

JET PUMP DIFFERENTIAL PRESS (%dp)

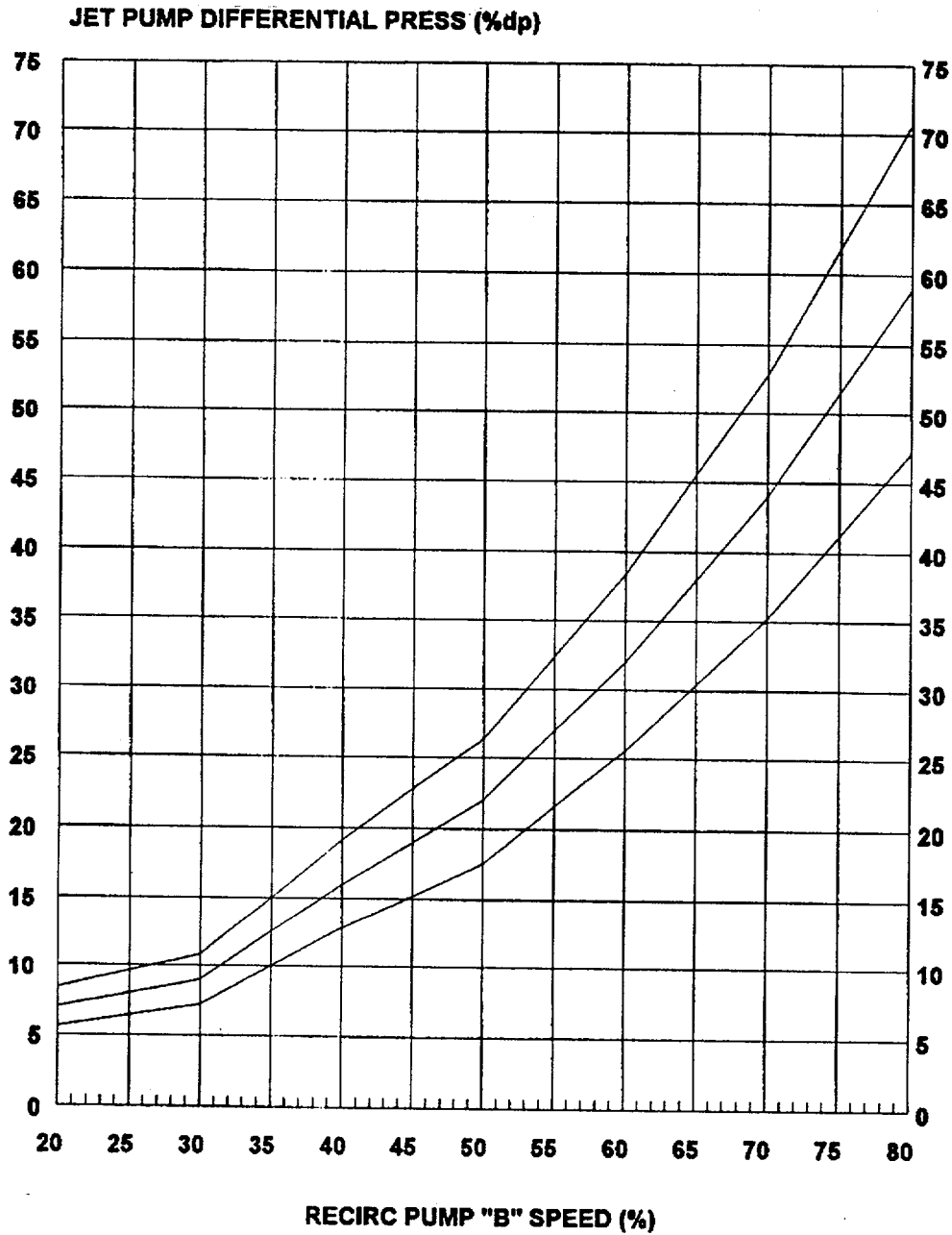


(1-BB-SIC-R621B)

Cycle 5, SLO B, JP1

ATTACHMENT 9
ESTABLISHED % dP GRAPH - "B" RECIRC PUMP OPERATING

JET PUMP 03



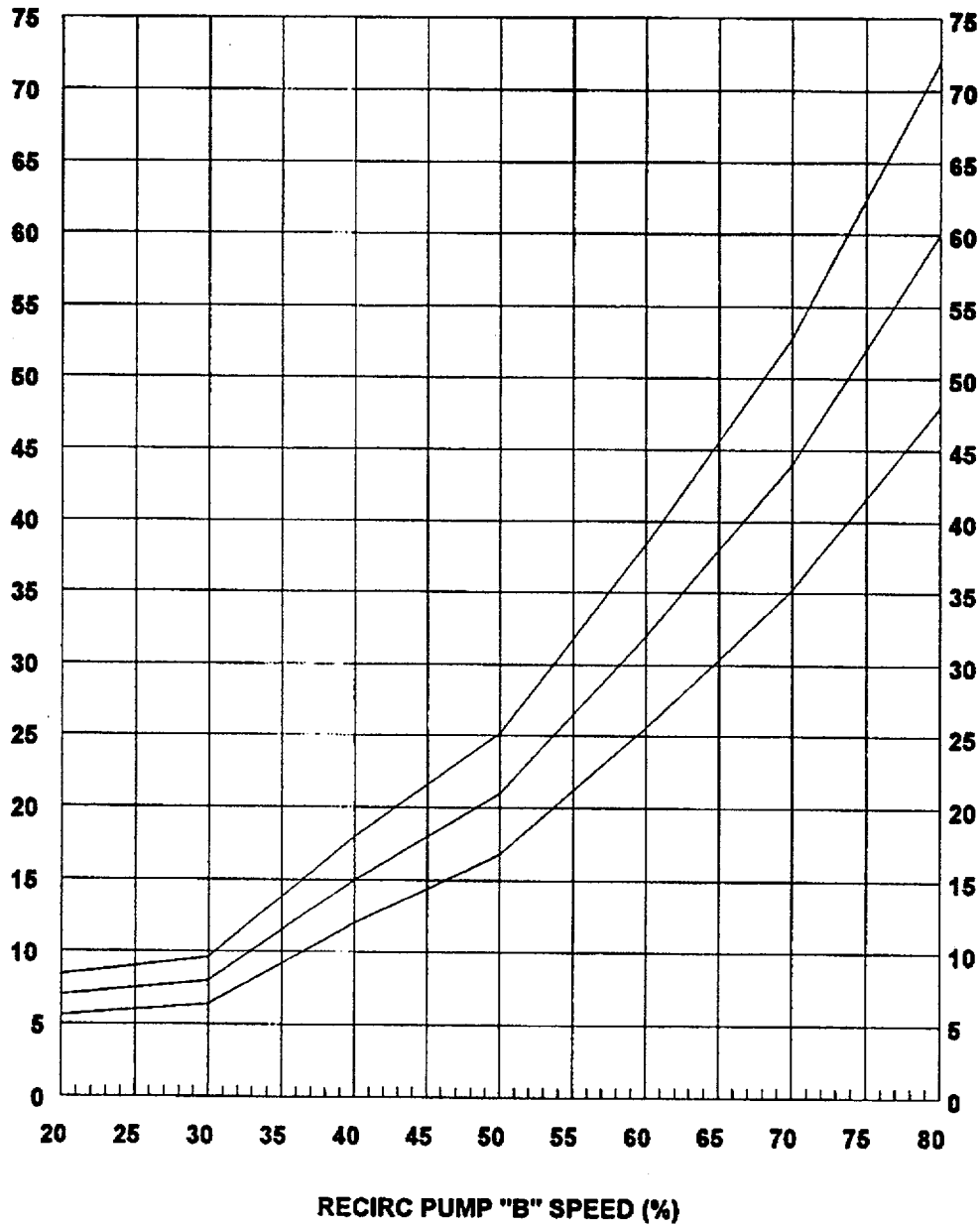
Cycle 5, SLO B, JP3

(1-BB-SIC-R621B)

ATTACHMENT 9
ESTABLISHED % dP GRAPH - "B" RECIRC PUMP OPERATING

JET PUMP 05

JET PUMP DIFFERENTIAL PRESS (%dp)



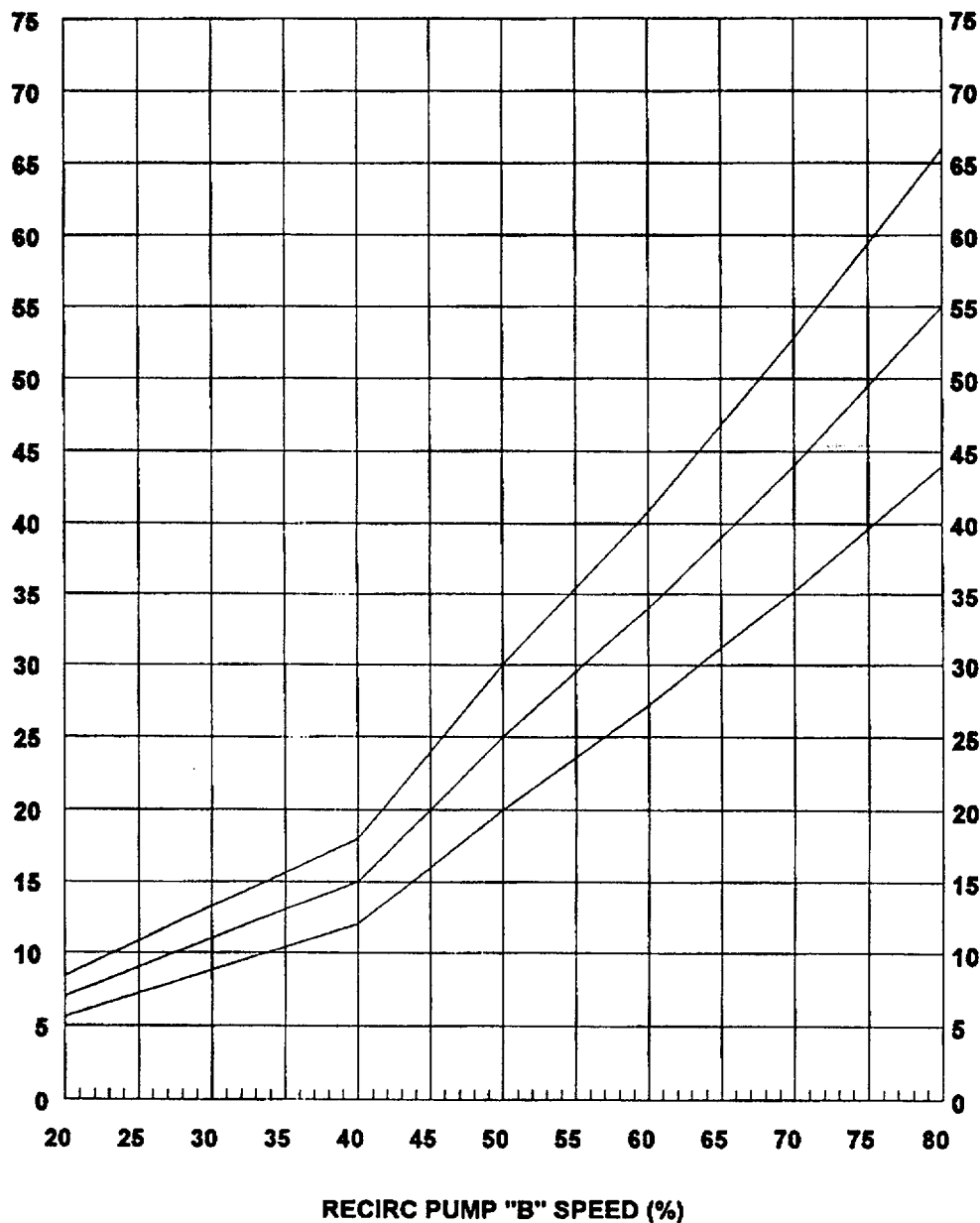
(1-BB-SIC-R621B)

Cycle 5, SLO B, JP 5

ATTACHMENT 9
ESTABLISHED % dP GRAPH - "B" RECIRC PUMP OPERATING

JET PUMP 07

JET PUMP DIFFERENTIAL PRESS (%dp)



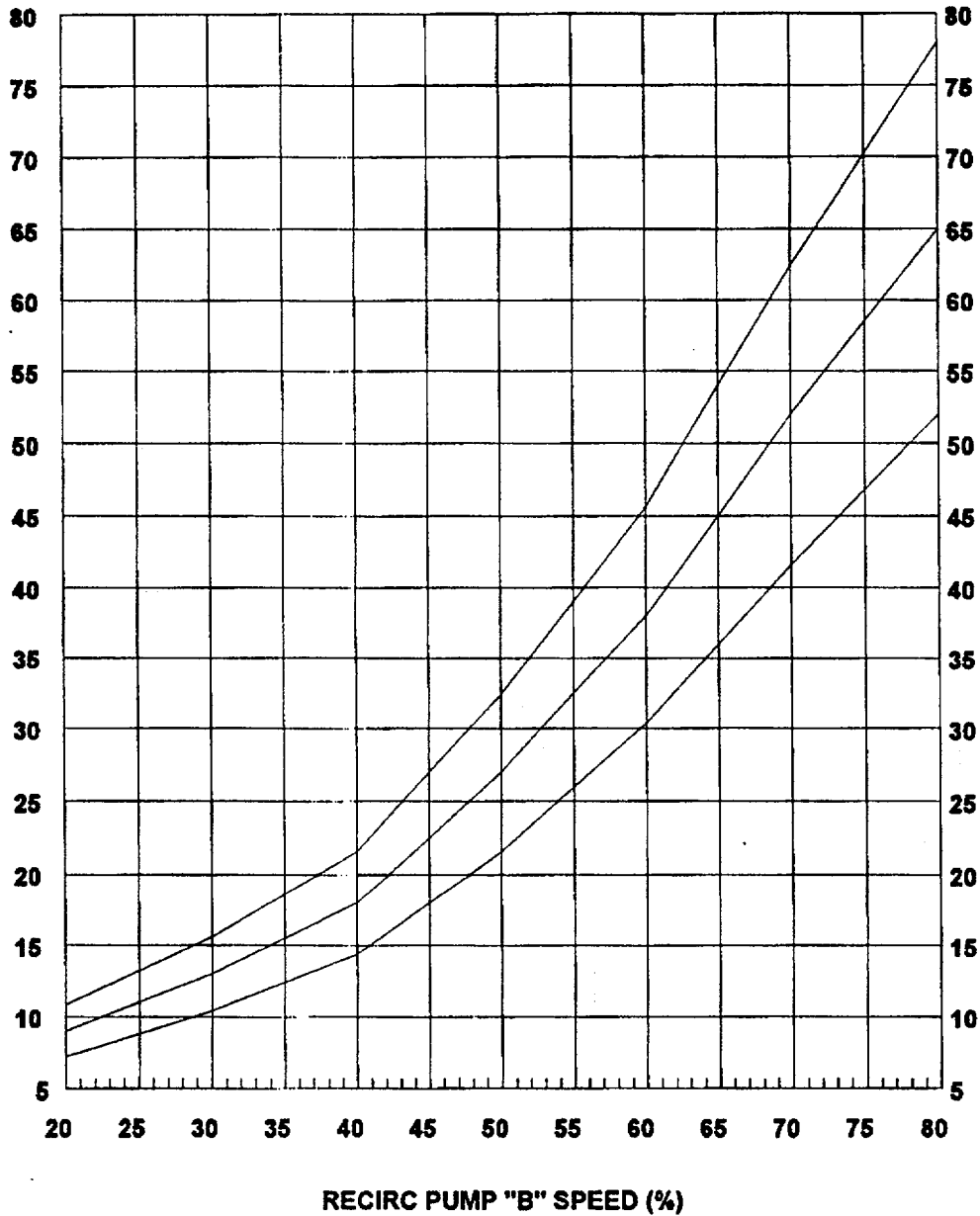
(1-BB-SIC-R621B)

Cycle 5, SLO B, JP7

ATTACHMENT 9
ESTABLISHED % dP GRAPH - "B" RECIRC PUMP OPERATING

JET PUMP 09

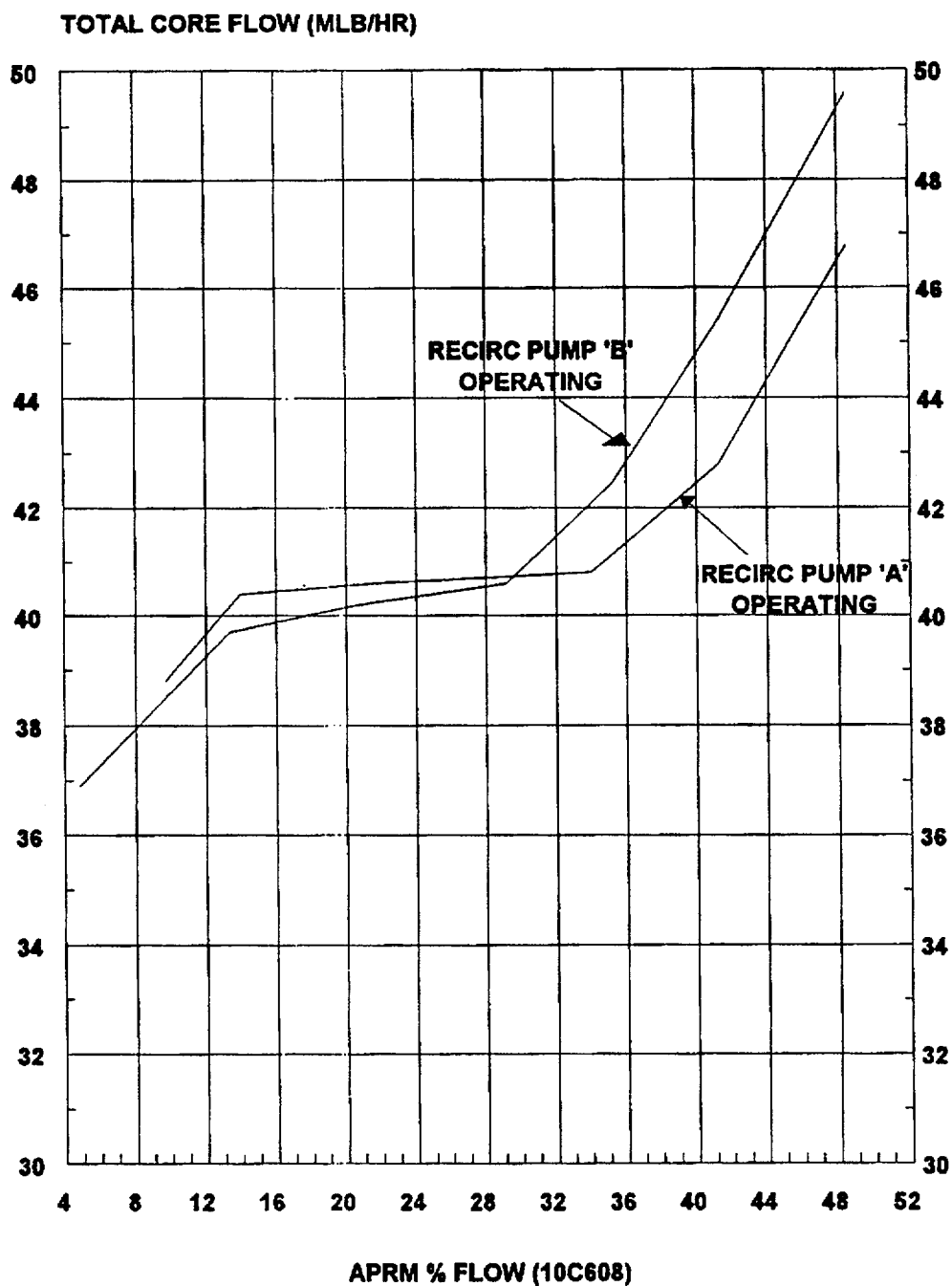
JET PUMP DIFFERENTIAL PRESS (%dp)



(1-BB-SIC-R621B)

Cycle 5, SLO B, JP9

ATTACHMENT 10
ESTABLISHED TOTAL CORE FLOW vs APRM % FLOW



CYCLE 5, SLO, APRM % FLOW

HOPE CREEK GENERATING STATION

Page 1 of 1

HC.OP-ST.BB-0007(Q) - Rev. 6

RECIRCULATION JET PUMP OPERABILITY-SINGLE LOOP - DAILY

USE CATEGORY: I

REVISION SUMMARY:

REV. 6

1. The following changes were made in response to Revision Request OP-96-0416, to incorporate changes already made and approved in HC.OP-SO.BB-0002 (Q). These changes can be considered editorial based on an allowance in NC.NA-AP.ZZ-0001(Q), Attachment 4, for revising a procedure to include changes previously reviewed and approved.
 - Added new Note 5.1.4.F to explain whether the flow observed is forward or reverse.
 - Changed directions in steps 5.1.4.F.4 - 6 to account for both forward and reverse flows.
 - Revised Attachments 1, 2 and 3 to reflect the above changes and the splitting of certain steps to conform to the Writers Guide.
2. Made editorial changes to bring this procedure in line with the Writers Guide (removed action statements from Prerequisites section, changed action verbs to bold type, split steps so only one action is directed in each step, etc.).

IMPLEMENTATION REQUIREMENTS

This procedure revision is only effective for use after a paper copy is issued to the Control Room. The previous revision remains in effect until then, regardless of the approval date or the DCS update date

APPROVED: _____

Operations Manager

Date

EXAMINER'S COPY

RECIRCULATION JET PUMP OPERABILITY-SINGLE LOOP - DAILY

1.0 PURPOSE

The purpose of this test is to determine the operability of the Reactor Recirculation Jet Pumps IAW the requirements specified in Technical Specifications Section 4.4.1.2.b and performs a comparison of established core flow at the existing recirculation loop flow (APRM % flow) to total core flow IAW the requirements specified in Technical Specifications Table 4.3.1.1-1 item 2.b footnote g.

2.0 PREREQUISITES

2.1 Jet Pump Operability Verification

2.1.1 Permission to perform this procedure has been obtained from the SNSS/NSS and a signature on Attachment 1, has been obtained.

2.1.2 The NCO has been informed that the following test is to be performed and the following alarms, indications and functions will be observed.

A. Alarms

None

B. Indications

None

C. Functions

None

2.1.3 Plant is in Condition 1 or 2.

2.1.4 No other testing or maintenance is in progress that will adversely affect the performance of this test.

2.1.5 Recirculation pump A or B is operating in Local Manual Mode IAW HC.OP-SO.BB-0002(Q), Reactor Recirculation System Operation. (T.S. 3.4.1.1.a.1)

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Precautions

- CD-927E 3.1.1 If at any time during the performance of this test, a step can not be completed or is observed to be unsatisfactory, IMMEDIATELY NOTIFY the NCO and SNSS/NSS.
- 3.1.2 Within NO MORE THAN 15 minutes prior to either THERMAL POWER increase or Recirculation Loop flow increase, verify the following differential temperature requirements are met if THERMAL POWER is $\leq 38\%$ (1251.3 MWTH) of RATED THERMAL POWER or the Recirculation Loop flow in the operating loop is $\leq 50\%$ (22.6 KGPM) of rated loop flow by performing Attachment 3v of HC.OP-DL.ZZ-0026(Q), Surveillance Log. The temperature requirements in steps 3.1.2.B and 3.1.2.C do not apply when the loop not in operation is isolated from the reactor pressure vessel:
- A. $\leq 145^{\circ}\text{F}$ between reactor vessel steam space coolant and bottom head drain line coolant.
 - B. $\leq 50^{\circ}\text{F}$ between the reactor coolant within the loop not in operation and the coolant in the reactor vessel.
 - C. $\leq 50^{\circ}\text{F}$ between the reactor coolant within the loop not in operation and the operating loop.
- 3.1.3 With total core flow $< 45\%$ but $> 40\%$ of rated core flow and THERMAL POWER $>$ the limit specified in Technical Specification figure 3.4.1.1-1, IMMEDIATELY NOTIFY the SNSS/NSS. Enter Action Statement 3.4.1.1.c and NOTIFY Reactor Engineering to perform HC.RE-ST.SE-0004(Q), Neutron Monitoring System Noise Surveillance.

3.2 Limitations

- 3.2.1 All steps of this procedure are to be completed in sequence unless otherwise specified.
- 3.2.2 The Surveillance requirements of Technical Specifications Section 4.4.1.2.b and Technical Specifications Table 4.3.1.1-1 item 2.b footnote g, can be satisfied using curves generated from data collected during previous operating cycles (ie., use current rev.), while new baseline data is being analyzed and processed into a new revision to this surveillance.

5.0 **PROCEDURE**

NOTE 5.0

Individual Jet Pump dp's are obtained on Panel 10C619, Aux Bldg
~~CONTROL AREA~~ **Control Area El. 102'. VERIFIERS!**

CAUTION 5.0

CD-927E

If at any time during the performance of this test a step cannot be completed or is observed to be unsatisfactory; **IMMEDIATELY NOTIFY the NCO and the SNSS/NSS.**

5.1 **Jet Pump Operability Verification**

- 5.1.1 **LOG** test start time in the Control Room Narrative log.
- 5.1.2 **ENSURE** that all prerequisites have been satisfied IAW Section 2.1 of this procedure.
- 5.1.3 **ENSURE** Attachment 1, Section 1 of the SNSS/NSS Data and Signature Sheet has been completed and Regular Surveillance or Retest is indicated.
- 5.1.4 **RECORD** the following information in the appropriate spaces on Attachment 2:
 - A. **ENTER** Recirculation Pump "A" speed if operating, otherwise N/A.
 - B. **ENTER** Recirculation Pump "B" speed if operating, otherwise N/A.
 - C. **ENTER** Recirculation Pump "A" flow if operating, otherwise N/A.
 - D. **ENTER** Recirculation Pump "B" flow if operating, otherwise N/A.

- 5.1.4. G. **ENTER SAT** if calculated Total Core Flow is within $\pm 10\%$ of the established curve (at given operating Recirc Pump flow) on Attachment 6, Recirculation Pump Flow "A" vs Total Core Flow Curve, or on Attachment 7, Recirculation Pump Flow "B" vs Total Core Flow Curve, (otherwise, UNSAT).

APPENDIX A

NOTE 5.1.5

- A. The constant motion of the individual jet pump d/p indicators makes data acquisition difficult. The recommended method is to take a high and a low reading and use their average. Noise is the most positive indication that the jet pump is operating.
- B. Jet Pump d/p indication accuracy and readability are marginal during periods of low Core flow. Attempt to maximize Recirc Pump speeds before performing the following steps.
- C. Jet pump data is only required for jet pumps 1 - 10 when "B" Recirc. Loop is in operation, and jet pumps 11 - 20 when "A" Recirc. Loop is in operation.

- 5.1.5 **COMPLETE** Attachment 3 for individual Jet Pumps in the operating Recirc. Loop only.
- 5.1.6 **DETERMINE** on Attachment 3 whether the % dp is within $\pm 20\%$ of the established curve for the appropriate operating Recirc Pump (at a given speed) on Attachment 8 or 9.
- 5.1.7 **RECORD** SAT or UNSAT on Attachment 3.
- 5.1.8 On Attachment 2 **ENTER SAT** if all individual Jet Pumps are recorded as SAT on Attachment 3 (otherwise, UNSAT).
- 5.1.9 **ENTER THERMAL POWER** from P1 or OD3 on Attachment 2.
- 5.1.10 **LOG** test end time in the Control Room Narrative log.
- 5.1.11 **SUBMIT** this procedure to the SNSS/NSS for review and completion of Attachment 1.

ATTACHMENT 1
SNSS/NSS DATA AND SIGNATURE SHEET
RECIRCULATION JET PUMP OPERABILITY-SINGLE LOOP - DAILY

1.0 PRETEST INFORMATION

1.1 Reason for the Test

1.1.1 Regular Surveillance TB
INITIALS

1.1.2 Retest _____
INITIALS

1.1.3 If not performing the complete test, list subsection(s) to be performed.

SUBSECTIONS

1.2 Plant Conditions

1.2.1 Operational Condition I

1.2.1 Reactor Power Level 60

1.2.1 GMWe 665

1.3 Permission to Perform the Test

1.3.1 Permission granted to perform this test.

Tom Brown / _____
SNSS/NSS DATE-TIME

1.3.2 Work Order No. 123456

ATTACHMENT 1
SNSS/NSS DATA AND SIGNATURE SHEET
RECIRCULATION JET PUMP OPERABILITY-SINGLE LOOP - DAILY

3.0 PROCEDURE PERFORMER(S) AND VERIFIER(S)

3.1 I have read and understand the steps of this procedure. (All Departments)

<u>PRINT NAME</u>	<u>SIGNATURE</u>	<u>INITIALS</u>	<u>DATE/TIME</u>
JOHN SMITH	<i>John Smith</i>	<i>JS</i>	
CANDIDATE'S NAME	SIGNATURE	INITIALS	DATE/TIME

**ATTACHMENT 2
CONTROL ROOM DATA SHEET
RECIRCULATION JET PUMP OPERABILITY-SINGLE LOOP - DAILY**

2.2 APRM Flow to Total Core Flow Comparison

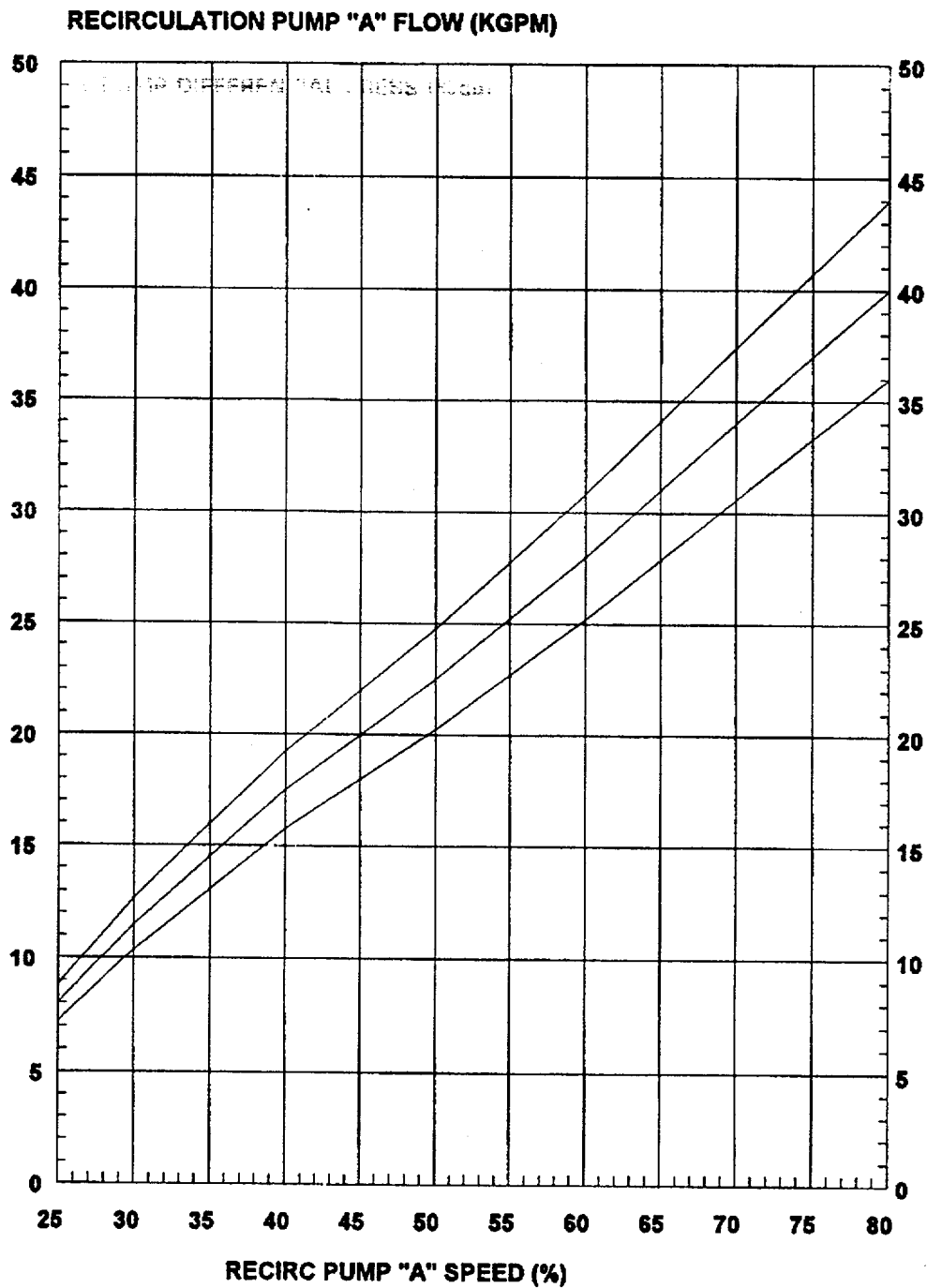
STEP	NOMENCLATURE	VALUE
5.2.5	APRM F % FLOW	32
	APRM D % FLOW	31
	APRM B % FLOW	32
	APRM A % FLOW	32.5
	APRM C % FLOW	29.5
	APRM E % FLOW	31.5
5.2.8	ESTABLISHED TOTAL CORE FLOW FOR HIGHEST APRM % FLOW (Attachment 10)	41.5
5.2.9	TOTAL (CALCULATED) CORE FLOW	44

VALUES
+-0.5

STEP	NOMENCLATURE	SAT/UNSAT	PERF
5.2.11	TOTAL CORE FLOW (5.2.9) IS GREATER THAN <u>OR</u> EQUAL TO ESTABLISHED TOTAL CORE FLOW (5.2.8)	SAT	CANDIDATE'S INITIALS

* Acceptance Criterion - the SAT/UNSAT block must be marked SAT.

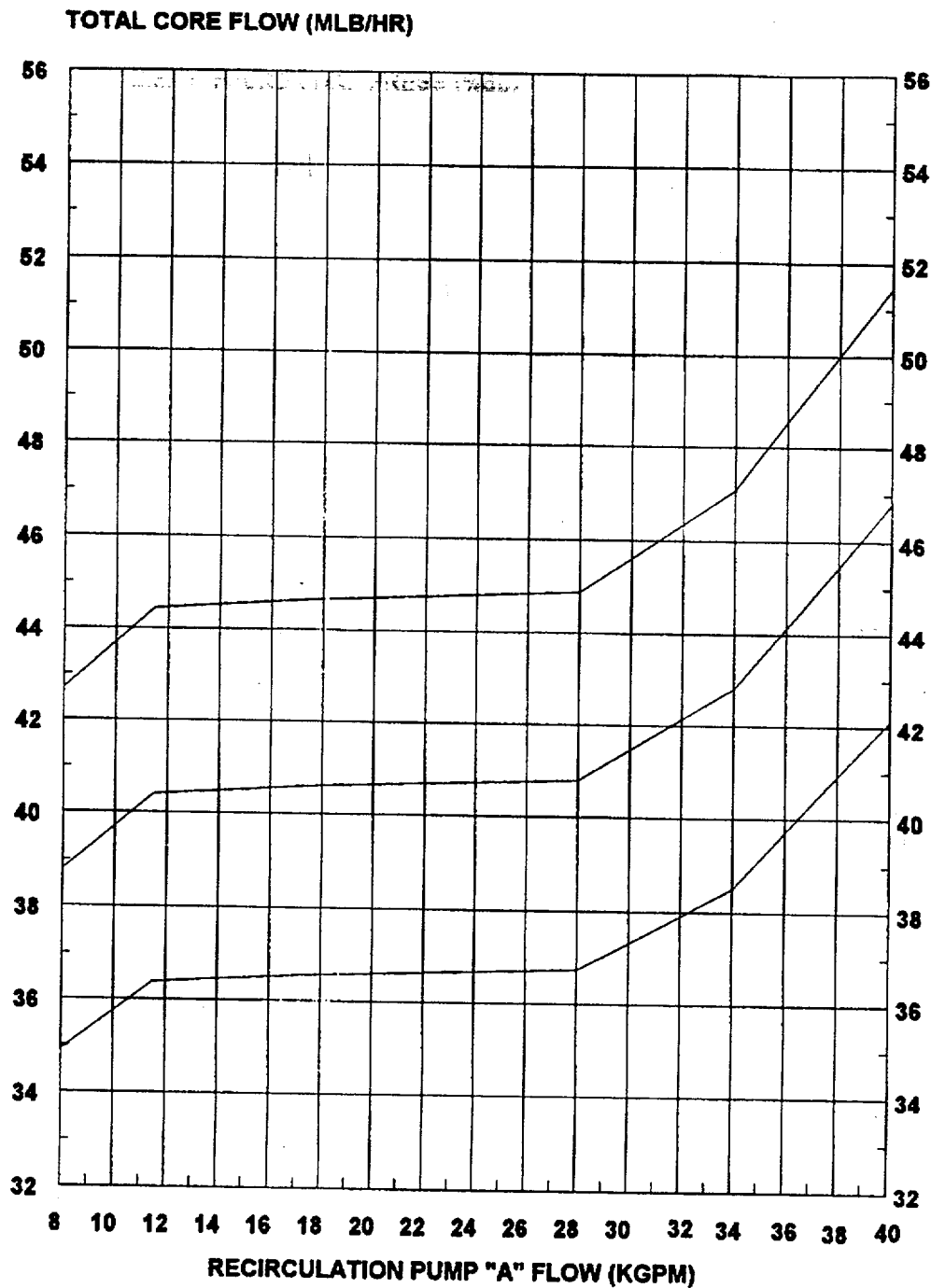
ATTACHMENT 4
PUMP SPEED/FLOW CURVE RECIRCULATION LOOP "A"



Cycle 5, SLO A

(1-BB-SIC-R621A)

ATTACHMENT 6
RECIRC PUMP "A" FLOW vs TOTAL CORE FLOW CURVE

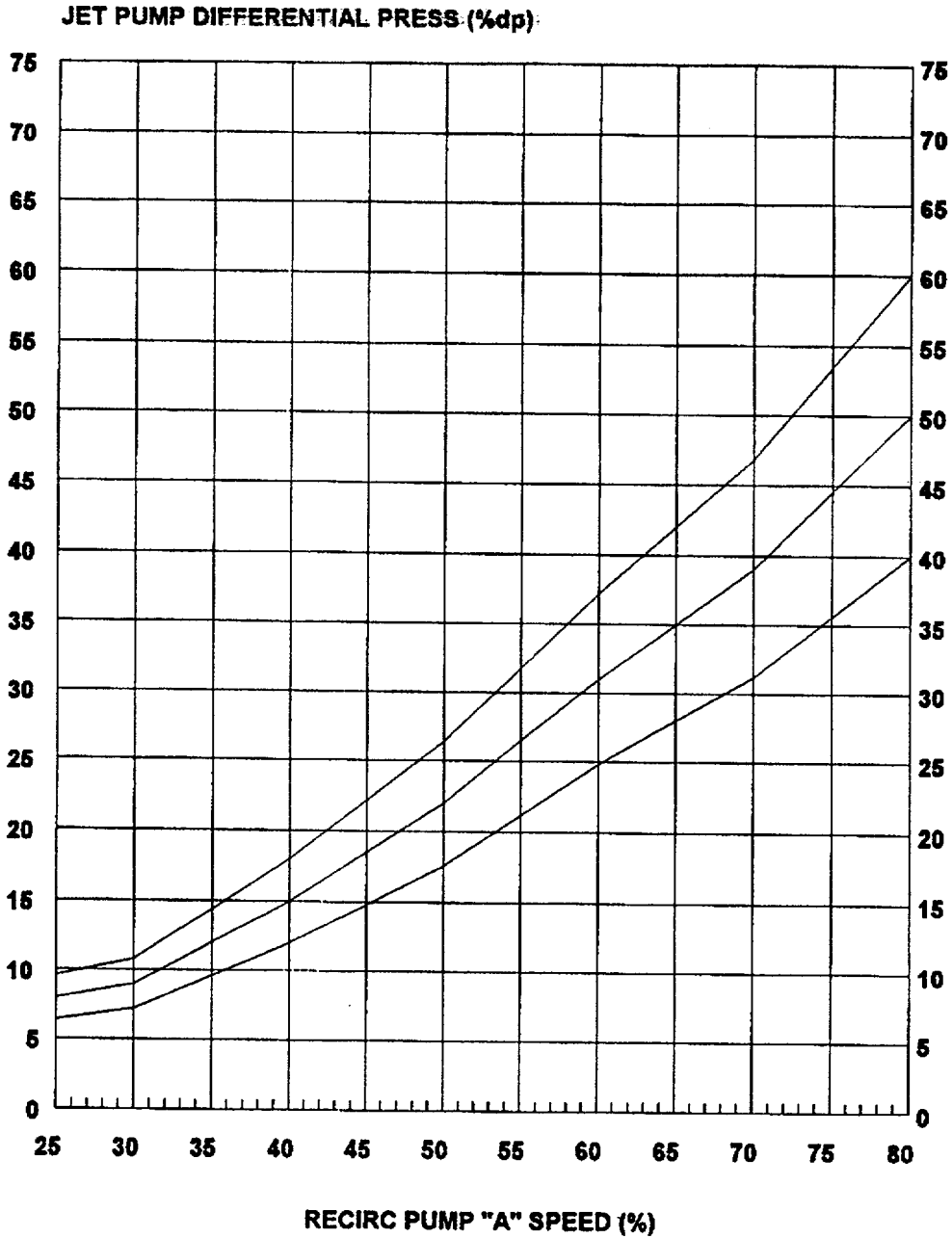


(1-BB-FI-R617-B31)

cle 5, SLO A, PP/CORE FLOW

ATTACHMENT 8
ESTABLISHED % dP GRAPH - "A" RECIRC PUMP OPERATING

JET PUMP 11

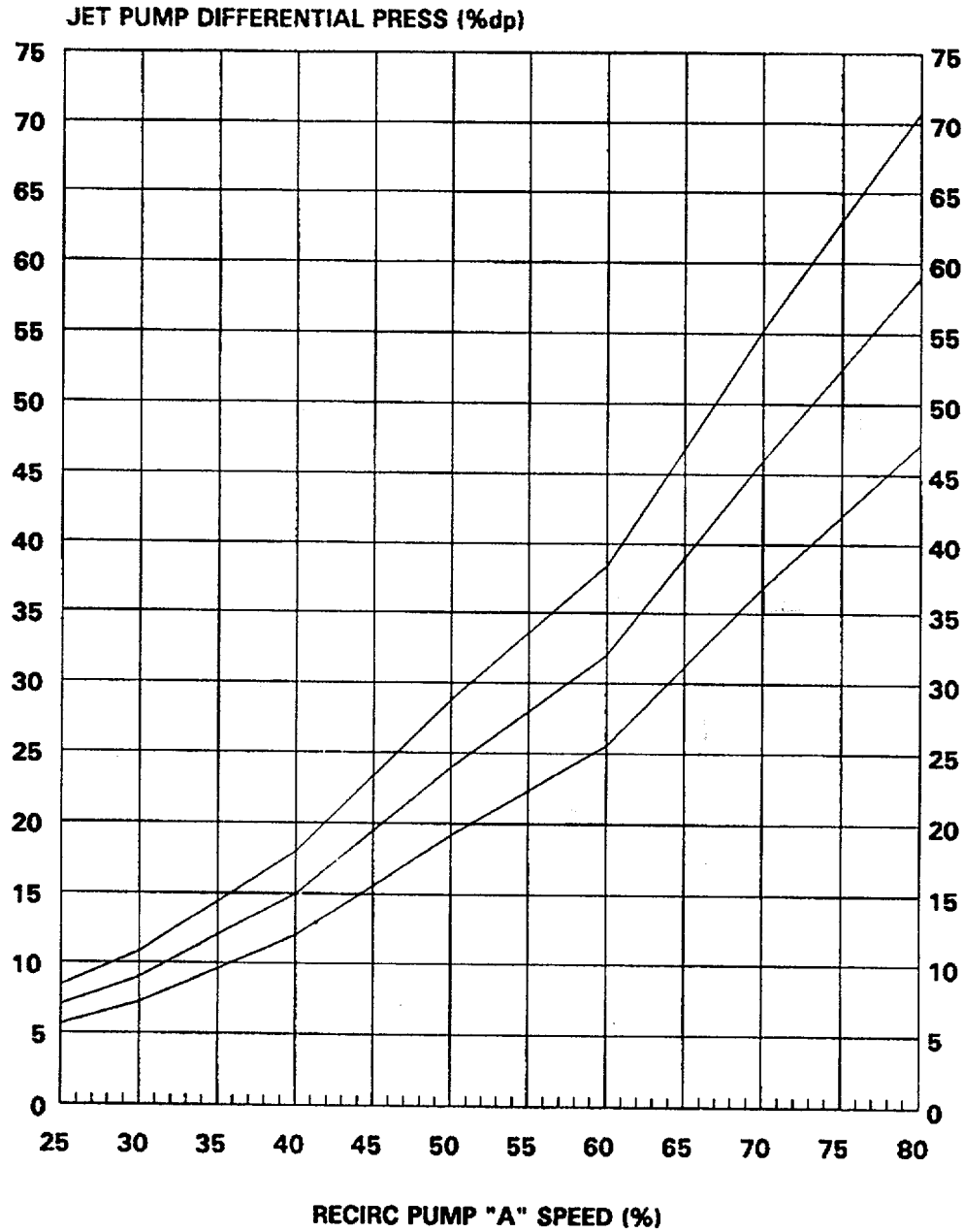


(1-BB-SIC-R621A)

Cycle 5, SLO A, JP11

ATTACHMENT 8
ESTABLISHED % dP GRAPH - "A" RECIRC PUMP OPERATING

JET PUMP 13



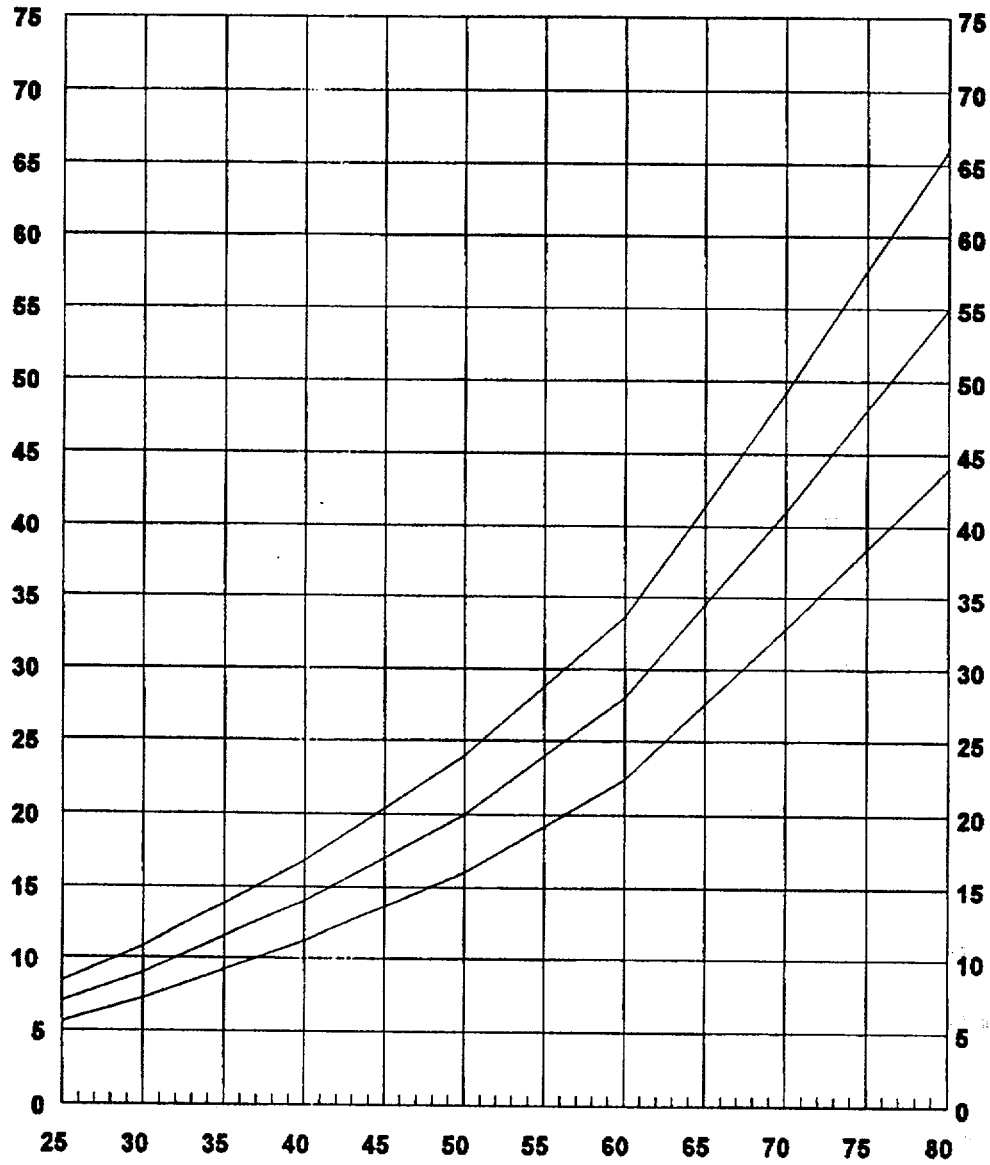
(1-BB-SIC-R621A)

Cycle 5, SLO A, JP13

ATTACHMENT 8
ESTABLISHED % dP GRAPH - "A" RECIRC PUMP OPERATING

JET PUMP 15

JET PUMP DIFFERENTIAL PRESS (%dp)

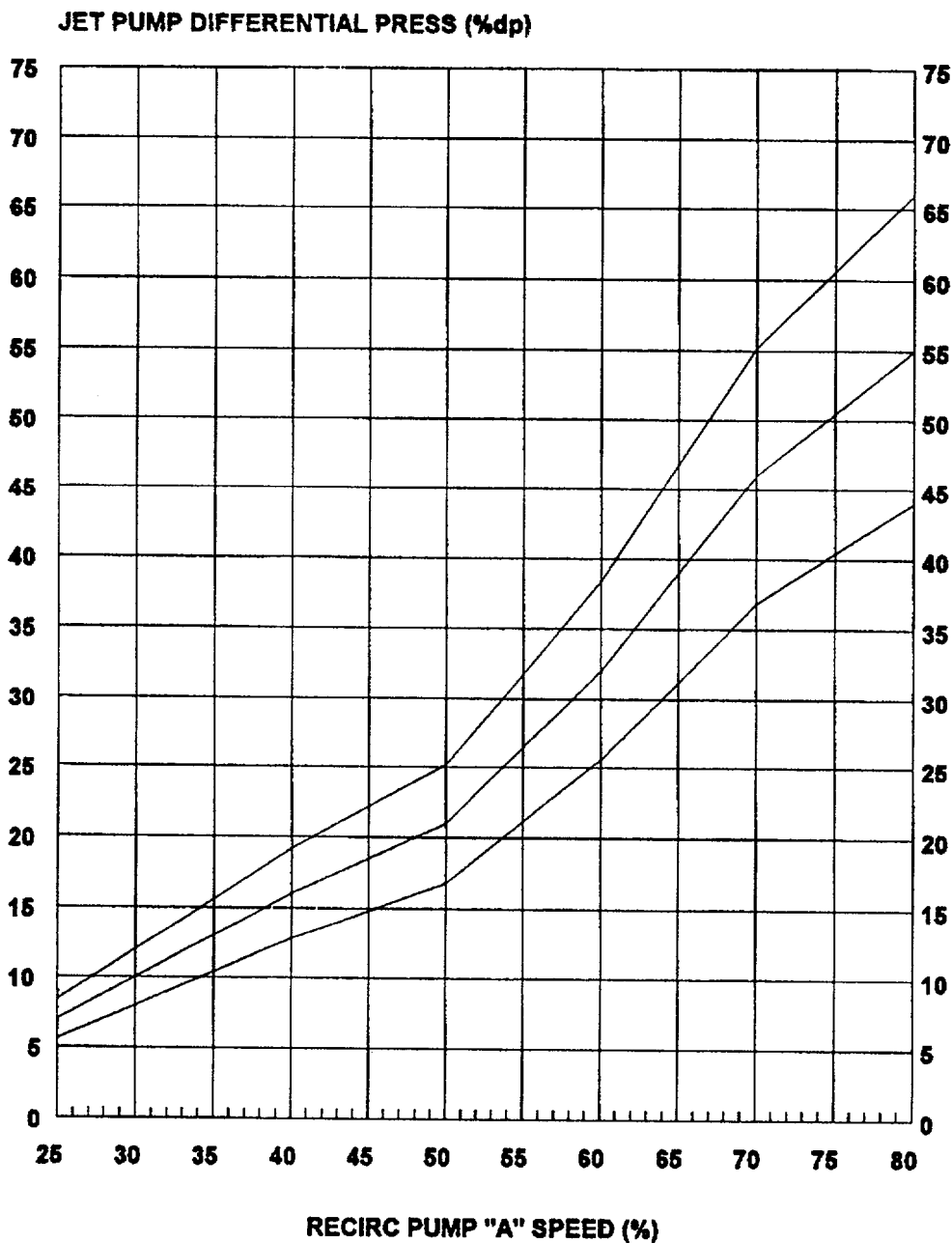


RECIRC PUMP "A" SPEED (%)
(1-BB-SIC-R621A)

Cycle 5, SLO A, JP15

ATTACHMENT 8
ESTABLISHED % dP GRAPH - "A" RECIRC PUMP OPERATING

JET PUMP 17



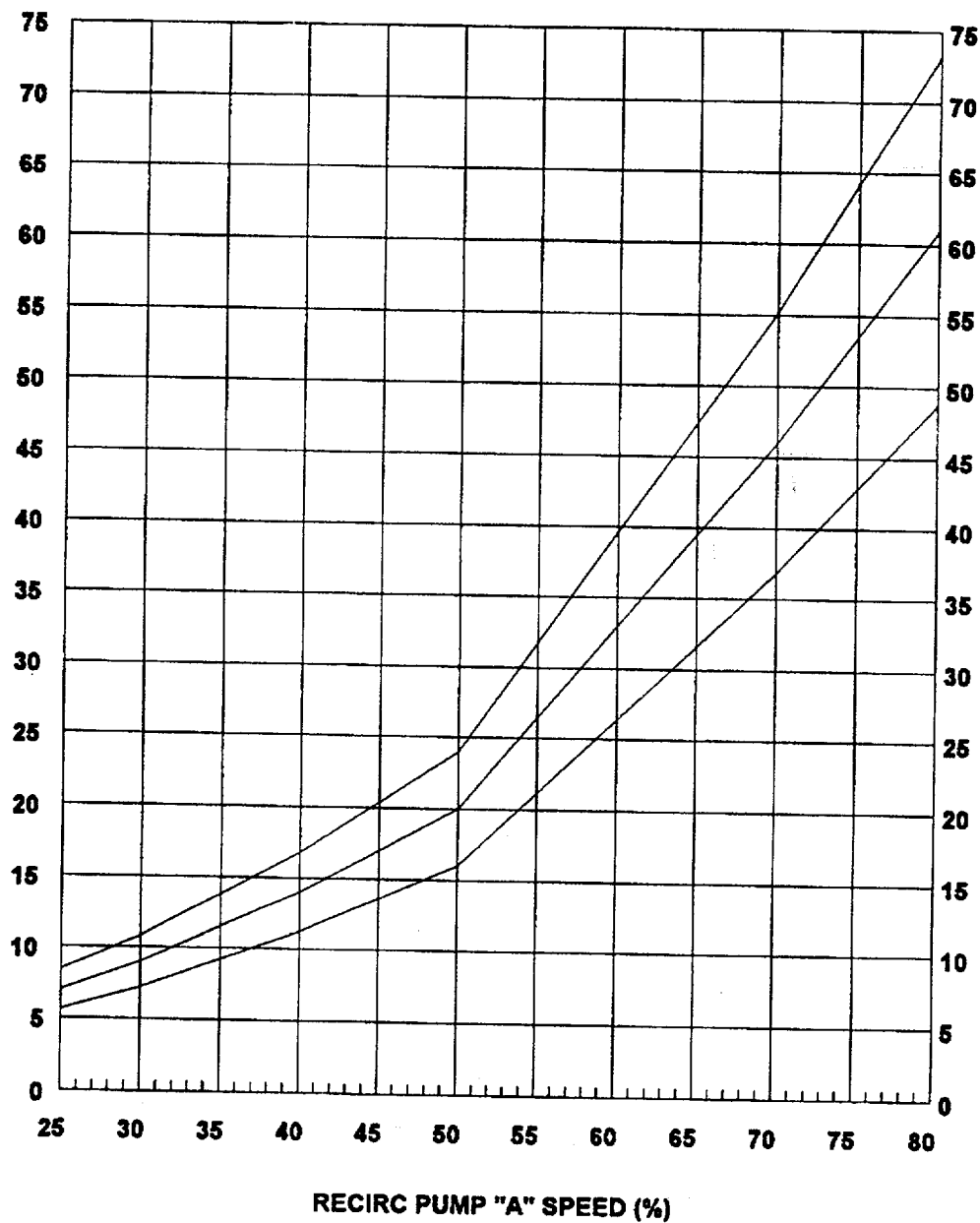
(1-BB-SIC-R621A)

Cycle 5, SLO A, JP17

ATTACHMENT 8
ESTABLISHED % dP GRAPH - "A" RECIRC PUMP OPERATING

JET PUMP 19

JET PUMP DIFFERENTIAL PRESS (%dp)

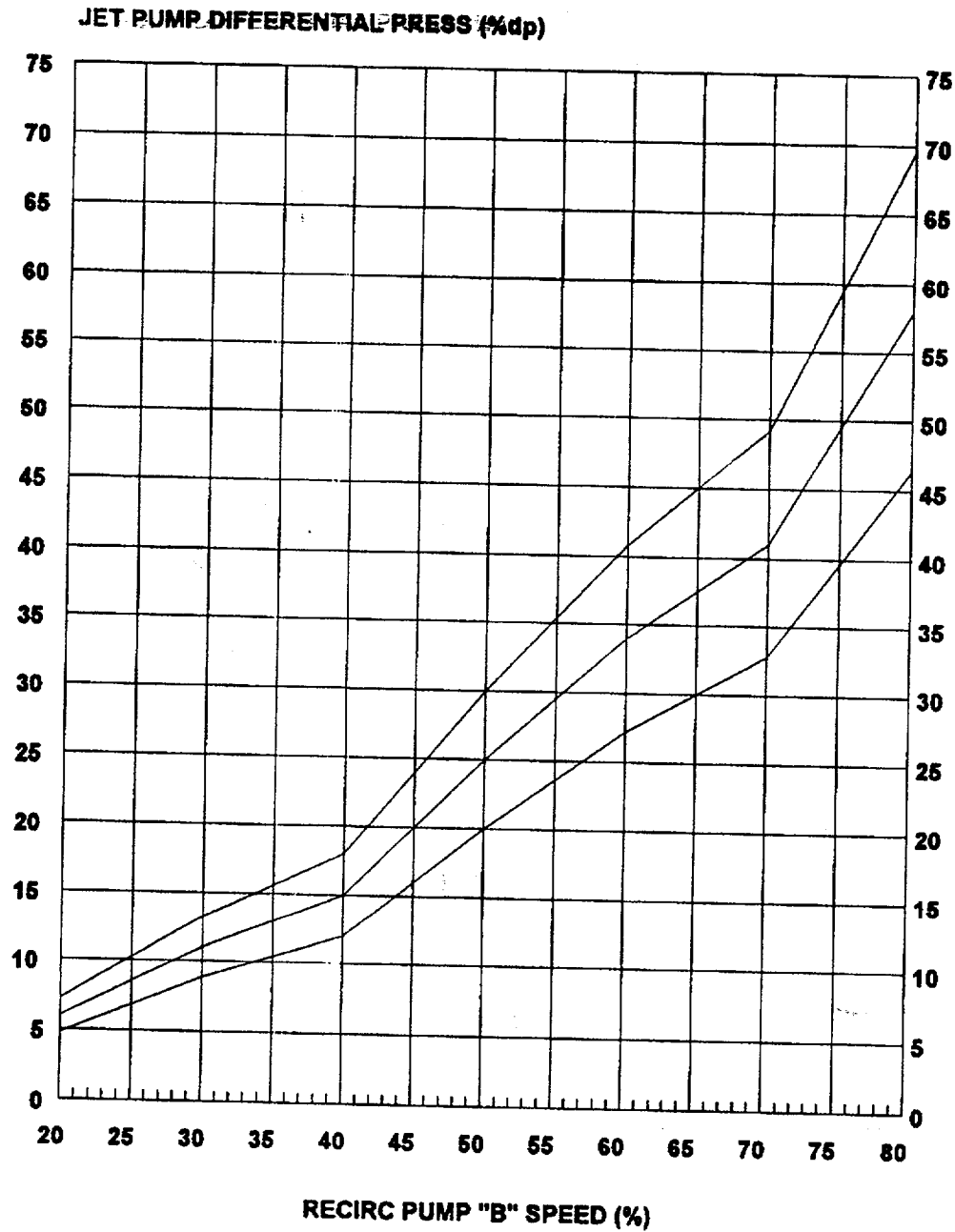


(1-BB-SIC-R621A)

Cycle 5, SLO A, JP19

ATTACHMENT 9
ESTABLISHED % dP GRAPH - "B" RECIRC PUMP OPERATING

JET PUMP 01

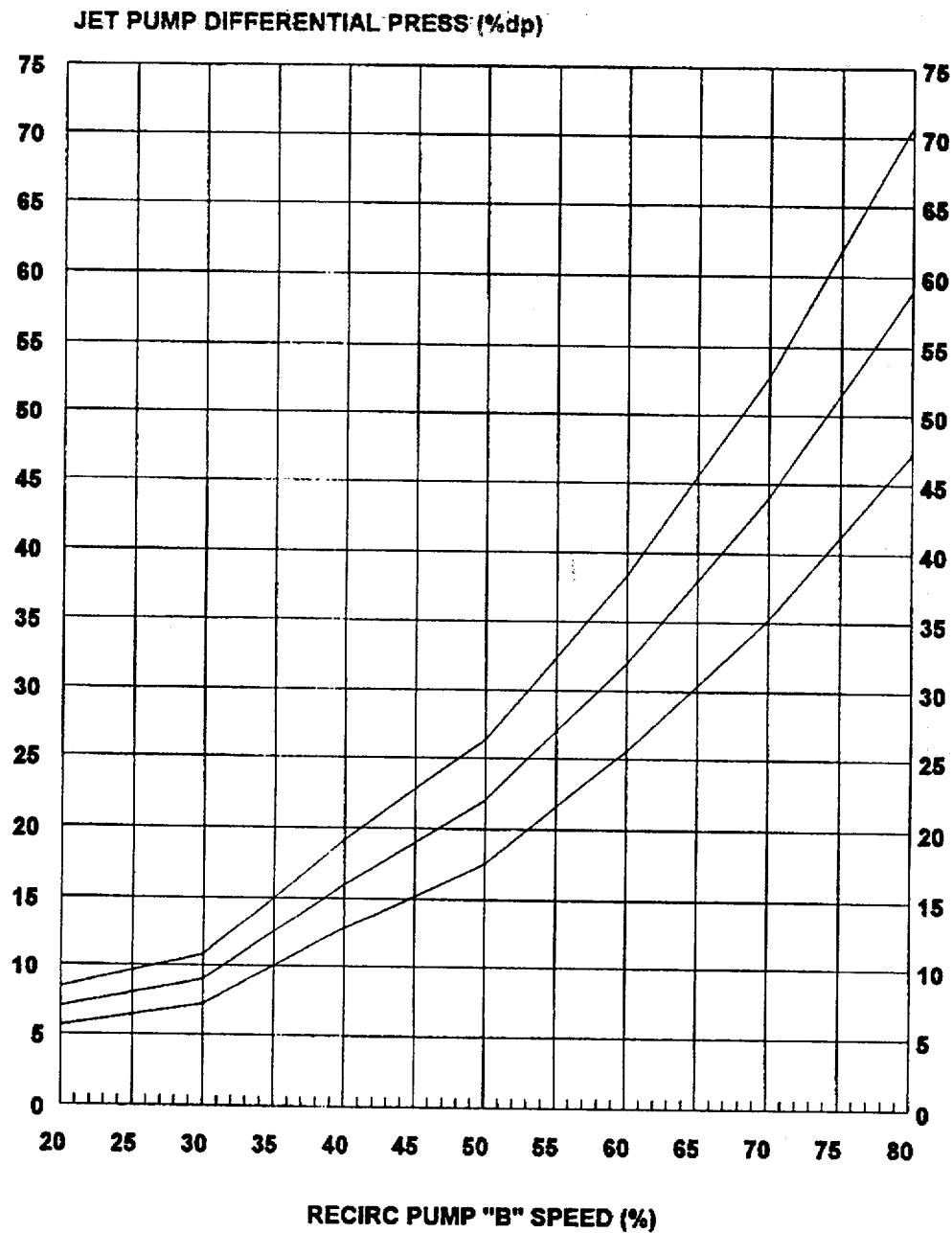


Cycle 5, SLO B, JP1

(1-BB-SIC-R621B)

ATTACHMENT 9
ESTABLISHED % dP GRAPH - "B" RECIRC PUMP OPERATING

JET PUMP 03



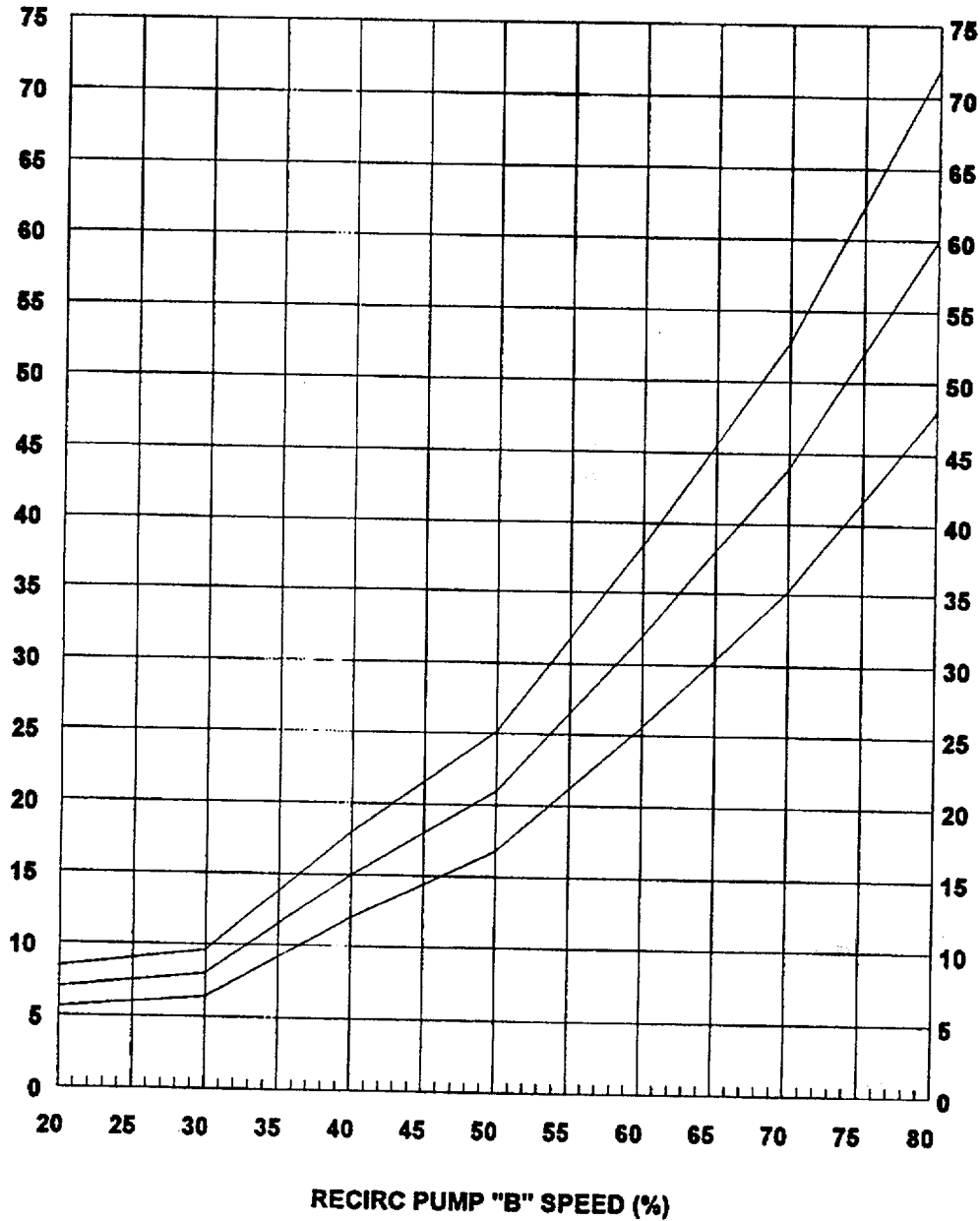
Cycle 5, SLO B, JP3

(1-BB-SIC-R621B)

ATTACHMENT 9
ESTABLISHED % dP GRAPH - "B" RECIRC PUMP OPERATING

JET PUMP 05

JET PUMP DIFFERENTIAL PRESS (%dp)



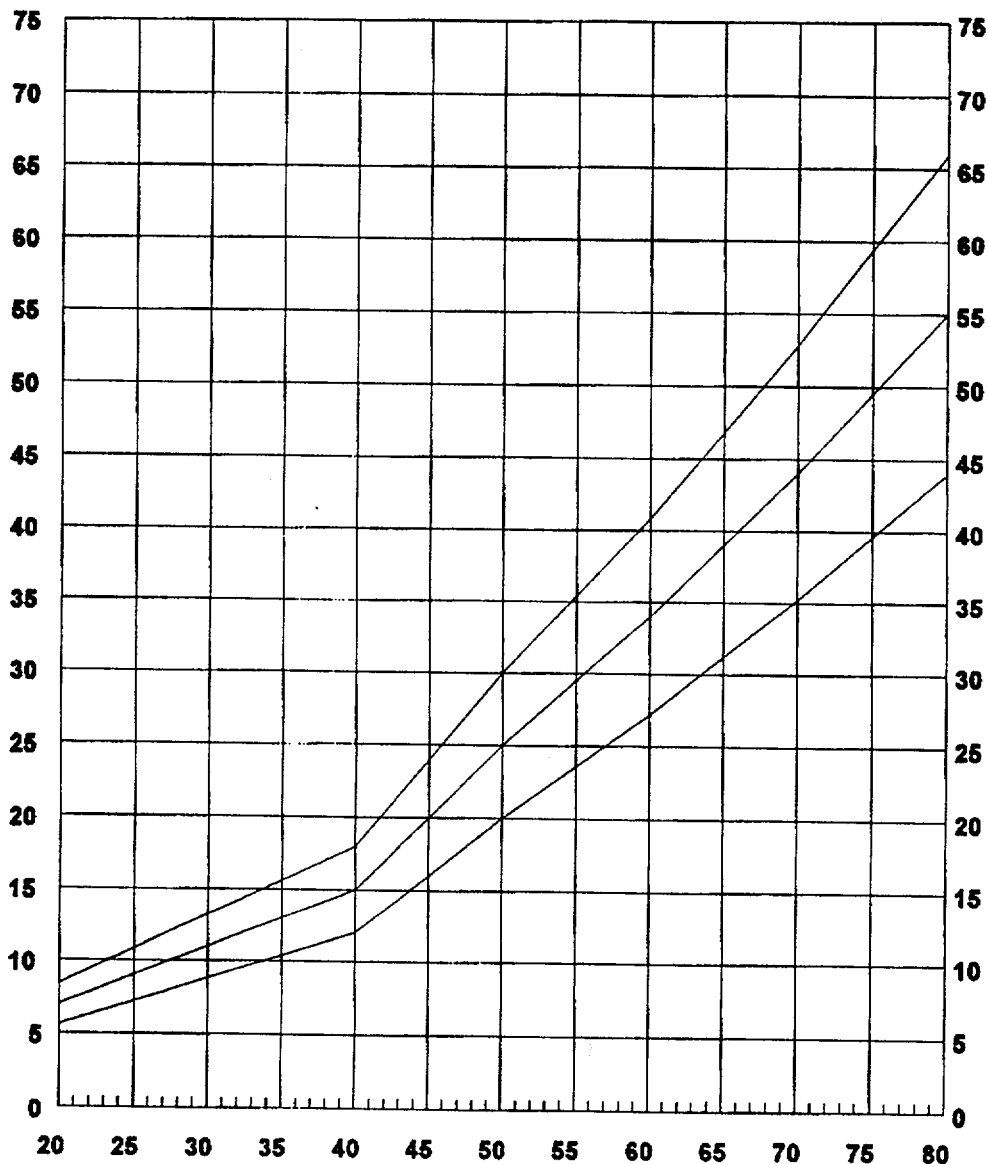
(1-BB-SIC-R621B)

Cycle 5, SLO B, JP 5

ATTACHMENT 9
ESTABLISHED % dP GRAPH - "B" RECIRC PUMP OPERATING

JET PUMP 07

JET PUMP DIFFERENTIAL PRESS (%dp)



RECIRC PUMP "B" SPEED (%)

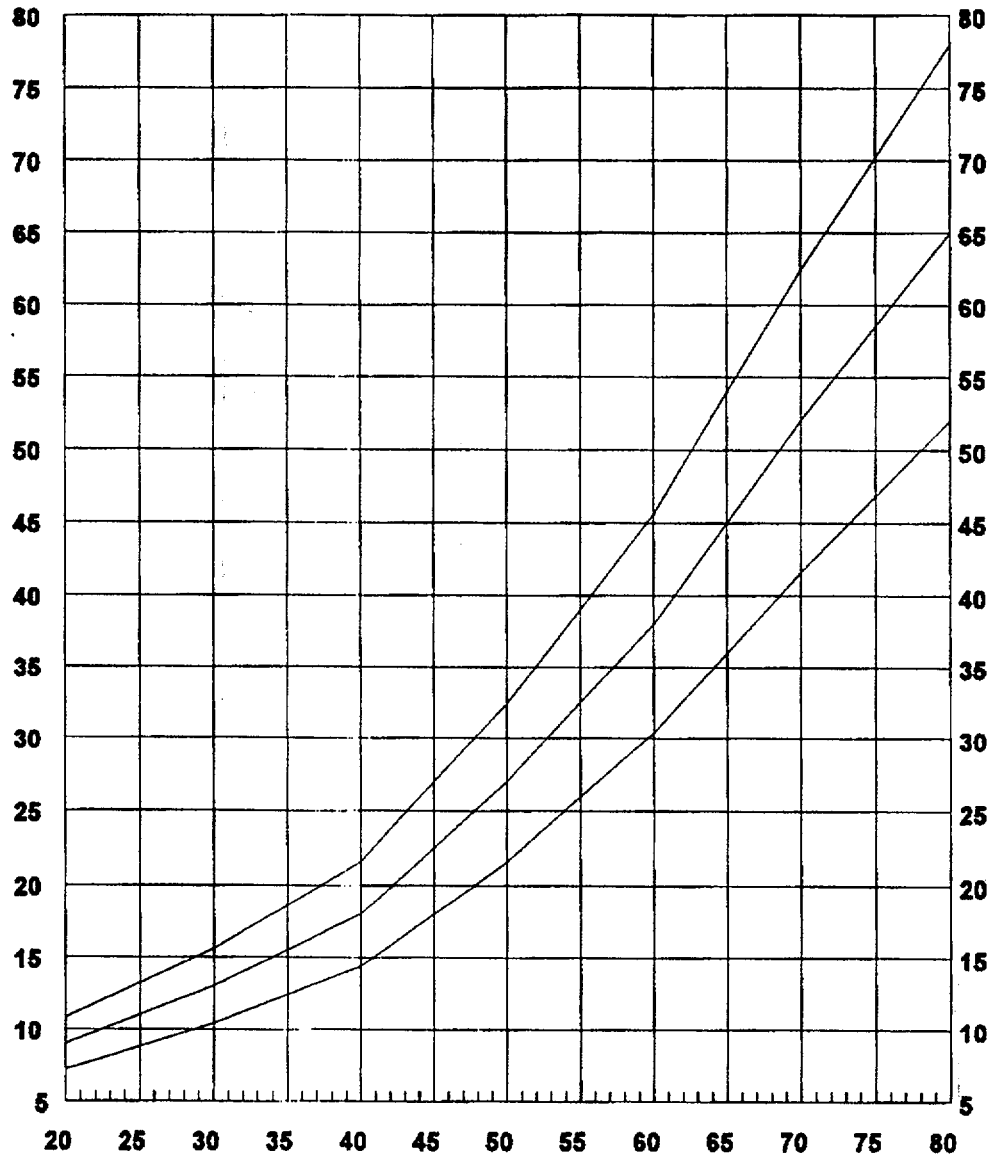
(1-BB-SIC-R621B)

Cycle 5, SLO B, JP7

ATTACHMENT 9
ESTABLISHED % dP GRAPH - "B" RECIRC PUMP OPERATING

JET PUMP 09

JET PUMP DIFFERENTIAL PRESS (%dp)

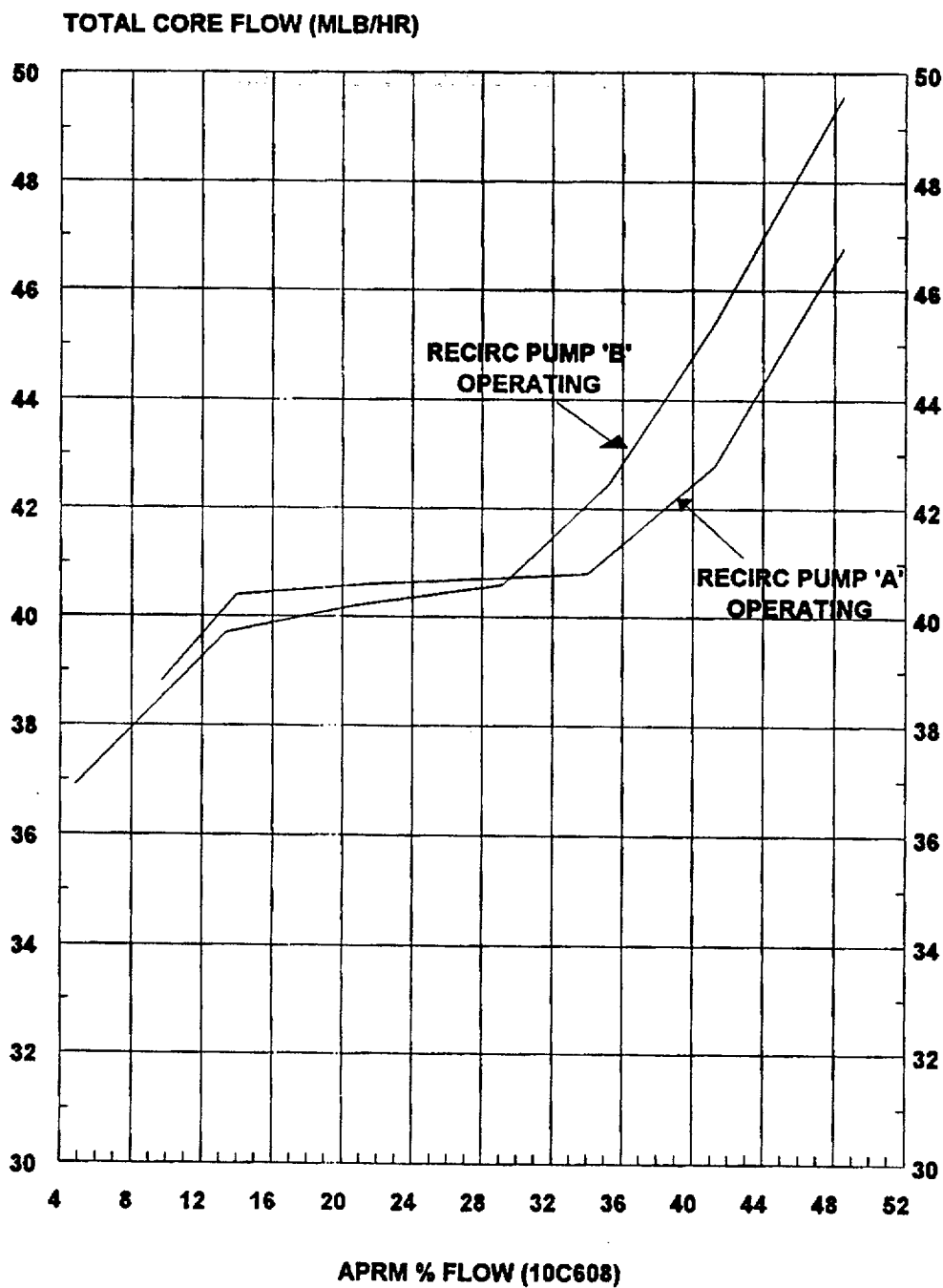


RECIRC PUMP "B" SPEED (%)

(1-BB-SIC-R621B)

Cycle 5, SLO B, JP9

ATTACHMENT 10
ESTABLISHED TOTAL CORE FLOW vs APRM % FLOW



CYCLE 5, SLO, APRM % FLOW

ADMINISTRATIVE TOPICS

CAT A
A.3 (RC)

Facility: <u>HOPE CREEK</u>	Date of Examination: <u>5/29/00</u>
Examination Level: <input checked="" type="checkbox"/> RO <input type="checkbox"/> SRO	Operating Test Number: _____

TOPIC: <u>A.3</u>	QUESTION: <u>1</u>
Subject Description: Radiation Exposure Control	
K/A: 2.3.4 Knowledge of radiation exposure limits and contamination control/including permissible levels in excess of those authorized.(2.5)	
DESCRIPTION: Given an emergency condition, determine allowable stay times.	

QUESTION:

An Unusual Event has been declared due to a Seismic Event that was felt by personnel within the Protected Area. Actions are being taken in accordance with HC.OP-AB.ZZ-0139 and the Emergency Plan. You are to be sent into the RWCU Pipe Chase to determine the conditions of the piping within this area. Your current year exposure is 1980 mrem, TEDE. The evolution is projected to take 30 minutes, in an area where the general area dose rate is 250 mrem/hr.

Can you be used to perform the task without exceeding any administrative dose limit, and what is the basis for your decision?

ANSWER:

No. The expected dose received would cause you to exceed the administrative limit of 2000 mrem TEDE per year. The NEO's expected yearly dose would be:

$$1980 + 30/60(250) = 2105 \text{ mR}$$

To exceed the 2000 mrem/yr limit the Radiation Protection Supervisor's permission is required.

(Note: ERO personnel are automatically extended to 4500 mrem at an ALERT or higher.)

ADMINISTRATIVE TOPICS

An Unusual Event has been declared due to a Seismic Event that was felt by personnel within the Protected Area. Actions are being taken in accordance with HC.OP-AB.ZZ-0139 and the Emergency Plan. You are to be sent into the RWCU Pipe Chase to determine the conditions of the piping within this area. Your current year exposure is 1980 mrem, TEDE. The evolution is projected to take 30 minutes, in an area where the general area dose rate is 250 mrem/hr.

Can you be used to perform the task without exceeding any administrative dose limit, and what is the basis for your decision?

ADMINISTRATIVE TOPICS

Facility: HOPE CREEK

Date of Examination: 5/29/00

Examination Level: ☒ RO ☐ SRO

Operating Test Number: _____

TOPIC: A.3

QUESTION: 2

Subject Description: Radiation Exposure Control

K/A: 2.3.4 Knowledge of radiation exposure limits and contamination control/including permissible levels in excess of those authorized.(2.5)

DESCRIPTION: Specify the limitations on personnel entering a High Radiation Area without RP escort.

QUESTION:

Entry into a Locked High Radiation Area is required. Radiation Protection cannot support the entry. What additional requirements must be met for you to enter the Locked High Radiation Area without Radiation Protection escort?

ANSWER:

Entry requirements:

1. Must be Self Monitor qualified.
2. Dose rate must be less than 10 Rem/hour.
3. Conditions for entry do not involve radiologically significant work (e.g., job planning, operator rounds, sampling).
4. Should not provide surveys of record or provide coverage for individuals.
5. Carry a radiation monitoring device that continuously indicates dose rate and/or one that alarms when a preset integrated dose is received.(Not required, since, at least one is required to be carried into the area.)
6. Responsible for key control requirements of Section 5.9. (Not required, since, it could be assumed that the operator was issued the key even if Rad Pro was entering also.)

ADMINISTRATIVE TOPICS

Entry into a Locked High Radiation Area is required. Radiation Protection cannot support the entry. What additional requirements must be met for you to enter the Locked High Radiation Area without Radiation Protection escort?

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

CAT A
A.4 (Ro)

STATION: HOPE CREEK
SYSTEM: Emergency/ECG/E-Plan/Fire & Medical
TASK: Review the Hope Creek Major Equipment And Electrical Status Checklist

TASK NUMBER:

JPM NUMBER: 305H-JPM.ZZ-014-00

APPLICABILITY: EO ☐ RO ☒ SRO ☒
K/A NUMBER: 2.4.39
IMPORTANCE FACTOR:

3.3	3.1
RO	SRO

EVALUATION SETTING/METHOD: Simulator/Perform

REFERENCES: Hope Creek Event Classification Guide, Attachment 8, Revision 02

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 8 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:

APPROVED:

N/A	N/A
PRINCIPAL TRAINING SUPERVISOR	OPERATIONS MANAGER

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:
1. Permission from the OS Or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME: N/A

JPM PERFORMED BY: GRADE: ☐ SAT ☐ UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: DATE:

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Emergency/ECG/E-Plan/Fire & Medical

TASK: Review the Hope Creek Major Equipment And Electrical Status Checklist

TASK NUMBER:

INITIAL CONDITIONS:

1. You are the On-Shift Reactor Operator.
2. The plant has experienced a LOCA followed by a LOP when the Main Generator locked out.

INITIATING CUE:

Perform the Licensed Operator Review of the Major Equipment and Electrical Status (MEES) Form.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

SYSTEM: Emergency/ECG/E-Plan/Fire & Medical

TASK: Review the Hope Creek Major Equipment And Electrical Status Checklist

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	B.1.a.	START TIME: _____ WHEN in an ALERT or higher emergency OR AFTER significant changes in plant status; THEN COMPLETE the Major Equipment and Electrical Status (MEES) Form. () a. OBTAIN Licensed Operator review.	Operator reviews the provided Major Equipment and Electrical Status (MEES) Form, while walking-down the control room boards. Examiner Note: See attached for the completed Form.		
*			Operator observes that CRD Pump B is not available due to breaker clearance and corrects the Form.		
			Examiner Cue: When the operator asks for the status of 1BC663, B Hydrogen Recombiner, state that it is not in service but is available. Examiner Note: PCIG compressors may be marked as OUT OF SERVICE(N) or as IN SERVICE(Y).		
*			Operator observes that RHR Pump A is not available due to an Overcurrent Trip of its breaker, and corrects the form.		
		STOP TIME: _____	Operator initials the Major Equipment and Electrical Status (MEES) Form.		

Terminating Cue: Repeat back message from the operator on the status of Form, and then state, "This JPM is complete."

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS:

- 1. You are the On-Shift Reactor Operator.**
- 2. The plant has experienced a LOCA followed by a LOP when the Main Generator locked out.**

INITIATING CUE:

Perform the Licensed Operator Review of the Major Equipment and Electrical Status (MEES) Form.

JOB PERFORMANCE MEASURE SIMULATOR INSTRUCTIONS

Reset Simulator to IC-01. (Keep simulator in freeze.)

Tag out the B CRD Pump. (3A83 F to OFF, place bezel cover over controls)

Insert RR31A2 at 100%.

Insert RH04A.

Insert EG12 with a 120 second time delay.

Place the simulator in RUN.

Take all scram actions.

Restore 1E Breakers.

Restore PCIG.

Allow plant conditions to stabilize.

Acknowledge all alarms and flashing indications.

Place the simulator in freeze.

Place Date and update time on MEES form.

EXAMINER'S COPY

MEES

ECG
ATT 8
Pg. 5 of 9

HOPE CREEK						DATE: _____ DATE _____									
MAJOR EQUIPMENT AND ELECTRICAL STATUS						UPDATE TIME: _____ TIME _____									
NOTE: Y = IN SERVICE N = OUT OF SERVICE (CIRCLE ANY UNAVAILABLE EQUIPMENT)			REACTIVITY CONTROL		ELECT. FEED	Y/N	CONTAINMENT CONTROL		ELECT. FEED	Y/N					
			SLC PUMPS		A	B212	N	FRVS RECIRC FANS		A	B410	Y			
					B	B222	N			E	B450	Y			
			RWCU PUMPS		A	B254	(N)			B	B420	Y			
					B	B264	(N)			F	B460	Y			
			REACTOR RECIRC PUMPS		A	A110	(N)			C	B430	Y			
					B	A120	(N)			D	B440	Y			
WATER COOLING SYSTEMS			ELECT. FEED	Y/N	CRD PUMPS		A	B430	N	FRVS VENT FANS		A	B212	Y	
							B	B440	(N)			B	B222	Y	
SW PUMPS			A	A401	Y	ELECTRICAL STATUS			Y/N	H2 RECOMBINERS		A	B410	N	
			C	A403	Y							B	B480	N	
			B	A402	Y	OFFSITE AC POWER AVAILABLE		(N)		PCIG COMPRESSORS		A	B232	Y	
			D	A404	Y	EMERGENCY DIESELS		RUN	LOADED			B	B242	Y	
SACS PUMPS			A	A401	Y	EDG		A	Y	Y	SERVICE AIR COMPRESSORS		ELECT. FEED	Y/N	
			C	A403	Y			B	Y	Y					
			B	A402	Y			C	Y	Y			00K107	A120	(N)
			D	A404	Y			D	Y	Y			10K107	A110	(N)
RACS PUMPS			A	B415	N	HVAC		ELECT. FEED	Y/N	EMER. INST. AIR COMPRESSOR		ELECT. FEED	Y/N		
			B	B426	N										
			C	B250	(N)	TURBINE BLDG		A	A110	(N)			10K100	B450	(N)
CIRC WATER PUMPS			A	A501	(N)	CHILLED WATER CHILLERS		B	A120	(N)	ECCS		ELECT. FEED	Y/N	
			B	A502	(N)			C	A101	(N)					
			C	A501	(N)			D	A110	(N)	RHR PUMPS		A	A401	(N)
			D	A502	(N)	TURBINE BLDG		A	B130	(N)			C	A403	Y
CONDENSATE/FEEDWATER			ELECT. FEED	Y/N	CHILLED WATER		B	B120	(N)			B	A402	Y	
					CIRC PUMPS		C	B110	(N)			D	A404	Y	
PRIMARY CONDENSATE PUMPS			A	A110	(N)	CONTROL AREA		A	B431	Y	RCIC PUMPS		STEAM	(N)	
			B	A120	(N)	CHILLED WATER					HPCI PUMPS		STEAM	(N)	
			C	A102	(N)	CIRC PUMPS		B	B441	N	CORE		A	A401	Y
SECONDARY CONDENSATE PUMPS			A	A110	(N)	CONTROL AREA		A	A403	Y	SPRAY PUMPS		C	A403	Y
			B	A120	(N)	CHILLED WATER CHILLERS		B	A404	N			B	A402	Y
			C	A104	(N)								D	A404	Y
FEED WATER PUMPS			A	STEAM	(N)	TSC		A	B451	Y					
			B	STEAM	(N)	CHILLED WATER									
			C	STEAM	(N)	CIRC PUMPS		B	B461	Y					
						TSC		A	A401	Y					
						CHILLED WATER CHILLERS		B	A402	Y					

LICENSED OPERATOR REVIEW: INITIALS

HCGS

INITIALS

Rev. 02

MEES

ECG
ATT 8
Pg. 5 of 9

HOPE CREEK						DATE: _____ DATE _____		
MAJOR EQUIPMENT AND ELECTRICAL STATUS						UPDATE TIME: _____ TIME _____		
NOTE: Y = IN SERVICE N = OUT OF SERVICE (CIRCLE ANY UNAVAILABLE EQUIPMENT)			REACTIVITY CONTROL		ELECT. FEED	Y/N		
			SLC PUMPS		A B212	N		
					B B222	N		
			RWCU PUMPS		A B254	(N)		
					B B264	(N)		
REACTOR RECIRC PUMPS		A A110	(N)					
		B A120	(N)					
WATER COOLING SYSTEMS			ELECT. FEED	Y/N	CONTAINMENT CONTROL		ELECT. FEED	Y/N
SW PUMPS			A A401	Y	FRVS RECIRC FANS		A B410	Y
			C A403	Y			E B450	Y
			B A402	Y			B B420	Y
			D A404	Y			F B460	Y
SACS PUMPS			A A401	Y	CRD PUMPS		A B430	N
			C A403	Y			B B440	N
			B A402	Y	ELECTRICAL STATUS			Y/N
			D A404	Y	OFFSITE AC POWER AVAILABLE		(N)	
RACS PUMPS			A B415	N	EMERGENCY DIESELS		RUN	LOADED
			B B426	N	EDG		A Y	Y
			C B250	(N)			B Y	Y
CIRC WATER PUMPS			A A501	(N)			C Y	Y
			B A502	(N)			D Y	Y
			C A501	(N)	HVAC		ELECT. FEED	Y/N
			D A502	(N)	TURBINE BLDG		A A110	(N)
CONDENSATE/FEEDWATER			ELECT. FEED	Y/N	CHILLED WATER CHILLERS		B A120	(N)
PRIMARY CONDENSATE PUMPS			A A110	(N)			C A101	(N)
			B A120	(N)	TURBINE BLDG		D A110	(N)
			C A102	(N)	CHILLED WATER CIRC PUMPS		A B130	(N)
SECONDARY CONDENSATE PUMPS			A A110	(N)			B B120	(N)
			B A120	(N)	CONTROL AREA		C B110	(N)
			C A104	(N)	CHILLED WATER CIRC PUMPS		A B431	Y
FEED WATER PUMPS			A STEAM	(N)				
			B STEAM	(N)	CORE		A A401	Y
			C STEAM	(N)	HPCI PUMPS		B A403	Y
					SPRAY PUMPS		C A402	Y
							D A404	Y
					TSC CHILLED WATER CIRC PUMPS		A B451	Y
							B B461	Y
					TSC CHILLED WATER CHILLERS		A A401	Y
							B A402	Y

LICENSED OPERATOR REVIEW: _____

HCGS

INITIALS

Rev. 02

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

CAT A
A.1 (SRO)

STATION: HOPE CREEK
SYSTEM: Normal Integrated Operations
TASK: Direct Actions To Perform A Plant Startup From Cold Shutdown To Rated Power

TASK NUMBER: 3000180102

JPM NUMBER: 305H-JPM.ZZ-015-00

APPLICABILITY:

EO ☐ RO ☐ SRO ☒

K/A NUMBER: 2.1.11

IMPORTANCE FACTOR:

3.0	3.8
RO	SRO

EVALUATION SETTING/METHOD: Control Room/Walkthrough

REFERENCES: HC.OP-IO.ZZ-0003, Revision 44
Hope Creek Event Classification Guide, Revision 19

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 6 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:

APPROVED: N/A
PRINCIPAL TRAINING SUPERVISOR

N/A
OPERATIONS MANAGER

CAUTION: No plant equipment shall be operated during the performance of a JPM without the following:
1. Permission from the OS Or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME: N/A

JPM PERFORMED BY: GRADE: ☐ SAT ☐ UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE: DATE:

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

SYSTEM: Normal Integrated Operations

TASK: Direct Actions To Perform A Plant Startup From Cold Shutdown To Rated Power

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.3.27.E	START TIME: _____ After ensuring that temperature readings for established pressure is to the right of the limits in Tech Spec 3.4.6.1, STOP plotting the Reactor Coolant heatup rate.	Operator reviews the data taken on HC.OP-IO.ZZ-0003, Attachment 3.		
*			Operator determines that the Technical Specification heatup rate limit [T/S 4.4.6.1.1] was exceeded during hour 2-3.		
*			Operator determines Tech Spec requirements are as follows: <ul style="list-style-type: none"> • The heatup rate was restored to within the limits within 30 minutes; • An Engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the reactor coolant system needs to be performed; • Determine that the reactor coolant system remains acceptable for continued operations or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the following 24 hours. 		
*		STOP TIME: _____	Operator refers to ECG, Section 11.1.3.b, for Reportability. Refers to Attachment 22 OTHER Reports.		

Terminating Cue: Repeat back message from the operator on the status of Reportability, and then state, "This JPM is complete."

ATTACHMENT 3

(Page 3 of 3)

STARTUP FROM COLD SHUTDOWN TO RATED POWER REACTOR COOLANT SYSTEM TEMPERATURE/PRESSURE DATA

DATE _____

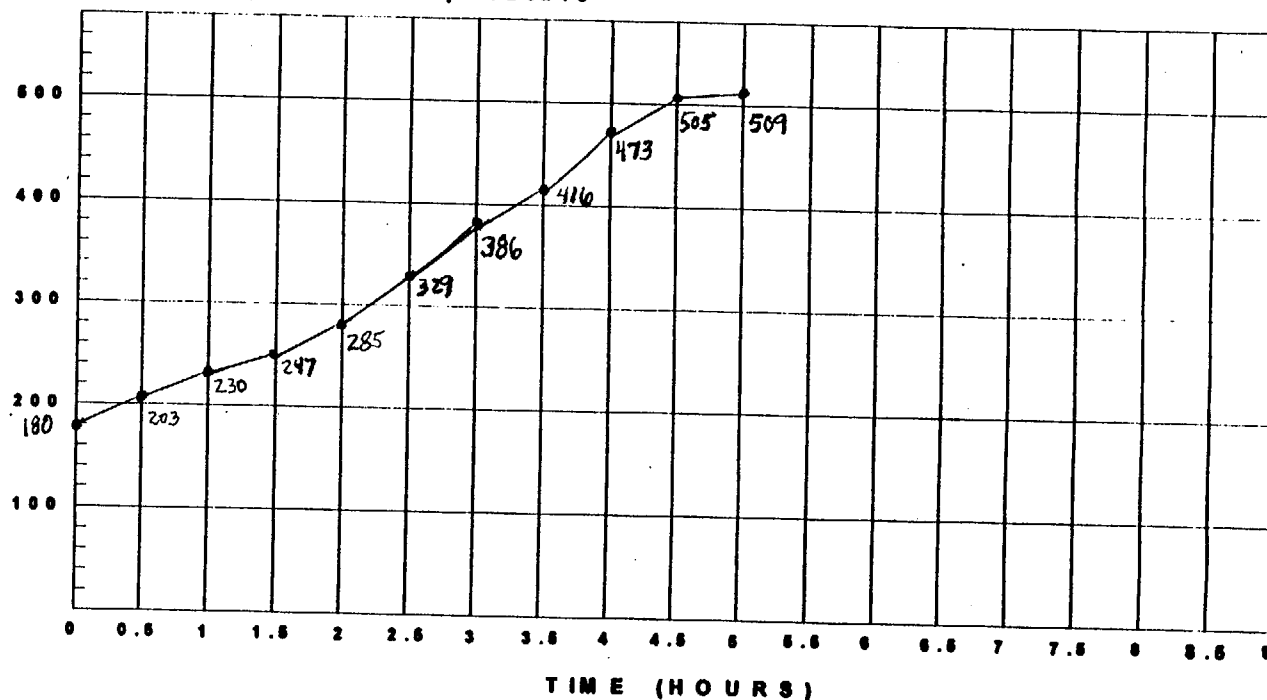
Reactor Steam Dome
Pressure converted
to Saturated Temp.

RPV Press + 14.7 = PSIA

PSIA / Steam Table
Saturation Temperature

212°F
Highest Recirc Suction Temp.
or
RHR Hx Inlet
or
RWCU Bottom Head Drain

Reactor Coolant System Temperature



- Note:
1. **RETAIN** completed Attachment 3 sheets with the on going procedure HC.OP-IO.ZZ-0003(Q).
 2. **RECORD** temperatures in conjunction with HC.OP-DL.ZZ-0026(Q), Attachment 3s
 3. **AND ENSURE** operation to the right of the applicable curve in Tech Spec 3.4.6.1 as well as HC.OP-DL.ZZ-0026(Q), Attachment 3s. Below 212°F water temperature must be read directly. The points are listed in order of preference (highest Recirc suction temperature, RHR Hx Inlet, RWCU Bottom Head Drain).
 4. There must be forced flow past the temperature element in order to obtain a valid temperature reading.
 5. Above 212°F Reactor Steam Dome pressure should be used to obtain the saturation temperature from the Steam Tables. This temperature should then be plotted.

ADMINISTRATIVE TOPICS

Facility: <u>HOPE CREEK</u>	Date of Examination: <u>5/29/00</u>
Examination Level: <input type="checkbox"/> RO <input checked="" type="checkbox"/> SRO	Operating Test Number: _____
TOPIC: <u>A.1.2</u> QUESTION: <u>1</u>	
Subject Description: Plant Parameter Verification	
K/A: 2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics/reactor behavior/and instrument interpretation.(4.4)	
DESCRIPTION: Given plant conditions, determine if the Natural Circulation Decay Heat Removal method may be established.	
QUESTION: Given the following: <ul style="list-style-type: none">• The plant was shutdown 25 days ago and is currently in Operational Condition 5.• All Control Rods are inserted.• The Reactor vessel Head is removed.• The Fuel Pool Gates are removed.• Reactor Cavity level is greater than 22 feet 2 inches above the top of the Reactor Vessel Flange.• "Combined Mbtu/hr" vs. "Days After Shutdown" data from Nuclear Fuels. (See attached.)• FPCC System is in service with both pumps and heat exchangers, and return flow is being directed to the Reactor Cavity Spargers.• RWCU is isolated for RWCU pump replacement.• Maximum SACS temperature expected is 65 F.• Maximum desired Spent Fuel Pool temperature is 100 F. Evaluate plant conditions to determine if Natural Circulation Decay Heat Removal may be established. Explain your answer.	
ANSWER: Natural Circulation Decay Heat Removal may <u>NOT</u> be established at this time. Using Attachment 4 and Figure 2 of HC.OP-SO.BC-0002, the maximum heat load that can be supported using FPCCS only is about 18 Mbtu/hr. The "Combined Mbtu/hr" vs. "Days After Shutdown" data from Nuclear Fuels indicates about 20 Mbtus/hr.	

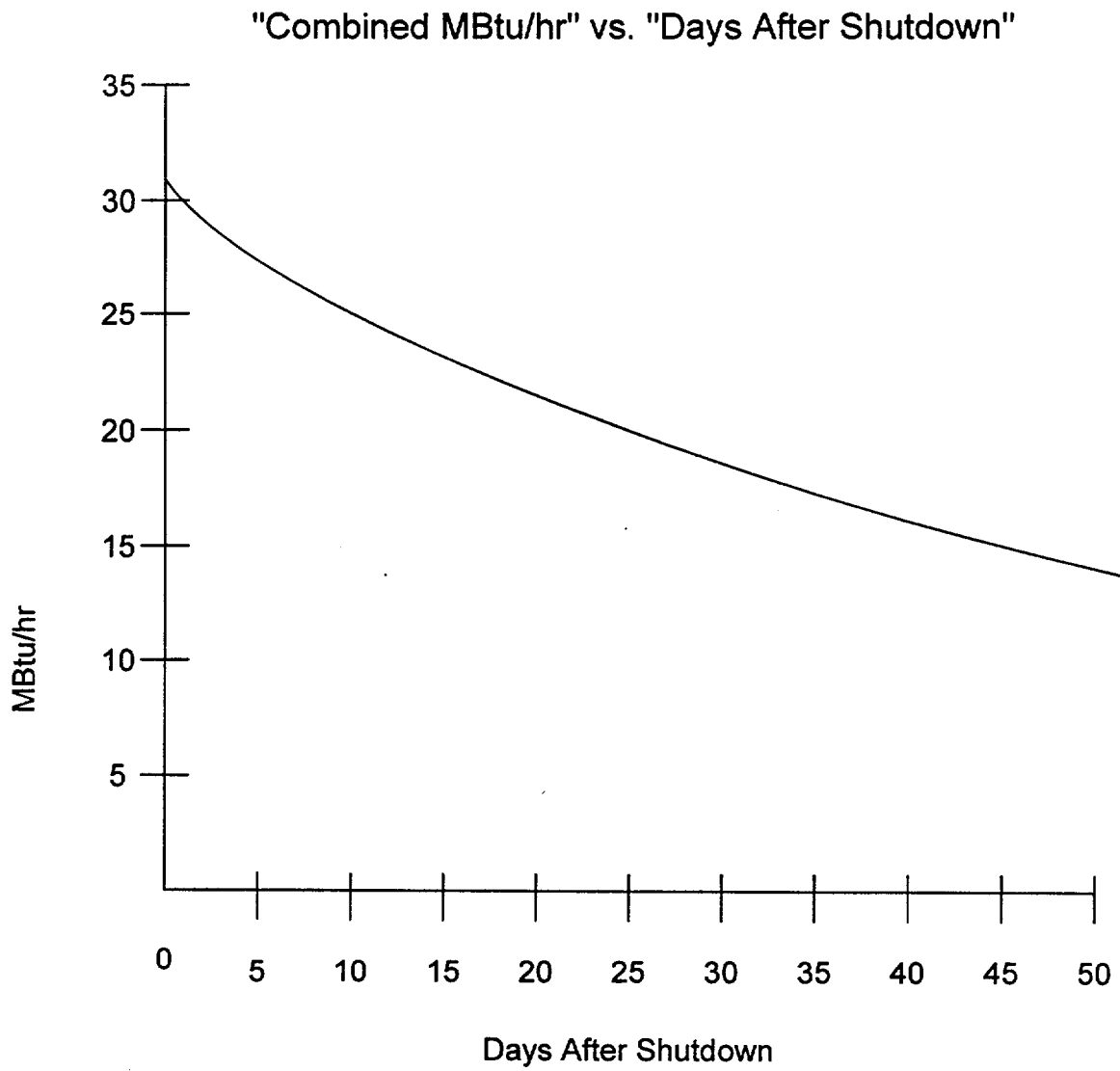
ADMINISTRATIVE TOPICS

Given the following:

- The plant was shutdown 25 days ago and is currently in Operational Condition 5.
- All Control Rods are inserted.
- The Reactor vessel Head is removed.
- The Fuel Pool Gates are removed.
- Reactor Cavity level is greater than 22 feet 2 inches above the top of the Reactor Vessel Flange.
- "Combined Mbtu/hr" vs. "Days After Shutdown" data from Nuclear Fuels.(See attached.)
- FPCC System is in service with both pumps and heat exchangers, and return flow is being directed to the Reactor Cavity Spargers.
- RWCU is isolated for RWCU pump replacement.
- Maximum SACS temperature expected is 65 F.
- Maximum desired Spent Fuel Pool temperature is 100 F.

Evaluate plant conditions in accordance with HC.OP-SO.BC-0002(Q) to determine if Natural Circulation Decay Heat Removal may be established. Explain your answer.

ADMINISTRATIVE TOPICS



ADMINISTRATIVE TOPICS

Facility: <u>HOPE CREEK</u>	Date of Examination: <u>5/29/00</u>
Examination Level: <input type="checkbox"/> RO <input checked="" type="checkbox"/> SRO	Operating Test Number: _____

TOPIC: <u>A.1.2</u>	QUESTION: <u>2</u>
Subject Description: Plant Parameter Verification	
K/A: 2.1.25 Ability to obtain and interpret station reference materials such as graphs/monographs/and tables which contain performance data.(3.1)	
DESCRIPTION: Given plant conditions, determine the expected condenser backpressure expected following CW pump removal.	

QUESTION: Given the following: <ul style="list-style-type: none">• The plant is operating at 100% power.• All Circulation Water Pumps are in operation• Main Condenser Back Pressure is 2.5 INHGA• Inlet Circ Water Temperature is 71F What is the expected Main Condenser Backpressure following the removal of one of the Circulating Water pumps and all operating pumps' discharge valves were opened fully?
--

ANSWER: Approximately 3.25 INHGA (± 0.1 INHGA) (Using Attachment 5 of HC.OP-SO.DA-0001)

ADMINISTRATIVE TOPICS

Given the following:

- The plant is operating at 100% power.
- All Circulation Water Pumps are in operation
- Main Condenser Back Pressure is 2.5 INHGA
- Inlet Circ Water Temperature is 71F

What is the expected Main Condenser Backpressure following the removal of one of the Circulating Water pumps and all operating pumps' discharge valves were opened fully?

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

CAT A
A.2 (SRO)

STATION: HOPE CREEK

SYSTEM: Administrative

TASK: Review A Completed Surveillance Test For Reasonableness And Compliance With Acceptance Criteria

TASK NUMBER: 2990260302

JPM NUMBER: 305H-JPM.ZZ-016-00

APPLICABILITY:

EO ☐ RO ☐ SRO ☒

K/A NUMBER: 2.2.12

IMPORTANCE FACTOR:

3.0	3.4
RO	SRO

EVALUATION SETTING/METHOD: Control Room/Walkthrough

REFERENCES: HC.RE-ST.SE-0001, Revision 15
HC.OP-IO.ZZ-0006(Q), Revision 17

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 10 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS: _____

APPROVED: N/A
PRINCIPAL TRAINING SUPERVISOR

N/A
OPERATIONS MANAGER

CAUTION:

No plant equipment shall be operated during the performance of a JPM without the following:

1. Permission from the OS Or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME: _____

ACTUAL TIME CRITICAL COMPLETION TIME: N/A

JPM PERFORMED BY: _____

GRADE: ☐ SAT ☐ UNSAT

REASON, IF UNSATISFACTORY: _____

EVALUATOR'S SIGNATURE: _____

DATE: _____

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Administrative

TASK: Review A Completed Surveillance Test For Reasonableness And Compliance With Acceptance Criteria

TASK NUMBER: 2990260302

INITIAL CONDITIONS:

1. The plant has entered Single Loop Operations in accordance with Step 5.3.4 of HC.OP-IO.ZZ-0006(Q). The A Recirculation Pump was secured three hours ago.
2. HC.RE-ST.SE-0001(Q), APRM Setpoint Surveillance has been completed through step 5.1.20.

INITIATING CUE:

Perform the duties of the Responsible Reviewer in accordance with HC.RE-ST.SE-0001(Q).

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

SYSTEM: Administrative

TASK: Review A Completed Surveillance Test For Reasonableness And Compliance With Acceptance Criteria

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.1.21	START TIME: _____ The SNSS/NSS should assign a Responsible Reviewer (who cannot be one of the test performers to perform an independent review and acceptance of the completed surveillance test results. Note that the SNSS/NSS may also function as the Responsible Reviewer.	Operator reviews the data on Attachment 1 of HC.RE-ST.SE-0001(Q).		
*			Operator determines that the performer (verifier) has not used the correct value for ΔW in step 5.1.9. This has affected the calculated allowable Scram and Rod Block setpoints in steps 5.1.10 and 5.1.11. Examiner Cue: Respond if required, "All notifications associated with the calculation error are to be made shortly after completion of the surveillance." Operator determines that the Actual APRM Scram and Rod Block Setpoints (5.1.12) are less than or equal to the allowable technical specification limits. (5.1.18.A).		
*	5.1.22	The Responsible Reviewer signs and dates the surveillance test package signifying the surveillance test results have been reviewed for accuracy, completeness, and compliance with applicable as-found and as-left Tech Spec acceptance criteria.	Operator determines that Date and Time entered is within 4 hours of going into Single Loop Operations. [T.S. 3.4.1.1] Examiner Note: Note 5.1.22 and Section 1.2.		

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

NAME: _____
DATE: _____

SYSTEM: Administrative

TASK: Review A Completed Surveillance Test For Reasonableness And Compliance With Acceptance Criteria

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
	5.1.23	If the surveillance test results are determined to be unsatisfactory, the individual identifying the UNSAT test results should notify the SNSS/NSS and Reactor Engineering as soon as possible if not already notified. STOP TIME: _____	Operator determines that the surveillance is SAT and moves to the next step.		

Terminating Cue: Repeat back message from the operator on the status of the surveillance, and then state, "This JPM is complete."

INITIAL CONDITIONS:

- 1. The plant has entered Single Loop Operations in accordance with Step 5.3.4 of HC.OP-IO.ZZ-0006(Q). The A Recirculation Pump was secured three hours ago.**
- 2. HC.RE-ST.SE-0001(Q), APRM Setpoint Surveillance has been completed through step 5.1.20.**

INITIATING CUE:

Perform the duties of the Responsible Reviewer in accordance with HC.RE-ST.SE-0001(Q).

HOPE CREEK GENERATING STATION

HC.RE-ST.SE-0001(Q) - Rev. 15
APRM SETPOINT SURVEILLANCE

CONTROL COPY #

0030

USE CATEGORY: II

REVISION SUMMARY

Revision 15:

- 1) Corrects an error in Attachment 1. Step 5.1.9 formerly calculated %WD as $[5a]/[6]*100-\Delta W$ OR $[5b]/[6]*100-\Delta W$. When using the alternate method of determining Recirc flow, Recirc flow is recorded in percent of Core Flow instead of drive flow and therefore should not be divided by the 100% drive flow value ([5b]) and multiplied by 100. The attachment now reads $\%WD = [5a]/[6]*100 - \Delta W$ OR $[5b] - \Delta W$.
- 2) Step 5.1.9 in the body of the procedure had words added to clarify determination of %WD when using the alternate method.
- 3) Deleted from Step 5.1.12.B the requirement to verify that the METER switch is in the NORMAL position due to this switch being removed from the plant when the OPRM system was installed IAW DCP 4EC-3523.

Changes 1 and 2 were previously reviewed and incorporated IAW OTSC 14A as an editorial change. Change 3 was previously approved in an equal tier level procedure (see HC.IC-CC.SE-0013(Q), rev. 17) and received the full review IAW Attachment 3 of NAP-1. Therefore, these proposed changes are editorial in content and do not require a 10CFR50.59 Applicability Review.

— APPLICANT'S COPY —

IMPLEMENTATION REQUIREMENTS

Effective Date: 12/24/97

APPROVED: Jon Mark Lively for Pete Roberts

Manager - System Engineering - HC

12/24/97

Date

— TRAINING ONLY —




1.0 PURPOSE1.1 Scope

The APRM setpoint surveillance is required to verify that scram and rod block trip setpoints are properly set to account for the current core power distribution. Technical specification values for APRM scram and rod block trip settings identified in T/S Table 2.2.1-1 are generally appropriate during power operation. However, if the core power distribution is peaked such that the Core Maximum Fraction of Limiting Power Density (CMFLPD) exceeds the Fraction of Rated Thermal Power (FRTTP), these setpoints may be non-conservative. Under these conditions (CMFLPD > FRTTP), either the trip setpoints must be reduced or the APRM channel output must be increased to values in excess of CMFLPD expressed in percent. This surveillance provides a periodic check to verify that core power distribution, actual APRM trip setpoints and APRM output indication are properly maintained during power operation. [T/S 3.2.2]

1.2 Surveillance Requirements

This procedure fulfills surveillance requirements for technical specification 4.2.2. The requirements are applicable whenever reactor thermal power is greater than or equal to 25% of RATED THERMAL POWER. The surveillance frequency is once every 24 hours unless the value of CMFLPD exceeds the value of FRTTP. During these instances, the surveillance shall be performed immediately and the frequency increased to at least once per 12 hours as long as the reactor is operating with CMFLPD > FRTTP. Additionally, this surveillance shall be performed within 12 hours after completion of a thermal power increase of at least 15% of RATED THERMAL POWER. This surveillance shall be performed within 4 hours after beginning operation with only a single recirculation loop. [T/S 4.2.2, T/S 3.4.1.1]

2.0 PREREQUISITES

-  2.1 Reactor thermal power is greater than or equal to 25% of rated thermal power with stable core operating conditions and the generator synchronized to the grid.
-  2.2 Determine if any I&C work is in progress which would prevent the verification of actual scram and rod block setpoints (e.g., an APRM functional test or channel calibration).
-  2.3 The SNSS/NSS has been notified that the APRM setpoint surveillance is about to commence. This surveillance requires support from operations personnel and shift I&C technicians to determine the actual scram and rod block setpoints.

3.4 If the SNSS/NSS determines that an APRM channel(s) being calibrated is required to be OPERABLE, then:

3.4.1 With respect to the RPS trip function, the channel(s) may be placed in an inoperable status for up to six hours. If it appears that this limitation will be exceeded, then notify the SNSS/NSS that Technical Specification ACTION 3.3.1.a must be entered.

3.4.2 With respect to the rod block function, Technical Specification ACTION 3.3.6.b must be entered.

4.0 EQUIPMENT/MATERIAL REQUIRED

None

5.0 PROCEDURE

Not all steps in this procedure need to be completed in order as long as the intent of the procedure is not changed. Operators/Technicians may perform steps out of order or subsections concurrently based upon the task, experience of the operator/technician and familiarization with the task. Specific steps which must be performed in order are cautioned in the procedure.

5.1 Surveillance Test Steps

5.1.1 Sign and date the statements documenting fulfillment of prerequisites 2.1 through 2.3 on Attachment 1.

5.1.2 Obtain the value of the Core Maximum Fraction of Limiting Power Density (CMFLPD) through the performance of one of the following Reactor Engineering surveillances.

A. HC.RE-ST.ZZ-0001(Q), Core Thermal Limits Evaluation - Process Computer Method. [**Cross-Reference 6.7**]. QR

B. HC.RE-ST.ZZ-0002(Q), Core Thermal limits Evaluation - P1BACK Method. [**Cross-Reference 6.8**].

5.1.3 Record the value of CMFLPD on Attachment 1.

5.1.4 Obtain the value of percent core thermal power (PCT PWR) from the P1 output. Record this on Attachment 1.

5.1.5 Convert percent core thermal power to fraction of rated thermal power (FRTTP) expressed as a decimal. Record FRTTP on Attachment 1.

5.1.6 Calculate the value of T as shown on Attachment 1.

CAUTION 5.1.12

Procedure step 5.1.12 must be performed in order.

5.1.12 Request the Shift I&C Technician determine the actual scram and rod block setpoints from each operable APRM as follows:

- A. Request the NCO to bypass the selected APRM at 10C651 and verify the following:
1. The APRM BYPASS status light on 10C651 illuminates.
 2. The APRM BYPASS status light on 10C608 illuminates.

NOTE 5.1.12.B

Steps 5.1.12.B through 5.1.12.J are performed at panel 10C608.

- B. Verify the METER FUNCTION switch is in the AVERAGE position.
- C. Turn the POWER potentiometer to full counter clockwise.
- D. Turn the MODE switch to "TEST/PWR" and verify "INOP" and "DNSCL" lights are illuminated.
- E. Depress TRIP RESET to clear any trip lights.
- F. Slowly turn the POWER potentiometer clockwise until the "UPSCALARM" light illuminates. Record the indicated power (APRM meter reading) on Attachment 1, as actual Rod Block setpoint (S_{RB}).

Note 5.1.15

The actual scaling factor applied to the APRMs must be greater than or equal to the required scaling factor.

- N/A
- 5.1.15 If the required scaling factor calculated in step 5.1.13 is 1.00 and a scaling factor is presently applied, that scaling factor may be removed (set to 1.00).
- A. Calibrate the APRM output in accordance with HC.RE-ST.SE-0002(Q), APRM Calibration Surveillance. [**Cross-Reference 6.6**].
 - B. Discard the APRM scaling notice (Attachment 2) previously posted.
 - C. Proceed to step 5.1.18.
- 5.1.16 If the required scaling factor calculated in step 5.1.13 is greater than 1.00 and greater than the presently applied scaling factor (if any), a scaling factor must be added to the APRM readings.
- A. Determine the desired scaling factor. This factor must be greater than the required scaling factor calculated in step 5.1.13. The desired scaling factor may be greater than the required scaling factor to allow for an increase in CMFLPD compared with FRTP and decrease the number of times APRMs must be adjusted.
 - B. Record the desired scaling factor on Attachment 1 and Attachment 2.
 - C. Calibrate the APRMs in accordance with HC.RE-ST.SE-0002(Q), APRM Calibration Surveillance. [**Cross-Reference 6.6**].
 - D. Post a copy of Attachment 2, APRM Scaling Notice, on the reactor control panel (10C651) and the APRM back panels (10C608) in accordance with NC.NA-AP.ZZ-0044(Q), Station Aids and Labels. [**Cross reference 6.5**].
 - E. Ensure that the increased surveillance frequency of T/S 4.2.2.C is satisfied [T/S 4.2.2.C]
 - F. Proceed to step 5.1.18.

- 5.1.21 The SNSS/NSS should assign a Responsible Reviewer (who cannot be one of the test performers) to perform an independent review and acceptance of the completed surveillance test results. Note that the SNSS/NSS may also function as the Responsible Reviewer.

Note 5.1.22

Step 5.1.22 must be completed prior to exceeding the TS 1.25 Date, 6 hours for a once per 24 hour surveillance and 3 hours for a once per 12 hour surveillance.

- 5.1.22 The Responsible Reviewer signs and dates the surveillance test package signifying the surveillance test results have been reviewed for accuracy, completeness, and compliance with applicable as-found and as-left Tech Spec acceptance criteria.
- 5.1.23 If the surveillance test results are determined to be unsatisfactory, the individual identifying the UNSAT test results should notify the SNSS/NSS and Reactor Engineering as soon as possible if not already notified.
- 5.1.24 Forward the completed package (Attachment 1 and the P1 edit or a copy of the P1 edit) to the Reactor Engineering Records Coordinator for retention in accordance with NC.NA-AP.ZZ-0003(Q) Document Management Program by placing the completed package in the completed surveillance basket for Reactor Engineering to process. [Cross-Reference 6.9].

5.2 Acceptance Criteria

- 5.2.1 The APRM setpoints are acceptable if both of the following conditions are satisfied.
- A. The actual values of APRM Scram and Rod Block setpoints are less than or equal to the allowable technical specification limits.

$$S_{RB} \leq 0.66 \cdot (W - \Delta W) + 45$$

$$S \leq 0.66 \cdot (W - \Delta W) + 54$$
[T/S 3.2.2]
- B. $T = 1.0$ or a scaling factor is applied to the APRM output such that the APRM output is equal to or exceeds the value of CMFLPD expressed in percent.
 $T = \text{lowest value of FRTP/CMFLPD}$. A scaling factor must be applied if $T < 1.00$.
[T/S 3.2.2]

**ATTACHMENT 1
APRM SETPOINT SURVEILLANCE DATA FORM**

VERIFICATION OF PREREQUISITES

<u>Prereq.</u>	<u>Description</u>	<u>Verified By</u>	<u>Date</u>
2.1	Reactor Thermal power \geq 25%	<u>John Smith</u>	<u> </u>
2.2	I&C work checked	<u>John Smith</u>	<u> </u>
2.3	SNSS/NSS Notification	<u>John Smith</u>	<u> </u>

APRM SETPOINT SURVEILLANCE DATA

5.1.3	CMFLPD (obtained from P1)	<u>0.558</u>	[1]
5.1.4.	Percent Core Thermal Power (obtained from P1)	<u>60.9</u>	[2]
5.1.5	F RTP (fraction of rated thermal power) [2]/100	<u>0.609</u>	[3]
5.1.6	T = F RTP/CMFLPD = [3]/[1] If T>1.0 Enter 1.0 for [4]	<u>1.0</u>	[4]
5.1.7.A	Recirc Drive Flow (WD from the P1)	<u>9.73</u>	[5a]
5.1.7.B	Recirc Drive Flow (Alternate Method)	<u>N/A</u>	[5b]

From 10C608

("N/A" if channel inoperable or if this method not used).

APRM	%Flow	APRM	%Flow
A		D	
B		E	
C		F	

WD=Sum of Flows/# Operable Channels [5b]

5.1.8	WD100 (from OD-3)	<u>32.4</u>	[6]
5.1.9	%WD = [5a]/[6]*100- Δ W <u>OR</u> [5b]- Δ W	<u>30.0</u>	[7]

* Where Δ W is defined as the difference in indicated drive flow (in percent of drive flow which produces rated core flow) between two loop and single loop operation at the same core flow. Δ W=0 for two recirculation loop operation. Δ W = 9.0 for single recirculation loop operation.

ATTACHMENT 1 (continued)

COMMENTS: REQUIRED FOR INITIAL ENTRY INTO SINGLE LOOP
OPERATIONS THREE HOURS AGO.

REVIEW AND APPROVAL

5.1.19 The APRM setpoint surveillance has been completed.

Verified By	<u>John Smith</u>	Date	Time
-------------	-------------------	------	------

5.1.22 The Responsible Reviewer has reviewed the surveillance test results for accuracy, completeness, and compliance with applicable as-found and as-left Tech Spec acceptance criteria.

Reviewed By	Date	Time
-------------	------	------

[illegible]

04/07/00

DATE 04/07/00 FLY 11 HOPCREEK UNIT 1 SEQ. NO. 100

PERIODIC ASS CORE PERFORMANCE LOG

CONTROL ROL POSITION AND CALIBRATED LPRM READINGS

++-43

57 D	42 ++	++ 50 ++	++ 29 ++	++ 34 ++	
C	26	31	18	21	
B	24	28	16	19	
55 A	++ 22 ++	++ 26 ++	28 15 ++	++ 18 ++	++
51	38 ++	++ 34 ++	++ 53 ++	++ 56 ++	++ 55 ++
	23	33	31	34	34
	21	30	31	31	29
47	++ 20 ++	12 27 ++	14 28 ++	12 30 ++	16 29 ++
				12 22 ++	++
43	++	++ 54 ++	++ 54 ++	++ 52 ++	++ 50 ++
	32	37	31	33	33
	30	30	29	30	30
39	++	++ 29 ++	16 29 ++	04 28 ++	08 27 ++
				04 28 ++	16 29 ++
				++ 25 ++	
35	++	++ 54 ++	++ 53 ++	++ 46 30	++ 46 36
	33	34	28	28	29
	30	31	25	26	26
31	++	28 29 ++	12 29 ++	08 24 ++	24 25 ++
				08 25 ++	12 26 ++
				23 29 ++	
27	++	++ 53 ++	++ 50 ++	++ 49 36	++ 47 36
	32	31	30	29	33
	29	23	27	26	30
23	++	++ 28 ++	16 28 ++	04 26 ++	08 25 ++
				04 29 ++	16 29 ++
				++ 17 ++	
19	++	++ 43 ++	++ 53 ++	++ 54 ++	++ 56 ++
	26	33	33	33	34
	24	30	30	31	31
15	++	23 ++	12 28 ++	16 29 ++	12 30 ++
				16 30 ++	12 30 ++
				++ 19	
11 D	++	++ 56 ++	++ 56 ++	++ 57 ++	++ 57 ++
C		22	34	33	34
B		20	31	32	32
07 A	++	19 ++	++ 30 ++	28 10 ++	++ 30 ++
				++ 22	
03	++	++	++	++	++
	06	10	14	18	22
				26	30
				34	38
				42	46
				50	54
				58	

PERATOR MS VAL CR LOG

HOPE CREEK GENERATING STATION

HC.RE-ST.SE-0001(Q) - Rev. 15
APRM SETPOINT SURVEILLANCE

CONTROL COPY #

0030

USE CATEGORY: II

REVISION SUMMARY

Revision 15:

- 1) Corrects an error in Attachment 1. Step 5.1.9 formerly calculated %WD as $[5a]/[6]*100-\Delta W$ OR $[5b]/[6]*100-\Delta W$. When using the alternate method of determining Recirc flow, Recirc flow is recorded in percent of Core Flow instead of drive flow and therefore should not be divided by the 100% drive flow value ([5b]) and multiplied by 100. The attachment now reads $\%WD = [5a]/[6]*100 - \Delta W$ OR $[5b] - \Delta W$.
- 2) Step 5.1.9 in the body of the procedure had words added to clarify determination of %WD when using the alternate method.
- 3) Deleted from Step 5.1.12.B the requirement to verify that the METER switch is in the NORMAL position due to this switch being removed from the plant when the OPRM system was installed IAW DCP 4EC-3523.

Changes 1 and 2 were previously reviewed and incorporated IAW OTSC 14A as an editorial change. Change 3 was previously approved in an equal tier level procedure (see HC.IC-CC.SE-0013(Q), rev. 17) and received the full review IAW Attachment 3 of NAP-1. Therefore, these proposed changes are editorial in content and do not require a 10CFR50.59 Applicability Review.

EXAMINER'S COPY

IMPLEMENTATION REQUIREMENTS

Effective Date: 12/24/97

APPROVED:

Mark Lucilly for Pete Roberts
Manager - System Engineering - HC

12/24/97

Date

TRAINING ONLY

1.0 PURPOSE




1.1 Scope

The APRM setpoint surveillance is required to verify that scram and rod block trip setpoints are properly set to account for the current core power distribution. Technical specification values for APRM scram and rod block trip settings identified in T/S Table 2.2.1-1 are generally appropriate during power operation. However, if the core power distribution is peaked such that the Core Maximum Fraction of Limiting Power Density (CMFLPD) exceeds the Fraction of Rated Thermal Power (F RTP), these setpoints may be non-conservative. Under these conditions (CMFLPD > F RTP), either the trip setpoints must be reduced or the APRM channel output must be increased to values in excess of CMFLPD expressed in percent. This surveillance provides a periodic check to verify that core power distribution, actual APRM trip setpoints and APRM output indication are properly maintained during power operation. [T/S 3.2.2]

1.2 Surveillance Requirements

This procedure fulfills surveillance requirements for technical specification 4.2.2. The requirements are applicable whenever reactor thermal power is greater than or equal to 25% of RATED THERMAL POWER. The surveillance frequency is once every 24 hours unless the value of CMFLPD exceeds the value of F RTP. During these instances, the surveillance shall be performed immediately and the frequency increased to at least once per 12 hours as long as the reactor is operating with CMFLPD > F RTP. Additionally, this surveillance shall be performed within 12 hours after completion of a thermal power increase of at least 15% of RATED THERMAL POWER. This surveillance shall be performed within 4 hours after beginning operation with only a single recirculation loop. [T/S 4.2.2, T/S 3.4.1.1]

2.0 PREREQUISITES

-  2.1 Reactor thermal power is greater than or equal to 25% of rated thermal power with stable core operating conditions and the generator synchronized to the grid.
-  2.2 Determine if any I&C work is in progress which would prevent the verification of actual scram and rod block setpoints (e.g., an APRM functional test or channel calibration).
-  2.3 The SNSS/NSS has been notified that the APRM setpoint surveillance is about to commence. This surveillance requires support from operations personnel and shift I&C technicians to determine the actual scram and rod block setpoints.

3.4 If the SNSS/NSS determines that an APRM channel(s) being calibrated is required to be OPERABLE, then:

3.4.1 With respect to the RPS trip function, the channel(s) may be placed in an inoperable status for up to six hours. If it appears that this limitation will be exceeded, then notify the SNSS/NSS that Technical Specification ACTION 3.3.1.a must be entered.

3.4.2 With respect to the rod block function, Technical Specification ACTION 3.3.6.b must be entered.

4.0 EQUIPMENT/MATERIAL REQUIRED

None

5.0 PROCEDURE

Not all steps in this procedure need to be completed in order as long as the intent of the procedure is not changed. Operators/Technicians may perform steps out of order or subsections concurrently based upon the task, experience of the operator/technician and familiarization with the task. Specific steps which must be performed in order are cautioned in the procedure.

5.1 Surveillance Test Steps

5.1.1 Sign and date the statements documenting fulfillment of prerequisites 2.1 through 2.3 on Attachment 1.

5.1.2 Obtain the value of the Core Maximum Fraction of Limiting Power Density (CMFLPD) through the performance of one of the following Reactor Engineering surveillances.

A. HC.RE-ST.ZZ-0001(Q), Core Thermal Limits Evaluation - Process Computer Method. [Cross-Reference 6.7]. OR

B. HC.RE-ST.ZZ-0002(Q), Core Thermal limits Evaluation - P1BACK Method. [Cross-Reference 6.8].

5.1.3 Record the value of CMFLPD on Attachment 1.

5.1.4 Obtain the value of percent core thermal power (PCT PWR) from the P1 output. Record this on Attachment 1.

5.1.5 Convert percent core thermal power to fraction of rated thermal power (F RTP) expressed as a decimal. Record F RTP on Attachment 1.

5.1.6 Calculate the value of T as shown on Attachment 1.

CAUTION 5.1.12

Procedure step 5.1.12 must be performed in order.

5.1.12 Request the Shift I&C Technician determine the actual scram and rod block setpoints from each operable APRM as follows:

- A. Request the NCO to bypass the selected APRM at 10C651 and verify the following:
 - 1. The APRM BYPASS status light on 10C651 illuminates.
 - 2. The APRM BYPASS status light on 10C608 illuminates.

NOTE 5.1.12.B

Steps 5.1.12.B through 5.1.12.J are performed at panel 10C608.

- B. Verify the METER FUNCTION switch is in the AVERAGE position.
- C. Turn the POWER potentiometer to full counter clockwise.
- D. Turn the MODE switch to "TEST/PWR" and verify "INOP" and "DNSCL" lights are illuminated.
- E. Depress TRIP RESET to clear any trip lights.
- F. Slowly turn the POWER potentiometer clockwise until the "UPSCL ALARM" light illuminates. Record the indicated power (APRM meter reading) on Attachment 1, as actual Rod Block setpoint (S_{RB}).

Note 5.1.15

The actual scaling factor applied to the APRMs must be greater than or equal to the required scaling factor.

N/A

- 5.1.15 If the required scaling factor calculated in step 5.1.13 is 1.00 and a scaling factor is presently applied, that scaling factor may be removed (set to 1.00).
- A. Calibrate the APRM output in accordance with HC.RE-ST.SE-0002(Q), APRM Calibration Surveillance. **[Cross-Reference 6.6]**.
 - B. Discard the APRM scaling notice (Attachment 2) previously posted.
 - C. Proceed to step 5.1.18.
- 5.1.16 If the required scaling factor calculated in step 5.1.13 is greater than 1.00 and greater than the presently applied scaling factor (if any), a scaling factor must be added to the APRM readings.
- A. Determine the desired scaling factor. This factor must be greater than the required scaling factor calculated in step 5.1.13. The desired scaling factor may be greater than the required scaling factor to allow for an increase in CMFLPD compared with F RTP and decrease the number of times APRMs must be adjusted.
 - B. Record the desired scaling factor on Attachment 1 and Attachment 2.
 - C. Calibrate the APRMs in accordance with HC.RE-ST.SE-0002(Q), APRM Calibration Surveillance. **[Cross-Reference 6.6]**.
 - D. Post a copy of Attachment 2, APRM Scaling Notice, on the reactor control panel (10C651) and the APRM back panels (10C608) in accordance with NC.NA-AP.ZZ-0044(Q), Station Aids and Labels. **[Cross reference 6.5]**.
 - E. Ensure that the increased surveillance frequency of T/S 4.2.2.C is satisfied **[T/S 4.2.2.C]**
 - F. Proceed to step 5.1.18.

- 5.1.21 The SNSS/NSS should assign a Responsible Reviewer (who cannot be one of the test performers) to perform an independent review and acceptance of the completed surveillance test results. Note that the SNSS/NSS may also function as the Responsible Reviewer.

Note 5.1.22

Step 5.1.22 must be completed prior to exceeding the TS 1.25 Date, 6 hours for a once per 24 hour surveillance and 3 hours for a once per 12 hour surveillance.

- 5.1.22 The Responsible Reviewer signs and dates the surveillance test package signifying the surveillance test results have been reviewed for accuracy, completeness, and compliance with applicable as-found and as-left Tech Spec acceptance criteria.
- 5.1.23 If the surveillance test results are determined to be unsatisfactory, the individual identifying the UNSAT test results should notify the SNSS/NSS and Reactor Engineering as soon as possible if not already notified.
- 5.1.24 Forward the completed package (Attachment 1 and the P1 edit or a copy of the P1 edit) to the Reactor Engineering Records Coordinator for retention in accordance with NC.NA-AP.ZZ-0003(Q) Document Management Program by placing the completed package in the completed surveillance basket for Reactor Engineering to process. **[Cross-Reference 6.9].**

5.2 Acceptance Criteria

- 5.2.1 The APRM setpoints are acceptable if both of the following conditions are satisfied.
- A. The actual values of APRM Scram and Rod Block setpoints are less than or equal to the allowable technical specification limits.

$$S_{RB} \leq 0.66 \cdot (W - \Delta W) + 45$$

$$S \leq 0.66 \cdot (W - \Delta W) + 54$$
[T/S 3.2.2]
- B. $T = 1.0$ or a scaling factor is applied to the APRM output such that the APRM output is equal to or exceeds the value of CMFLPD expressed in percent.
 $T = \text{lowest value of FRTP/CMFLPD}$. A scaling factor must be applied if $T < 1.00$.
[T/S 3.2.2]

**ATTACHMENT 1
APRM SETPOINT SURVEILLANCE DATA FORM**

VERIFICATION OF PREREQUISITES

<u>Prereq.</u>	<u>Description</u>	<u>Verified By</u>	<u>Date</u>
2.1	Reactor Thermal power $\geq 25\%$	<u>John Smith</u>	_____
2.2	I&C work checked	<u>John Smith</u>	_____
2.3	SNSS/NSS Notification	<u>John Smith</u>	_____

APRM SETPOINT SURVEILLANCE DATA

5.1.3	CMFLPD (obtained from P1)	<u>0.558</u>	[1]
5.1.4.	Percent Core Thermal Power (obtained from P1)	<u>60.9</u>	[2]
5.1.5	F RTP (fraction of rated thermal power) [2]/100	<u>0.609</u>	[3]
5.1.6	T = F RTP/CMFLPD = [3]/[1] If T>1.0 Enter 1.0 for [4]	<u>1.0</u>	[4]
5.1.7.A	Recirc Drive Flow (WD from the P1)	<u>9.73</u>	[5a]
5.1.7.B	Recirc Drive Flow (Alternate Method)	<u>N/A</u>	[5b]

From 10C608

("N/A" if channel inoperable or if this method not used).

APRM	%Flow	APRM	%Flow
A		D	
B		E	
C		F	

WD=Sum of Flows/# Operable Channels [5b]

5.1.8	WD100 (from OD-3)	<u>32.4</u>	[6]
5.1.9	%WD = [5a]/[6]*100- Δ W <u>OR</u> [5b]- Δ W	<u>30.0 21.0</u>	[7]

* Where Δ W is defined as the difference in indicated drive flow (in percent of drive flow which produces rated core flow) between two loop and single loop operation at the same core flow. Δ W=0 for two recirculation loop operation. Δ W = 9.0 for single recirculation loop operation.

ATTACHMENT 1 (continued)

COMMENTS: REQUIRED FOR INITIAL ENTRY INTO SINGLE LOOP
OPERATIONS THREE HOURS AGO.

REVIEW AND APPROVAL

5.1.19 The APRM setpoint surveillance has been completed.

Verified By John Smith Date _____ Time _____

5.1.22 The Responsible Reviewer has reviewed the surveillance test results for accuracy, completeness, and compliance with applicable as-found and as-left Tech Spec acceptance criteria.

CANDIDATE'S SIGNATURE DATE TIME
Reviewed By Date Time

ADMINISTRATIVE TOPICS

CAT A
A.31(sae)

Facility: <u>HOPE CREEK</u>	Date of Examination: <u>5/29/00</u>
Examination Level: <input type="checkbox"/> RO <input checked="" type="checkbox"/> SRO	Operating Test Number: _____

TOPIC: <u>A.3</u>	QUESTION: <u>1</u>
Subject Description: <u>Radiation Exposure Control</u>	
K/A: 2.3.4 Knowledge of radiation exposure limits and contamination control/including permissible levels in excess of those authorized.(2.5)	
DESCRIPTION: Given an emergency condition, determine allowable stay times.	
QUESTION: An Unusual Event has been declared due to a Seismic Event that was felt by personnel within the Protected Area. Actions are being taken in accordance with HC.OP-AB.ZZ-0139 and the Emergency Plan. The Reactor Building Equipment Operator (EO) is to be sent into the RWCU Pipe Chase to determine the conditions of the piping within this area. The EO's current year exposure is 1980 mrem, TEDE. The evolution is projected to take 30 minutes, in an area where the general area dose rate is 250 mrem/hr. Can you send the EO to perform the task without the operator exceeding any administrative dose limit, and what is the basis for your decision?	
ANSWER: No. The expected dose received would cause the operator to exceed the administrative limit of 2000 mrem TEDE per year. The NEO's expected yearly dose would be: $1980 + 30/60(250) = 2105 \text{ mR}$ [To exceed the 2000 mrem/yr limit the Radiation Protection Supervisor's permission is required. (Not required.)] (Note: ERO personnel are automatically extended to 4500 mrem at an ALERT or higher.)	

ADMINISTRATIVE TOPICS

An Unusual Event has been declared due to a Seismic Event that was felt by personnel within the Protected Area. Actions are being taken in accordance with HC.OP-AB.ZZ-0139 and the Emergency Plan. The Reactor Building Equipment Operator (EO) is to be sent into the RWCU Pipe Chase to determine the conditions of the piping within this area. The EO's current year exposure is 1980 mrem, TEDE. The evolution is projected to take 30 minutes, in an area where the general area dose rate is 250 mrem/hr.

Can you send the EO to perform the task without the operator exceeding any administrative dose limit, and what is the basis for your decision?

ADMINISTRATIVE TOPICS

Facility: <u>HOPE CREEK</u>	Date of Examination: <u>5/29/00</u>
Examination Level: <input type="checkbox"/> RO <input checked="" type="checkbox"/> SRO	Operating Test Number: _____
TOPIC: <u>A.3</u> QUESTION: <u>2</u>	
Subject Description: Radiation Exposure Control	
K/A: 2.3.1 Knowledge of 10CFR20 and related facility radiation control requirements.(3.0)	
DESCRIPTION: Apply the NBU radiation exposure limits for a Declared Pregnant Worker with existing exposure.	
QUESTION: An Equipment Operator, qualified to stand the Reactor Building watch, has just formally declared her pregnancy in writing. She is at the end of the 2 nd month of her pregnancy. Her dose for the last two months is 25 mrem TEDE and 0 mrem CEDE. What are her exposure limitations (TEDE and CEDE) for the rest of her pregnancy?	
ANSWER: TEDE limit is 500 mrem for the entire period of pregnancy and that the dose be delivered at a uniform rate. (Section 5.5.2) Administrative limits are: 50 mrem/month or less, and 450 mrem for the entire period. Can be exceeded with Radiation Protection Manager's approval. (Attachment 1) (450-25=425 mrem for the remainder of the pregnancy.) CEDE is limited to 50 mrem/year. Reference: NC.NA-AP.ZZ-0024(Q), Radiation Protection Program. Section 5.5.2, 5.5.3, and Attachment 1.	

ADMINISTRATIVE TOPICS

An Equipment Operator, qualified to stand the Reactor Building watch, has just formally declared her pregnancy in writing. She is at the end of the 2nd month of her pregnancy. Her dose for the last two months is 25 mrem TEDE and 0 mrem CEDE.

What are her exposure limitations (TEDE and CEDE) for the rest of her pregnancy?

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

CAT. 21
A.4 (3020)

STATION: HOPE CREEK

SYSTEM: Emergency/ECG/E-Plan/Fire & Medical

TASK: Utilize The ECG To Determine The Emergency Classification And/Or Reportability Of An Event And/Or Plant Condition

TASK NUMBER: 2000500302

JPM NUMBER: 305H-JPM.ZZ-017-00

APPLICABILITY:

EO

☐

RO

☐

SRO

☒

K/A NUMBER:

2.4.41

IMPORTANCE FACTOR:

2.3

4.1

RO

SRO

EVALUATION SETTING/METHOD: Control Room/Walkthrough

REFERENCES: Hope Creek Event Classification Guide, Revision 19

TOOLS AND EQUIPMENT: None

VALIDATED JPM COMPLETION TIME: 15 Minutes

TIME PERIOD IDENTIFIED FOR TIME CRITICAL STEPS:

APPROVED:

N/A

PRINCIPAL TRAINING SUPERVISOR

N/A

OPERATIONS MANAGER

CAUTION:

No plant equipment shall be operated during the performance of a JPM without the following:

1. Permission from the OS Or Unit CRS;
2. Direct oversight by a qualified individual (determined by the individual granting permission based on plant conditions).
3. Verification of the "as left" condition by a qualified individual.

ACTUAL JPM COMPLETION TIME:

ACTUAL TIME CRITICAL COMPLETION TIME:

N/A

JPM PERFORMED BY:

GRADE:

☐

SAT

☐

UNSAT

REASON, IF UNSATISFACTORY:

EVALUATOR'S SIGNATURE:

DATE:

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____

DATE: _____

SYSTEM: Emergency/ECG/E-Plan/Fire & Medical

TASK: Utilize The ECG To Determine The Emergency Classification And/Or Reportability Of An Event And/Or Plant Condition

TASK NUMBER: 2000500302

INITIAL CONDITIONS:

1. The plant was operating at 100% power.
2. A packing leak developed on HV-F028A, OTBD MSIV A. Repair attempts over a few days had been unsuccessful.
3. The leak caused a NSSSS isolation, as evidenced by annunciators C8-C4, NSSS ISLN SIG-STM TNL TEMP HI and C8-B4, MSIV CLOSURE, and a Reactor Scram.
4. Three rods were found to be at 02 following the scram signal. The Reactor Operator is inserting those rods manually.
5. All overhead annunciators were lost approximately 6 minutes ago due to a failure of BD483 inverter. The Equipment Operator is expected to restore power shortly.
6. SRV PSV-F013J stuck open on the pressure spike. It closed at 850 psig Reactor pressure.
7. RPV water level initially dipped to -45 inches.
8. ARI, HPCI and RCIC initiated.
9. Currently:
 - RPV level is 35 inches and steady.
 - RPV pressure is being controlled between 900-1000 psig with SRVs.
 - MSL Tunnel temperatures are 140 F.
 - Total Off-site Release values are:
 - 1.20E+02 μ Ci/sec Noble Gas
 - 1.20E-01 μ Ci/sec I-131
10. Current wind speed is 15 mph from 270°.

INITIATING CUE:

Classify the event in accordance with the ECG and implement the appropriate attachment.

Successful Completion Criteria:

1. All critical steps completed.
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made (and NRC concurrence is obtained).

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

SYSTEM: Emergency/ECG/E-Plan/Fire & Medical

TASK: Utilize The ECG To Determine The Emergency Classification And/Or Reportability Of An Event And/Or Plant Condition

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
		START TIME: _____ Locates an ECG and refers to the applicable sections.	Operator refers to Sections 1.0, 3.0, 5.0, 8.0 and 11.3.1 of the ECG. (Other sections may be referred to.)		
		Classifies the event. Refers to Attachment 1.	Operator reviews the information provided and declares an Unusual Event in accordance with Section 8.2.1. Operator opens to Attachment 1 and commences completion. (Unplanned loss of >75% of Main Control Room Overhead Annunciators, AND, a significant transient is in progress.)		
			[Basis for the call: Must have indications of fuel failure and an SRV open to classify under 1.1. Valve packing leaks that cause MSIV isolations are not to be classified under 3.2.3.a. All rods at 02 or less results in the Reactor being shutdown under all conditions without Boron, hence, 5.1 is not applicable. A loss of overhead annunciators and a major transient (Reactor Scram) in progress meets the Emergency Action Level for an Unusual Event per 8.2.2.a]		

**OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE**

NAME: _____
DATE: _____

SYSTEM: Emergency/ECG/E-Plan/Fire & Medical

TASK: Utilize The ECG To Determine The Emergency Classification And/Or Reportability Of An Event And/Or Plant Condition

# *	STEP NO.	STEP (*Denotes a Critical Step) (#Denotes a Sequential Step)	STANDARD	EVAL S/U	COMMENTS (Required for UNSAT evaluation)
*	I.	A. DECLARE AN UNUSUAL EVENT AT HOPE CREEK EAL# _____ Declared at _____ hrs on _____ date	Operator completes I.A. by filling in the required spaces and initials the step. EAL# <u>8.2.1</u> Declared at <u>(time)</u> hrs on <u>(today's date)</u> Examiner's Note: Initialing steps is not considered critical.		
		B. NOTIFICATIONS 1. CALL communicators to the control room.	Operator pages the communicators and initials step. Examiner's Cue: Communicators are present.		
*		2. COMPLETE the INITIAL CONTACT MESSAGE FORM (ICMF) (last page of this attachment).	Operator completes the ICMF and initials step. (See Attached) Examiner's Note: Operator determines that no radiological release is in progress. Values provided are below Technical Specification limits.		
		3. PROVIDE the ICMF to the Communicator (CM1) and DIRECT the CM1 to implement ECG Attachment 6. STOP TIME: _____	Operator directs CM1 to implement Attachment 6.		

Terminating Cue: Repeat back the direction to implement Attachment 6 and then state, "This JPM is complete."

INITIAL CONDITIONS:

1. The plant was operating at 100% power.
2. A packing leak developed on HV-F028A, OTBD MSIV A. Repair attempts over a few days had been unsuccessful.
3. The leak caused a NSSSS isolation, as evidenced by annunciators C8-C4, NSSS ISLN SIG-STM TNL TEMP HI and C8-B4, MSIV CLOSURE, and a Reactor Scram.
4. Three rods were found to be at 02 following the scram signal. The Reactor Operator is inserting those rods manually.
5. All overhead annunciators were lost approximately 6 minutes ago due to a failure of BD483 inverter. The Equipment Operator is expected to restore power shortly.
6. SRV PSV-F013J stuck open on the pressure spike. It closed at 850 psig Reactor pressure.
7. RPV water level initially dipped to -45 inches.
8. ARI, HPCI and RCIC initiated.
9. Currently:
 - RPV level is 35 inches and steady.
 - RPV pressure is being controlled between 900-1000 psig with SRVs.
 - MSL Tunnel temperatures are 140 F.
 - Total Off-site Release values are:
 - 1.20E+02 μ Ci/sec Noble Gas
 - 1.20E-01 μ Ci/sec I-131
10. Current wind speed is 15 mph from 270°.

INITIATING CUE:

Classify the event in accordance with the ECG and implement the appropriate attachment.

ATTACHMENT 1

UNUSUAL EVENT

I. EMERGENCY COORDINATOR (EC) LOG SHEET

Initials

A. DECLARE AN UNUSUAL EVENT AT HOPE CREEK

EAL # 8,2.2. a Declared at Time hrs on DATE INITIALS
time date EC

B. NOTIFICATIONS

1. CALL communicators to the Control Room. INITIALS
OS
2. COMPLETE the INITIAL CONTACT MESSAGE FORM (ICMF)
(last page of this attachment). INITIALS
EC
3. PROVIDE the ICMF to the Communicator (CM1) and DIRECT the
CM1 to implement **ECG Attachment 6**. EC
4. DIRECT the Secondary Communicator (CM2) to implement **ECG**
Attachment 8 for an Unusual Event. EC

NOTE

Activation of the Emergency Response Organization (ERO) during an Unusual Event is implemented at the discretion of the Emergency Coordinator (EC). If additional support personnel are needed during an Unusual Event, then limited or full staffing of the TSC may be initiated at the discretion of the EC. Limited staffing may be initiated by contacting selected support personnel on an individual basis in lieu of activating the full ERO.

5. IF desired, **ACTIVATE** the Emergency Response Organization (ERO)
or **PERFORM** a limited staffing of the Emergency Response Facilities. EC

Full Staffing

LOCATE the confidential envelope in the Operations Superintendent (O.S.) Desk marked "Emergency Callout". Remove the card that contains the Emergency Callout System activation steps; and follow the directions. When complete return to this procedure.

6. IMPLEMENT EPEP 102 for OS. OS

(EP96-003)

EC

HCGS

Rev. 03

INITIAL CONTACT MESSAGE FORM

I. THIS IS cmi, COMMUNICATOR IN THE CONTROL ROOM
(NAME)

AT THE HOPE CREEK NUCLEAR GENERATING STATION.

II.

☐ THIS IS NOTIFICATION OF AN UNUSUAL EVENT WHICH WAS

DECLARED AT Time ON DATE
(Time - 24 HR CLOCK) (DATE)

EAL # 8.2.2.a

DESCRIPTION OF EVENT: UNPLANNED LOSS
OF 775% OF MAIN CONTROL ROOM ANNUNCIATORS AND A SIGNIFICANT
TRANSIENT IN PROGRESS

III.

☒ NO RADIOLOGICAL RELEASE IS IN PROGRESS.

☐ THERE IS A RADIOLOGICAL RELEASE IN PROGRESS.

} see NOTE
for release
definition

IV.

33 FT. LEVEL WIND DIRECTION (From): 270 WIND SPEED: 15
(From MET Computer) (DEGREES) (MPH)

V. NO PROTECTIVE ACTIONS ARE RECOMMENDED AT THIS TIME

CANDIDATE'S INITIALS

EC Initials

(Approval to Transmit ICMF)

NOTE:

Radiological Release is defined as: Plant Effluent > Tech Spec Limit of $1.20\text{E}+04$ $\mu\text{Ci/sec}$ Noble Gas or $1.70\text{E}+01$ $\mu\text{Ci/sec}$ I-131.