OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

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

K/A NUMBER: 2.1.19

IMPORTANCE FACTOR:

RO	SRO
3.0	3.0

APPLICABILITY: EO [ ] RO [X] SRO [X]

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
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:** _____

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)
		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: • 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. Examiner Note: Operator should note the change in CMWT, and attribute it to the rod pattern adjustment.		

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.		

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.

04/09/00

DATE 04/09/00 TIME 1003 HOPECREEK 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	.36
REGION REL PWR	.87	.97	.87	.97	.75	.97	.87	.97	.87			
RING REL PWR	.54	1.06	.91	1.19	.95	1.06	.90	.62				
APRM GAF	1.00	1.00	1.00	1.00	1.00	1.00						

REGION	1	2	3	4	5	6	7	8	9
MFLCPR	.672	.672	.672	.672	.774	.672	.672	.672	.672
LOC	19-18	27-14	41-18	17-24	25-24	43-24	19-44	27-46	41-44
FLOW	.1158	.1164	.1158	.1157	.1156	.1157	.1158	.1164	.1158
PKP	1.39	1.40	1.39	1.40	1.39	1.40	1.39	1.40	1.39
MFLPD	.688	.688	.688	.688	.909	.688	.688	.688	.688
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
PKFL	2.29	2.27	2.29	2.28	2.30	2.28	2.29	2.27	2.29
MAPRAT	.563	.563	.563	.563	.743	.563	.563	.563	.563
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
PKFS	1.70	1.66	1.70	1.67	1.76	1.67	1.70	1.66	1.70

CMWT	3287.
PCT PWR	99.8
GMWE	1104.
CMFCP	.774
CMFLPD	.909
CMAPR	.743
CMPP	2.193
CAEW	.142
CAGA	.144
CAVP	.420
CAPO	48.626
CRD	.106
CRSYM	2.
PR	1012.97
DPC-M	14.02
DPC-C	19.57
RWL	35.00
DHS	20.71
MPW	14.67
WE	99.78
WTSUB	97.15
WTMB	1.60
WT	99.59
PCTWTR	99.591
WTFLAG	2.000
ITER	1.000
IREC	.000
ICYC	1.000
IXYFLG	.000
CMFLEX	.693
CAVEX	1324.250
CYEXP	37.500
PCTLL	100.02

FAILED SENSORS 34

FAILED LPRM LIST BASE CRIT CODE

THE 12 MOST LIMITING BUNDLES

	FOR MFLCPR			FOR MFLPD				FOR MAPRAT			
MFLCPR	LOC	MCPR	CPRLIM	MFLPD	LOC	MRPD	RPDLIM	MAPRAT	LOC	MAPLHGR	LIMLHGR
.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	23-26	1.601	1.240	.909	23-26- 6	12.18	13.40	.743	23-26- 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	23-36	1.601	1.240	.909	23-36- 6	12.18	13.40	.743	23-36- 6	5.05	6.80
.774	37-36	1.601	1.240	.909	37-36- 6	12.18	13.40	.743	37-36- 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	27-46	1.846	1.240	.688	27-46- 6	9.23	13.40	.563	25-38- 6	3.82	6.80
.672	33-46	1.846	1.240	.688	33-46- 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

04/09/00

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

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

OPERATOR SUBS VAL CR LOC

04709/00

DATE 04/09/00 TIME 1007 HOPECREEK UNIT 1 SEQ. NO. 100

PERIODIC NSS CORE PERFORMANCE LOG

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12
AXIAL REL PWR	.58	1.18	1.41	1.59	1.34	1.26	1.13	1.05	.91	.78	.60	.36
REGION REL PWR	.90	.95	.90	.96	.78	.96	.90	.96	.90			
RING REL PWR	1.08	1.06	.91	1.19	.93	1.12	.80	.62				
APRM GAF	.99	1.00	.99	1.00	.99	.97						

REGION	1	2	3	4	5	6	7	8	9
MFLCPR	.670	.670	.670	.670	.773	.670	.670	.670	.670
LOC	19-18	27-14	41-18	17-24	25-24	43-24	19-44	27-46	41-44
FLOW	.1158	.1164	.1158	.1157	.1158	.1157	.1158	.1164	.1158
PKF	1.39	1.40	1.39	1.40	1.39	1.40	1.39	1.40	1.39
MFLPD	.681	.681	.681	.681	.900	.681	.681	.681	.681
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
PKFL	2.29	2.27	2.29	2.28	2.30	2.28	2.29	2.27	2.29
MAPRAT	.557	.557	.557	.557	.735	.557	.557	.557	.557
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
PKFS	1.70	1.66	1.70	1.67	1.76	1.67	1.70	1.66	1.70

CMWT	3276.
PCT PWR	99.5
GMWE	1100.
CMFCP	.773
CMFLPD	.900
CMAPR	.735
CMPF	2.179
CAEG	.141
CAGA	.143
CAVF	.420
CAPD	48.453
CRD	.C95
CRSYM	3.
FR	1016.48
EPC-M	14.02
EPC-C	19.57
RWL	3[illegible].00
DHS	20.67
WPW	1[illegible].61
WD	30.78
WTSUB	97.15
WTHD	1.66
WT	99.59
PCTWTR	99.591
WTFLAG	2.000
ITER	1.000
IREC	.000
ICQL	1.000
IXYFLG	.000
CMFLEX	.693
CAVEX	12324.250
CYEXP	279.500
PCTLL	99.66

FAILED SENSORS 34

FAILED LPRM LIST BASE CRIT CODE

THE 12 MOST LIMITING BUNDLES

FOR MFLCPR				FOR MFLPD				FOR MAPRAT			
MFLCPR	LOC	MCPR	CPRLIM	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	23-26	1.605	1.240	.900	23-26- 6	12.05	13.40	.735	23-26- 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. NO. 100

PERIODIC NSS CORE PERFORMANCE LOG

CONTROL ROD POSITION AND CALIBRATED LPRM READINGS

++=48

59	D						62	++	++	73	++	++	44	++	++	50	++						
	C						46			54			32			37							
	B						45			53			32			36							
55	A					++	36	++	++	43	++	12	26	++	++	29	++	++					
51				55	++	++	79	++	++	78	++	++	82	++	++	81	++	++	63	++			
				41			58			58			60			60			46				
				40			57			57			59			59			45				
47			++	32	++	++	46	++	24	46	++	12	48	++	24	48	++	++	37	++	++		
43		++	++	78	++	++	79	++	++	78	++	++	75	++	++	79	++	++	61	++	++	70	++
				57			58			57			55			58			59			51	
				56			57			56			54			57			58			50	
39		++	++	46	++	24	47	++	10	46	++	08	44	++	10	46	++	24	47	++	++	41	++
35		++	++	75	++	++	82	++	++	69	36	++	71	36	++	71	++	++	78	++	++	61	++
				57			60			50			52			52			57			59	
				56			59			50			51			51			56			59	
31		++	10	46	++	12	48	++	08	40	++	++	41	++	08	41	++	12	46	++	12	47	++
27		++	++	76	++	++	73	++	++	73	36	++	71	36	++	79	++	++	81	++	++	47	++
				56			54			54			53			58			60			34	
				55			53			53			52			57			59			34	
23		++	++	44	++	24	43	++	10	43	++	08	42	++	10	46	++	24	46	++	++	27	++
19		++	++	61	++	++	78	++	++	79	++	++	84	++	++	82	++	++	63	++	++	51	++
				45			57			58			62			60			61			38	
				44			56			57			60			59			60			37	
15			++	35	++	++	45	++	24	46	++	12	49	++	24	48	++	++	49	++	++	30	
11	D				++	++	51	++	++	61	++	++	63	++	++	83	++	++	61	++			
	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 SUBS VAL. OR LOC

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

K/A NUMBER: 2.1.3

APPLICABILITY: EO [ ] RO [X] SRO [X]

IMPORTANCE FACTOR: RO 3.0 SRO 3.4

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
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:** _____

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	START TIME:_____ 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.	Operator obtains a copy of Attachment 6, and commences to complete while walking-down the control room boards. Examiner Note: See attached for the completed attachment.		
*			Operator observes that RCIC flow controller is set at 500 gpm vice 600gpm. **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.)** Operator sets the RCIC flow controller to 600 gpm.		
*			Operator observes that RHR Pump C Minimum Flow Valve, HV-F007, is closed. **Examiner Cue: When asked, provide cue to place HV-F007 in the desired position. (Operator may wait until completion of attachment before informing CRS.)** Operator opens HV-F007.		

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.

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.

		Remarks
Cooling Water		
SSWS:	(A) (C) B (D)	
SACS:	(A) (C) B (D)	
TACS Loop:	(A) B	
RACS:	A (B) (C)	
Condenser/Condensate		
CW	(A) (B) (C) (D)	
SJAE:	A (B)	
Offgas Train:	(Unit 1) Common	
PCP:	(A) (B) (C)	
SCP:	(A) (B) (C)	
HWCI:	(RUN) STOP	
Reactor Feedwater		
A RFP:	(AUTO)/MANUAL	
B RFP:	(AUTO)/MANUAL	
C RFP:	(AUTO)/MANUAL	
Startup Valves	AUTO/MANUAL (CLOSED)	
Reactor		
RWCU Pump:	(A) (B)	
RWCU Filter-Demin:	(A) (B)	
Reactor Recirc Pumps:	(A) (B)	
Recirc Control:	(A) (B)	
	(AUTO)/MAN (AUTO)/MAN	
CRD Pumps:	(A) B	
CRD Stablizer:	(A) B	
CRD Flow Control:	(A) B	
Nuclear 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 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 5600	AUTO 5600	
Aux Oil Pump		AUTO	AUTO	

ATTACHMENT 6
EQUIPMENT STATUS CHECKLIST

RHR

Component	I/D	Req	A	C	B	D	Remarks
Supp Pool Suct	HV-F004	O	O	O	O	O	
S/D Clng Suction	HV-F006	X	X	N/A	X	N/A	
Pump Min Flow	HV-F007	O	O	O	O	O	FOUND FOOTC CLOSED, OPENED FOOTC
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	Disc & Operator
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	Disc & Actuator
Inbrd Isln	HV-F060	O	O	N/A	O	N/A	
Pump	P202	STBY	STBY	STBY	STBY	STBY	

Performed the Control Room Key Audit N/A
Initial

Checklist Performed By

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

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

K/A NUMBER: 2.4.39

APPLICABILITY: EO [ ] RO [X] SRO [X]

IMPORTANCE FACTOR: RO 3.3 SRO 3.1

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
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 **NAME:** _____

JOB PERFORMANCE MEASURE **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)
		START TIME:_____			
	B.1.a.	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."

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.

HOPE CREEK
MAJOR EQUIPMENT AND ELECTRICAL STATUS

DATE: DATE
UPDATE TIME: TIME

NOTE: Y = IN SERVICE
N = OUT OF SERVICE
(CIRCLE ANY UNAVAILABLE EQUIPMENT)

WATER COOLING SYSTEMS		ELECT. FEED	Y/N
SW PUMPS	A	A401	Y
	C	A403	Y
	B	A402	Y
	D	A404	Y
SACS PUMPS	A	A401	Y
	C	A403	Y
	B	A402	Y
	D	A404	Y
RACS PUMPS	A	B415	N
	B	B426	N
	C	B250	(N)
CIRC WATER PUMPS	A	A501	(N)
	B	A502	(N)
	C	A501	(N)
	D	A502	(N)

CONDENSATE/ FEEDWATER		ELECT. FEED	Y/N
PRIMARY CONDENSATE PUMPS	A	A110	(N)
	B	A120	(N)
	C	A102	(N)
SECONDARY CONDENSATE PUMPS	A	A110	(N)
	B	A120	(N)
	C	A104	(N)
FEED WATER PUMPS	A	STEAM	(N)
	B	STEAM	(N)
	C	STEAM	(N)

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)
CRD PUMPS	A	B430	N
	B	B440	N

ELECTRICAL STATUS		Y/N
OFFSITE AC POWER AVAILABLE		(N)

EMERGENCY DIESELS		RUN	LOADED
EDG	A	Y	Y
	B	Y	Y
	C	Y	Y
	D	Y	Y

HVAC		ELECT. FEED	Y/N
TURBINE BLDG CHILLED WATER CHILLERS	A	A110	(N)
	B	A120	(N)
	C	A101	(N)
	D	A110	(N)
TURBINE BLDG CHILLED WATER CIRC PUMPS	A	B130	(N)
	B	B120	(N)
	C	B110	(N)
CONTROL AREA CHILLED WATER CIRC PUMPS	A	B431	Y
	B	B441	N
CONTROL AREA CHILLED WATER CHILLERS	A	A403	Y
	B	A404	N
TSC CHILLED WATER CIRC PUMPS	A	B451	Y
	B	B461	Y
TSC CHILLED WATER CHILLERS	A	A401	Y
	B	A402	Y

CONTAINMENT CONTROL		ELECT. FEED	Y/N
FRVS RECIRC FANS	A	B410	Y
	E	B450	Y
	B	B420	Y
	F	B460	Y
	C	B430	Y
	D	B440	Y
FRVS VENT FANS	A	B212	Y
	B	B222	Y
H2 RECOMBINERS	A	B410	N
	B	B480	N
PCIG COMPRESSORS	A	B232	Y
	B	B242	Y

SERVICE AIR COMPRESSORS	ELECT. FEED	Y/N
00K107	A120	(N)
10K107	A110	(N)

EMER. INST. AIR COMPRESSOR	ELECT. FEED	Y/N
10K100	B450	(N)

ECCS		ELECT. FEED	Y/N
RHR PUMPS	A	A401	Y
	C	A403	Y
	B	A402	Y
	D	A404	Y
RCIC PUMPS		STEAM	(N)
HPCI PUMPS		STEAM	(N)
CORE SPRAY PUMPS	A	A401	Y
	C	A403	Y
	B	A402	Y
	D	A404	Y

LICENSED OPERATOR REVIEW: _____

OPERATOR TRAINING PROGRAM
JOB PERFORMANCE MEASURE

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

K/A NUMBER: 2.1.11

APPLICABILITY: EO [ ] RO [ ] SRO [X]

IMPORTANCE FACTOR: RO 3.0 SRO 3.8

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 **NAME:** _____

JOB PERFORMANCE MEASURE **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: • 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

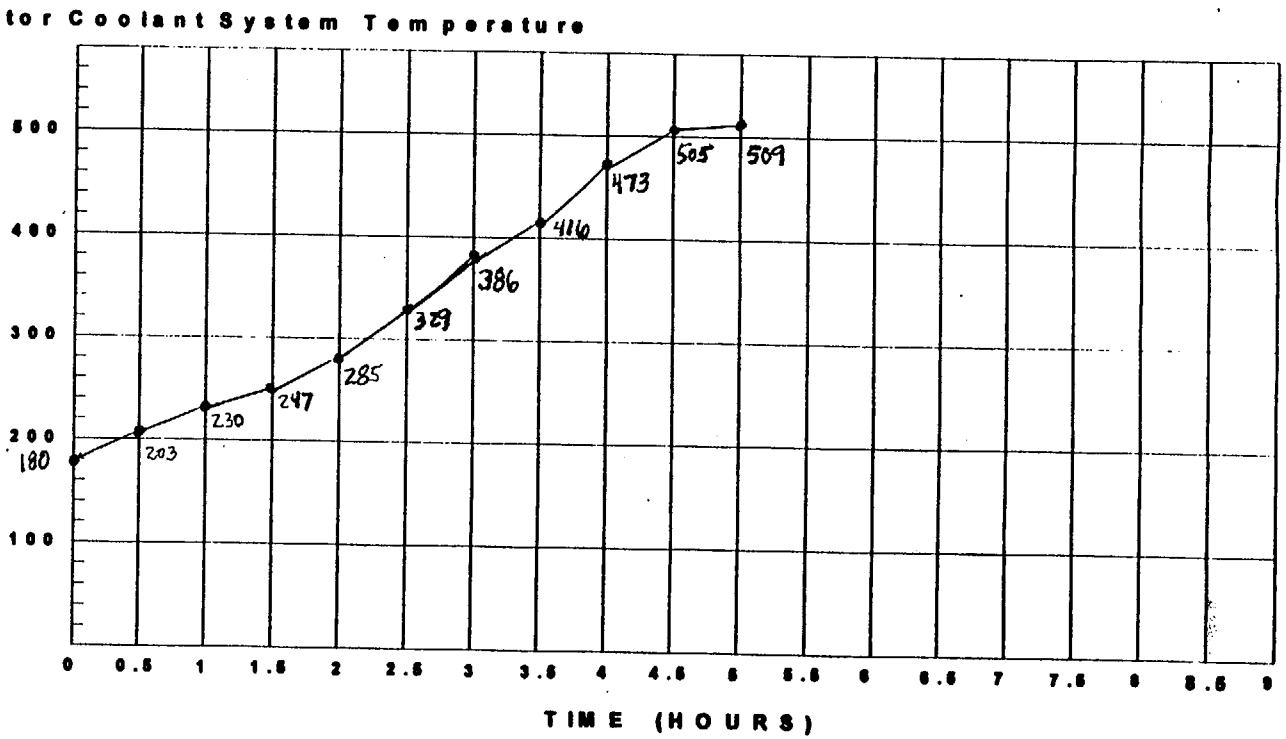
Reactor Steam Dome Pressure converted to Saturated Temp.

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



212°

1.2 Delta T 23 27 17 38 44 57 30 57 32 4

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 **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.
3. 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.

Facility: HOPE CREEK Date of Examination: 5/29/00

Examination Level: ☒ RO ☐ SRO Operating Test Number: _____

TOPIC: A.3 QUESTION: 1

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 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.)

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?

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.)

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?

Facility: HOPE CREEK Date of Examination: 5/29/00

Examination Level: ☐ RO ☒ SRO Operating Test Number: _____

TOPIC: A.1.2 QUESTION: 1

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:

- 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:

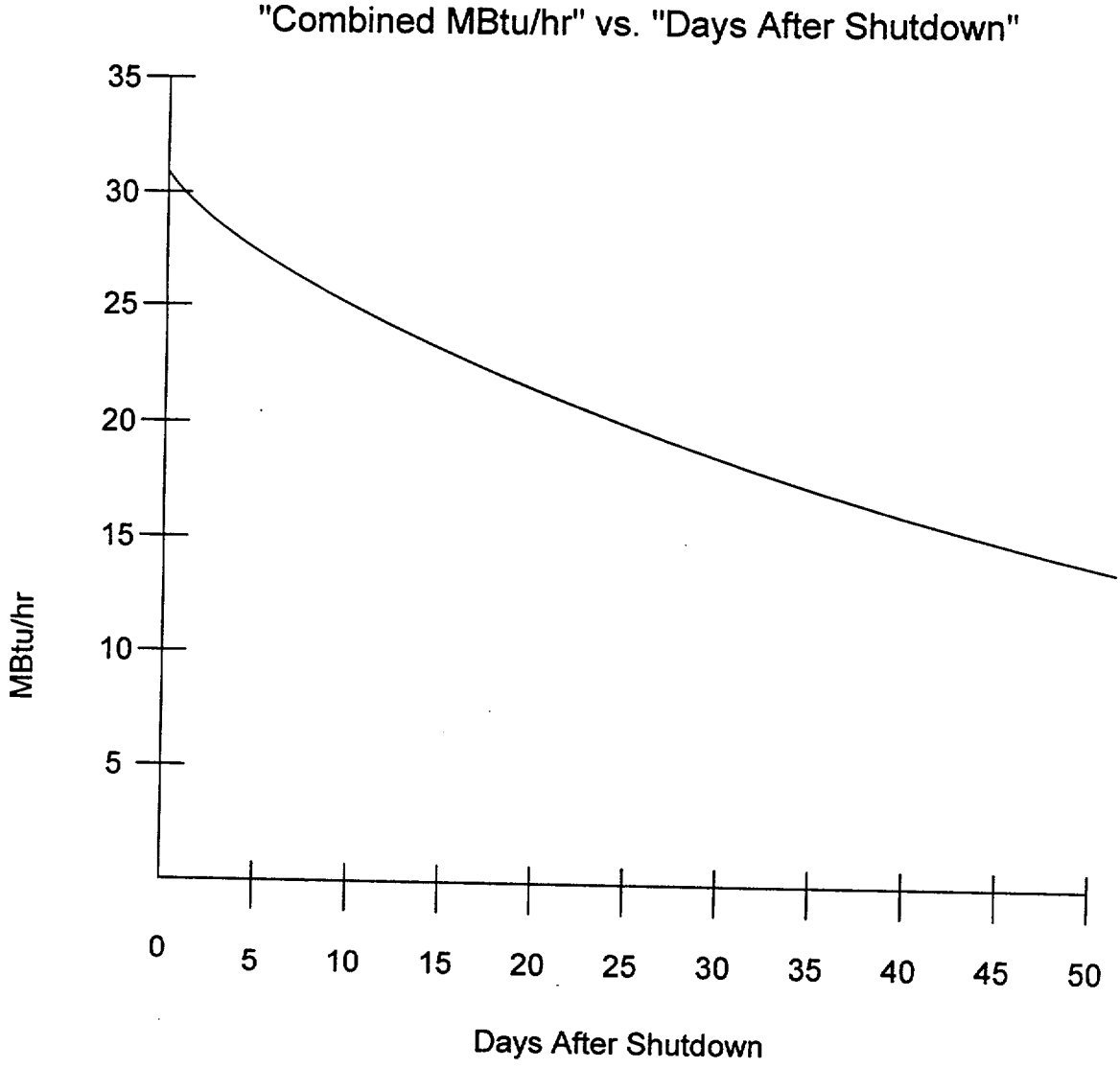
Natural Circulation Decay Heat Removal may NOT be established at this time.

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.

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.


"Combined MBtu/hr" vs. "Days After Shutdown"
35
30
25
20
15
10
5
MBtu/hr
0
5
10
15
20
25
30
35
40
45
50
Days After Shutdown

Facility: HOPE CREEK Date of Examination: 5/29/00

Examination Level: ☐ RO ☒ SRO Operating Test Number: _____

TOPIC: A.1.2 QUESTION: 2

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:

- 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)

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

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** [X]

K/A NUMBER: 2.2.12

IMPORTANCE FACTOR: 3.0 (RO) 3.4 (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:** _____

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.**		

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-ΔW OR [5b]/[6]*100-ΔW. 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 - ΔW OR [5b] - ΔW.

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.

[redacted]

EXAMINER'S COPY

IMPLEMENTATION REQUIREMENTS

Effective Date: 12/24/97

APPROVED: Mark Lilly for Pete Roberts — 12/24/97

Manager - System Engineering - HC — **Date**

[redacted]

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 (FRTP), these setpoints may be non-conservative. Under these conditions (CMFLPD > FRTP), 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 FRTP. 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 > FRTP. 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

N/A 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 (FRTP) expressed as a decimal. Record FRTP 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 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.
$S_{RB} \leq 0.66*(W-\Delta W)+45$
$S \leq 0.66*(W-\Delta W)+54$
[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=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

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

APRM SETPOINT SURVEILLANCE DATA

5.1.3	CMFLPD (obtained from P1)	0.558	[1]
5.1.4.	Percent Core Thermal Power (obtained from P1)	60.9	[2]
5.1.5	FRTP (fraction of rated thermal power) [2]/100	0.609	[3]
5.1.6	T = FRTP/CMFLPD = [3]/[1] If T>1.0 Enter 1.0 for [4]	1.0	[4]
5.1.7.A	Recirc Drive Flow (WD from the P1)	9.73	[5a]
5.1.7.B	Recirc Drive Flow (Alternate Method)	N/A	[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)	32.4	[6]
5.1.9	%WD = [5a]/[6]*100-ΔW OR [5b]-ΔW	~~30.0~~ 21.0	[7]

* Where ΔW 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. ΔW=0 for two recirculation loop operation. ΔW = 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.

John Smith
Verified By _____ 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
Reviewed By _____ DATE Date _____ TIME Time _____

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-ΔW OR [5b]/[6]*100-ΔW. 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 - ΔW OR [5b] - ΔW.

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.

IMPLEMENTATION REQUIREMENTS

Effective Date: 12/24/97

APPROVED: Mark Lilly for Pete Roberts — 12/24/97

Manager - System Engineering - HC — **Date**

[redacted]

APPLICANT'S COPY

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 (FRTP), these setpoints may be non-conservative. Under these conditions (CMFLPD > FRTP), 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 FRTP. 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 > FRTP. 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**

N/A 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 (FRTP) expressed as a decimal. Record FRTP 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 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.
$S_{RB} \leq 0.66*(W-\Delta W)+45$
$S \leq 0.66*(W-\Delta W)+54$ **[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=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

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

APRM SETPOINT SURVEILLANCE DATA

5.1.3	CMFLPD (obtained from P1)	0.558	[1]
5.1.4.	Percent Core Thermal Power (obtained from P1)	60.9	[2]
5.1.5	FRTP (fraction of rated thermal power) [2]/100	0.609	[3]
5.1.6	T = FRTP/CMFLPD = [3]/[1] If T>1.0 Enter 1.0 for [4]	1.0	[4]
5.1.7.A	Recirc Drive Flow (WD from the P1)	9.73	[5a]
5.1.7.B	Recirc Drive Flow (Alternate Method)	N/A	[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)	32.4	[6]
5.1.9	%WD = [5a]/[6]*100-ΔW OR [5b]-ΔW	30.0	[7]

* Where ΔW 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. ΔW=0 for two recirculation loop operation. ΔW = 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.

John Smith
Verified By _____ 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

04/07/00 11:54:22 TASK # 18G00134 TRAIN ENCORE COMPUTER CORP. MPX-32 5.5 002 MPXSYS10 PAGE 1

04/07/00

DATE 04/07/00 TIME 1154 HOPECREEK UNIT 1 SEQ. NO. 100

PERIODIC NSS 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	.76	.60	.38
REGION REL PWR	.86	.96	.86	.96	.74	.96	.86	.96	.86			
RING REL PWR	.54	1.06	.90	1.17	.90	1.06	.90	.62				
APRM GAF	1.01	1.00	1.01	1.01	1.02	1.00						

REGION	1	2	3	4	5	6	7	8	9
MFLCPR	.494	.494	.494	.494	.566	.494	.494	.494	.494
LOC	19-18	27-14	41-18	17-24	25-24	43-24	19-44	27-46	41-44
FLCW	.0540	.0543	.0540	.0540	.0535	.0540	.0540	.0543	.0540
PKF	1.39	1.40	1.39	1.40	1.39	1.40	1.39	1.40	1.39
MFLPD	.423	.423	.423	.423	.558	.423	.423	.423	.423
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
PKFL	2.29	2.27	2.29	2.28	2.30	2.28	2.29	2.27	2.29
MAPRAT	.346	.346	.346	.346	.456	.346	.346	.346	.346
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
PKFS	1.70	1.66	1.70	1.67	1.76	1.67	1.70	1.66	1.70

FAILED SENSORS 34

FAILED LPRM LIST BASE CRIT CODE

CMWT	200.
PCT PWR	80.9
GMWE	410.
CMFCF	.966
CMFLPD	.998
CMAPR	.456
CMPF	2.287
CREG	.159
CAXA	.088
CAVF	.436
CAPD	29.663
CRD	.116
CRSYM	2.
PR	983.12
DPC-M	7.11
DPC-C	9.72
RWL	35.00
DHS	30.85
WFW	7.98
WL	9.73
WTSUB	48.44
WTHO	1.66
WT	50.49
PCTWTR	50.490
WTFLAG	2.000
ITER	1.000
IPEC	.000
ICGC	1.000
IXYFLG	.000
CMFLEX	.693
CAVEX	12724.250
CYBXF	979.500
PCTLL	93.00

THE 12 MOST LIMITING BUNDLES

FOR MFLCPR				FOR MFLPD				FOR MAPRAT			
MFLCPR	LOC	MCPR	CPRLIM	MFLPD	LOC	MRPD	RPDLIM	MAPRAT	LOC	MAPLHGR	LIMLHGR
.566	25-24	2.192	1.240	.558	25-24- 6	7.48	13.40	.456	25-24- 6	3.10	6.80
.566	35-24	2.192	1.240	.558	35-24- 6	7.48	13.40	.456	35-24- 6	3.10	6.80
.566	25-38	2.192	1.240	.558	25-38- 6	7.48	13.40	.456	25-38- 6	3.10	6.80
.566	35-38	2.192	1.240	.558	35-38- 6	7.48	13.40	.456	35-38- 6	3.10	6.80
.566	25-26	2.192	1.240	.558	25-26- 6	7.48	13.40	.456	25-26- 6	3.10	6.80
.566	37-26	2.192	1.240	.558	37-26- 6	7.48	13.40	.456	37-26- 6	3.10	6.80
.566	23-36	2.192	1.240	.558	23-36- 6	7.48	13.40	.456	23-36- 6	3.10	6.80
.566	37-36	2.192	1.240	.558	37-36- 6	7.48	13.40	.456	37-36- 6	3.10	6.80
.494	27-14	2.510	1.240	.423	27-14- 6	5.67	13.40	.346	25-24- 6	2.35	6.80
.494	33-14	2.510	1.240	.423	33-14- 6	5.67	13.40	.346	35-24- 6	2.35	6.80
.494	27-46	2.510	1.240	.423	27-46- 6	5.67	13.40	.346	25-38- 6	2.35	6.80
.494	33-46	2.510	1.240	.423	33-46- 6	5.67	13.40	.346	35-38- 6	2.35	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

```
04/07/00     11:54:22     TASK # 18001135          TRAIN     ENCORE COMPUTER CORP. MPX-32 3.5   U02   MPXSYS10   PAGE    2

04/07/00

DATE      04/07/00          TIME      1154                HOPECREEK UNIT 1                                SEQ. NO.    100

                         ***PERIODIC NSS CORE PERFORMANCE LOG***
                         CONTROL ROD POSITION AND CALIBRATED LPRM READINGS
        ++=48
59 D                              42 ++     ++  50 ++     ++  29 ++     ++  34 ++
   C                              26            31            18            21
   B                              24            28            16            19
55 A                          ++  22 ++     ++  26 ++     28  15 ++     ++  18 ++     ++

51                  38 ++     ++  54 ++     ++  53 ++     ++  56 ++     ++  55 ++     ++  42 ++
                    23            33            33            34            34            25
                    21            30            30            31            31            25
47              ++  20 ++     12  29 ++     16  28 ++     12  30 ++     16  29 ++     12  22 ++     ++

43       ++     ++  54 ++     ++  54 ++     ++  52 ++     ++  50 ++     ++  53 ++     ++  54 ++     ++  47 ++
                    32            33            32            31            33            33            29
                    30            30            29            28            30            30            26
39       ++     ++  29 ++     16  29 ++     04  28 ++     08  27 ++     04  28 ++     16  29 ++     ++  25 ++

35       ++     ++  54 ++     ++  55 ++     ++  46 36     ++  46 36     ++  47 ++     ++  52 ++     ++  54 ++
                    33            34            28            28            29            32            33
                    30            31            25            26            26            29            33
31       ++     28  29 ++     12  29 ++     08  24 ++     24  25 ++     08  25 ++     12  28 ++     28  29 ++

27       ++     ++  53 ++     ++  50 ++     ++  49 36     ++  47 36     ++  54 ++     ++  55 ++     ++  52 ++
                    32            31            30            29            33            34            20
                    29            28            27            26            30            31            18
23       ++     ++  28 ++     16  25 ++     04  26 ++     08  25 ++     04  29 ++     16  29 ++     ++  17 ++

19       ++     ++  43 ++     ++  53 ++     ++  54 ++     ++  56 ++     ++  56 ++     ++  56 ++     ++  55 ++
                    26            33            33            33            34            33            22
                    24            30            30            31            31            31            19
15              ++  23 ++     12  28 ++     16  29 ++     12  30 ++     16  30 ++     12  30 ++     ++  19

11 D                   ++     ++  36 ++     ++  56 ++     ++  57 ++     ++  57 ++     ++  42 ++
   C                              22            34            35            35            26
   B                              20            31            32            32            23
07 A                          ++  19 ++     ++  30 ++     28  30 ++     ++  30 ++     ++  22

03                                   ++     ++     ++     ++     ++     ++     ++

         02     06     10     14     18     22     26     30     34     38     42     46     50     54     58

OPERATOR SUBS VAL OR LOC
```

Facility: HOPE CREEK Date of Examination: 5/29/00

Examination Level: ☐ RO ☒ SRO Operating Test Number: _____

TOPIC: A.3 QUESTION: 1

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. 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 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.)

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?

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: 2.3.1 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 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?

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.

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

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 [X]

K/A NUMBER: 2.4.41

IMPORTANCE FACTOR:

RO	SRO
2.3	4.1

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

# *	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 refereed 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]		

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 μCi/sec Noble Gas
        - 1.20E-01 μCi/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.

ALL ACTIVE ON-THE-SPOT CHANGES MUST BE ATTACHED FOR FIELD USE
20000414

INITIAL CONTACT MESSAGE FORM

I. THIS IS CMI (NAME), COMMUNICATOR IN THE CONTROL ROOM AT THE **HOPE CREEK** NUCLEAR GENERATING STATION.

II.

☐ THIS IS NOTIFICATION OF AN **UNUSUAL EVENT** WHICH WAS DECLARED AT Time (Time - 24 HR CLOCK) ON DATE (DATE).

EAL # 8.2.2.a DESCRIPTION OF EVENT: UNPLANNED LOSS OF >75% 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 (From MET Computer) (DEGREES) WIND SPEED: 15 (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 1.20E+04 µCi/sec Noble Gas or 1.70E+01 µCi/sec I-131.