DOCUMENT TRANSMITTAL FORM 89978
FOR DOCUMENTS TRANSMITTED TO DC DESK(NRC)*

DATE: 20 Apr 1993
BATCH: 100

DOCUMENT NUMBER	SHEET NUMBER	REVISION NUMBER	COPY NUMBER
AP 770		18	7
AP 790		07	7

INSTRUCTIONS TO THE ADDRESSEE

COMPLETE EACH OF THE INSTRUCTIONS BELOW WHICH ARE MARKED WITH AN " X "

_X_ (1) VERIFY THE DOCUMENTS RECEIVED AGREE WITH THE ABOVE DESCRIPTION
_X_ (2) INCORPORATE THE TRANSMITTED DOCUMENTS INTO YOUR FILES
_X_ (3) DESTROY DOCUMENTS OR PORTIONS OF DOCUMENTS SUPERSEDED BY THE ABOVE
_X_ (4) SIGN AND DATE IN THE SPACES BELOW INDICATING THAT YOU COMPLETED THESE INSTRUCTIONS.
___ (5) SIGN BELOW INDICATING THAT YOU HAVE READ AND UNDERSTOOD THE CHANGES AS IDENTIFIED
_X_ (6) RETURN TO DOCUMENT CONTROL, CRYSTAL RIVER UNIT 3, MAC# NA1C___ NR2A___ SA1G___ FLORIDA POWER CORP., P.O. BOX 219 CRYSTAL RIVER FLA. 32623
___ (7) QUALITY PROGRAMS PERSONNEL HAVE READ AND UNDERSTOOD THE CHANGES TO THE AFFECTED QAP'S

SIGNATURE OF ADDRESSEE _____ DATE _____

INDEPENDENT VERIFICATION _____ DATE _____ (OPS)

280018

A045 1/1

EMERGENCY DIESEL GENERATOR ACTUATION

1.0 ENTRY CONDITIONS

IF 4160V ES Bus undervoltage occurs,

THEN use this procedure.

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2.0 IMMEDIATE ACTIONS

ACTIONS	DETAILS

Note

There are no Immediate Actions for this procedure.

Table 1: EDG Rating.

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

3.0 FOLLOW-UP ACTIONS

ACTIONS	DETAILS
3.1 ___ Ensure EDGs start and energize affected ES 4160V bus. IF an EDG fails to energize its respective bus, THEN energize affected bus from any available power source.	1 ___ Ensure all feeder Bkrs to affected bus are open. 2 ___ IF EDG tripped after energizing the bus, THEN defeat the "4160V ES BUS ES/UV BLOCK LOCK OUT" for the affected bus: o Open knife switch "AY" in the dummy cubicle for the affected ES 4160V Bus. o Reset UV lockout by depressing the reset P/B for the affected bus. 3 ___ Close feeder Bkr from the available power source by holding in "CLOSE" position for ≈ 10 sec: 4 ___ IF knife switch "AY" was opened per detail step 2, THEN close knife switch "AY".

Feeder	A BUS	B BUS
BEST	__3205	__3206
Offsite	__3211	__3212
AUX	__3207	__3208
EDG	__3209	__3210

FEEDER	A BUS	B BUS
BEST	__3205	__3206
Offsite	__3211	__3212
AUX	__3207	__3208

Table 1: EDG Rating.

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

3.0 FOLLOW-UP ACTIONS

	ACTIONS	DETAILS
3.2	___ Notify personnel of plant conditions as required.	o ___ SOTA o ___ Plant Operators o ___ SSOD to evaluate plant conditions for potential entry into the Emergency Plan.
3.3	___ CONCURRENTLY PERFORM VP-580, Plant Safety Verification Procedure, beginning with Step 1.1.	
3.4	___ IF Loss of letdown flow has occurred, THEN restore letdown, OR isolate letdown.	o ___ Restore letdown flowpath, OR o ___ Close MUV-49 IF MUV-49 will NOT close, THEN Close: o ___ MUV-50, Block Orifice Iso AND o ___ MUV-51, Block Orifice Bypass

Table 1: EDG Rating.

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

ACTIONS	DETAILS
3.5 ___ IF the affected Bus has NOT been energized, AND a tripped EDG exists, THEN correct the cause of the trip and energize the affected Bus.	Tripped EDG recovery: 1 ___ Block the EDG start command by selecting the "NORMAL/AT ENGINE" switch to "AT ENGINE" on the tripped EDG's gauge board. 2 ___ Ensure condition causing trip is corrected. 3 ___ Depress the "RESET" P/B on the EDG gauge board. 4 ___ Wait at least 2 minutes to allow the shutdown relays to reset. 5 ___ Select the "NORMAL/AT ENGINE" switch to "NORMAL" on the EDG gauge board. The EDG should start and energize the bus if an undervoltage condition exists.
3.6 ___ IF ES 480V undervoltage lockout has actuated, THEN reset ES 480V lockout.	1. ___ Bypass or Reset ES actuation. 2. ___ Reset ES 480V lockouts located behind the MCB. ES 480V U/V Lockouts:

A	B
__8627/ESA	__8627ESB
__86X27/ESA	N/A

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Table 3: ES 480V Loads and Ratings

LOADS	KW
ES-MCC-3AB With AHF-1C	91
"A" or "B" Heat Tracing	41
EFIC Room Fans	13
AHF-19A or 19B	17
AHF-17A/B or AHF-18A/B	50
Chilled Water Pumps	17
Chiller	193
Spent Fuel Pumps	41

ACTIONS	DETAILS
3.7 ___ IF either ES 480V Bus is NOT energized, THEN ensure ES MCC-3AB is aligned to energized ES 480V Bus	1. ___ Ensure EDG has enough capacity to supply desired loads, if operating, see Tables 1, 2, and 3. 2. ___ Depress transfer pushbuttons for the ES-MCC-3AB to the energized ES 480V Bus.
3.8 ___ IF MUP restart is required, THEN start MUP, AND establish RCP seal injection.	1. ___ Close MUV-16, Seal Injection Control Valve. 2. ___ Close MUV-31 PZR Level Control Valve. 3. ___ Establish MUP cooling. 4. ___ Establish MUP recirc flow path. 5. ___ Start Lube and Gear oil pumps. 6. ___ Start ES selected MUP. 7. ___ Throttle open, MUV-16, to obtain 2 gpm/RCP. 8. ___ Place MUV-31 in AUTO at desired setpoint 9. ___ Throttle open, MUV-16, over a 30 min. period, to establish ≈ 10 gpm/RCP.
3.9 ___ IF an additional MUP is required to be started, THEN ensure EGDG capacity for 693 KW additional load exists prior to starting.	o See Table 1 of EDG rating

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Table 3: ES 480V Loads and Ratings

LOADS	KW
ES-MCC-3AB With AHF-1C	91
"A" or "B" Heat Tracing	41
EFIC Room Fans	13
AHF-19A or 19B	17
AHF-17A/B or AHF-18A/B	50
Chilled Water Pumps	17
Chiller	193
Spent Fuel Pumps	41

ACTIONS	DETAILS
3.10 ___ IF RCS was on Decay Heat Removal, AND DHP restart is required, THEN verify prerequisite conditions as directed by SSOD.	Refer to OP-404, Decay Heat Removal System, Section 4.5.
3.11 ___ IF SW Raw Water PRESS has NOT recovered, THEN start RWP-2A or RWP-2B	To start RWP-2B: 1. Select RWP-2B control switch to the "STOP" position to reset the anti-pump device. 2. Select RWP-2B control switch to the "START" position.

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Table 3: ES 480V Loads and Ratings

LOADS	KW
ES-MCC-3AB With AHF-1C	91
"A" or "B" Heat Tracing	41
EFIC Room Fans	13
AHF-19A or 19B	17
AHF-17A/B or AHF-18A/B	50
Chilled Water Pumps	17
Chiller	193
Spent Fuel Pumps	41

	ACTIONS	DETAILS
3.12 ___	IF all of the following conditions are met: o PZR htrs are required, o PZR htr normal power supply is NOT available, o PZR heater MCC-3A is available, THEN ensure EDG-1A capacity for 126 KW load AND energize 1 htr group from 4160V ES Bus 3A.	o See Table 1 for EDG rating. o Perform Enclosure 1 to energize htr group.

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Table 3: ES 480V Loads and Ratings

LOADS	KW
ES-MCC-3AB With AHF-1C	91
"A" or "B" Heat Tracing	41
EFIC Room Fans	13
AHF-19A or 19B	17
AHF-17A/B or AHF-18A/B	50
Chilled Water Pumps	17
Chiller	193
Spent Fuel Pumps	41

ACTIONS	DETAILS
3.13 ___ IF all of the following conditions are met: o PZR htrs are required, o PZR htr normal power supply is NOT available, o PZR heater MCC-3A is NOT available, THEN ensure EDG-1B capacity for 126 KW load AND energize 1 htr group from 4160V ES Bus 3B.	o See Table 1 for EDG rating. o Perform Enclosure 2 to energize htr group.

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Table 3: ES 480V Loads and Ratings

LOADS	KW
ES-MCC-3AB With AHF-1C	91
"A" or "B" Heat Tracing	41
EFIC Room Fans	13
AHF-19A or 19B	17
AHF-17A/B or AHF-18A/B	50
Chilled Water Pumps	17
Chiller	193
Spent Fuel Pumps	41

	ACTIONS	DETAILS
3.14	___ IF an outside air compressor is available, THEN notify TB Operator to start SAP-1C or SAP-1D.	
3.15	___ IF SAP-1C and SAP-1D are NOT available, THEN start diesel air compressor, if available.	
3.16	___ IF all outside air compressors are NOT available, THEN energize and Start IAP-1A OR Start IAP-1B.	Refer to Enclosure 1 for IAP-1A Refer to Enclosure 2 for IAP-1B

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Table 3: ES 480V Loads and Ratings

LOADS	KW
ES-MCC-3AB With AHF-1C	91
"A" or "B" Heat Tracing	41
EFIC Room Fans	13
AHF-19A or 19B	17
AHF-17A/B or AHF-18A/B	50
Chilled Water Pumps	17
Chiller	193
Spent Fuel Pumps	41

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS	DETAILS
3.17 ___ Start control complex ventilation.	1. ___ Ensure EDG has enough capacity to supply desired loads, see Tables 1, 2, and 3. 2. ___ Start normal control complex ventilation. Refer to OP-409, Plant Ventilation, Section 4.2. 3. ___ Start control complex chiller. Refer to OP-409, Plant Ventilation, Section 4.10. IF control complex chillers are NOT available, THEN refer to OP-409, Plant Ventilation, Section 4.3 for Appendix R chillers, OR refer to MP-193, Temporary Cooling to Control Complex.

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Table 3: ES 480V Loads and Ratings

LOADS	KW
ES-MCC-3AB With AHF-1C	91
"A" or "B" Heat Tracing	41
EFIC Room Fans	13
AHF-19A or 19B	17
AHF-17A/B or AHF-18A/B	50
Chilled Water Pumps	17
Chiller	193
Spent Fuel Pumps	41

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS	DETAILS
3.18 IF DPBA-1C battery charge is desired, AND EDG capacity exists, THEN charge DPBA-1C from energized 4160V ES Bus	o Refer to Enclosure 1 for battery charge from 4160V ES A o Refer to Enclosure 2 for battery charge from 4160V ES B
3.19 IF EDG capacity exists AND heat tracing is desired, THEN RESTORE heat tracing.	1. ___ Ensure EDG has enough capacity to supply heat tracing loads, if operating, see Tables 1, 2, and 3. 2. ___ IF heat tracing is desired, THEN reset heat tracing at: o HTCP-2, "A" heat trace panel near ES MCC-3A2, 119' Aux Bld. o HTCP-5, "B" heat trace panel near Elevator, 95' Aux Bld.

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Table 3: ES 480V Loads and Ratings

LOADS	KW
ES-MCC-3AB With AHF-1C	91
"A" or "B" Heat Tracing	41
EFIC Room Fans	13
AHF-19A or 19B	17
AHF-17A/B or AHF-18A/B	50
Chilled Water Pumps	17
Chiller	193
Spent Fuel Pumps	41

ACTIONS	DETAILS

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CAUTION:

When operating an EDG in parallel with Unit 3 Startup Transformer, avoid unnecessary loading of the transformer in order to prevent voltage fluctuations which could cause tripping of the EDG output bkr and loss of bus voltage.

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Note

Plant should be in a stable condition prior to paralleling to EDG.

3.20 ___ WHEN alternate power is available to ES 4160V busses,
THEN sync in alternate power supply,
AND unload EDG.

1. ___ Ensure HPI is bypassed or reset.

   ___ Depress the "4160V ES A or B UV RESET" pushbutton.

2. ___ Select EDG speed droop to 60 in increments of 10.

   ___ Select EDG Unit/Parallel switch to "PARALLEL".

   ___ Select synchroscope for Bkr to be paralleled to "ON".

3. ___ Select "EXC VOLT ADJ SELECT" switch to "CONT RM".

4. ___ Match voltages using "EXC VOLT ADJ DIESEL GEN".

   ___ Adjust Gen speed to establish synchroscope moving slowly in the "SLOW" direction, Counter- clockwise.

5. ___ Close oncoming Bkr at ≈ 1 o'clock.

6. ___ Refer to OP-707, Operation of the ES Emergency Diesel Generators, Section 4.13, for ES restoration.

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Table 3: ES 480V Loads and Ratings

LOADS	KW
ES-MCC-3AB With AHF-1C	91
"A" or "B" Heat Tracing	41
EFIC Room Fans	13
AHF-19A or 19B	17
AHF-17A/B or AHF-18A/B	50
Chilled Water Pumps	17
Chiller	193
Spent Fuel Pumps	41

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS	DETAILS
3.21 ___ GO TO applicable operating procedures AND exit this procedure.	Applicable operating procedures to be determined by plant conditions and SSOD.

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Enclosure 1

Energizing Pressurizer Heaters, IAP-1A, DPBC-1G and DPBC-1I from 4160V ES A

1.0	___	Ensure 480V Reactor Aux Bus 3A feeder breakers are open.	Ensure open: o Bkr 3305 o Bkr 3395
2.0	___	Notify TB Operator to ensure open all breakers on: ___ 480V Rx Aux Bus 3A ___ PZR Htr MCC-3A	
3.0	___	Place IAP-1A c/s in Pull-to-Lock.	
4.0	___	Energize 480V Rx Aux Bus 3A.	Close the following breakers: o Bkr 3321 o Bkr 3395
5.0	___	Energize PZR Htr MCC-3A	Notify TB Operator to close Unit 1C, Bkr 3355, at Rx Aux Bus 3A, PZR Htr MCC-3A feeder.

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Energizing Pressurizer Heaters, IAP-1A, DPBC-1G and DPBC-1I from 4160V ES A

6.0 ___ IF Pressurizer heaters are required, Energize PZR control power, THEN Energize 1 group of heaters.

1. ___ Ensure EGDG-1A capacity is available for 126 KW, see Table 1 for EDG rating.

2. ___ Notify TB Operator to close the following Bkrs at PZR Htr MCC-3A:

   o Unit 1A, PZR Control A-1
   o Unit 2A, PZR Control A-2

3. ___ Notify TB Operator to close 1 of the following Bkrs at PZR Htr MCC 3A:

   o Unit 1C, PZR Htr Grp 7
   OR
   o Unit 2C, PZR Htr Grp 8
   OR
   o Unit 3C, PZR Htr Grp 9

7.0 ___ IF IAP-1A is required, Establish IAP-1A cooling from SW system, THEN start IAP-1A.

1. ___ Ensure EGDG-1A capacity is available for 75 KW, see Table 1 for EDG rating.

2. ___ Notify TB Operator to line up SW cooling for IAP-1A,

   o Refer to OP-408, Nuclear Services Cooling System, Section 4.6.

3. ___ Start IAP-1A.

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Energizing Pressurizer Heaters, IAP-1A, DPBC-1G and DPBC-1I from 4160V ES A

8.0 ___ IF DPBC-1C Battery recharge is required, Place DPBA-1C on charge.

1. ___ Ensure EGDG-1A capacity is available for 160 KW, see Table 1 for rating.

2. ___ Notify TB Operator to Ensure open DPDP-1C Switch #13

3. ___ Notify TB Operator to Close the following Switches:

   o DPDP-1C Switch #4
   o DPDP-1C Switch #14

4. ___ Notify TB Operator to select DPXS-1C to the "PZR Htr MCC-3A" feed, "UP", position.

5. ___ Notify TB Operator to Close PZR Htr MCC-3A Bkrs:

   o Unit 3A, DPBC-1G supply
   o Unit 3B, DPXS-1C supply

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Enclosure 2

Energizing Pressurizer Heaters, IAP-1B, DPBC-1H and DPBC-1I from 4160V ES B

1.0	___ Ensure the following 480V feeder and tie breakers are open.	1. ___ Ensure open: o Bkr 3392, Plant Aux Tie o Bkr 3312, Plant Aux Feeder o Bkr 3306, Rx Aux 3B Feeder o Bkr 3396, Rx Aux 3B Tie o Bkr 3393, Turb Aux 3A Tie o Bkr 3394, Turb Aux 3B Tie o Bkr 3399, Heating Aux Tie
2.0	___ Notify TB Operator to ensure open all breakers on: ___ 480V Plant Aux Bus ___ 480V Rx Aux Bus 3B ___ PZR Htr MCC-3B	
3.0	___ Place IAP-1B c/s in Pull-to-Lock.	
4.0	___ Energize 480V Plant Aux Bus.	Close the following breakers: o Bkr 3222 o Bkr 3312
5.0	___ Energize 480V Rx Aux Bus 3B.	Close the following breakers: o Bkr 3392 o Bkr 3396
6.0	___ Energize PZR Htr MCC-3B.	Notify TB Operator to close Unit 1C, Bkr 3356, at Rx Aux Bus 3B, PZR Htr MCC-3B feeder.

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Energizing Pressurizer Heaters, IAP-1B, DPBC-1H and DPBC-1I from 4160V ES B

7.0 ___ IF Pressurizer heaters are required,
Energize PZR control power,
THEN Energize 1 group of heaters.

1. ___ Ensure EGDG-1B capacity is available for 126 KW, see Table 1 for EDG rating.

2. ___ Notify TB Operator to close the following Bkrs at PZR Htr MCC-3B:

   o Unit 1A, PZR Control B-1
   o Unit 1B, PZR Control B-2

3. ___ Notify TB Operator to close 1 of the following Bkrs at PZR Htr MCC-3B:

   o Unit 2A, PZR Htr Grp 2
   OR
   o Unit 3A, PZR Htr Grp 5
   OR
   o Unit 4A, PZR Htr Grp 6
   OR
   o Unit 1D, PZR Htr Grp 10
   OR
   o Unit 2C, PZR Htr Grp 11
   OR
   o Unit 3C, PZR Htr Grp 12
   OR
   o Unit 4C, PZR Htr Grp 13

8.0 ___ IF IAP-1B is required,
Establish IAP-1B cooling from SW system,
THEN start IAP-1B

1. ___ Ensure EGDG-1B capacity is available for 75 KW, see Table 1 for EDG rating.

2. ___ Notify TB Operator to line up SW cooling for IAP-1B,

   o Refer to OP-408, Nuclear Services Cooling System, Section 4.6.

3. ___ Start IAP-1B.

Table 1: EDG Rating

Time	Maximum Load Range in KW
30 min	> 3250 to ≤ 3500
200 hr	> 3000 to ≤ 3250
2000 hr	> 2850 to ≤ 3000
Continuous	≤ 2850 KW

Table 2: EDG Loads to Shed

LOADS	KW
EFP-1	528
SWP-1A or SWP-1B	486
RWP-2A or RWP-2B	538
AHF-1A or AHF-1B or AHF-1C	61

Energizing Pressurizer Heaters, IAP-1B, DPBC-1H and DPBC-1I from 4160V ES B

9.0 ___ IF DPBC-1C Battery recharge is required, Place DPBA-1C on charge.

1. ___ Ensure EGDG-1B capacity is available for 160 KW, see Table 1 for rating.

2. ___ Notify TB Operator to Ensure open DPDP-1C Switch #14

3. ___ Notify TB Operator to Close the following Switches:

   o DPDP-1C Switch #5
   o DPDP-1C Switch #13

4. ___ Notify TB Operator to select DPXS-1C to the "PZR Htr MCC-3B" feed, "DOWN" position.

5. ___ Notify TB Operator to Close PZR Htr MCC-3B Bkrs:

   o Unit 3BL, DPBC-1G supply
   o Unit 3BR, DPXS-1C supply

STATION BLACKOUT

1.0 ENTRY CONDITIONS

IF a loss of off-site power occurs during Modes 1 thru 4

AND neither 4160V ES buses can be energized.

THEN use this procedure.

This Procedure Addresses Safety Related Components
Approved by MNPO [signature] Date 4-12-93

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2.0 IMMEDIATE ACTIONS

ACTIONS	DETAILS

Note

There are no Immediate Actions in this procedure.

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3.0 FOLLOW-UP ACTIONS

ACTIONS		DETAILS
3.1	___ Minimize RCS inventory loss.	o Close MUV-49. Valve position indication is available at the ES-B panel. o Close MUV-253 o Contact Chemistry and ensure all sampling of the primary system is stopped.
3.2	___ Ensure core cooling.	o EFP-2 started o EFIC OTSG level control is selected to 65% o EFW flow exists to both OTSGs.

Note

Neutron flux recorders will not be operable. Use edgewise meters for monitoring neutron flux levels.

3.3	___ Verify the reactor is shutdown.	o IR flux decreasing. o SR flux decreasing. o SR flux at shutdown level and not increasing.
3.4	___ Secure DC motors at the Main Control Board that are not needed by placing their control switches in Pull-to-lock.	___ MUP-3A, MUP A B/U LUBE OIL PP ___ MUP-3B, MUP B B/U LUBE OIL PP ___ MUP-3C, MUP C B/U LUBE OIL PP ___ RCP-3A, RCP A DC OIL LIFT PP ___ RCP-3B, RCP B DC OIL LIFT PP ___ RCP-3C, RCP C DC OIL LIFT PP ___ RCP-3D, RCP D DC OIL LIFT PP

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	ACTIONS	DETAILS
3.5 ___	Actuate MS line isolation on both OTSGs.	o Depress "SG MAIN STM ISOLATION" pushbuttons. o Verify all 4 MSIVs closed by observing status lights on PSA panel.

Note

In-plant communications should be made with the hand-held radios, on Channel 11 during the performance of this procedure.

3.6 ___	Notify personnel of plant conditions as required.	___ SOTA, ___ Plant Operators, ___ SSOD to evaluate plant conditions for potential entry into the Emergency Plan.
3.7 ___	Notify available operator to observe EFP-2.	Locally observe EFP-2 performance and report indications of abnormal pump/turbine operation.
3.8 ___	Continue attempts to restore AC power to the 4160 ES buses.	o Attempt to restore EDG operation. o Determine status of 230KV Switchyard o Off-Site Power Source Xfmr o Backup ES Transformer o Determine status of 500KV switchyard to establish backfeed.

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ACTIONS	DETAILS
3.9 ___ IF a tripped EDG exists, THEN correct the cause of the trip and energize the affected Bus.	Tripped EDG recovery: 1 ___ Block the EDG start command by selecting the "NORMAL/AT ENGINE" switch to "AT ENGINE" on the tripped EDG's gauge board. 2 ___ Ensure condition causing trip is corrected. 3 ___ Depress the "RESET" P/B on the EDG gauge board. 4 ___ Wait at least 2 minutes to allow the shutdown relays to reset. 5 ___ Select the "NORMAL/AT ENGINE" switch to "NORMAL" on the EDG gauge board. The EDG should start and energize the bus if an undervoltage condition exists.

3.10 ___ IF, at any time while performing this procedure, 4160V ES bus power is available, THEN GO TO Step 3.24 in this procedure.

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.10 IF 4160V ES bus power is available,
THEN GO TO Step 3.24 in this procedure.

ACTIONS	DETAILS
3.11 ___ IF, at any time while performing this procedure, adequate subcooling margin does NOT exist, THEN: o Raise OTSG levels to 95% using EFW. o Immediately begin a cooldown at the maximum achievable rate.	o See Table 1 for adequate subcooling margins. o Depress "95%" level select pushbutton on both OTSGs. o Open MSV-25 and MSV-26 fully. o There are no applicable cooldown rate limits for this cooldown.

NOTE

The PORV and the High Point Vents should remain closed during performance of this procedure unless specifically directed otherwise.

3.12 ___ Select PORV, RCV-10, to CLOSE.	ICS panel control switch.
3.13 ___ IF, at any time while performing this procedure, RCS PRESS increases to ≈ 2400 psig. THEN manually operate the PORV to reduce RCS PRESS based on subcooling. IF the PORV is NOT available, THEN allow RCS PRESS to increase to the PZR Safety Valve setpoint of 2500 psig.	o IF adequate subcooling margin does NOT exist, THEN reduce RCS PRESS until $T_{incore} \approx 50°F > T_{sat}$ of the OTSG. o IF adequate subcooling margin exists, THEN reduce RCS PRESS until: o RCS PRESS ≈ 100 psig above the adequate subcooling margin curve OR o RCS PRESS ≈ 1600 psig

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.10 IF 4160V ES bus power is available,
THEN GO TO Step 3.24 in this procedure.

3.11 IF adequate subcooling margin does NOT exist,
THEN raise OTSG levels to 95% with EFW.
AND begin a cooldown at maximum rate.

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

ACTIONS	DETAILS
3.14 ___ Vent main generator H^2 pressure to ≈ 0 psig. Venting will take ≈ 20 minutes to complete. Continue on in this procedure.	Notify available operator to perform the following: 1 Close H^2 isolation valves: ___ HYV-28 ___ GGV-213 ___ GGV-220 2 ___ Open H^2 vent valves: o GGV-232 o GGV-274 Valves are located on 95' TB at H^2 manifold area.
3.15 ___ Control EFW flow to maintain RCS TEMP and minimize PZR outsurge.	
3.16 ___ Provide cooling to the electrical equipment in the Control Complex	Ensure the following doors are open and remain open until Control Complex ventilation is restored. o All Annunciator cabinet doors o All ICS cabinet doors o All NNI cabinet doors o All EFIC cabinet doors o All doors on the 145 ft. elevation leading from the Control Room to the Turbine Building.

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.10 IF 4160V ES bus power is available,
THEN GO TO Step 3.24 in this procedure.

3.11 IF adequate subcooling margin does NOT exist,
THEN raise OTSG levels to 95% with EFW.
AND begin a cooldown at maximum rate.

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

	ACTIONS	DETAILS
3.17 ___	IF, at any time, while performing this procedure, OTSG PRESS decreases to ≤ 100 psig AND Units 1/2 steam is available, THEN supply EFP-2 from Units 1/2 steam.	Perform Enclosure 1 to supply EFP-2 from Units 1/2 steam.
3.18 ___	IF instrument air is not available. THEN align N_2 to the ADVs	o Close N_2 vent valve NGV-324. o Open N_2 supply valve NGV-312.
3.19 ___	Control OTSG PRESS to prevent cooldown of the RCS.	

Note

FWP-5A and FWP-5B should be operated for 30 minutes following event initiation.

3.20 ___	IF power restoration has not occurred, THEN stop FWP lube oil pumps.	1 ___ Place FWP-5A in Pull-to-lock. 2 ___ Place FWP-5B in Pull-to-lock.
3.21 ___	De-energize plant computer Invertor VBIT-1E.	1 ___ Open Invertor "AC Input" Bkr. 2 ___ Open Invertor "AC Output" Bkr. 3 ___ Open Invertor "Battery Input" Bkr.

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.10 IF 4160V ES bus power is available,
THEN GO TO Step 3.24 in this procedure.

3.11 IF adequate subcooling margin does NOT exist,
THEN raise OTSG levels to 95% with EFW.
AND begin a cooldown at maximum rate.

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

3.17 IF OTSG PRESS decreases to ≤ 100 psig
AND Units 1/2 steam is available,
THEN supply EFP-2 from Units 1/2 steam.

ACTIONS	DETAILS
3.22 ___ WHEN main generator pressure has decreased to ≈ 0 psig, THEN purge the generator using N^2 for 1.5 hours, OR until a total of 20" N^2 has been used.	o Use local H^2 pressure indication, TB-156-PI, 95' TB.
Continue on in this procedure.	Notify available operator to perform the following: 1 ___ Open generator purge valves, 95' TB by H^2 header: o GGV-233 o GGV-234 2 ___ Open N^2 purge supply valves, 119' TB West of Cardox tank: o NGV-325 o NGV-326 3 ___ Ensure open, both N^2 tank outlet valves: o NGV-260 o NGV-261 4 Record data: North N^2 tank level ____ inches South N^2 tank level ____ inches Time of purge start ____ hours 5 WHEN either 1.5 hours has elapsed OR a total of 20" N^2 has been used, THEN isolate the purge lineup by closing: ___ NGV-325 ___ NGV-326 ___ GGV-233 ___ GGV-234 ___ GGV-232

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.10 IF 4160V ES bus power is available,
THEN GO TO Step 3.24 in this procedure.

3.11 IF adequate subcooling margin does NOT exist,
THEN raise OTSG levels to 95% with EFW.
AND begin a cooldown at maximum rate.

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

3.17 IF OTSG PRESS decreases to ≤ 100 psig
AND Units 1/2 steam is available,
THEN supply EFP-2 from Units 1/2 steam.

ACTIONS	DETAILS
3.23 ___ WHEN main generator has been purged with N^2, THEN stop TBP-3 and TBP-10 AND open DPDP switches for these pumps. Continue on in this procedure.	1 ___ Place TBP-3 control switch in Pull-to-lock. 2 ___ Open DPDP 1C, switches 2 and 16. 3 ___ Open DPDP 3B, switches 17 and 13.
3.24 ___ Place EFP-1 control switch in Pull-to-lock.	Provides for controlled start-up following power restoration.

Note

Opening HPI pump Bkrs provides for controlled start-up following power restoration.

3.25 ___ IF an ES actuation has occurred prior to energizing the 4160V ES buses. THEN ensure ES is bypassed or reset AND ensure HPI pump Bkrs are open	1 ___ Ensure ES is bypassed or reset ___ HPI bypassed or reset ___ LPI bypassed or reset ___ RBIC bypassed or reset 2 ___ Position the following control switches to "STOP" then "NORM-AFT-STOP" ___ MUP-1A ___ MUP-1B ___ MUP-1C
3.26 ___ WHEN ES 4160V power is available, THEN continue this procedure.	

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.11 IF adequate subcooling margin does NOT exist,
THEN raise OTSG levels to 95% with EFW.
AND begin a cooldown at maximum rate.

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

3.17 IF OTSG PRESS decreases to ≤ 100 psig
AND Units 1/2 steam is available,
THEN supply EFP-2 from Units 1/2 steam.

ACTIONS	DETAILS

Note

If the A ES 4160V ES/UV Undervoltage Lockout has actuated, it will be necessary to defeat this lockout by opening Switch AY, located in ES 4160V Bus A Cubicle 3A13, Dummy Bkr, and reset the Undervoltage Lockout.

3.27 ___ Restore power to ES 4160V A Bus.

1 ___ Ensure switchgear room is cleared prior to energizing the bus.

2 ___ Close one of the following feeders by selecting CLOSE position for ≈ 10 seconds:

- o 3211, Unit 3 Offsite Power Transformer,

  OR

- o 3205, Unit 3 Backup ES Transformer,

  OR

- o 3209, If EDG-1A is operating at rated voltage and speed.

3 ___ IF Switch AY in Cubicle 3A13, Dummy Bkr, is open, THEN close the switch.

4 ___ IF EDG is supplying the bus, THEN CONCURRENTLY PERFORM AP-770, Emergency Diesel Generator Actuation, beginning with Step 3.8.

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.11 IF adequate subcooling margin does NOT exist,
THEN raise OTSG levels to 95% with EFW.
AND begin a cooldown at maximum rate.

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

3.17 IF OTSG PRESS decreases to ≤ 100 psig
AND Units 1/2 steam is available,
THEN supply EFP-2 from Units 1/2 steam.

ACTIONS	DETAILS
Note If the B ES 4160V ES/UV Undervoltage Lockout has actuated, it will be necessary to defeat this lockout by opening Switch AY, located in ES 4160V Bus B Cubicle 3B2, Dummy Bkr, and reset the Undervoltage Lockout.	
3.28 ___ Restore power to ES 4160V B Bus.	1 ___ Ensure switchgear room is cleared prior to energizing the bus. 2 ___ Close one of the following feeders by selecting CLOSE position for ≈ 10 seconds: o 3212, Unit 3 Offsite Power Transformer, OR o 3206, Unit 3 Backup ES Transformer, OR o 3210, If EDG-1B is operating at rated voltage and speed. 3 ___ IF Switch AY in Cubicle 3B2, Dummy Bkr, is open, THEN close the switch. 4 ___ IF EDG is supplying the bus, THEN CONCURRENTLY PERFORM AP-770, Emergency Diesel Generator Actuation, beginning with Step 3.8.

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.11 IF adequate subcooling margin does NOT exist,
THEN raise OTSG levels to 95% with EFW.
AND begin a cooldown at maximum rate.

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

3.17 IF OTSG PRESS decreases to ≤ 100 psig
AND Units 1/2 steam is available,
THEN supply EFP-2 from Units 1/2 steam.

ACTIONS	DETAILS
3.29 ___ IF any ES 480V bus is de-energized, THEN energize the de-energized bus or busses.	o ES 480V Bus 3A: 1 IF UV lockout relays are tripped, THEN reset the lockout relays located behind the MCB. 1 ___ 8627/ESA 2 ___ 86X27/ESA 2 ___ Close Bkr 3221. 3 ___ Close Bkr 3311. o ES 480V Bus 3B: 1 ___ IF UV lockout relay is tripped, THEN reset the lockout relay located behind the MCB. o ___ 8627/ESB 2 ___ Close Bkr 3220. 3 ___ Close Bkr 3310.
3.30 ___ Ensure all ES 480V MCCs are energized.	___ ES MCC 3A1 ___ ES MCC 3A2 ___ ES MCC 3A3 ___ ES MCC 3B1 ___ ES MCC 3B2 ___ ES MCC 3B3 ___ ES MCC 3AB

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.11 IF adequate subcooling margin does NOT exist,
THEN raise OTSG levels to 95% with EFW.
AND begin a cooldown at maximum rate.

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

3.17 IF OTSG PRESS decreases to ≤ 100 psig
AND Units 1/2 steam is available,
THEN supply EFP-2 from Units 1/2 steam.

	ACTIONS	DETAILS
3.31 ___	Ensure SW and RW cooling water systems are operating.	o ___ SWP-1A or SWP-1B o ___ RWP-2A or RWP-2B
3.32 ___	IF EFW is required, THEN start EFP-1 AND CONCURRENTLY PERFORM AP-450, Emergency Feedwater Actuation, beginning with Step 3.9.	o ___ Start EFP-1 from the Main Control Room.
3.33 ___	IF EFP-2 is NOT required, THEN stop EFP-2.	Close ASV-5 and ASV-204.
3.34 ___	IF adequate subcooling margin exists, THEN GO TO Step 3.37 in this procedure.	

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

3.17 IF OTSG PRESS decreases to ≤ 100 psig
AND Units 1/2 steam is available,
THEN supply EFP-2 from Units 1/2 steam.

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS	DETAILS
3.35 ___ Establish HPI flow.	1 ___ Ensure MUV-16, Seal Injection Control Valve is closed. 2 ___ Verify "SWGR TRANSF PERMIT" light is lit. 3 ___ Ensure MUP control switch is selected to NORM-AFT-STOP. 4 ___ Ensure BWST suction is open. o MUV-73 o MUV-58 5 ___ Ensure MUP recirc valves are open: o MUV-53 o MUV-257 6 ___ Ensure Main Lube Oil Pump is operating. 7 ___ Ensure Main Gear Oil Pump is operating. 8 ___ Start MUP. 9 ___ Establish HPI using all 4 injection lines.

3.36 ___ GO TO 1 of the following procedures based on T_{incore}

T_{incore}	Procedure
< Adequate Subcooling Margin	AP-380, ESA beginning with Step 3.5
Superheated	EP-290, ICC beginning with Step 3.1

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.11 IF adequate subcooling margin does NOT exist,
THEN raise OTSG levels to 95% with EFW.
AND begin a cooldown at maximum rate.

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

3.17 IF OTSG PRESS decreases to ≤ 100 psig
AND Units 1/2 steam is available,
THEN supply EFP-2 from Units 1/2 steam.

ACTIONS	DETAILS
3.37 ___ IF adequate subcooling margin exists, THEN CONCURRENTLY PERFORM AP-530, Natural Circulation, beginning with Step 3.4.	See Table 1 for adequate subcooling margins.

****

CAUTION

Ensure cooling water is supplied to MUP prior to starting.

****

3.38 ___ IF MUP is required THEN start 1 MUP AND establish RCP Seal Injection and Make-up.

1 ___ Ensure closed MUV-16, Seal Injection Control Valve.

2 ___ Ensure closed MUV-31, PZR Level Control Valve.

3 ___ Verify "SWGR TRANSF PERMIT" light is lit for desired MUP to be started.

4 ___ Ensure MUP Main Lube Oil Pump running.

5 ___ Start MUP Main Gear Oil Pump.

6 ___ Ensure respective suction valves are opened.

7 ___ Ensure recirc flow path exists.

8 ___ Start desired MUP.

9 ___ Ensure open MUV-18, Seal Injection Block Valve.

10 ___ Throttle open MUV-16 to obtain 2 gpm/RCP.

11 ___ Ensure open MUV-253, RCPs Controlled Bleed-off MOV.

12 ___ Throttle open MUV-16 over a 30 min period to establish ≈ 10 gpm/RCP.

13 ___ Operate MUV-31 to obtain desired PZR level.

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.11 IF adequate subcooling margin does NOT exist,
THEN raise OTSG levels to 95% with EFW.
AND begin a cooldown at maximum rate.

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

3.17 IF OTSG PRESS decreases to ≤ 100 psig
AND Units 1/2 steam is available,
THEN supply EFP-2 from Units 1/2 steam.

ACTIONS	DETAILS
3.39 ___ IF RCS make-up is established, AND RCS letdown is desired, THEN restore RCS letdown.	1 ___ Ensure the following valves are closed: o ___ MUV-49 o ___ MUV-50 o ___ MUV-51 2 ___ Place desired letdown coolers in service: 1 ___ Ensure SW cooling 2 ___ Ensure MU inlet and outlet valves are open 3 ___ Restore letdown flow: 1 ___ Open MUV-49 2 ___ Throttle Open MUV-51 to establish ≈ 2.5 gpm each minute for 20 minutes 3 ___ Allow letdown temperature to stabilize for ≈ 10 minutes 4 ___ Open MUV-50 5 ___ Throttle MUV-51 to establish desired letdown flow.
3.40 ___ Energize plant computer Invertor VBIT-1E.	1 ___ Close Invertor "Battery Input" Bkr. 2 ___ Close Invertor "AC Output" Bkr. 3 ___ Close Invertor "AC Input" Bkr. 4 ___ Verify normal Invertor AC output voltage of approximately 120V.

Table 1: Tsat Monitor Adequate Subcooling Margin

Reactor Coolant	MARGIN
> 1500 psig	30°F
≤ 1500 to > 250 psig	50°F
≤ 250 to > 150 psig	70°F
≤ 150 psig	SPDS
≤ 200°F	N/A

3.11 IF adequate subcooling margin does NOT exist,
THEN raise OTSG levels to 95% with EFW.
AND begin a cooldown at maximum rate.

3.13 IF RCS PRESS increases to ≈ 2400 psig,
THEN manually open the PORV to reduce RCS PRESS based on subcooling.

3.17 IF OTSG PRESS decreases to ≤ 100 psig
AND Units 1/2 steam is available,
THEN supply EFP-2 from Units 1/2 steam.

3.0 FOLLOW-UP ACTIONS (CONT'D)

	ACTIONS	DETAILS
3.41 ___	Determine the operability of balance of plant equipment and restore plant systems as required.	GO TO appropriate OPs for plant systems operational guidance.

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Enclosure 1

Supplying EFP-2 From Units 1/2 Steam

1. ___ Perform valve alignment for ASDT 1 & 2.

o ASDT-1 valve alignment:

___ Open ASV-93, Root Isol.
___ Open ASV-118, Inlet.
___ Close ASV-117, Outlet.
___ Fully open ASV-109 and blowdown through orificed cap as required.
___ Close ASV-101, Bypass.

o ASDT-2 valve alignment:

___ Open ASV-94, Root Isol.
___ Open ASV-120, Inlet.
___ Close ASV-119, Outlet.
___ Fully open ASV-110 and blowdown through orificed cap as required.
___ Close ASV-102, Bypass.

---

2. ___ IF steam line up to ASV-18 is NOT warmed, THEN notify Unit 1/2 Control Room to start warmup & pressurization of steam line up to ASV-18.

Ensure Auxiliary Steam Tie-line is drained of condensate prior to opening ASV-18.

---

3. ___ Perform warmup & pressurization between ASV-18 and ASV-16

1 ___ Close the following ASV isolation valves:

___ ASV-15
___ ASV-183
___ ASV-16

2 ___ Throttle open ASV-18 one turn off closed seat.

3 ___ Ensure condensate removal via ASDT-1.

4 ___ WHEN steam PRESS is equalized around ASV-18, THEN open ASV-18.

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Supplying EFP-2 From Units 1/2 Steam

4. ___ Perform warmup & pressurization of Auxiliary Steam Line to EFP-2.

1 ___ Ensure closed ASV-33.

2 ___ Open ASV-23.

3 ___ Throttle open ASV-15 one turn off closed seat.

4 ___ WHEN steam PRESS is equalized around ASV-15, THEN open ASV-15.

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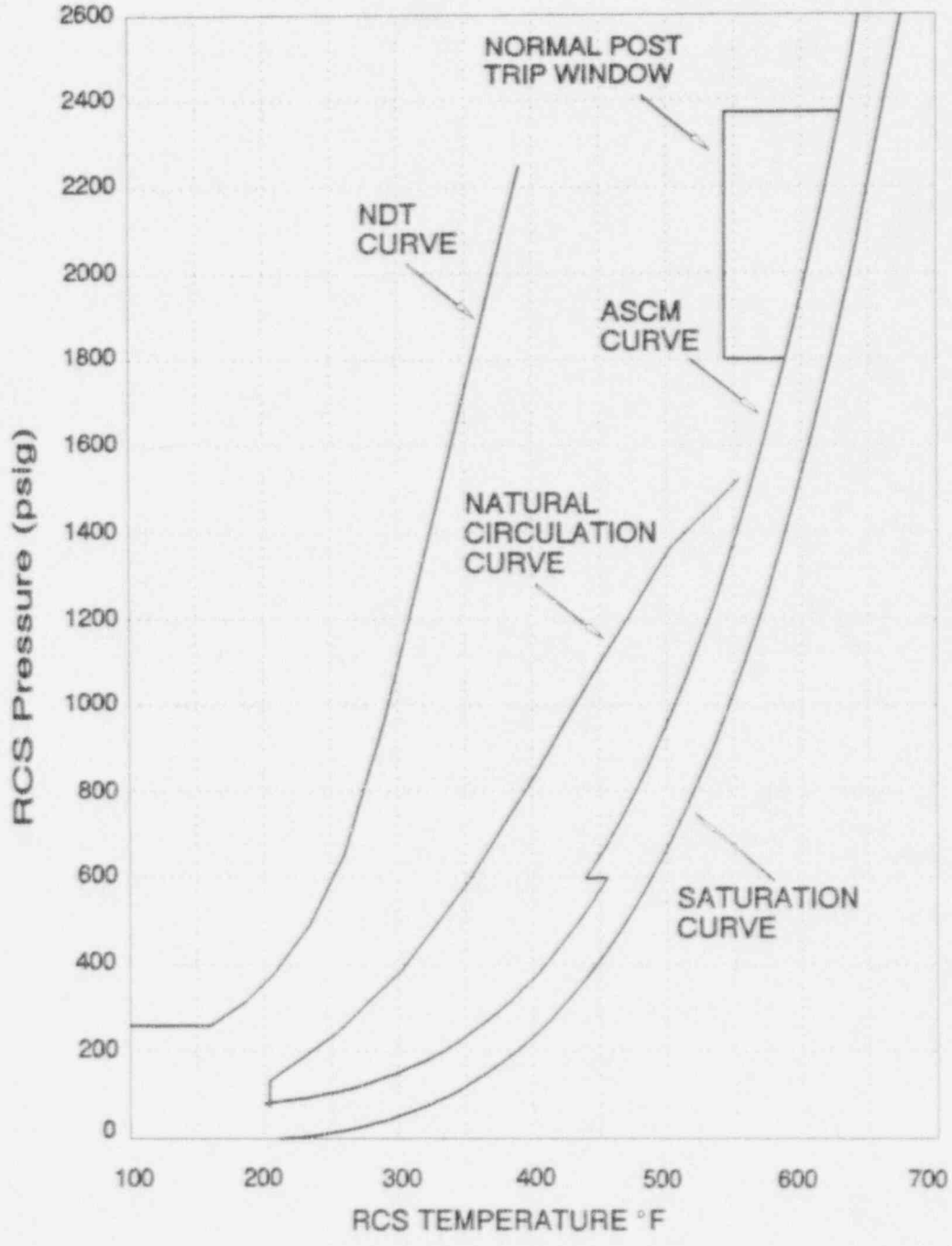
Enclosure 2

Cooldown Curve for Natural Circulation and Forced Flow



Acceptable region is:

- o below and to the right of the NDT curve
- o above and to the left of the ASCM curve
- o above and to the left of the Natural Circulation curve if RCPs are off and cooldown rate $\geq 10^{\circ}F/hr$