DOCUMENT TRANSMITTAL FORM 18551
FOR DOCUMENTS TRANSMITTED TO DC DESK (NRC)*

DATE: 30 OCT 1989
BATCH: 180

DOCUMENT NUMBER	SHEET NUMBER	REVISION NUMBER	COPY NUMBER
VP 580		12	20

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X (3) DESTROY DOCUMENTS OR PORTIONS OF DOCUMENTS SUPERSEDED BY THE ABOVE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_X_ FLA. POWER CORP., P.O. BOX 219 CRYSTAL RIVER FLA. 32629

SIGNATURE OF ADDRESSEE _____ DATE _____

INDEPENDENT VERIFICATION _____ DATE _____ (OPS)

A045
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PLANT SAFETY VERIFICATION PROCEDURE

This Procedure Addresses Safety Related Components			
Approved by NOS W K Bardham Date 10-27-89			
VP-580	REV 12	PAGE 1 of 15	PSVP

1.0 REACTIVITY CONTROL

ACTIONS	DETAILS
1.1 IF Rx tripped, THEN verify Immediate Actions of AP-580, Rx Trip, are completed.	o Rx trip pushbutton depressed. o CRD Groups 1 thru 7 are fully inserted. o Intermediate range flux decreasing. o Turbine trip pushbutton depressed. o TVs or GVs closed. o "MAIN FW BLOCK"s closed. o "LO LOAD FW BLOCK"s closed. o PZR level $\geq$ 50". o Steam Hdr PRESS $\approx$ 1010 psig. o Output Bkrs open. o Ensure ICS and NNI power is available
1.2 IF Rx is NOT tripped, THEN observe plant parameters AND determine if Rx should be tripped.	o RPS setpoint exceeded. o PZR level $\geq$ 290". o 2 or more MSIVs are closed. o All MFW is lost $\geq$ 15% FP.
1.3 IF Rx should NOT be tripped, THEN GO TO Step 2.1 in this procedure.	

1.0 REACTIVITY CONTROL (CONT'D)

ACTIONS	DETAILS
1.4 Verify IR flux is decreasing to Source Range.	
IF Neutron flux is NOT decreasing, THEN verify Emergency Boration.	Refer to EP-140, Emergency Reactivity Control.
1.5 Verify 480V Bkrs are closed:	
o Bkr 3305,	
o Bkr 3312.	
1.6 Verify Shutdown Margin is is $\geq$ 1%.	IF in Modes 3, 4, or 5, THEN refer to SP-421, Reactivity Balance Calculations.
	IF in Mode 6, THEN verify the requirements of STS 3.9.1 are met.

2.0 THERMAL CONTROL

ACTIONS	DETAILS
2.1 IF RCS PRESS is > 2300 psig, THEN verify PORV OR high point vents are used to restore RCS PRESS within limits.	Refer to SPDS AND abnormal or emergency operating procedures in use to determine RCS PRESS limits.
2.2 IF incores indicate superheated conditions, THEN ensure EP-290, Inadequate Core Cooling, is being performed AND monitor RCS inventory.	Instrumentation for monitoring RCS inventory: o Reactor Coolant Inventory Tracking System - will be affected by HPI, LPI, or Natural Circulation flow. o Reactor Coolant Pump Void Trend Monitoring System - effective only when RCP(s) are operating.
2.3 IF Adequate subcooling margin does NOT exist, THEN verify: o Full HPI or LPI flow, o No RCPs operating, o OTSGs at 95%.	Adequate Subcooling Margin RCS PRESS: > 1500 psig — MARGIN: ≥ 20°F RCS PRESS: ≤ 1500 psig — MARGIN: ≥ 50°F o Refer to AP-380, ES Actuation. o Refer to AP-360, Loss of DHR.
2.4 IF Subcooling Margin is > 100°F, THEN verify: o HPI and LPI Control, o OTSG Feeding Control, o OTSG Steaming Control.	

ACTIONS | DETAILS

| 2.5 Verify required OTSG level.

IF EFW and MFW is NOT available,
THEN verify HPI/PORV cooling.

Required OTSG levels

Condition	Level
Inadequate subcooling margin	95%
NO RCPs and adequate subcooling margin	65%
RCPs and adequate subcooling margin	Low Level Limits

| 2.6 IF any of the following conditions exist:

- RCS is < 500°F. AND STS Cooldown Rate limits are exceeded
- RCS is < 500°F, AND HPI flow exists, AND RCPs are NOT operating,

THEN ensure EP-220, PTS, is being performed.

RCS TEMP	LIMIT
> 270°F	≤ 100°F/hr
270°-171°F	≤ 50°F/hr
≤ 170°F	≤ 10°F/hr

2.0 THERMAL CONTROL (CONT'D)

ACTIONS	DETAILS
2.7 IF RCPs are NOT operating, THEN verify Nat Circ. IF Nat Circ is NOT verified AND adequate subcooling margin exists, THEN refer to AP-530, Nat Circ.	Indications of Nat Circ: o Verify Tc ≈ Tsat of OTSG. o Verify core ΔT develops and stabilizes. o Verify incore TEMPs follows Th within 10°F. o WHEN OTSG PRESS is lowered, THEN verify Tc, incore TEMPs, and Th lower.
2.8 IF OTSG Tube Rupture has occurred, THEN verify proper cooldown rate.	Refer to EP-390, OTSG Tube Leak.

Note

Enclosure 2 contains EFW inventory requirements during a loss of offsite power cooldown to DHR.

2.9 IF Nat Circ exists, THEN verify proper Nat Circ cooldown rate.

Nat Circ Cooldown Rates

RCS Tc	°F/hr
≥ 280°F	10
280 to 150°F	5
≤ 150°F	2.5
*	50

* Only to be used if RCS PRESS is maintained above Nat Circ cooldown curve.

2.0 THERMAL CONTROL (CONT'D)

ACTIONS	DETAILS
	Note Due to possible high radiation conditions, Th and Tc indications may become unreliable 24 hrs after a LOCA.
2.10 Verify RCS PRESS and TEMP are maintained within limits.	Observe SPDS Post Trip Display for RCS PRESS and Incore TEMP. IF SPDS is NOT operable, THEN record RCS PRESS and TEMP on Enclosure 1 until plant is stable for ≈ 30 min.

3.0 RADIOACTIVE INVENTORY CONTROL

ACTIONS	DETAILS
3.1 Observe radiation monitors for unexplained trends.	IF any monitor is in alarm, THEN refer to AP-250, Radiation Monitor Actuation.
3.2 Observe MS radiation monitors for unexplained trends.	IF any MS radiation monitor trend indicates CTSG leakage, THEN refer to EP-390, Steam Generator Tube Leak.
3.3 Observe for increased RCS leakage.	o Observe: o RCP seals and dumpsters, o PZR level, o RCDT level, o MUT level, o RB sump level, o Relief valve tailpipe TEMPs. o Refer to STS 3.4.6.2, Operational Leakage.
3.4 Verify fuel integrity.	Observe RML-1 Alarms and trends.
3.5 Verify MWST level rise is < 1%/hr.	Time _____ MWST Level _____ _____ _____ _____ _____ _____ _____ _____ _____

4.0 EQUIPMENT AVAILABILITY

ACTIONS	DETAILS
4.1 Verify availibility of borated water sources for MUPs and DHPs. IF NOT, THEN refer to: o If in Modes 1, 2 or 3, AP-380, ES Actuation, o If in Modes 4, 5 or 6, AP-360, Loss of DHR.	o MUT level between 30" and 100". o BWST level $\geq$ 4 ft.
4.2 IF RCS PRESS is < 600 psig, AND adequate subcooling margin does NOT exist, THEN verify CFT level lowers.	
4.3 Verify water sources for OTSG cooling.	o EF Tank $\geq$ 15 ft. o CST level $\geq$ 28 ft. o Hotwell level at 7 to 9 ft. (84 to 109"). o See Enclosure 2 for EFW requirements. o See Enclosure 3 for other sources of water.
4.4 Verify SW Cooling. IF NOT, THEN ensure AP-330, Loss of SW, is being performed.	o SW PRESS $\geq$ 110 psig. o Stable SWP Motor Current

4.0 EQUIPMENT AVAILABILITY (CONT'D)

ACTIONS	DETAILS
4.5 Verify DC Cooling, if required. IF NOT, THEN ensure AP-360, Loss of DH, is being performed.	o Stable DCP motor current. o Stable discharge PRESS. o DC Heat Exchanger Outlet TEMP < 105°F.
4.6 Verify RW available.	o Stable RWP motor current. o RW ΔT across DH Seawater heat exchanger.
4.7 Verify Instrumentation power available.	o NNI X o NNI Y o ICS
4.8 Verify ES busses are energized.	o ES 4160V "A" o ES 4160V "B" o ES 480V "A" o ES 480V "B"
4.9 Verify Instrument Air pressure available.	o SAP-1A o SAP-1B o SAP-1C o SAP-1D o IAP-1A o IAP-1B o SA-4-PI o IA-4-PI
4.10 Observe RB conditions.	o RB TEMP o RB PRESS o RB H2 concentration, if available from Chemistry.

4.0 EQUIPMENT AVAILABILITY (CONT'D)

ACTIONS	DETAILS
4.11 NI-14-NI1 and NI-15-NI1, neutron flux monitors, may not be reliable under accident conditions, due to cable assemblies possibly leaking.	
4.12 IF a OTSG tube leak exists, AND BWST level is ≤ 35 ft, THEN notify SSOD to begin makeup to the BWST.	Makeup water can be obtained from: o SF pools, o DW and boric acid.
4.13 IF EFWPs are on minimum recirc, THEN determine their need to be running.	o EFW is required when: o No RCPs operating, o Adequate subcooling margin does not exist, o OTSG Heat Removal does not exist. o Time EFWPs are on recirc should be limited to: 1 EFWP running - ≤ 3 hours/ event 2 EFWPs running - ≤ 1 hours/ event
4.14 Review alarm summaries for unexplained alarms.	o Review annunciator alarm summary. o Review computer alarm summary.

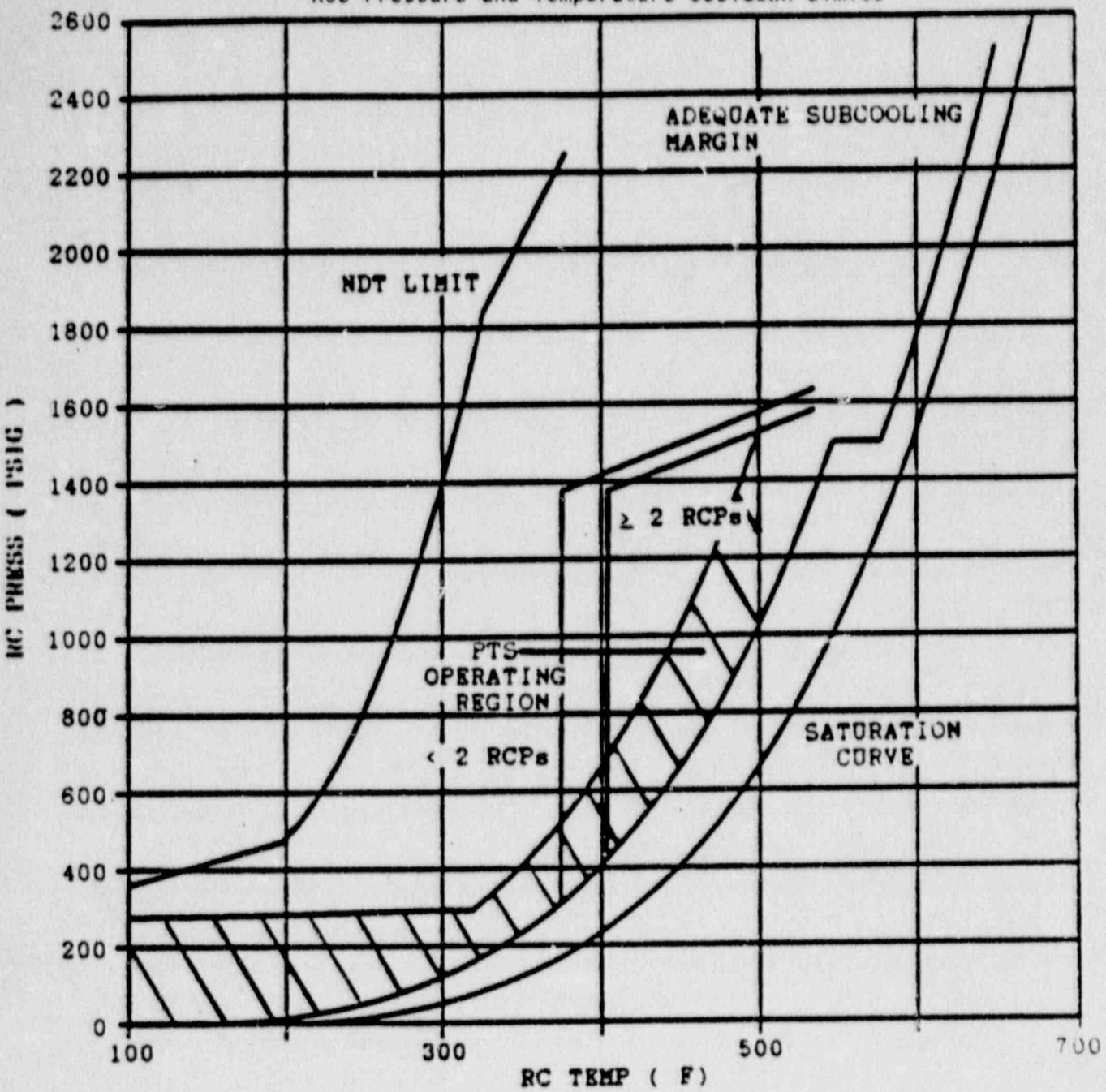
4.0 EQUIPMENT AVAILABILITY (CONT'D)

ACTIONS	DETAILS
4.15 Verify proper notification are completed.	o Refer to CP-111, Documenting, Reporting and Reviewing NCORs. o Refer to AI-500, Conduct of Operations. o Refer to EM-202, Duties of the Emergency Coordinator.

4.16 WHEN VP-580 is stopped,
THEN notify SSOD.

ENCLOSURE 1

RCS Pressure and Temperature Cooldown Limits



Acceptable region is below and to the right of the NDT curve.

Acceptable region is above and to the left of the applicable Fuel Pin in Compression curve.

Acceptable region is above and to the left of the adequate subcooling margin curve.

ENCLOSURE 2

Cooldown Requirements Vs. Nat Circ Cooldown Rates

1) FW requirements and the time to cooldown are controlled primarily by the characteristics of the ADVs and the cut-in conditions for the DHR system.

2) The time to cooldown from Rx trip is about 45 hrs.

3) The FW requirement to cooldown is about 350,000 gal.

4) The minimum cooldown rate consistent with the above minimum time and FW requirements is about 8.5°F/hr.

5) Cooldown rates in excess of 8.5°F/hr do not decrease the FW or time requirements for cooldown.

6) Cooldown rates less than 8.5°F/hr increase both the FW and the time requirements for cooldown.

7) A time delay of 28 hours from Rx trip will not significantly affect FW or time requirements if a cooldown rate of 50°F/hr is then utilized. For smaller time delays smaller cooldown rates may be utilized.

ENCLOSURE 3

Sources of Emergency Feedwater (EFW) at the Crystal River Site

Condensate - Grade Sources

Source	Volume (gal)
Dedicated EFW Tank (EFT-2)	150,000
Condensate Storage Tank	139,000
Condenser Hotwells	150,000
DW Storage Tank, Unit 3	450,000
DW Storage Tank, Unit 1	147,000
DW Storage Tank, Unit 2	147,000
DW Storage Tank, Unit 4/5	500,000
CD Storage Tank, Unit 4	500,000
CD Storage Tank, Unit 5	500,000
AB DW Storage Tank, Unit 3	5,000