

DOCUMENT TRANSMITTAL* FORM 63727
FOR DOCUMENTS TRANSMITTED TO DC DESK(NRC)*

DATE: 17 DEC 1991
BATCH: 100

DOCUMENT NUMBER SHEET NUMBER REVISION NUMBER COPY NUMBER

AP 580

17

7

INSTRUCTIONS TO THE ADDRESSEE

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

- (1) VERIFY THE DOCUMENTS RECEIVED AGREE WITH THE ABOVE DESCRIPTION
- (2) INCORPORATE THE TRANSMITTED DOCUMENTS INTO YOUR FILES
- (3) DESTROY DOCUMENTS OR PORTIONS OF DOCUMENTS SUPERSEDED BY THE ABOVE
- (4) SIGN AND DATE IN THE SPACES BELOW INDICATING THAT YOU COMPLETED THESE INSTRUCTIONS.
- (5) SIGN BY INDICATING THAT YOU HAVE READ AND UNDERSTOOD THE CHANGES AS IDENTIFIED
- (6) RETURN TO DOCUMENT CONTROL, CRYSTAL RIVER UNIT 3, MAC# NA1C____
NR2A SA1G____ FLORIDA POWER CORP., P.O. BOX 219
CRYSTAL RIVER FLA. 32623

SIGNATURE OF ADDRESSEE _____

DATE _____

INDEPENDENT VERIFICATION _____

DATE _____

(OPS)

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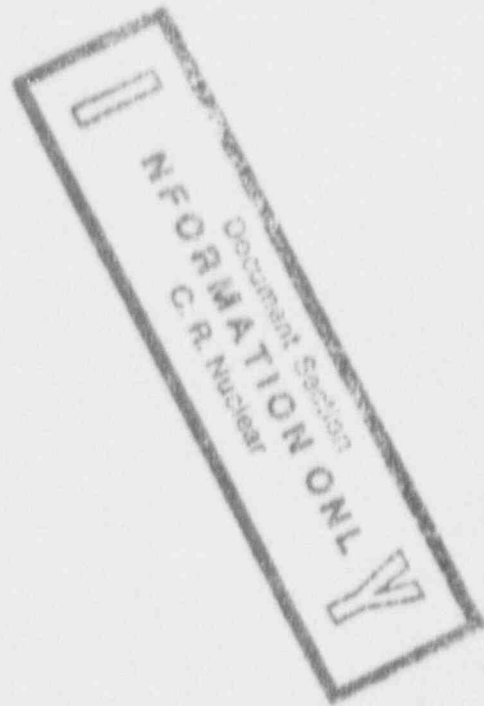
REACTOR TRIP

1.0 ENTRY CONDITIONS

IF Rx trips,
OR in Modes 1 or 2
AND any of the following conditions exist:

- o RCS PRESS is \geq 2355 PSIG,
- o RCS PRESS is \leq 1800 PSIG,
- o Th is \geq 618°F,
- o Rx power is \geq 104.9%FP,
- o RB PRESS is \geq 4 PSIG,
- o Less than 3 RCPs are operating,
- o Turbine trip at \geq 45%FP,
- o Loss of both MFWs at \geq 20%FP,
- o RCS PRESS and TEMP are below variable PRESS TEMP curve,
- o Rx power and imbalance outside limits of barn curve,
- o PZR level is \geq 290",
- o 2 or more MSIVs are closed,
- o All MFW is lost at \geq 15%FP,

THEN use this procedure.



This Procedure Addresses Safety Related Components		
Approved by NOS <i>[Signature]</i> Date <i>12-16-91</i>		
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2.0 IMMEDIATE ACTIONS

ACTIONS

DETAILS

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CAUTION

Steps 2.1 through 2.3 must be performed prior to performing any other Immediate Actions of this procedure. This is to ensure adequate heat removal capabilities.

2.1 Depress Rx Trip pushbutton.

2.2 Ensure CRD Groups 1 through 7 are fully inserted.

IF NOT,
THEN:

- o Select Reactor Diamond to manual,
- o Open both 480V Bkrs:
 - o 3305
 - o 3312,

AND reclose.

2.3 Ensure Reactor Power is decreasing on Intermediate Range.

IF NOT,
THEN CONCURRENTLY PERFORM EP-140, Emergency Reactivity Control, beginning with Step 2.1.

2.4 Depress Turbine Trip pushbutton.

2.5 Ensure TVs or GVs are closed.

IF NOT,
THEN close the MSIVs.

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2.0 IMMEDIATE ACTIONS (CONT'D)

ACTIONS

DETAILS

2.6 Ensure "MAIN FW BLOCK" valves are closing and MFW flows are decreasing.

IF NOT,
THEN trip both MFWPs.

2.7 Ensure "LO LOAD FW BLOCK" valves are closing.

IF NOT,
THEN close associated Low Load Control Valves.

2.8 Ensure PZR level is ≥ 50 ".

IF NOT,
THEN open MUV-24

IF PZR level does NOT recover,
THEN perform the following:

1. Ensure BWST suction is open
 2. Start second MUP
 3. Open additional HPI valves as required
-

2.9 Ensure steam Hdr PRESS is = 1010 PSIG.

IF NOT,
THEN verify position of:

- o TBVs,
- o ADVs,
- o MSSVs.

MSSV TV monitor may be used to verify MSSV/ADV closed.

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2.0 IMMEDIATE ACTIONS (CONT'D)

ACTIONS

DETAILS

2.10 Ensure output Bkrs
are open.

IF NOT,
THEN notify Dispatcher.

2.11 Ensure ICS and NNI power is
available.

IF NOT,
THEN trip both MFWPs.

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3.0 FOLLOW-UP ACTIONS

ACTIONS

DETAILS

3.1 — IF more than 1 safety or regulating control rod is NOT fully inserted, THEN start boration at ≥ 55 gpm from BWST, OR ≥ 10 gpm from BAST.

3.2 — Notify SOTA of plant conditions.

3.3 — CONCURRENTLY PERFORM VP-580, Plant Safety Verification Procedure, beginning with Step 1.1.

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

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS

DETAILS

CAUTION

IF RCPs have NOT been stopped within 2 min from time that adequate subcooling margin was lost,
THEN RCPs must remain running to prevent core damage.

3.4 IF, at any time while performing this procedure, adequate subcooling margin does NOT exist,
THEN:

See Table 1 for adequate subcooling margins.

___ Stop all RCPs,

Stop all RCPs and ensure Oil Lift Pumps start.

___ Raise OTSG levels to 95% using EFW,

Raise OTSG level to 95%:

1. Depress both "EFW INITIATE" pushbuttons on Channels A and B.
2. Depress "95%" level select pushbuttons on OTSG A and B.

___ Start full HPI.

Start full HPI:

___ CONCURRENTLY PERFORM AP-380, ES Actuation, beginning with Step 3.4.

- 1 ___ Open HPI suction from SWST:
 - o MUV-58 o MUV-73.
- 2 ___ Ensure \geq 2 MUPs and their cooling water pumps are operating.
- 3 Open all 4 HPI valves:
 - ___ MUV-23 ___ MUV-24
 - ___ MUV-25 ___ MUV-26.

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

- 3.4 IF adequate subcooling margin does NOT exist,
THEN:
- o Within 2 min, stop all RCPs,
 - o Raise OTSG levels to 95% with EFW,
 - o Start full HPI,
 - o CONCURRENTLY PERFORM AP-380, ES Actuation, beginning with Step 3.4.

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS

DETAILS

3.5 — IF TB Operator reports a MSSV is NOT fully seated, THEN momentarily lower affected OTSG's PRESS 50 to 200 PSIG to reseal valve.

Lower OTSG PRESS using TBVs.

IF TBVs are NOT available, THEN use ADVs.

MSSV Location

"A" OTSG MSSVs	"B" OTSG MSSVs
MSV-33	MSV-35
MSV-34	MSV-36
MSV-37	MSV-39
MSV-38	MSV-41
MSV-40	MSV-44
MSV-42	MSV-45
MSV-43	MSV-47
MSV-46	MSV-48

3.6 — IF MSSVs do NOT fully seat, THEN notify an available operator or mechanic to manually cycle MSSV.

3.7 — IF an uncontrolled cooldown exists, OR steam leak is in the RB, THEN isolate the affected OTSG, AND CONCURRENTLY PERFORM AP-460. MS Line Isolation Actuation beginning with Step 2.1.

o Depress "SG MAIN STM ISOLATION" pushbuttons on EFIC channels A and B for affected OTSG.

o Depress "SG MAIN FEED ISOLATION" pushbuttons on EFIC channels A and B for affected OTSG.

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> 1500 PSIG	30°F
≤ 1500 to > 250 PSIG	50°F
≤ 250 to > 150 PSIG	70°F
≤ 150 PSIG	SPDS
≤ 200°F	N/A

- 3.4 IF adequate subcooling margin does NOT exist,
THEN:
- o Within 2 min, stop all RCPs,
 - o Raise OTSG levels to 95% with EFW,
 - o Start full HPI,
 - o CONCURRENTLY PERFORM AP-380, ES Actuation, beginning with Step 3.4.

Table 2: Required OTSG Levels

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

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS

DETAILS

3.8 — IF unexplained and significant RC pressure decrease exists, THEN ensure proper operation of:

- o RCV-10, PORV
- o RCV-14, PZR Spray Valve
- o PZR Heaters

IF valve leakage is suspected THEN consider isolation to verify integrity.

IF PZR Heaters are suspect, THEN verify operation by observing PZR heater KW loading as indicated at rear of MCB.

- o RC-203-JI
- o RC-204-JI

3.9 — IF NNI-X power is NOT available, THEN CONCURRENTLY PERFORM AP-581, Loss of NNI-X beginning with Step 3.1.

3.10 — IF NNI-Y power is NOT available, THEN CONCURRENTLY PERFORM AP-582, Loss of NNI-Y, 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

3.4 IF adequate subcooling margin does NOT exist,
THEN:

- o Within 2 min, stop all RCPs,
- o Raise OTSG levels to 95% with EFW,
- o Start full HPI,
- o CONCURRENTLY PERFORM AP-380, ES Actuation,
beginning with Step 3.4.

Table 2: Required OTSG Levels

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

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS

DETAILS

3.11 — Ensure "MAIN FW BLOCK" and "LO LOAD FW BLOCK" valves are closed.

- o Ensure closed:
 - ___ FWV-29, Main Block,
 - ___ FWV-30, Main Block,
 - ___ FWV-31, Lo Load Block,
 - ___ FWV-32, Lo Load Block.

3.12 — Isolate the MSR HP bundles.

- o Depress "RESET" pushbutton on reheat control panel.
- o CLOSE:
 - ___ MSV-29, MS to "A" MSR,
 - ___ MSV-30, MS to "B" MSR,
 - ___ MSV-31, MS to "C" MSR,
 - ___ MSV-32, MS to "D" MSR.

3.13 — Ensure main turbine oil pumps have Auto started.

- Ensure started:
- o TBP-2, "TG BRG OIL PP AC,"
 - o TBP-8, "HP SEAL OIL E/U PUMP."

3.14 — Maintain MUT level between 55 and 86".

- o IF MUT is > 86",
THEN bleed to RCBT.
- o IF MUT is < 55",
THEN feed from RCBT,
AND ensure MUV-112 is selected to MUT.

IF feeding from RCBT does NOT restore level,
THEN open BWST suction to operating MUP.

3.15 — Maintain required OTSG levels.

See Table 2 for required OTSG levels.

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≤ 150 PSIG	SPDS
≤ 200°F	N/A

- 3.4 IF adequate subcooling margin does NOT exist,
THEN:
- o Within 2 min, stop all RCPs,
 - o Raise OTSG levels to 95% with EFW,
 - o Start full HPI,
 - o CONCURRENTLY PERFORM AP-380 CS Actuation, beginning with Step 3.4.

Table 2: Required OTSG Levels

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

3.0 FOLLOW-UP ACTIONS (CONT'D)

<u>ACTIONS</u>	<u>DETAILS</u>
3.16 — Maintain PZR level between 80 and 120".	o Adjust PZR level "SETPOINT" to adjust PZR level. o Adjust MUV-51 controller to adjust letdown flow.
3.17 — Notify TB Operator to ensure Aux steam is supplied from Units 1 and 2.	1 — Ensure ASV-18 is opened. 2 — Open ASV-16. 3 — Regulate ASV-26 between 125 and 175 PSiG.
3.18 — Notify TB Operator to close HVV-103, DFT Vent to Atmosphere.	
3.19 — Notify TB Operator to isolate FWHE-5A and 5B drains to the DFT.	— HDV-47, FWHE-5A Drain to DFT, — HDV-48, FWHE-5B Drain to DFT.
3.20 — Ensure TDV-1 thru TDV-10, Turbine Drains Valves, are open.	
3.21 — Select the voltage regulator to "OFF."	
3.22 — Ensure the main generator Field Bkr is open.	

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- 3.4 IF adequate subcooling margin does NOT exist,
THEN:
- o Within 2 min, stop all RCPs,
 - o Raise OTSG levels to 95% with EFW,
 - o Start full HPI,
 - o CONCURRENTLY PERFORM AP-380, ES Actuation, beginning with Step 3.4.

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS

DETAILS

3.23 — WHEN IR lowers to
= 5×10^{-10} amps,
THEN verify SR energizes.

Continue on in this
procedure.

3.24 — IF any safety or regulating
control rod is NOT fully
inserted,
THEN determine boration
requirements to ensure
 $\geq 1\%$ shutdown marg'n.

o IF 1 control rod is stuck,
THEN refer to OP-103C, Curve
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o IF > 1 control rod is stuck,
THEN continue boration until
either of the following:

o Actual boron concentration
 ≥ 1925 ppmB

OR

o Actual boron concentration
 \geq value determined by the
Reactor Engineer or his
designee.

3.25 — IF power reduction was
> 15%FP in 1 hr.
THEN notify Chemistry.

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THEN:

- o Within 2 min, stop all RCPs,
- o Raise OTSG levels to 95% with EFW,
- o Start full HPI,
- o CONCURRENTLY PERFORM AP-380, ES Actuation,
beginning with Step 3.4.

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS

DETAILS

3.26 ___ Notify Health Physics to increase the frequency of radiation surveys on the MU filters.

3.27 ___ WHEN "TURBINE AT ZERO SPEED" alarm is activated, THEN ensure turbine goes on turning gear.

Continue on in this procedure.

1. Ensure TBP-6, "TG BRG OIL LIFT PUMP," has started.

2. Select turning gear control switch to "AUTO."

IF turning gear does NOT Auto engage, THEN select turning gear control switch to "MAN", AND notify TB Operator to engage turning gear locally.

3.28 ___ Notify TB Operator to isolate MSR HP and LP bundle vents to FWHE-5 and 6.

Close at local panel on 119 ft elevation TB:

- | | |
|-------------|--------------|
| ___ HDV-539 | ___ HDV-540 |
| ___ HDV-543 | ___ HDV-544 |
| ___ HDV-547 | ___ HDV-548 |
| ___ HDV-551 | ___ HDV-552. |

3.29 ___ Notify TB Operator to isolate MSR HP drain tank drains to FWHE 6A and 6B.

Close locally:

- | | |
|-----------|------------|
| ___ HDV-1 | ___ HDV-3 |
| ___ HDV-5 | ___ HDV-7. |

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- 3.4 IF adequate subcooling margin does NOT exist,
THEN:
- o Within 2 min, stop all RCPs,
 - o Raise OTSG levels to 95% with CW,
 - o Start full HPI,
 - o CONCURRENTLY PERFORM AP-380, ES Actuation, beginning with Step 3.4.

3.0 FOLLOW-UP ACTIONS (CONT'D)

ACTIONS

DETAILS

3.30 — IF SSOD authorized,
 withdrawal of Group 1 rods,
THEN withdraw Group 1.

- 1 — Reset all 4 RPS channels.
- 2 — Select both TBV Control stations to Hand.
- 3 — Depress "TRIP RESET" on Diamond Panel.
- 4 — Balance "DEV" on TBV control stations using "MAIN STEAM PRESS" setpoint control.
- 5 — Select TBV control station to Auto.
- 6 — Reset "REACTOR TRIPPED LOCKOUT 86/REC".
- 7 — Refer to CP-502, Control Rod Drive System, Section 4.2.

3.31 — IF ICS is NOT energized,
AND power is available,
THEN stabilize the plant
AND re-energize ICS

Refer to OP-504, Integrated Control System, Section 4.1 for energizing the ICS.

3.32 — IF plant conditions requires cooldown,
THEN GO TO OP-209,
 Plant Cooldown.

3.33 — IF conditions permit a plant heatup,
THEN GO TO OP-202,
 Plant Heatup.