Volume 05

Section 01

05-S-01-EP-1

Revision: 12

Date:

EMERGENCY PROCEDURE

LEVEL CONTROL

SAFETY RELATED

Prepared: G A Johnson Date 11/11/82

Reviewed: Gary Shamon Date 11/11/82
Technical Review

Reviewed: R J Keel Date 11/12/82
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Concurrence: _____ Date _____
Chemistry/Radiation Superintendent

Reviewed: _____ Date _____
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Approved: _____ Date _____
Plant Manager

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10	None
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12	None

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1.0 PURPOSE

The purpose of this procedure is to restore and stabilize RPV water level above the top of the active fuel (TAF).

NOTE

Refer to EPP-1 for concurrent requirements of the Emergency Plan.

2.0 ENTRY CONDITIONS

Entry conditions are any of the following:

2.1 RPV water level below +11.4"

2.2 Drywell pressure above +1.73 psig

2.3 Group I isolation

2.3.1 Isolation signals are:

-150.3" RPV water level
1.5 x N 'Kg. Main steam line high radiation
140% Ma.n steam line flow (1.09 psid)
180 °F Main Steam Tunnel high ambient temperature
9 inches Hg condenser low vacuum (in Run Mode)
850 psig Main Steam line pressure
80 °F Main Steam Tunnel Δ T

3.0 OPERATOR ACTIONS

3.1 For each entry condition, confirm or initiate all the following:

[ ] 3.1.1 RPV water level less than +11.4" initiates:

a. Reactor Scram

[ ] 3.1.2 High Drywell pressure initiates:

a. Reactor Scram (at 1.75 psig)

b. Diesel Generators start (at 1.89 psig)

c. ECCS initiation for HPCS, LPCS, and LPCI (at 1.89 psig)

d. RCIC initiation (at 1.89 psig)

[ ] 3.1.3 Group I isolation initiates:

a. MSIV closure

b. Main Steam Line drain closure

☐ 3.2 Enter ONEP 05-1-02-I-1 (Reactor Scram) and execute concurrently with this procedure.

CAUTION

Avoid RPV High Water Level Trip (+53.5") on RFPT's, RCIC, and HPCS Injection valve (E22-F004).

NOTE

It is preferred that the minimum number of systems be used to accomplish the water level restoration.

☐ 3.3 Restore and maintain RPV water level between +11.4" and +53.5" with the following system:

	SYSTEM PRESSURE RANGES
☐ 3.3.1 Condensate/Feedwater (preferred) (04-1-01-N21-1)	(1103 - 0 psig)
☐ 3.3.2 CRD (04-1-01-C11-1) (Sect 6.0)	(1103 - 0 psig)
a. Operate two pumps if possible	
b. Increase flow rate to maximum	
☐ 3.3.3 RCIC (04-1-01-E51-1)	(1103 - 50 psig)
☐ 3.3.4 HPCS (04-1-01-E22-1)	(1103 - 0 psig)
☐ 3.3.5 LPCS (04-1-01-E21-1)	(500 - 0 psig)
☐ 3.3.6 Condensate Booster (04-1-01-N19-1)	(435 - 0 psig)
☐ 3.3.7 Condensate (04-1-01-N19-1)	(270 - 0 psig)
☐ 3.3.8 LPCI (04-1-01-E12-1)	(225 - 0 psig)

☐ 3.4 If RPV water level cannot be restored and maintained above +11.4" maintain RPV water level above TAF.

NOTE

TAF= - 167" as read on fuel zone instrumentation:

P601 - RHR B/C Section - Reactor Water Level Indicator (B21-R615)

P601 - RHR A Section - Reactor Water Level Recorder (B21-R610)

☐ 3.5 If RPV water level cannot be determined or maintained above TAF, then proceed to EP-4 (Level Restoration).

☐ 3.6 If Low-Low Set does not function, then manually open one SRV and reduce RPV pressure to approximately 850 psig.

☐ 3.6.1 If depressurization must be repeated to prevent SRV cycling alternate SRV's to equalize suppression pool heating, using Figure A as a guide.

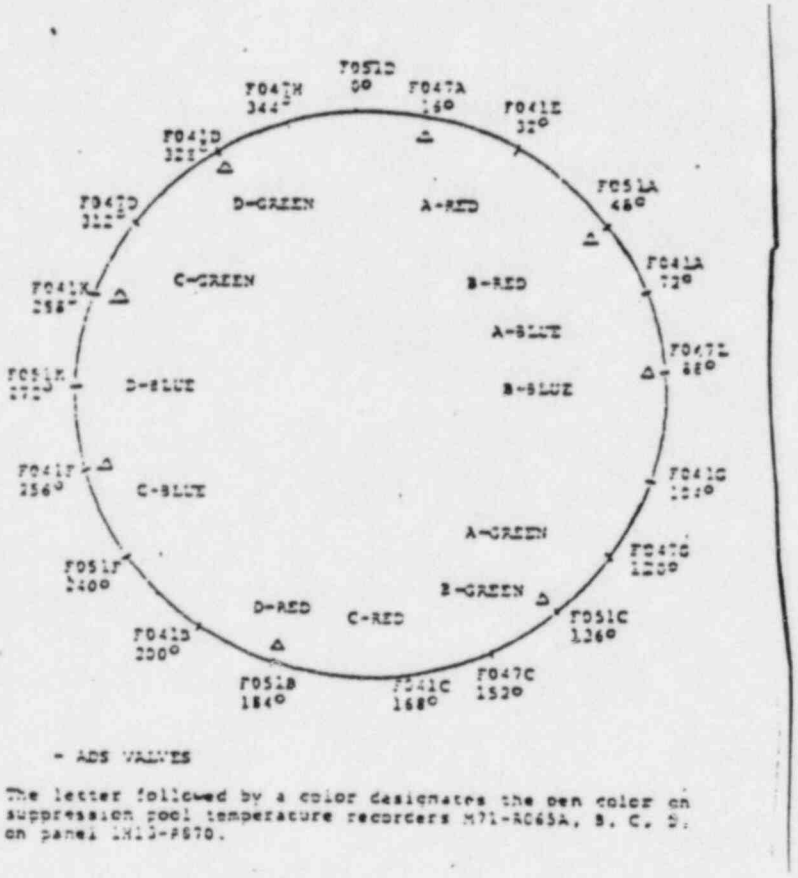

FIGURE A

☐ 3.7 When the RPV water level has stabilized at less than +11.4, then proceed to EP-2 (Cooldown).

☐ 3.8 If the RPV water level has stabilized at greater than +11.4, then proceed to the applicable IOI, as dictated by plant conditions and determined by the Shift Supervisor.

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EMERGENCY PROCEDURE

COOLDOWN

SAFETY RELATED

Prepared: G A Johnson Date 11/9/82

Reviewed: Gary D. Shomo Date 11/10/82
Technical Review

Reviewed: R G Keuter Date 11/10/82
Operations Superintendent

Concurrence: _____ Date _____
Chemistry/Radiation Superintendent

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Nuclear Plant Quality Superintendent

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0	None
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Title: Cooldown	No.: 05-S-01-EP-2	Revision: 11	Page: 1

1.0 PURPOSE

The purpose of this procedure is to depressurize and cooldown the RPV to cold shutdown conditions while maintaining RPV water level within an acceptable range.

2.0 ENTRY CONDITIONS

This procedure is entered from EP-1 (Level Control) after the RPV water level has been stabilized.

3.0 OPERATOR ACTIONS

CAUTION

Do not secure or place an ECCS in MANUAL mode unless (by at least two indications); 1) Misoperation in AUTOMATIC Mode is confirmed or, 2) adequate core cooling is assured. If an ECCS is placed in MANUAL it will not initiate automatically. Frequent checks of the controlling parameter are required.

CAUTION

A LPCS and LPCI Injection resulting from a +1.89 psig drywell presure signal will inject a large volume of water into the RPV when RPV pressure decreases to the LPCS and LPCI pump injection pressures. Rapid injection of this large volume of water may be detrimental to maintaining RPV water level within the desired range.

NOTE

It is preferred that the minimum number of systems be used to accomplish the water level restoration.

___ 3.1 Maintain RPV water level between +53.5" and the TAF, as follows:

NOTE

TAF = 167" as read on the following fuel zone instrumentation:

P601-RHR B/C Section - Reactor Water Level Indicator (B21-R615)

P601-RHR A Section - Reactor Water Level Recorder (B21-R601)

3.1.1 Use the following systems:

☐ a. Condensate/feedwater (Preferred) (1103 - 0 psig) (04-1-01-N19-1/04-1-01-N21-1)

☐ b. CRD (04-1-01-C11-1) (Section 6.0) (1103 - 0 psig)

(1) Operate two pumps if possible.

(2) Increase flow rate to maximum.

c. RCIC (04-1-01-E51-1) (1103 - 50 psig)

☐ d. HPCS (04-1-01-E22-1) (1103 - 0 psig)

☐ e. LPCS (04-1-01-E21-1) (500 - 0 psig)

☐ f. LPCI (04-1-01-E12-1) (225 - 0 psig)

☐ 3.1.2 If RPV water level cannot be determined or maintained above TAF, then proceed to EP-4 (Level Restoration)

NOTE

TAF - -167" as read on the following fuel zone instrumentation:

P601 - RHR B/C Section - Reactor Water Level Indicator (B21-R615)

P601 RHR A Section - Reactor Water Level Recorder (B21-R610)

☐ 3.2 If high Suppression Pool water level (18.83') or low Condensate Storage Tank level (2.0') occurs, then perform the following:

3.2.1 Confirm automatic transfer to HPCS and RCIC suctions from the Condensate Storage Tank to the Suppression Pool.

a. HPCS - E22-F015 opens and then E22-F001 closes

b. RCIC - E51-F031 opens and then E51-F010 closes

3.2.2 If the HPCS and RCIC suctions did not automatically transfer as designed, then manually transfer the HPCS and RCIC suctions in the sequence listed in substep a.

☐ 3.3 If Low-Low Set does not function;
then manually open one SRV and reduce RPV pressure to approximately 850 psig.

☐ 3.4 Depressurize the RPV and maintain cooldown rate below 100°F/hr, as follows:

> CAUTION
>
> In order to (1) conserve RPV water inventory, (2) protect containment integrity, or (3) limit radioactive release to the environment, cooldown rates greater than 100 °F/hr may be required. However, the cooldown rate should be maintained as close to 100 °F/hr as possible.

☐ 3.4.1 If the main condenser is available,
then the following systems may be used for RPV cooldowns:

☐ a. Main Turbine Bypass Valves (Preferred) (1103 - 0 psig)

> CAUTION
>
> Maintain the RCIC turbine above 2000 RPM to ensure sufficient oil pressure

> CAUTION
>
> Do not depressurize the RPV below 50 psig unless motor driven pumps sufficient to maintain RPV water level are running and available for injection.

(1) If necessary to determine if motor driven pumps can maintain RPV water level,
then perform the following:

☐ (a) Note RPV water level

☐ (b) Reduce RCIC Flow Setpoint as low as possible

(c) If RPV water level cannot be maintained with motor driven pumps
then restore RCIC flow setpoint to original setting

(d) If RPV water level can be maintained with motor driven pumps,
then RCIC may be shutdown and the RPV may be depressurized to less than 50 psig.

CAUTION
Contact Chemistry personnel prior to discharging RPV coolant to areas outside secondary containment

b. RCIC (04-1-01-E51-1) (1103 - 50 psig)

c. RHR (Steam Condensing Mode) (04-1-01-E12-1) (1103 - 50 psig)

d. Steam Seal Generator (04-1-01-N33-1) (≤ 1103 psig)

e. Off Gas Preheaters (04-1-01-N64-1) (≤ 1103 psig)

f. SJAE's (04-1-01-N62-1) (≤ 1103 psig)

g. RFPT's (04-1-01-N21-1) (≤ 1103 psig)

h. RWCU (recirculation mode) (04-1-01-G33-1) (≤ 1103 psig)

i. MSL Drains (04-1-01-N11-2) (≤ 1103 psig)

j. RWCU (blowdown mode) (04-1-01-G33-1) (Sect 5.1) (≤ 1103 psig)

3.4.2 If the main condenser is not available,
then the following systems may be used for RPV cooldown:

CAUTION
Maintain the RCIC turbine above 2000 rpm to ensure sufficient oil pressure.

CAUTION
Do not depressurize the RPV below 50 psig unless motor driven pumps sufficient to maintain RPV water level are running and available for injection.

a. RCIC (04-1-01-E51-1) (≤1103 psig)

(1) If necessary to determine if motor driven pumps can maintain RPV water level,
then perform the following:

☐ (a) Note RPV water level

☐ (b) Reduce RCIC Flow Setpoint as low as possible

☐ (c) If RPV water level cannot be maintained with motor driven pump,
then return RCIC flow setpoint to original setting.

☐ (d) If RPV water level can be maintained with motor driven pumps,
then RCIC may be shutdown and the RPV may be depressurized to less than 50 psig.

☐ b. RHR (Steam Condensing Mode)
(04-1-01-E12-1) (≤ 1103 psig)

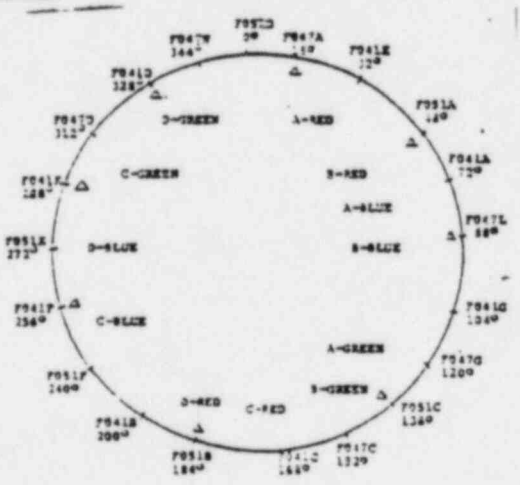
NOTE

Fewer SRV blowdowns with increased pressure reductions are desirable to minimize SRV cyclic stresses. Use only if other pressure reduction methods are unavailable.

☐ c. SRV's
(04-1-01-B21-1) (≤ 1103 psig)

☐ (1) Select SRV's to equalize suppression pool heating, using FIGURE A as a guide.

☐ (2) If the Instrument Air System is lost,
then depressurize with sustained SRV opening.



Δ = ADS VALVES

The letter followed by a color designates the new color on suppression pool temperature recorders N71-R601A, B, C, D, on panel 1H13-P870.

FIGURE A

☐ d. RWCU (Recirculation Mode (04-1-01-G33-1) (≤1103 psig)

> **CAUTION**
>
> Contact Chemistry personnel prior to discharging RPV coolant to areas outside secondary containment.

☐ e. RWCU (blowdown mode)
(04-1-01-G33-1) (Section 5.1) (≤ 1103 psig)

3.5 When the RHR shutdown cooling interlocks clear (as indicated by RPV pressure less than 135 psig),
then initiate the shutdown cooling mode of RHR per 04-1-01-E12-1.

3.6 If the RHR shutdown cooling mode cannot be established and further cooldown is required,
then continue to cooldown with the system listed in step 3.4.

3.7 If RPV cooldown beyond that which can be accomplished by depressurization (i.e. to less than 212 °F) is required,
then enter EP-8 (Alternate Shutdown Cooling).

3.8 If the RPV cooldown is under control and the Plant condition is stable,
then proceed to cold shutdown per IOI 03-1-01-3.

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EMERGENCY PROCEDURE

CONTAINMENT CONTROL

SAFETY RELATED

Prepared: G A Johnson Date 11/10/82

Reviewed: Gary D. Shamo Date 11/10/82
Technical Review

Reviewed: RG Keith Date 11/10/82
Operations Superintendent

Concurrence: _____ Date _____
Chemistry/Radiation Superintendent

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Nuclear Plant Quality Superintendent

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0	None
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12	None

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1.0 PURPOSE

The purpose of this procedure is to control Containment and Drywell temperatures, pressure and level. This procedure will be performed concurrently with the procedure from which it was entered.

NOTE

Refer to EPP-1 for concurrent requirements of the Emergency Plan.

2.0 ENTRY CONDITIONS

NOTE

Enter the paragraph(s) of this procedure as required by the entry condition and perform only the actions of that paragraph(s). Due to the close coupling of all containment parameters, when one entry condition is met, all other parameters listed below must be closely monitored. The paragraphs should be performed concurrently with each other as the entry conditions dictate. When the entry condition is cleared, the actions of this Emergency Procedure are not required.

The entry conditions for this procedure are any of the following:

		Paragraph
___	2.1 Drywell pressure above +1.73 psig	3.1
___	2.2 Drywell temperature above 135 °F	3.2
___	2.3 Suppression Pool temperature above 95 °F	3.3
___	2.4 Suppression Pool level above 18.83'	3.4
___	2.5 Suppression Pool level below 18.45'	3.4
___	2.6 Containment temperature above 90 °F	3.5

3.0 OPERATORS ACTION

☐ 3.1 Monitor and control drywell pressure less than 15 psig and containment pressure less than 12 psig as follows:

> **NOTE**
>
> If the drywell and containment require venting simultaneously by this section, containment take precedence.

☐ 3.1.1 Confirm or initiate a reactor scram.

☐ 3.1.2 If the containment cooling system has isolated, then verify it has shifted to a containment cleanup mode. Refer to SOI-04-1-01-M41-1.

a. When the isolation signal has cleared, then restore containment cooling to the normal operating mode (04-1-01-M41-1)

> **CAUTION**
>
> Elevated containment pressure may trip the RCIC turbine on high exhaust pressure.

☐ 3.1.3 If cooling water to the drywell coolers has isolated, then maintain drywell cooler fans in operation.

a. When the cooling water isolation signal has cleared then restore drywell cooling per SOI 04-1-01-M51-1.

3.1.4 If containment pressure reaches 9.0 psig, then initiate containment spray (RHR Loop A preferred) to reduce containment pressure below 9.0 psig and start Hydrogen Igniters (04-1-01-E61-1).

NOTE

Containment spray should automatically initiate at 9 psig containment pressure (10 minute time delay), provided that 1.75 psig exists in the drywell.

3.1.5 If containment pressure cannot be maintained below 15 psig, then proceed to EP-5 (Rapid RPV Depressurization).

3.1.6 If containment pressure exceeds 17.25 psig, then vent the containment to reduce pressure below 17.25 psig as follows:

a. Place a jumper across contacts M4 and T4 for relay 1M71R1 at P871.

b. Open M41-F034 at P870.

c. Place a jumper across contacts M4 and T4 for relay 1M71R16 at P872.

d. Open M41-F035 at P870.

☐ 3.2 Monitor and control drywell temperatures as follows:

☐ 3.2.1 Operate all available drywell cooling when drywell temperature exceeds 135 °F (04-1-01-M51-1)

CAUTION

Whenever temperature near the RPV water level instrument cold reference leg vertical runs increases above the calibration range, inaccuracies are introduced into the indicated level. The actual RPV water level may be below the elevation of the lower instrument tap with an indicated level reading on scale if temperatures get too high.

☐ 3.2.2 If temperature near the cold reference leg vertical runs increases to the limits listed in the temperature column of TABLE A and the indicated RPV water level decreases to that given in the indicated level column,
then disregard the instrument for further reliability.

NOTE

TE-N010D = Point #9 on CNMT/DWL TEMP recorder (P870
TE-N008D = Red pen on CNMT/DWL CH-B TEMP recorder (P870)
TE-N008A = Red pen on CNMT/DWL CH-A TEMP recorder (P870)
TE-N008B = Red pen on CNMT/DWL CH-D TEMP recorder (P870)

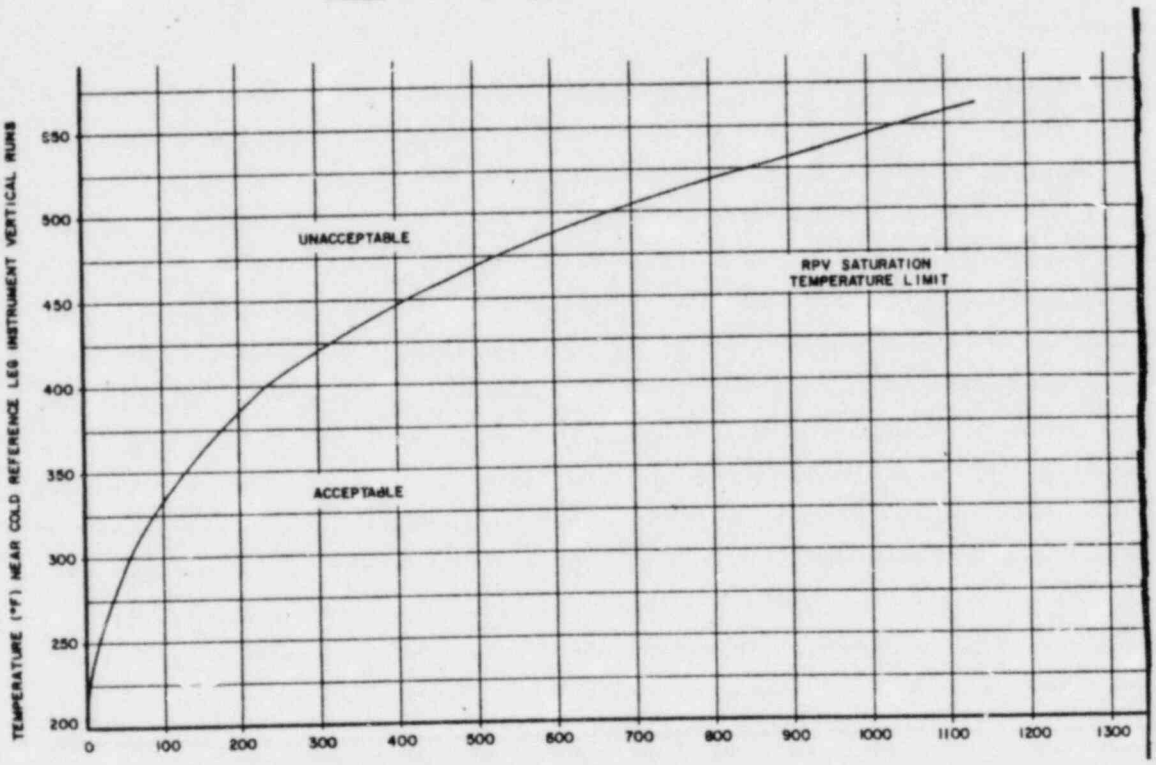
TABLE A

TEMP ELEMENT/ TEMPERATURE	INDICATED LEVEL	LEVEL INSTRUMENT			LOWER TAP ELEVATION
		TYPE	RANGE	NUMBER	
TE-N010D/ & TE-N0008D/ 108 °F	124 in.	Shutdown	0" to +400 in.	B21-LI-R605	-16 in.
TE-N0008A&B/ *	*	Wide Range	-160" to +60 in.	B21-UR-R623A&B B21-LI-R604	-169 in. -169 in.
TE-N0008A&B/ *	*	Narrow Range	0" to +60 in.	B21-LR-R608 B21-LI-R606A,B&C	-18.7 in. -18.7 in.
TE-N0008A&B/ *	*	Fuel Zone	-317 in. to -117 in.	B21-LR-R615 B21-LI-R610	-390.5 in -390.5 in

*For these instruments there is no elevated drywell temperature which will cause an on-scale reading if the actual level is at or below the lower instrument tap, i.e. if the instrument reads on scale, actual RPV water level is at or above the lower tap elevation.

☐ 3.2.3 If temperature near the cold reference leg instrument vertical runs (see Table A) reaches the RPV saturation limit unacceptable area as determined from Figure A.
Then proceed to EP-5 (Rapid RPV Depressurization).

FIGURE A



☐ 3.2.4 If drywell temperature cannot be maintained below 330 °F proceed to EP-5 (Rapid RPV Depressurization).

3.3 Monitor and control suppression pool temperature as follows:

CAUTION

If suppression pool level is below 18.33', temperature elements for TAH-L605 C&D may be uncovered and reading ambient air temperature. Use TR-605A-D under these conditions.

3.3.1 Attempt to close any stuck open SRV.

a. If any stuck open SRV cannot be closed within approximately two minutes, from the time it was opened, then scram the reactor.

b. Use Figure B as a guide for localized heating problems.

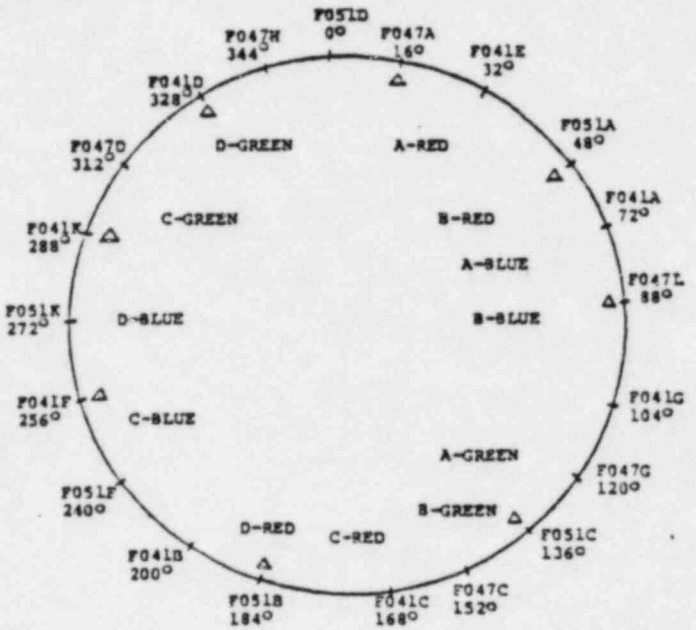


FIGURE B

3.3.2 If (1) adequate core cooling does not require that RHR pumps be continuously operated in the LPCI mode and (2) suppression pool temperature exceeds 95 °F,
then operate either RHR loop A and/or B in the suppression pool cooling mode (04-1-01-E12-1).

3.3.3 If suppression pool temperature reaches 110 °F,
then scram the reactor.

CAUTION

Do not depressurize the RPV below 50 psig (RCIC Low pressure isolation setpoint) unless motor driven pumps sufficient to maintain RPV water level are running and available for injection.

☐ 3.3.4 If necessary to determine if motor driven pumps can maintain RPV level,
then perform the following:

CAUTION

Maintain the RCIC turbine above 2000 RPM to ensure sufficient oil pressure.

☐ a. Note RPV water level.

☐ b. Reduce RCIC flow setpoint as low as possible.

☐ c. If RPV water level cannot be maintained with motor driven pumps
Then return RCIC flow setpoint to original value.

☐ d. If RPV water level can be maintained with motor driven pumps,
then RCIC may be shutdown and the RPV may be depressurized to less than 50 psig.

☐ 3.3.5 Maintain suppression pool water level greater than 14.5' in order to maintain NPSH requirements for pumps taking a suction from the suppression pool with the following temperature limitations:

☐ a. HPCS, LPCS, and RHR - maximum suppression pool temperature of 212 °F.

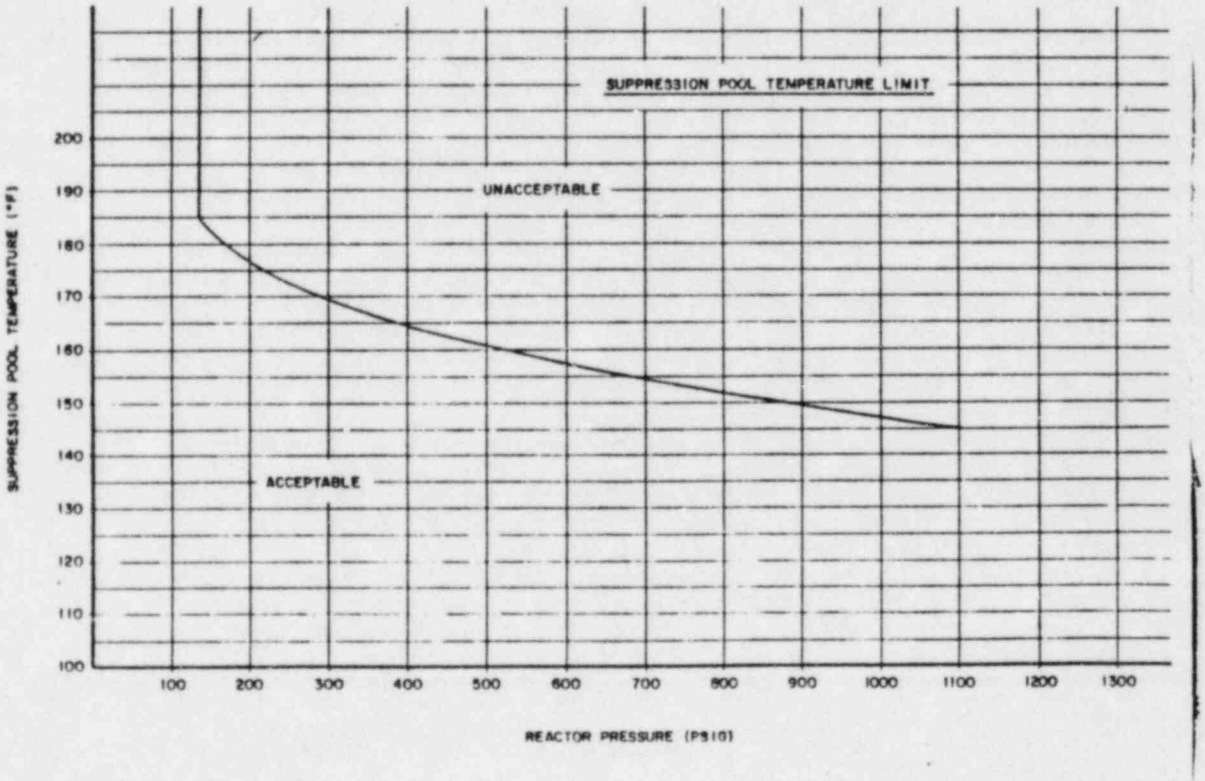
☐ b. RCIC - maximum suppression pool temperature of 140 °F.

NOTE

Cooldown rates greater than 100 °F/hr may be required when depressurizing to maintain RPV pressure within the heat capacity temperature limit as determined by Figure C.

☐ 3.3.6 If suppression pool temperature cannot be maintained below Suppression Pool temperature limit as determined by Figure C then maintain RPV pressure below the limit.

FIGURE C



☐ 3.3.7 If suppression pool temperature and RPV pressure cannot be restored or maintained below the Suppression Pool temperature limit as determined by Figure C,
then, enter EP-5 (Rapid RPV Depressurization).

☐ 3.4 Restore suppression pool water level to be between 18.45' and 18.83' as follows:

CAUTION

Suppression pool water level must be maintained greater than 14.5' to maintain NPSH for pumps taking a suction from the suppression pool, with the following temperature limitations: HPCS, LPCS, RHR - maximum suppression pool temperature of 212 °F.
RCIC - maximum suppression pool temperature 140 °F.

☐ 3.4.1 If suppression pool water level is less than 18.45', then restore level with normal suppression pool makeup (04-1-01-P11-2).

☐ a. If normal suppression pool makeup cannot restore level to 18.45';
then initiate SPMS .

☐ b. If a SPMS auto initiation signal is present,
then confirm initiation or initiate SPMS.

☐ c. If suppression pool water level cannot be maintained above the Suppression Pool Level Limit (Figure D).
Then confirm or initiate a SCRAM and proceed to EP-5 (Rapid RPV Depressurization).

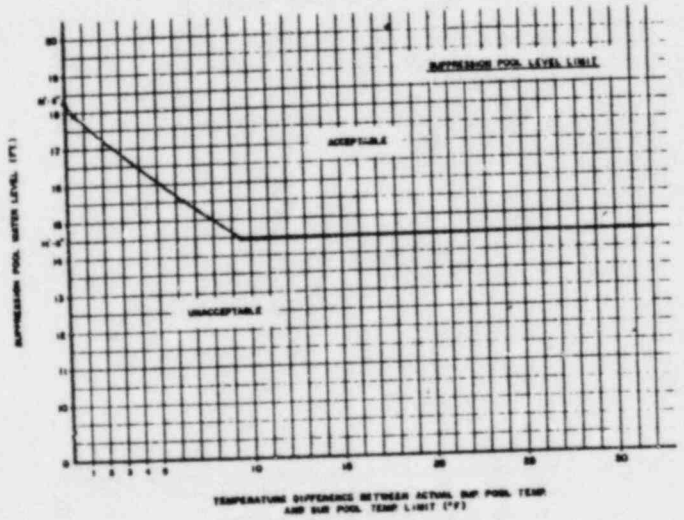


FIGURE D

NOTE

Temperature Difference = Suppression Pool Temperature limit (Figure C, Page 8) minus actual Suppression Pool Temperature.

☐ 3.4.2 If suppression pool water level increases to 18.83' or CST level decreases to 2.0';
then confirm auto transfer to HPCS and RCIC suctions from the CST to the suppression pool by verifying that:

HPCS - E22-F015 opens and then E22-F001 closes

RCIC - E51-F031 opens and then E51-F010 closes

☐ a. If the HPCS and RCIC suctions did not auto transfer, then manually transfer the HPCS and RCIC suctions in the sequence listed above.

> **CAUTION**
>
> Contact chemistry personnel prior to discharging suppression pool water outside secondary containment.

☐ 3.4.3 If the suppression pool water level increases to 18.83', then restore level with normal suppression pool drain (04-1-01-P11-2).

☐ a. If suppresison pool water level cannot be maintained below 18.83' and adequate core cooling is assured, then terminate injection into the RPV from sources external to the primary containment.

☐ 3.4.4 If primary containment water level reaches 170' (MSL) at 0 psig containment pressure,
then terminate injection into the RPV from sources external to the containment regardless of whether adequate core cooling is assured.

a. This corresponds to a static pressure on RHR pumps of approximately 35 psig when lined up for suction from the Suppression Pool [PI-R002A(B)(C)]

3.5 Monitor and control containment temperature as follows:

CAUTION

Whenever temperature near the RPV water level instrument cold reference leg vertical runs increases above calibration range inaccuracies are introduced into the indicated level. The actual RPV water level may be below the elevation of the lower instrument tap with an indicated level reading on scale if temperature gets too high.

3.5.1 If the temperature near the cold reference leg vertical runs increases to the limits listed in the temperature column of Table C and the RPV water level decreases to that given in the indicated level column,
then disregard the instrument for further reliability.

TEMPERATURE*	INDICATED LEVEL	LEVEL INSTRUMENT TYPE	LEVEL INSTRUMENT RANGE	LEVEL INSTRUMENT NUMBER	LOWER TAP ELEVATION
**	**	Shutdown	0" to +400 in.	B21-LR-R605	-16 in.
155 °F*	32.2	Wide Range	-160" to +60 in.	B21-UR-R623A&N B21-LI-R604	-169 in. -169 in.
**	**	Narrow Range	0" to +60 in.	B21-LR-R608 B21-LI-R606A,B&C	-18.7 in. -18.7 in.
**	**	Fuel Zone	-317 in. to -117 in.	B21-LR-R615 B21-LI-R610	-390.5 in -390.5 in

TABLE C

*Use CTMT CH A(B)(C) and (D) average for Elevation 119' (recorders on P870)

**For those instruments there is no elevated containment temperature which will cause onscale reading if the actual is at or below the lower instrument tap, i.e. If the instrument reads on scale, actual RPV water level is at or above the lower instrument tap.

Volume 05

Section 01

05-S-01-EP-4

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EMERGENCY PROCEDURE

LEVEL RESTORATION

SAFETY RELATED

Prepared: G A Johnson Date 11/8/82

Reviewed: Gary D. Shamon Date 11/10/82
Technical Review

Reviewed: R G Leet Date 11/10/82
Operations Superintendent

Concurrence: _____ Date _____
Chemistry/Radiation Superintendent

Reviewed: _____ Date _____
Nuclear Plant Quality Superintendent

Approved: _____ Date _____
Plant Manager

PSRC: _____ Date _____

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Revision	TCN No.
0	None
10	None
11	None

Title: Level Restoration	No.: 05-S-01-EP-4	Revision: 11	Page: 1

1.0 PURPOSE

The purpose of this procedure is to restore RPV water level to above TAF.

2.0 ENTRY CONDITIONS

Enter this procedure from EP-1 (Level Control) or EP-2 (Cooldown) when water level cannot be determined or maintained above TAF, or EP-6, Core Cooling Without Injection after RPV pressure decreases to 800 psig.

NOTE

TAF = -167" as read on the following fuel zone instrumentation:
P601 - RHR B/C Section - Reactor Water Level Indicator (B21-R615)
P601 - RHR A Section - Reactor Water Level Recorder (B21-R610)

3.0 OPERATOR ACTIONS

☐ 3.1 Lineup for injection and start pumps in at least two of the following injection subsystems:

NOTE

The most rapid way to initiate ECCS injection systems (HPCS, LPCS, LPCI) is by arming and depressing the respective divisional initiation pushbuttons.

☐ 3.1.1 Condensate/Feedwater (preferred) (04-1-01-N21-1) (1103 - 0 psig)

☐ 3.1.2 Condensate (04-1-01-N19-1) (270 - 0 psig)

☐ 3.1.3 HPCS (04-01-01-E22-1) (1103 - 0 psig)

☐ 3.1.4 LPCI A (04-1-01-E12-1) (325 - 0 psig)

☐ 3.1.5 LPCI B (04-1-01-E12-1) (225 - 0 psig)

☐ 3.1.6 LPCI C (04-1-01-E12-1) (225 - 0 psig)

☐ 3.1.7 LPCS (04-1-01-E21-1) (500 - 0 psig)

3.2 If less than two injection subsystems (paragraph 3.1) can be lined up, then lineup, but do not start as many of the following alternate injection subsystems as possible.

☐ 3.2.1 Standby Service Water Crosstie (150 - 0 psig)

a. Valves E12A-F094 and E12A-F096 are operated from RHR A section of 1H13-P601.

☐ 3.2.2 Fire System (04-1-01-P64-1) (Section 6.0)

☐ 3.2.3 ECCS flush connections from the Condensate Transfer System

a. (04-1-01-E12-1) (Section 6.0)

☐ 3.2.4 SLC (test tank) (04-1-01-C41-1) (Section 6.0) (1103 - 0 psig)

☐ 3.2.5 SLC (boron tank) 04-1-01-C41-1) (1103 - 0 psig)

☐ 3.2.6 ECCS Jockey Pumps (04-1-01-E12-1) (Section 6.0) (10 - 0 psig)

☐ 3.3 If at any time RPV water level cannot be determined, then determine that at least one injection subsystem is lined up for injection with one pump running or start pumps in alternate injection subsystems which are lined up for injection and open all ADS valves then proceed to EP-5, Rapid RPV Depressurization.

☐ 3.4 If at any time RPV water level cannot be determined and no injection subsystem or alternate injection subsystem is lined up for injection with at least one pump running,
then proceed to EP-6, Core Cooling Without Injection.

☐ 3.5 Monitor RPV pressure and water level and continue in this procedure at the steps indicated in Table A.

☐ 3.5.1 If at any time the RPV water level trend reverses or RPV pressure changes region,
then return to Table A, next page.

NOTE

500 psig = RPV pressure at which LPCS Shutoff Head is reached

50 psig = RCIC Low Steam Pressure Isolation Setpoint

		RPV LEVEL	
RPV PRESSURE	RANGE	INCREASING	NOT INCREASING
	HIGH (>500 psig)	PROCEED TO EP-1 (LEVEL CONTROL) PARAGRAPH 3.3	STEP 3.5.4
	INTERMEDIATE (>50 psig)	STEP 3.5.2	
	LOW (>50 psig)	STEP 3.5.3	STEP 3.5.5

TABLE A

☐ 3.5.2 Determine the availability of RCIC and perform the following actions:

☐ a. If RCIC is not ready for operation and RPV pressure is increasing,
then proceed to EP-5 (Rapid RPV Depressurization).

☐ b. If RCIC is not ready for operation and RPV pressure is not increasing or is steady,
then proceed to EP-1 (Level Control).

☐ c. If RCIC is ready for operation and when RPV water level increases to +11.4",
then proceed to EP-1 (Level Control) at paragraph 3.3.

☐ 3.5.3 Determine RPV pressure and perform the following actions:

☐ a. If RPV pressure is increasing,
then proceed to EP-5 (Rapid RPV Depressurization).

☐ b. If RPV pressure is not increasing,
then proceed to EP-1 (Level Control) at paragraph 3.3.

☐ 3.5.4 With RPV water level not increasing, perform the following actions:

☐ a. If RCIC is not operating,
then restart RCIC.

☐ b. If CRD is not operating but at least two injection subsystems are lined up for injection with pumps running,
then proceed to EP-5 (Rapid RPV Depressurization).

☐ c. If CRD is not operating but no injection subsystem is lined up for injection with at least one pump running,
then start pumps in all alternate injection subsystems which are lined up for injection (systems listed in paragraph 3.2).

☐ d. When RPV water level drops to TAF, perform the actions of (1) or (2) below and start Hydrogen Igniters (P870):

NOTE

TAF = -167" as read on fuel zone instrumentation
P601 - RHR Section - B21-R615
P601 - RCIC Section - B21-R610

(1) If no system, injection subsystem or alternate injection subsystem is lined up for injection with at least one pump running
then proceed to EP-6 (Core Cooling Without Injection).

(2) If any injection or alternate injection subsystem is lined up for injection with at least one pump running,
then proceed to EP-5 (Rapid RPV Depressurization).

☐ 3.5.5 Perform the following actions:

☐ a. If no injection subsystem is lined up for injection with at least one pump running,
then start pumps in alternate injections subsystems which are lined up for injection.

☐ b. If after performing substep 3.5.5.a, RPV pressure is increasing,
then proceed to EP-5 (Rapid RPV Depressurization).

☐ c. If after performing substep 3.5.5.a RPV pressure is not increasing, and RPV water level decreases to TAF,
then proceed to EP-7 (Core Cooling Without Level Restoration).

Volume 05

Section 01

05-S-01-EP-5

Revision: 11

Date:

EMERGENCY PROCEDURE

RAPID RPV DEPRESSURIZATION

SAFETY RELATED

Prepared: G A Johnson Date 11/9/82

Reviewed: Gary D. Shannon Date 11/10/82
Technical Review

Reviewed: R G Kent Date 11/10/82
Operations Superintendent

Concurrence: _____ Date _____
Chemistry/Radiation Superintendent

Reviewed: _____ Date _____
Nuclear Plant Quality Superintendent

Approved: _____ Date _____
Plant Manager

PSRC: _____ Date _____

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List of TCN's Incorporated

Revision	TCN No.
0	None
10	None
11	None

Title: Rapid RPV Depressurization	No.: 05-S-01-EP-5	Revision: 11	Page: 1

1.0 PURPOSE

The purpose of this procedure is to rapidly depressurize the RPV to allow injection systems to inject and restore RPV water level to an acceptable level above TAF, and to protect the containment.

2.0 ENTRY CONDITIONS

This procedure is entered from the following Emergency Procedures:

2.1 EP-3 (Containment Control) when:

2.1.1 Suppression Pool temperature and RPV pressure cannot be restored or maintained below the Suppression Pool temperature limit. (EP-3 step 3.3.7).

2.1.2 Drywell temperature near the cold reference leg instrument vertical runs has increased to the RPV saturation limit (EP-3 step 3.2.3)

2.1.3 Drywell temperature cannot be maintained below 330 °F (EP-3 step 3.2.4).

2.1.4 Containment pressure cannot be maintained below 15 psig (EP-3 step 3.1.5).

2.1.5 Suppression Pool Water level cannot be maintained above the Suppression Pool level limit (EP-3 step 3.4.1)

2.1.6 Containment temperature cannot be maintained below 185 °F (EP-3 step 3.5.3).

2.2 EP-4 (Level Restoration) when:

2.2.1 RPV water level cannot be determined but at least one injection or alternate injection subsystem is lined up with at least one pump running (EP-4 paragraph 3.3).

2.2.2 RPV water level is increasing, RPV pressure is between 50 psig and 500 psig and is increasing, and RCIC is not available (EP-4 step 3.5.2.a).

2.2.3 RPV water level is increasing, RPV pressure is less than 50 psig and RPV pressure is increasing (EP-4 step 3.5.3.a).

2.2.4 RPV water level is not increasing RPV pressure is greater than 50 psig, CRD is not operating but at least two injection subsystems are lined up for injections with pumps running (EP-4 step 3.5.4.b).

2.2.5 RPV water level is not increasing, RPV pressure is less that 50 psig any injection or alternate injection subsystem is lined up with pumps running and RPV pressure is increasing (EP-4 step 3.5.5.b)

2.3 EP-6 (Core Cooling Without Injection) when low pressure injection subsystems (or alternate injection subsystems) are lined up for injection with at least one pump running (EP-6 paragraph 3.1)

3.0 OPERATOR ACTIONS

CAUTION

Do not depressurize the RPV below 50 psig unless motor driven pumps sufficient to maintain RPV water level are running and available for injection

CAUTION

Maintain the RCIC turbine above 2000 RPM to ensure sufficient oil pressure

3.1 If necessary to determine if motor driven pumps can maintain RPV water level,
then perform the following:

☐ a. Note RPV water level

☐ b. Reduce RCIC flow setpoint as low as possible

☐ c. If RPV water level cannot be maintained with motor driven pumps, then return RCIC flow setpoint to original value

☐ d. If RPV water level can be maintained with motor driven pumps, then RCIC may be shutdown and the RPV may be depressurized to less than 50 psig.

☐ 3.2 Open all ADS valves.

☐ 3.3 Maintain suppression pool water level greater than 14.5' to maintain NPSH for pumps taking a suction from the suppression pool, with the following temperature limitations:

PUMPS	MAXIMUM SUPPRESSION POOL TEMPERATURE
HPCS, LPCS, RHR	212°F
RCIC	140°F

☐ 3.4 If not all ADS valves can be opened.
Then open other SRVs until a total of 8 SRVs are open.

NOTE

Defeating isolation interlocks may be required to complete paragraph 3.5

CAUTION

Contact Chemistry personnel prior to discharging RPV coolant outside secondary containment

☐ 3.5 If less than three SRV's can be opened, then rapidly depressurize the RPV using minimum number of systems required to depressurize to the point that RPV water level is increasing using the following system in the order that will minimize radioactive release to the environment:

☐ 3.5.1 Main Condenser (preferred method)

a) Jumper across contacts T1-M1 on B21-K1 A, B, C, and D at P691, 692, 693 & 694 respectively, to bypass MSIV closure on -150"

☐ 3.5.2 RHR (Steam Condensing Mode) (04-1-01-E12-1) (≤ 1103 psig)

☐ 3.5.3 Steam Seal Generator (04-1-01-N33-1) (≤ 1103 psig)

☐ 3.5.4 Off Gas preheater (04-1-01-N64-1) (≤ 1103 psig)

☐ 3.5.5 SJAE's (04-1-01-N62-1) (≤ 1103 psig)

☐ 3.5.6 RFPT's (04-1-01-N21-1) (≤ 1103 psig)

☐ 3.5.7 RWCU (Recirculation mode) (04-1-01-G33-1) (≤ 1103 psig)

☐ 3.5.8 Main Steam Line drains (04-1-01-B21-1) (≤ 1103 psig)

☐ 3.5.9 RWCU (blowdown mode) (04-1-01-G33-1) (≤ 1103 psig)

☐ 3.5.10 RCIC Steam Line (04-1-01-E51-1) (≤ 1103 psig)

☐ 3.5.11 Reactor Head Vent

a. Open B21-F005, F002, and F001 on P601

☐ 3.6 If suppression pool water level is less than 18.45' then initiate SPMS at the following location:

3.6.1 P870-Sections 4 and 10 - Manual Initiate Pushbuttons

NOTE

Containment spray will initiate automatically at 9 psig

☐ 3.7 If Containment pressure cannot be maintained below 15 psig, then proceed to EP-9 (RPV Flooding).

☐ 3.8 If RPV water level cannot be determined then proceed to EP-9 (RPV Flooding).

☐ 3.9 If temperature near the cold reference leg instrument vertical runs reaches the RPV saturation limit as determined from the Figure A then proceed to EP-9 (RPV Flooding).

☐ 3.10 If the following three conditions are met:

3.10.1 Temperature near the cold reference leg instrument vertical runs is less than the RPV saturation limit as determined by Figure A, and

3.10.2 Containment pressure is maintained less than 15 psig and

3.10.3 RPV water level can be determined, then enter EP-1 (Level Control) at paragraph 3.3

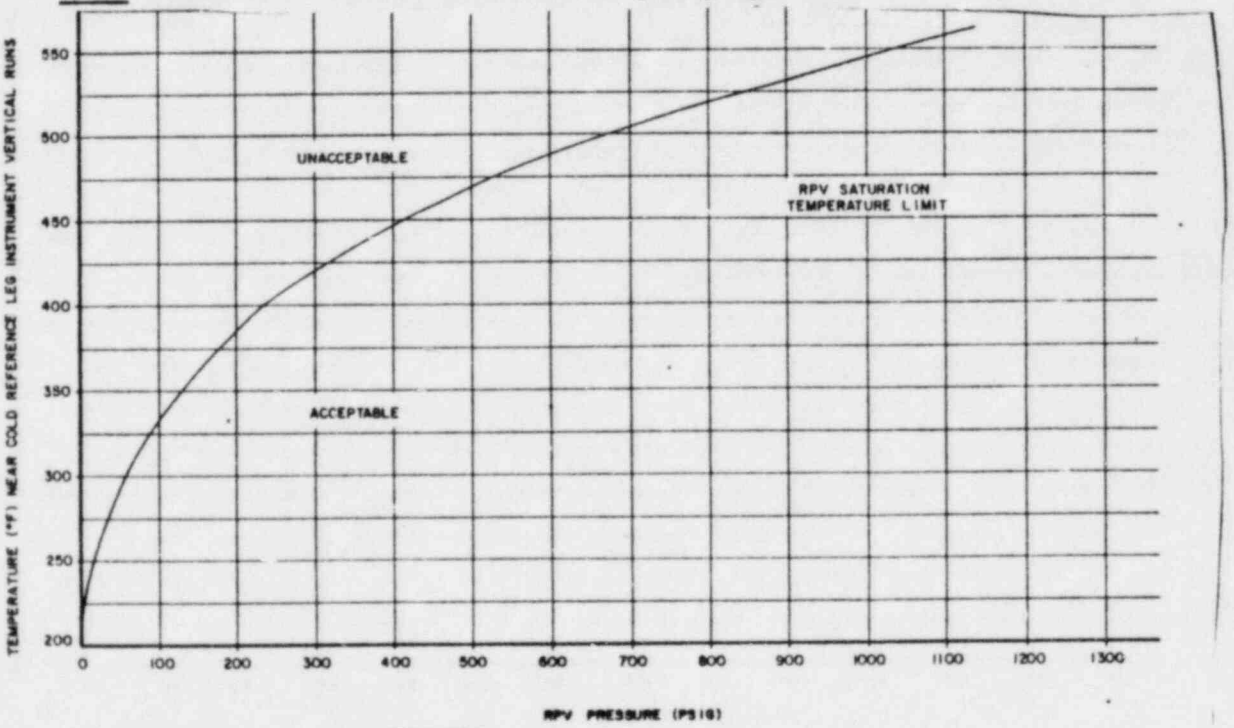

FIGURE A

Volume 05

Section 01

05-S-01-EP-6

Revision: 11

Date:

EMERGENCY PROCEDURE

CORE COOLING WITHOUT INJECTION

SAFETY RELATED

Prepared: G A Johnson Date 11/9/82

Reviewed: Gary D. Shaeffer Date 11/10/82
Technical Review

Reviewed: P G Kee Date 11/10/82
Operations Superintendent

Concurrence: _____ Date _____
Chemistry/Radiation Superintendent

Reviewed: _____ Date _____
Nuclear Plant Quality Superintendent

Approved: _____ Date _____
Plant Manager

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0	None
10	None
11	None

Title: Core Cooling Without Injection	No.: 05-S-01-EP-6	Revision: 11	Page: 1

1.0 PURPOSE

The purpose of this procedure is to cool the reactor core with steam sufficiently to maintain peak cladding temperature (PCT) below 2200 °F for a short time (approximately 20 minutes)

2.0 ENTRY CONDITIONS

This procedure is entered from EP-4 (Level Restoration) when either of the following conditions exists:

2.1 Condition 1

RPV water level cannot be determined and no injection or alternate injection subsystem is lined up for injection with at least one pump running.

2.2 Condition 2

2.2.1 RPV water level has decreased to -167" (TAF), and

2.2.2 No injection or alternate injection subsystem is lined up with at least one pump running.

3.0 OPERATOR ACTIONS

☐ 3.1 When an injection or alternate injection subsystem is lined up for injection with at least one pump running, then proceed to EP-5 (Rapid RPV Depressurization).

☐ 3.2 If RPV water level cannot be determined or RPV water level decreases to core midplane (-302" on fuel zone instrumentation), then open one SRV.

NOTE

Fuel zone instrumentation is as follows:

P601 - RHR B/C Section - Reactor Water Level Indication (B21-R615)

P610 - RHR A Section - Reactor Water Level Recorder (B21-R610)

☐ 3.3 When RPV pressure decreases to 800 psig, then open all ADS values and proceed to EP-4, Level Restoration.

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EMERGENCY PROCEDURE

CORE COOLING WITHOUT LEVEL RESTORATION

SAFETY RELATED

Prepared: G A Johnson Date 11/9/82

Reviewed: Gary O. Shannon Date 11/10/82
Technical Review

Reviewed: R G Keen Date 11/10/82
Operations Superintendent

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Chemistry/Radiation Superintendent

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List of TCN Incorporated:

Revision	TCN No.
0	None
10	None
11	None

Title: Core Cooling Without Level Restoration	No.: 05-S-01-EP-7	Revision: 11	Page: 1

1.0 PURPOSE

The purpose of this procedure is to cool the reactor core with spray flow until reactor water level can be restored.

2.0 ENTRY CONDITIONS

This procedure is entered from EP-4 (Level Restoration) when the following occur simultaneously:

2.1 RPV level cannot be restored and maintained above -167" (TAF) as read on the fuel zone instrumentation:

P601 - RHR Section - Reactor Water Level Recorder (B21-R615)

P601 - RCIC Section - Reactor Water Level Indicator (B21-R610)

2.2 RPV pressure is less than 50 psig (RCIC Low steam pressure isolation setpoint) and not increasing.

3.0 OPERATOR ACTIONS

NOTE
Cooldown rates greater than 100°F/hr may be attained when performing step 3.1.

☐ 3.1 Open all ADS valves.

☐ 3.2 If less than eight ADS valves are opened, open other SRV's until a total of eight SRV's are open.

☐ 3.3 Maintain Suppression Pool water level greater than 14.5' to ensure the NPSH requirements for the HPCS and LPCS pumps with a maximum Suppression Pool temperature of 212°F.

☐ 3.4 Inject water into the RPV from the Suppression Pool with the following systems:

3.4.1 HPCS (04-1-01-E22-1)

3.4.2 LPCS (04-1-01-E21-1)

☐ 3.5 When RPV pressure is less than 128 psig, verify HPCS or LPCS is spraying the core as follows:

☐ 3.5.1 Verify HPCS is spraying the core by observing:

a. HPCS pump discharge pressure is a minimum of 180 psig greater than RPV pressure.

b. HPCS flow is approximately 7114 gpm.

c. HPCS minimum flow valve (E22-F012) and test return valve (E22-F023) indicate closed.

☐ 3.5.2 Verify LPCS is spraying the core by observing:

a. LPCS pump discharge pressure is a minimum of 185 psig greater than RPV pressure.

b. LPCS flow is approximately 7114 gpm.

c. LPCS minimum flow valve (E21-F011) and test return valve (E21-F012) indicate closed.

☐ 3.6 If HPCS or LPCS is spraying the core,
then terminate all other injection into the RPV from sources external to the containment.

☐ 3.7 If water level is below the TAF (-167" as read on the following fuel zone instrumentation).
Then perform the following:

3.7.1 Start the Combustible Gas Control System per SOI (04-1-01-E61-1).

3.7.2 Start the hydrogen igniters on P870 (04-1-01-E61-1)

☐ 3.8 When RPV water level is restored to TAF (-167" as read on the following fuel zone level instrumentation).
Then enter EP-1 (Level Control) at paragraph 3.3)

P601 - RHR B/C Section - Reactor Water Level Indicator (B21-R615)

P601 - RHR A Section - Reactor Water Level Recorder (B21-R610)

Volume 05

Section 01

05-S-01-EP-8

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EMERGENCY PROCEDURE

ALTERNATE SHUTDOWN COOLING

SAFETY RELATED

Prepared: G A Johnson Date 11/9/82

Reviewed: Gary D. Shamon Date 11/10/82
Technical Review

Reviewed: R G Kuk Date 11/10/82
Operations Superintendent

Concurrence: _____ Date _____
Chemistry/Radiation Superintendent

Reviewed: _____ Date _____
Nuclear Plant Quality Superintendent

Approved: _____ Date _____
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0	None
10	None
11	None

Title: Alternate Shutdown Cooling	No.: 05-S-01-EP-8	Revision: 11	Page: 1

1.0 PURPOSE

The purpose of this procedure is to establish an alternate means for cooling down the RPV when the RHR Shutdown Cooling Mode is not available.

2.0 ENTRY CONDITIONS

This procedure is entered from EP-2 (Cooldown) when the following conditions exist:

2.1 RHR Shutdown Cooling Mode cannot be established

and

2.2 The RPV can no longer be cooled down by depressurization

and

2.3 RPV temperature must be reduced and/or the RPV must be maintained in a cold shutdown condition.

3.0 OPERATOR ACTIONS

☐ 3.1 Initiate Suppression Pool Cooling (04-1-01-E12-1)

☐ 3.2 Close or verify closed:

- ☐ 3.2.1 RPV head vents B21-F001, B21-F002, B21-F005
- ☐ 3.2.2 MSIV's
- ☐ 3.2.3 Main Steam Line Drains
- ☐ 3.2.4 RCIC steam line isolation valves

☐ 3.3 Open or shut SRV's as necessary such that two SRV's are left open.

☐ 3.4 Slowly increase RPV water level using any available injection subsystem to between (+101" and +129") to establish flow through the open SRV's back to the suppression pool.

☐ 3.5 Start one LPCS or LPCI pump with suction from the suppression pool.

3.5.1 LPCS (04-1-01-E12-1)

3.5.2 LPCI (04-1-01-E21-1)

☐ 3.6 Slowly increase the running (LPCS OR LPCI) pump flow to the maximum.

☐ 3.6.1 If RPV pressure does not stabilize above 53 psig, then start additional LPCS or LPCI pumps until RPV pressure is above 53 psig.

☐ 3.6.2 If RPV pressure does not stabilize below 110 psig with one LPCS or LPCI pump running, then open another SRV.

☐ 3.7 If the cooldown rate exceeds 100 °F/hr, then reduce LPCS and/or LPCI injection flowrate into the RPV until the cooldown rate decreases to less than 100°F/hr.

☐ 3.8 Control suppression pool temperature to maintain RPV water temperature above 70°F (04-1-01-E12-1 step 5.3).

☐ 3.9 Proceed to cold shutdown in accordance with IOI 03-1-01-3.

Volume 05

Section 01

05-S-01-EP-9

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EMERGENCY PROCEDURE

RPV FLOODING

SAFETY RELATED

Prepared: G A Johnson Date 11/9/82

Reviewed: Gary D. Shaver Date 11/10/82
Technical Review

Reviewed: P G Keith Date 11/10/82
Operations Superintendent

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Chemistry/Radiation Superintendent

Reviewed: _____ Date _____
Nuclear Plant Quality Superintendent

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Plant Manager

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List of TCN's Incorporated

Revision	TCN No.
0	None
10	None
11	None

Title: RPV Flooding	No.: 05-S-01-EP-9	Revision: 11	Page: 1

1.0 PURPOSE

The purpose of this procedure is to flood the RPV using all the available injection subsystems.

2.0 ENTRY CONDITIONS

This procedure is entered from EP-5 (Rapid RPV Depressurization) if any of the following occur:

2.1 Temperature near the cold reference leg instrument vertical runs exceeds the RPV saturation limit.

2.2 The RPV water level cannot be determined.

2.3 Containment pressure cannot be maintained below 12 psig or Drywell below 15 psig.

3.0 OPERATOR ACTIONS

☐ 3.1 If a minimum of three SRV's are open or if HPCS is running or in Standby Readiness
then:

☐ 3.1.1 Close the MSIV's

☐ 3.1.2 Close the Main Steam Line Drains

☐ 3.1.3 Isolate RCIC, RWCU, and RHR steam condensing

☐ 3.2 If RPV water level cannot be determined then:

☐ 3.2.1 Commence and increase injection into the RPV with the following systems until at least 3 SRV's are open and RPV pressure is not decreasing and is at least 92 psig above containment pressure.

☐ a. HPCS (04-1-01-E22-1)

☐ b. Condensate Booster Pumps (04-1-01-N19-1)

☐ c. LPCS (04-1-01-E21-1)

☐ d. LPCI (04-1-01-E12-1)

☐ e. Condensate pumps (04-1-01-N19-1)

☐ f. CRD (04-1-01-C11-1) (Section 6.0)

☐ g. Standby Service Water crosstie (valves E12-F094 and F096 on P601)

☐ h. Fire System (04-S-01-P64-1) (Section 6.0)

☐ i. ECCS Flush connections from Condensate Transfer (04-1-01-E12-1) (Section 6.0)

☐ j. SLC Test tank (04-1-01-C41-1) (Section 6.0)

☐ k. SLC Boron tank (04-1-01-C41-1)

☐ l. ECCS jockey pumps (04-1-01-E12-1) (Section 6.0)

☐ 3.2.2 Maintain RPV pressure at least 92 psig above containment pressure by throttling injection.

☐ 3.2.3 Start Hydrogen Igniters on P870 (04-1-01-E61-1)

☐ 3.3 If RPV water level can be determined, then commence and increase injection into the RPV with the following systems until RPV water level is increasing:

☐ 3.3.1 HPCS (04-1-01-E22-1)

☐ 3.3.2 Condensate Booster Pumps (04-1-01-N19-1)

☐ 3.3.3 LPCS (04-1-01-E21-1)

☐ 3.3.4 LPCI (04-1-01-E12-1)

☐ 3.3.5 Condensate Pumps (04-1-01-N19-1)

☐ 3.3.6 CRD 04-1-01-C11-1)

☐ 3.3.7 Standby Service Water crosstie (valves E12-F094 and F096 on P601)

☐ 3.3.8 Fire System (04-S-01-P64-1) (Section 6.0)

☐ 3.3.9 ECCS Flush connections from Condensate Transfer (04-1-01-E12-1) (Section 6.0)

☐ 3.3.10 SLC test tank (04-S-01-C41-1) (Section 6.0)

☐ 3.3.11 SLC Boron tank (04-S-01-C41-1)

☐ 3.3.12 ECCS jockey pumps (04-S-01-E12-1) (Section 6.0)

☐ 3.4 If containment pressure cannot be maintained below 15 psig, then initiate containment spray (04-1-01-E12-1) irrespective of whether adequate core cooling is assured.

☐ 3.5 If containment pressure exceeds 17.25 psig, then vent the containment per EP-3, Step 3.1.6 to reduce pressure below 17.25 psig.

☐ 3.6 If RPV water level cannot be determined, then:

☐ 3.6.1 Fill all RPV Level instrumentation reference columns (If accessible).

3.6.2 Continue injecting water into the RPV until the average drywell area temperature is below 212°F and RPV water level instrumentation is available.

☐ 3.6.3 If RPV water level can be determined,
then continue in this procedure at step 3.7.

☐ 3.6.4 If it can be determined that the RPV is filled or if RPV pressure is at least 92 psig above containment pressure,
then terminate all injection into the RPV and reduce RPV water level.

☐ 3.6.5 If RPV water level indication is not restored within the maximum acceptable core uncovery time (Figure A) after commencing termination of injection into the RPV,
then return to step 3.2 of this procedure

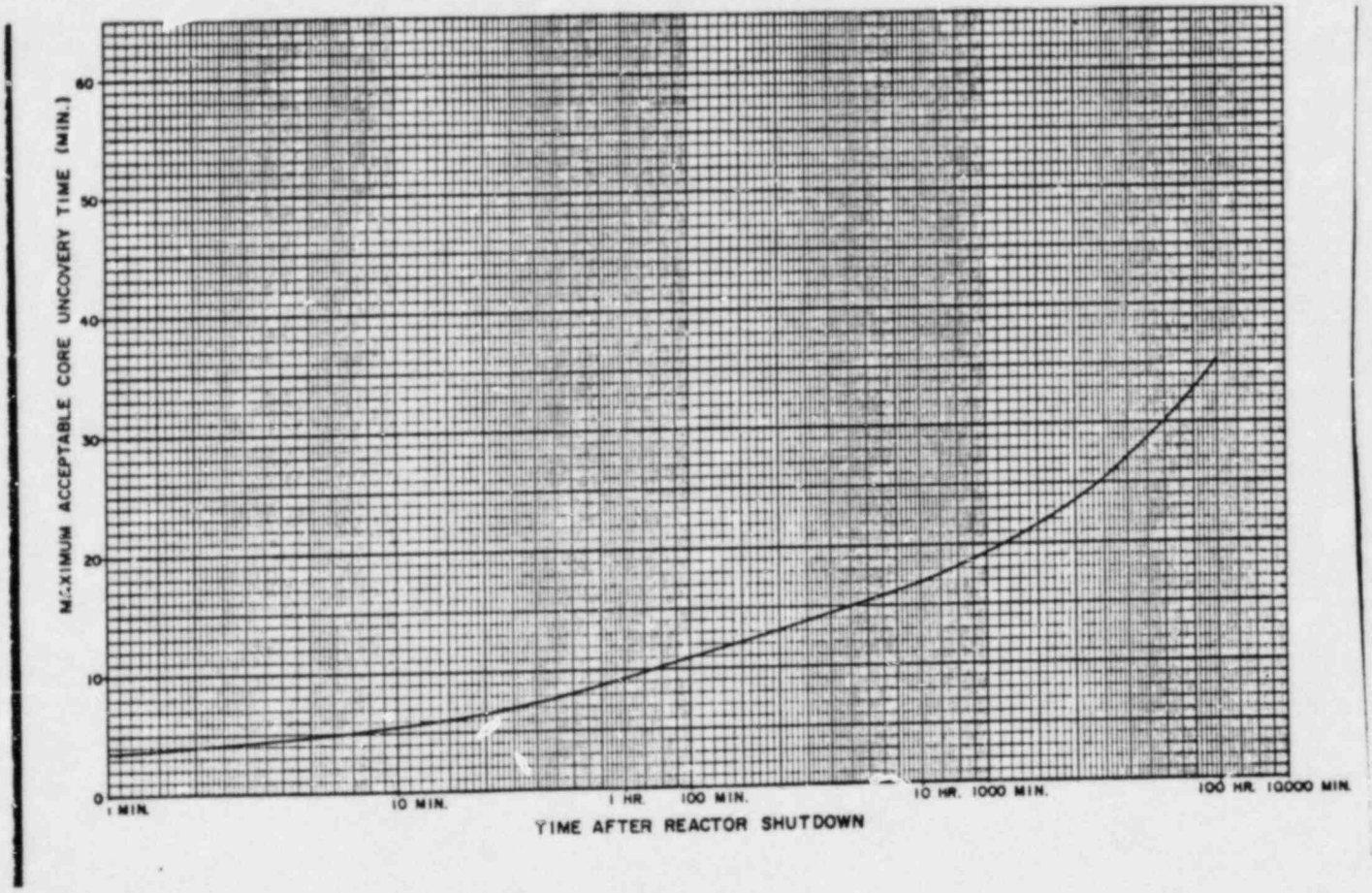

FIGURE A

☐ 3.7 When containment pressure can be maintained below 15 psig,
then enter EP-1 (Level Control at step 3.3).

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Section 01

05-S-01-EP-10

Revision 10

Date:

EMERGENCY PROCEDURE

REACTIVITY CONTROL

SAFETY RELATED

Prepared: G A Johnson Date 11/10/82

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List of TCN's Incorporated:

Revision	TCN No.
0	None
10	None

Title: Reactivity Control	No.: 05-S-01-EP-10	Revision: 10	Page: 1

1.0 PURPOSE

The purpose of this procedure is to reduce reactor power, following an ATWS, to a level that can be safely absorbed by the available heat sink. Entry into Containment Control (05-S-01-EP-3) is performed concurrently, as required.

2.0 ENTRY CONDITIONS

Condition exists that require a Reactor Scram and:

2.1 Reactor power greater than 5% on APRM's or greater than 20 on range 8 on inserted IRM's

and not all control rods are inserted between 00 and 06 (use 0D7 when necessary).

or

2.2 Reactor power cannot be determined

and not all control rods are inserted between 00 and 06 (use OD-7 as necessary).

3.0 OPERATOR ACTIONS

3.1 Enter ONEP 05-S-01-I-1 (Reactor Scram) and perform concurrently with this procedure.

3.2 If the turbine has tripped or if the MSIV's have closed,
Then trip the reactor recirculation pumps.

3.2.1 If the turbine has not tripped or if the MSIV's are open
then reduce reactor recirculation flow to minimum (LFMG; minimum valve position)

3.3 If reactor power is greater than 5% or cannot be determined,
then initiate SLC and perform step 3.10, 3.11, and 3.12.

3.4 If reactor power is less than 5% and a SRV is open or cycling
then trip the Reactor Recirculation Pumps and start RCIC in full flow test mode (CST to CST) per 06-OP-1E51-R-0005 to provide a heat sink.

3.5 Observe control rod positions, If all rods are inserted between position 00 and 06.
Then complete ONEP 05-S-02-I-1 (Reactor Scram)

3.5.1 If all rods are not inserted between position 00 and 06,
then reset scram (allow time for SDV to drain) and attempt a second manual scram.

a. If the scram can be reset but the scram valves did not open on the first scram,
then proceed to step 3.6.

b. If the scram cannot be reset,
Then proceed to step 3.8

3.6 Observe scram valve positions; If all are not open
Then open them as follows:

3.6.1 Deenergize the scram solenoids by opening circuit breakers CB2A (52-1C71102), CB8A (52-1C711108), CB2B (52-1C711202) and CB8B (52-1C711208) located in the respective (A or B) RPS bus in the RPS MG set rooms

or

3.6.2 Isolate the scram air header by closing C11-F095.

3.7 Observe control rod positions again; If all less than 06,
Then complete ONEP 05-1-02-I-1 (Reactor Scram)

IF NOT all less than 06
Then reset scram and scram individual rods via test switches at HCU's (if containment is accessible).

3.8 If all control rods cannot be inserted to less than 06 by the preceding or if the reactor scram cannot be reset, Then perform the following:

3.8.1 Close HCU accumulator charging water header isolation valve (1C11-F034) (if accessible)

3.8.2 Attempt manual control rod insertion using RC&IS.

3.9 If/When all control rods are fully inserted (less than 06) Then complete ONEP 05-1-02-I-1 (Reactor Scram)

3.10 If excessive power is still being discharged to the suppression pool as determined by:

3.10.1 More than 2 SRV's open or cycling after initial lift, or

3.10.2 Drywell pressure greater than 2 psig and suppression pool temperature is greater than 115 °F.

Then reduce RPV level by terminating all water injection into the RPV except CRD and SLC until power is less than 5%.

3.11 If SLC is not functioning
Then insert negative reactivity per 04-1-01-P11-1 (Section 6.0) or 04-1-01-N19-1 (Section 6.0).

3.12 When Reactor power has been reduced to that which suppression pool can be maintained <180°F,
then observe control rod positions and perform 3.5, 3.6, 3.7, 3.8, or 3.9 until all control rods are fully inserted (between 00 and 06).