BWR EMERGENCY PROCEDURE GUIDELINES

REVISION 2

ERRATA 9/28/82

These errata make the following minor changes and corrections to the BWR Emergency Procedure Guidelines, Revision 2, a prepublication draft of which was submitted to the NRC on June 1, 1982:

1. An additional entry condition, high RPV pressure, has been incorporated in the RPV Control Guideline to maintain the correspondence between entry conditions and controlled parameters which pervades the EPGs.

2. The superfluous conjunction, "or", has been deleted from each entry condition in the RPV Control Guideline.

3. The Heat Capacity Temperature Limit high endpoint pressure calculated for the typical plant has been corrected from 1020 to 1090 psig.

4. "Any" has been changed to "all" in Step SP/T-1 to make it clear that closing only one of several stuck-open SRV's does not complete the action required.

5. The conditional and action phrases in Steps SP/T-2, DW/T-1 and CN/T-1 have been reversed consistent with good human factors engineering.

6. Caution #18 has been associated with Step CN/T-2 to make it clear that adequate core cooling should not be sacrificed to spray the containment for these conditions.

7. Step C1-7 has been corrected to make it clear that if not operating, HPCI should be restarted even if RCIC is operating, and vice versa.

8. Step C2-1.2 has been reformatted to make it clear that no SRV, AOS or otherwise, should be opened if suppression pool water level is below the elevation of the top of the SRV discharge device.

BWR EMERGENCY PROCEDURE GUIDELINES

The attached errata pages, dated 9/28/82, are replacement pages to the BWR Emergency Procedure Guidelines, Revision 2 (pre-publication draft, dated May 20, 1982).

Errata pages as follows:

RC-1
RC-5
CC-2
CC-3
CC-5
C1-3
C1-5
C2-1
C2-2

RPV CONTROL GUIDELINE

PURPOSE

The purpose of this guideline is to:

- Restore and maintain RPV water level within a satisfactory range,
- Shut down the reactor, and
- Control RPV pressure and cool down the RPV to cold shutdown conditions ([100°F < RPV water temperature < 212°F (cold shutdown conditions)]).

ENTRY CONDITIONS

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

- RPV water level below [+ 12 in. (low level scram setpoint)]
- RPV pressure above [1045 psig (high RPV pressure scram setpoint)]
- Drywell pressure above [2.0 psig (high drywell pressure scram setpoint)]
- An isolation which requires or initiates reactor scram
- A condition which requires reactor scram, and reactor power above [3% (APRM downscale trip)] or cannot be determined.

OPERATOR ACTIONS

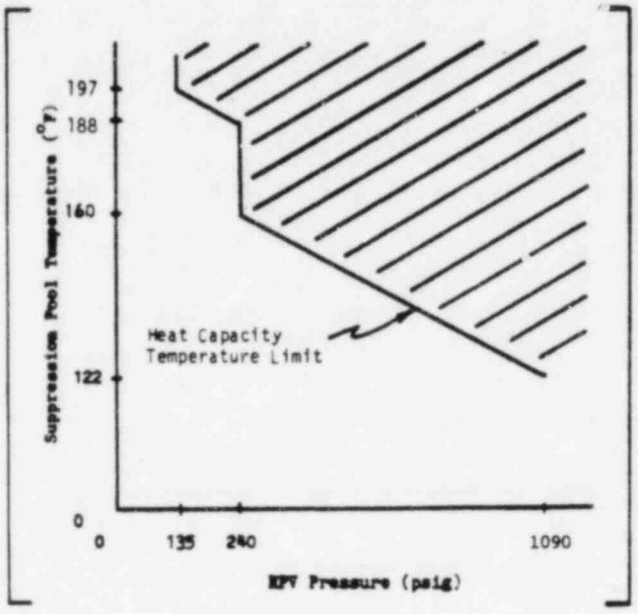
RC-1 If reactor scram has not been initiated, initiate reactor scram.

Irrespective of the entry condition, execute [Steps RC/L, RC/P, and RC/Q] concurrently.

If while executing the following steps:

- Suppression pool temperature cannot be maintained below the Heat Capacity Temperature Limit, maintain RPV pressure below the Limit.

#8
#13
#14



- Suppression pool water level cannot be maintained below the Suppression Pool Load Limit, maintain RPV pressure below the Limit.

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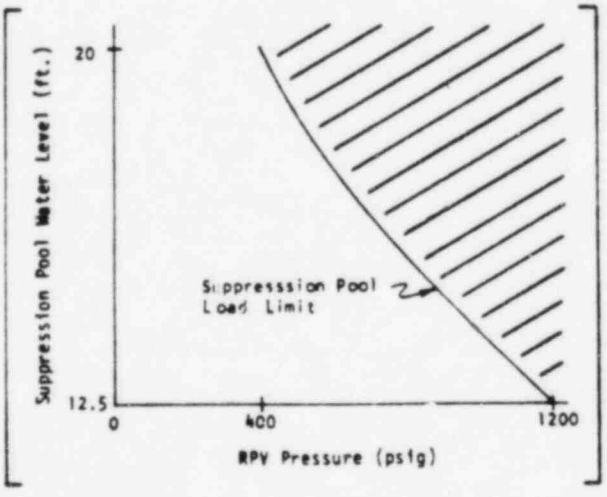


- Steam Cooling is required, enter [procedure developed from CONTINGENCY #3].

SP/T Monitor and control suppression pool temperature.

SP/T-1 Close all SORVs.

If any SORV cannot be closed [within 2 minutes (optional plant-specific time interval)], scram the reactor.

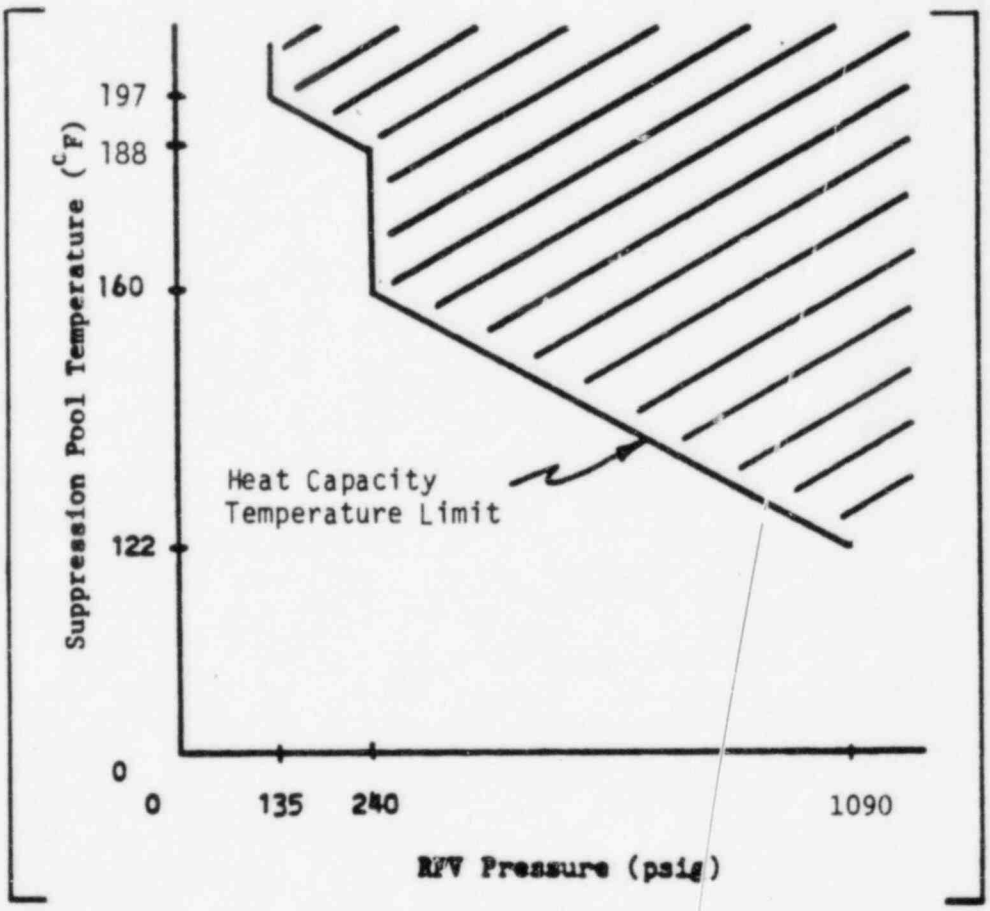
SP/T-2 When pool temperature exceeds [95°F (most limiting suppression pool temperature LCO)], operate available suppression pool cooling.

#18

SP/T-3 Before suppression pool temperature reaches [110°F (Boron Injection Initiation Temperature)], scram the reactor.

SP/T-4 If suppression pool temperature cannot be maintained below the Heat Capacity Temperature Limit, maintain RPV pressure below the Limit.

#8
#13
#14



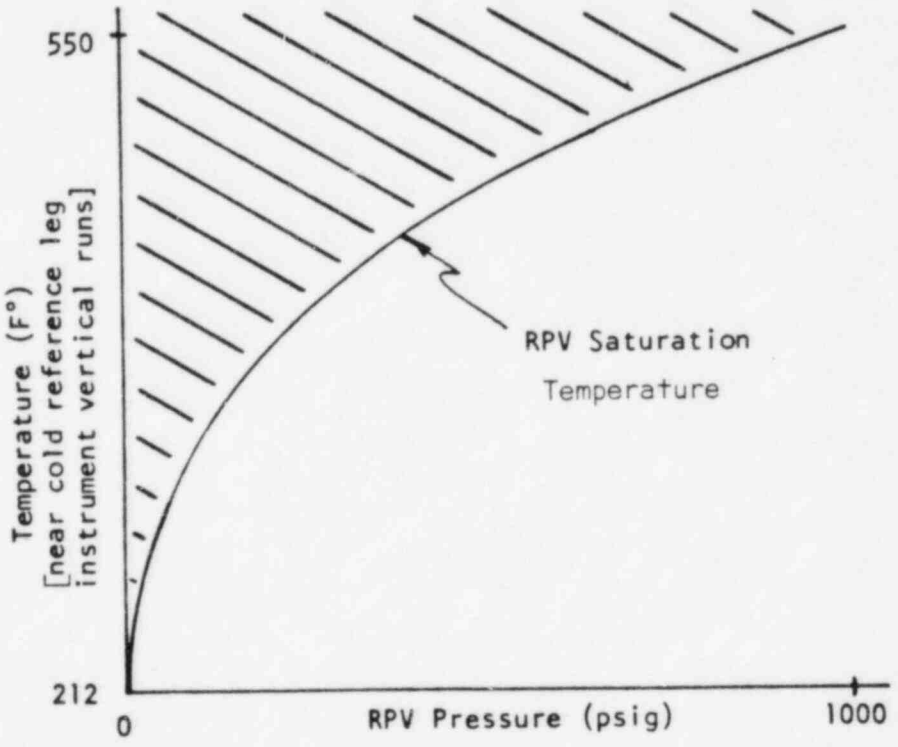
If suppression pool temperature and RPV pressure cannot be restored and maintained below the Heat Capacity Temperature Limit, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; enter [procedure developed from the RPV Control Guideline] at [Step RC-1] and execute it concurrently with this procedure.

DW/T Monitor and control drywell temperature.

DW/T-1 When drywell temperature exceeds [135°F (drywell temperature LCO or maximum normal operating temperature, whichever is higher)], operate available drywell cooling.

#6

DW/T-2 If drywell temperature [near the cold reference leg instrument vertical runs] reaches the RPV Saturation Temperature, RPV FLOODING IS REQUIRED; enter [procedure developed from the RPV Control Guideline] at [Step RC-1] and execute it concurrently with this procedure.



Errata
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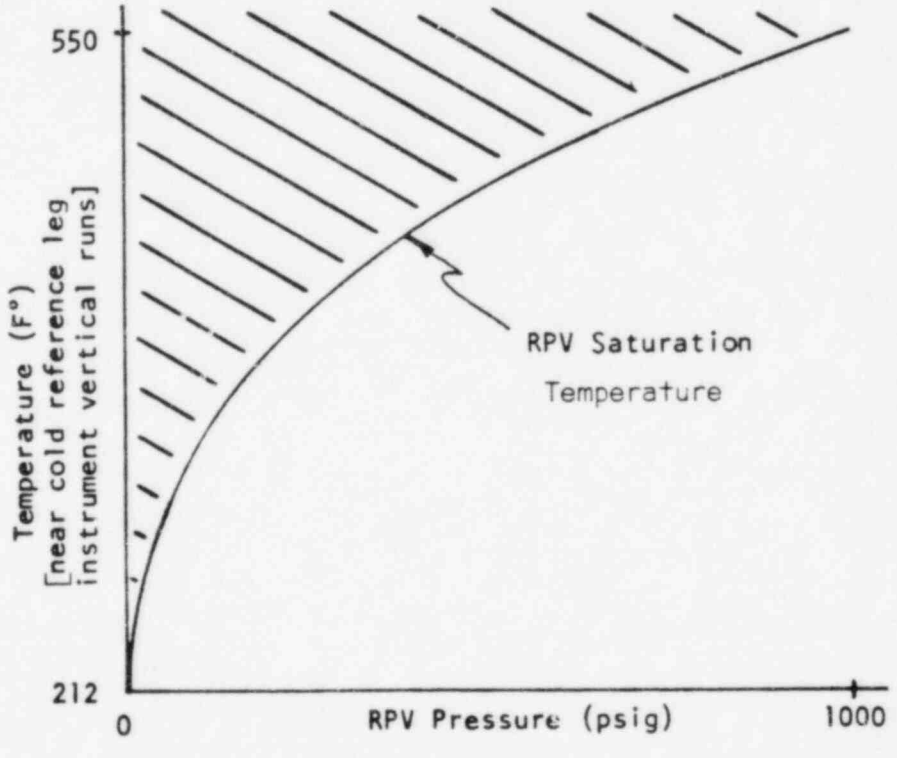
CN/T Monitor and control containment temperature.

CN/T-1 When containment temperature exceeds [90°F (containment temperature LCO)], operate available containment cooling. #6

CN/T-2 Before containment temperature reaches [185°F (containment design temperature)] but only if [suppression chamber pressure is above 1.7 psig (Mark III Containment Spray Initiation Pressure Limit)], initiate suppression pool sprays. #18

CN/T-3 If containment temperature cannot be maintained below [185°F (containment design temperature)], EMERGENCY RPV DEPRESSURIZATION IS REQUIRED; enter [procedure developed from the RPV Control Guideline] at [Step RC-1] and execute it concurrently with this procedure.

CN/T-4 If containment temperature [near the cold reference leg instrument vertical runs] reaches the RPV Saturation Temperature, RPV FLOODING IS REQUIRED.



C1-4 RPV WATER LEVEL INCREASING, RPV PRESSURE HIGH

Enter [procedure developed from the RPV Control Guideline] at [Step RC/L].

C1-5 RPV WATER LEVEL INCREASING, RPV PRESSURE INTERMEDIATE

If HPCI and RCIC are not available and RPV pressure is increasing, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. When RPV pressure is decreasing, enter [procedure developed from the RPV Control Guideline] at [Step RC/L].

If HPCI and RCIC are not available and RPV pressure is not increasing, enter [procedure developed from the RPV Control Guideline] at [Step RC/L].

Otherwise, when RPV water level reaches [+12 in. (low level scram setpoint)], enter [procedure developed from the RPV Control Guideline] at [Step RC/L].

C1-6 RPV WATER LEVEL INCREASING, RPV PRESSURE LOW

If RPV pressure is increasing, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. When RPV pressure is decreasing, enter [procedure developed from the RPV Control Guideline] at [Step RC/L].

Otherwise, enter [procedure developed from the RPV Control Guideline] at [Step RC/L].

C1-7 RPV WATER LEVEL DECREASING, RPV PRESSURE HIGH OR INTERMEDIATE

If HPCI or RCIC is not operating, restart whichever is not operating.

If no CRD pump is operating but at least 2 injection subsystems are lined up for injection with pumps running, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. When RPV water level is increasing or RPV pressure drops below [100 psig (HPCI or RCIC low pressure isolation setpoint, whichever is higher)], return to [Step C1-3].

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C1-3 MONITOR RPV PRESSURE AND WATER LEVEL. CONTINUE IN THIS PROCEDURE AT THE STEP INDICATED IN THE FOLLOWING TABLE:

ALTERNATE FORMAT FOR STEPS C1-3 THROUGH C1-8

RPV PRESSURE REGION

RPV WATER LEVEL	HIGH (>425 PSIG (*))	INTERMEDIATE (425 PSIG (*) to 100 PSIG (+))	LOW (<100 PSIG (+))
INCREASING	**C1-4** ENTER (PROCEDURE DEVELOPED FROM THE RPV CONTROL GUIDELINE) AT (STEP RC/L).	**C1-5** IF HPCI AND RCIC ARE NOT AVAILABLE AND RPV PRESSURE IS INCREASING, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. WHEN RPV PRESSURE IS DECREASING, ENTER (PROCEDURE DEVELOPED FROM THE RPV CONTROL GUIDELINE) AT (STEP RC/L). IF HPCI AND RCIC ARE NOT AVAILABLE AND RPV PRESSURE IS NOT INCREASING, ENTER (PROCEDURE DEVELOPED FROM THE RPV CONTROL GUIDELINE) AT (STEP RC/L). OTHERWISE, WHEN RPV WATER LEVEL REACHED (+12 IN. (LOW LEVEL SCRAM SETPOINT)), ENTER (PROCEDURE DEVELOPED FROM THE RPV CONTROL GUIDELINE) AT (STEP RC/L).	**C1-6** IF RPV PRESSURE IS INCREASING, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. WHEN RPV PRESSURE IS DECREASING, ENTER (PROCEDURE DEVELOPED FROM THE RPV CONTROL GUIDELINE) AT (STEP RC/L). OTHERWISE, ENTER (PROCEDURE DEVELOPED FROM THE RPV CONTROL GUIDELINE) AT (STEP RC/L).
DECREASING	**C1-7** IF HPCI OR RCIC IS NOT OPERATING, RESTART WHICHEVER IS NOT OPERATING. IF NO CRD PUMP IS OPERATING BUT AT LEAST 2 INJECTION SUBSYSTEMS ARE LINED UP FOR INJECTION WITH PUMPS RUNNING, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. WHEN RPV WATER LEVEL IS INCREASING OR RPV PRESSURE DROPS BELOW (100 PSIG (HPCI OR RCIC LOW PRESSURE ISOLATION SETPOINT, WHICHEVER IS HIGHER)), RETURN TO (STEP C1-3). IF NO CRD PUMP IS OPERATING AND NO INJECTION SUBSYSTEM IS LINED UP FOR INJECTION WITH AT LEAST ONE PUMP RUNNING, START PUMPS IN ALTERNATE INJECTION SUBSYSTEMS WHICH ARE LINED UP FOR INJECTION. WHEN RPV WATER LEVEL DROPS TO (-164 IN. (TOP OF ACTIVE FUEL)): ● IF NO SYSTEM, INJECTION SUBSYSTEM OR ALTERNATE INJECTION SUBSYSTEM IS LINED UP WITH AT LEAST ONE PUMP RUNNING, STEAM COOLING IS REQUIRED. WHEN ANY SYSTEM, INJECTION SUBSYSTEM OR ALTERNATE INJECTION SUBSYSTEM IS LINED UP WITH AT LEAST ONE PUMP RUNNING, RETURN TO (STEP C1-3). ● OTHERWISE, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. WHEN RPV WATER LEVEL IS INCREASING OR RPV PRESSURE DROPS BELOW (100 PSIG (HPCI OR RCIC LOW PRESSURE ISOLATION SETPOINT, WHICHEVER IS HIGHER)), RETURN TO (STEP C1-3).	**C1-8** (IF NO HPCS OR LPCS SUBSYSTEM IS OPERATING,) START PUMPS IN ALTERNATE INJECTION SUBSYSTEMS WHICH ARE LINED UP FOR INJECTION. IF RPV PRESSURE IS INCREASING, EMERGENCY RPV DEPRESSURIZATION IS REQUIRED. WHEN RPV WATER LEVEL DROPS TO (-164 IN. (TOP OF ACTIVE FUEL)) ENTER (PROCEDURE DEVELOPED FROM CONTINGENCY #4).

IF WHILE EXECUTING THE FOLLOWING STEPS THE RPV WATER LEVEL TREND REVERSES OR RPV PRESSURE CHANGES REGION, RETURN TO (STEP C1-3).

*RPV PRESSURE AT WHICH LPCS SHUTOFF HEAD IS REACHED. +HPCI OR RCIC LOW PRESSURE ISOLATION SETPOINT, WHICHEVER IS HIGHER.

CONTINGENCY #2

EMERGENCY RPV DEPRESSURIZATION

#13,#14

C2-1 When either:

- Boron Injection is required and all injection into the RPV except from boron injection systems and CRD has been terminated and prevented, or

- Boron Injection is not required,

C2-1.1 Initiate IC.

C2-1.2 If suppression pool water level is above [4 ft. 9 in. (elevation of top of SRV discharge device)]:

- Open all ADS valves.
- If any ADS valve cannot be opened, open other SRVs until [7 (number of SRVs dedicated to ADS)] valves are open.

C2-1.3 If less than [3 (Minimum Number of SRVs Required for Emergency Depressurization) SRVs are open [and RPV pressure is at least 50 psig (Minimum SRV Re-opening Pressure) above suppression chamber pressure], rapidly depressurize the RPV using one or more of the following systems (use in order which will minimize radioactive release to the environment):

#22

- Main condenser
- RHR (steam condensing mode)
- [Other steam driven equipment]
- Main steam line drains
- HPCI steam line
- RCIC steam line
- Head vent
- IC tube side vent

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If RPV Flooding is required, enter [procedure developed from CONTINGENCY #6].

C2-2 Enter [procedure developed from the RPV Control Guideline] at [Step RC/P-4].