All pages
Rev. 0

INDIAN POINT STATION

UNIT 2

SYSTEM OPERATING PROCEDURE 1.2.4 REV. 0

DRAINING REACTOR COOLANT SYSTEM
BELOW 62 FEET 10 INCHES

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DRAINING REACTOR COOLANT SYSTEM BELOW 62 FEET 10 INCHES

1 PRECAUTIONS AND LIMITATIONS

1.1 Maintain two RHR heat exchangers with CCW in service until minimum RCS temperature can no longer be maintained.

1.2 Maintain RHR flow balanced between both RHR heat exchangers when two are in service.

1.3 IF RHR is lost in mid loop drained down condition, RCS boiling could occur in as little time as 2.5 minutes.

1.4 WHEN loops are being drained, indicated hose level will lag actual level.

1.5 Ensure sufficient space available in CVCS tank in service for draindown.

1.6 RWP shall be obtained whenever RCS is to be opened to atmosphere.

1.7 Radiation release permit shall be completed prior to opening any steam generator manway diaphragm or valve which may cause rapid venting of RCS to Containment exhaust system.

2 INITIAL CONDITIONS

2.1 IF draining for refueling, RCS temperature is less than 140F. _____

2.2 IF draining for maintenance, RCS temperature is less than 180F. _____

2.3 RHR system in service with ONE RHR pump in service. _____

2.4 RCS level stable at 62 ft. 10 inches. _____

2.5 Calibrate letdown flow integrator if being used to determine letdown volume. _____

3 PROCEDURE

3.1 Secure RHR Purification Pump:

1 Deenergize pump from MCC-28A (VC, 68 ft. EL compartment 2B). _____

2 Fully open Pump Bypass 4055. _____

3 Fully open RHR Letdown HCV-133. _____

4 Fully open Letdown Backpressure Regulator PCV-135. _____

3.2 IF VCT bypassed, close charging line stop valves:

Normal Charging Stop 204B CLOSED _____
Alternate Charging Stop 204A CLOSED _____

3.3 IF VCT NOT bypassed, isolate VCT:

1 Ensure charging pump secured. _____

2 Close VCT Inlet Stop 357. _____

3 Close charging line stop valves:

Normal charging stop 204B CLOSED _____
Alternate charging stop 204A CLOSED _____

4 Mark VCT level. _____

3.4 Set letdown flow integrator to zero if available, OR record CVCS hold-up tank level for tank in service. _____

3.5 Place Letdown High Temperature Diversion Valve TCV-149 in DIVERT. _____

3.6 Record following data on Attachment 1A:

1 Time _____
2 CCR RCS level indication _____
3 Letdown flow integrator count _____
4 Letdown flow rate (when divertion increment begins) _____
5 Letdown flow X time if integrator is not used (when divertion increment ends) _____

3.7 Place VCT High Level Diversion Valve LCV-112A in DIVERT. _____

3.8 WHEN any of following are reached, close LCV-112A and record stop data:

1 1 inch decrease in RCS level _____
2 600 gallons increase on integrator _____
3 5 minutes _____

3.9 Ensure RCS level is tracking curve RCS-17B for change made in step 3.8. _____

3.10 Repeat steps 3.6 through 3.8 until desired level is reached. _____

3.11 Place TCV-149 in AUTO. _____

3.12 IF VCT bypassed, open charging line stop valve:

Normal Charging Stop 204B OPEN _____
OR
Alternate Charging Stop 204A OPEN _____

3.13 IF VCT not bypassed, unisolate VCT:

1 Open VCT Inlet Stop 357. _____
2 Open charging line stop valve:

Normal Charging Stop 204B OPEN _____
OR
Alternate Charging Stop 204A OPEN _____

3 Restart charging pump if needed. _____

```
* * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                   *
*                    CAUTION                        *
*                                                   *
*     Leave HCV-133 fully open if Purification      *
*     Booster Pump in service.                      *
*                                                   *
* * * * * * * * * * * * * * * * * * * * * * * * * * *
```

3.14 Place RHR Purification Pump in service:

1 Fully open RHR Letdown HCV-133 _____
2 Energize Pump from MCC-28A _____

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* * * * * * * * * * * * * * * * * * * * * * * * *
*                                               *
*                    CAUTION                    *
*                                               *
*     Do NOT completely close Purification Pump *
*     Bypass 4055 during pump operation.        *
*                                               *
* * * * * * * * * * * * * * * * * * * * * * * * *
```

3 Throttle pump bypass 4055 to regulate flow. _____

4 Throttle PCV-135 to regulate letdown and VCT level. _____

NOTE: Level should remain at point marked in step 3.3.4.

```
* * * * * * * * * * * * * * * * * * * * * * * * *
*                    CAUTION                    *
*                                               *
*     Prior to removal of Steam Generator manway *
*     diaphragm, adjust PRT eductor to maintain *
*     approximately 6 inch Hg on PI 3100, to    *
*     preclude high radiogas in work even during *
*     removal. WHEN high activity has dissipated *
*     return eductor setting to .5 to 1 inch Hg. *
*                                               *
* * * * * * * * * * * * * * * * * * * * * * * * *
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* * * * * * * * * * * * * * * * * * * * * * * * *
*                    CAUTION                    *
*                                               *
*     IF RHR pump is secured, when restarting,  *
*     close HCV 638 AND HCV 640, THEN start pump *
*     to prevent vortexing. Reestablish RHR     *
*     flow for cooling.                         *
*                                               *
* * * * * * * * * * * * * * * * * * * * * * * * *
```

3.15 During RHR operation with loop partially drained, frequently monitor RHR pumps for cavitation. _____

ATTACHMENT 1A

RCS DRAINDOWN LEVEL LOG

START TIME _____ FINISH TIME _____ DESIRED LEVEL _____

NOTES:
1 Starting point will be taken from Graph RCS-17B.

2 Set letdown flow integrator to zero.

3 Flow integrator reading from each increment shall NOT increase by more than 600 gallons.

4 Drain RCS in increments of 1 inch, 600 gallons, or 5 minutes, whichever occurs first.

5 Flow integrator reading shall be within 500 gallons of value derived from Graph RCS-17B.

Time	CCR Level Indication	RCS Level per RCS-17B	Letdown Integrator	Letdown Flow OR Flow X Time	No Cavitation
Start					