INDIAN POINT STATION

UNIT NO. 2

SOP-3.4 REV. 0

COLLAPSING THE STEAM BUBBLE IN THE PRESSURIZER

Kenneth R. Chapple
Written By

Reviewed By

SNSC Review / Date

Approved By / Date 7/16/76

Collapsing the Steam Bubble in the Pressurizer

1.0 Intent

This procedure describes the method for collapsing the pressurizer steam bubble during RCS cooldown.

2.0 Precautions and Limitations

2.1 The maximum allowable Δ T between the RCS and the pressurizer should be less than 320°F to prevent thermal shocking of the surge line thermal sleeve.

2.2 The maximum allowable pressurizer cooldown rate is 200°F per hour.

3.0 Initial Conditions

3.1 Reactor coolant letdown flow is being provided by either the RHR system letdown purification path via valve HCV-133 or the letdown orifices or some combination of both.

3.2 Either reactor coolant pump No. 23 or No. 24 is in operation to provide spray flow. Additional pumps may be operating as desired by the operator.

3.3 The makeup system is in Automatic to supply the required blend to the Volume Control Tank per SOP-3.2.

4.0 Procedure

4.1 De-energize the pressurizer heaters if this has not already been done.

4.2 Adjust the setpoint of low pressure letdown backpressure controller PCV-135 to maintain 400 to 450 psig in the Reactor Coolant System.

NOTE: The low pressure letdown valve will maintain purification flow. If it is desired to fill the pressurizer more rapidly increase charging flow (not to exceed 120 gpm).

4.3 Manually increase the charging pump speed approximately 40 to 50 gpm above letdown flow to increase pressurizer level (do not exceed 120 gpm).

4.4 Control the reactor coolant pressure at approximately 400 to 450 psig by manual control of spray valves PCV-455A and PCV-455B.

NOTES:
1. When the water level rises above the spray nozzle, the spray will lose its effectiveness and the pressure will begin to rise. It will be necessary at this time to reduce charging flow to maintain pressure.

2. It will take approximately 675 more gallons of water to collapse the bubble, from the time level indication is lost.

4.5 Reduce charging flow as required to maintain a pressure of 400 to 450 psig. When the pressurizer is completely filled, the charging flow will have to be adjusted to match letdown flow.

NOTES:
1. When spray no longer has any effect on pressure the pressurizer is filled solid.

2. Pressurizer spray valves PCV-455A and PCV-455B should be left open to facilitate cooldown of the pressurizer.

3. It is desireable to initiate auxiliary spray to the pressurizer and isolate the normal charging path to facilitate pressurizer cooldown.

4. Monitor both pressurizer steam and water space temperature to determine status of cooldown.

4.6 Adjust charging pump speed and letdown backpressure controller PCV-135 to achieve desired letdown flow and Reactor Coolant System pressure.