

-- PHILADELPHIA ELECTRIC COMPANY
LIMERICK GENERATING STATION

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4/1/92

OT-100 REACTOR LOW LEVEL - BASES

1.0 ENTRY CONDITIONS

1.1 Unexpected/unexplained drop in RPV water level.

This procedure specifies actions to be taken in response to an unexpected or unexplained decrease in reactor level. Some typical events covered by this procedure are the trip of a RFP or condensate pump, and failure of the feedwater control system in the minimum flow direction. Entry into this procedure is inappropriate under shutdown conditions when reactor level is being manually controlled. Manual operation of the feedwater system while in a shutdown condition will require the operator to routinely compensate for unexpected decreases in water level, and the majority of the steps in the procedure are applicable only to high power operation.

2.0 IMMEDIATE OPERATOR ACTIONS

2.1 Reduce Reactor power per Reactor Maneuvering Shutdown Instructions until normal level is restored.

Reactor low level results from an imbalance between reactor feedwater input and reactor steam output. The fastest way to reduce steam output following a sudden decrease in feedwater flow, and thereby terminate the reactor level decrease, is to reduce recirc. flow.

2.2 IF a RFP controller malfunction exists,
THEN take manual control of RFPs.

If a RFP controller has failed, transferring from the auto to manual control mode may restore sufficient feedwater flow. Transferring control from a RFP's controller to its motor speed changer may also prevent a low level scram if feed flow can be increased in time.

- 3.1 IF ^{RPV} level drop condition occurs,
OR ^{RPV} level drop enter T-101
AND exit this procedure.

This step reminds the operator that the OT procedure should be exited and the RPV Control procedure must be entered on a Reactor Low Water Level scram.

3.0 FOLLOW-UP ACTIONS

- 3.1 IF level drop was caused by RFP
OR Condensate Pump trip,
THEN determine cause of trip
AND restart pump.

The operator should determine the cause of any pump trip which caused the level decrease. The pumps should be returned to service as soon as possible to allow full power operation.

- 3.2 IF level drop was caused by RFP controller malfunction,
THEN return RFP to its normal control mode after
malfunction is cleared.

Since automatic RFP control requires the least operator attention, efforts should be made to return to the automatic control mode as soon as possible.

- 3.3 IF level drop was caused by failure of feed flow/steam flow
signal,
AND level is stabilized at 35 in.,
THEN consider swapping to single element control
AND restoring FW control to automatic until repairs can be
made.

Since automatic RFP control requires the least operator attention, and single element control does not use feed flow/steam flow inputs, on a failure of either of these signals efforts should be made to return to the automatic single element mode as soon as possible.

- 3.4 IF level drop is not evident on redundant instruments, THEN consider possible instrument sensing line failure AND verify actual level utilizing instruments with independent sensing lines.

In the event that redundant instruments do not respond correspondingly, it is essential to utilize independent instruments to determine actual level and thus respond accordingly. An indicated level reduction can occur from leakage/failure of an instruments variable leg, while an indicated level increase can occur from leakage/failure of an instruments reference leg. (Reference: Resolution of Generic Issue 101)

- 3.5 IF the selected FW level transmitter has failed, THEN transfer to the alternate level transmitter.

If the selected level transmitter is failing, it is appropriate to transfer to the alternate transmitter to stop the level transient and restore reactor level to normal. (Reference: Resolution of Generic Issue 101)

- 3.6 IF recirc runback occurred, THEN reset the runback per S43.0.B.

Certain plant conditions, specified under OT-100, Verification of Automatic Actions, will cause the recirc. pumps to runback to achieve 62% rated core flow or 28% rated speed. When these plant conditions have been cleared, the runback logic must be reset in order to raise the speed of the recirc. M-G sets.

- 3.7 IF third condensate pump is not available, THEN maintain RFP suction pressure above 300 psig by limiting Reactor power.

When fewer than three condensate pumps are operating, feed flow must be restricted to prevent tripping the RFPs on low suction pressure. The actual low suction pressure trip point setting of the RFPs is 241 psig. 300 psig has been conservatively chosen as a limit to account for possible calibration shift.

4.0 VERIFICATION OF AUTOMATIC ACTIONS

<u>Actions</u>	<u>Conditions</u>
4.1 Recirc. reduced to a speed corresponding to 62% rated core flow.	One RFP with less than 20% flow AND low reactor level (27.5") <u>OR</u> One condensate pump tripped with total Feedwater flow greater than 85%
4.2 Recirc. runback to 28% of indicated speed	Total Feedwater flow less than 20% <u>OR</u> low Reactor level (12.5") <u>OR</u> Pump discharge valve less than 90% open.
4.3 REACTOR HI-LO LEVEL alarm	30"
4.4 Steam Group II isolation	12.5"

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