

Operator/Station Response to a Loss of Service Water (SW)/Gland Water (GW)

Scenario – a loss of off-site power (LOOP) results in reactor trip. Division 1 emergency diesel generator (EDG) is postulated to fail on demand. SW/GW is cross-connected with GW supplied to all SW pumps from the division 1 SW pumps.

Recognition and Response

Alarms would annunciate (Service Water Pump B/D Brg Wtr Low Flow) and (SW Gland WTR Supply System Trouble) in the control room indicating a degraded condition with SW/GW. Other alarms would annunciate as a result of a reactor trip, loss of AC power and loss of division 1 EDG. The loss of off-site power would result in declaring a notice of unusual event and entering procedure 5.3EMPWR (Attachment 2, step 1.3) that would require dispatching an operator to return the Zurn strainer to service (wiper motor needs to be reset). Once on station that same operator would observe an alarm condition (Gland Water System B Low Pressure) for GW that is in the immediate area. This represents the first opportunity to detect the loss of GW condition. In addition, the same operator would be informed to check the SW/GW system for problems as a result of the annunciator alarm in the control room. This represents the second opportunity to detect the loss of GW condition. Indications in the pump room include GW pressure and flow, and both would indicate zero. The operator would then contact the control room to feed back what was observed and that the annunciator response procedure did not provide enough guidance to restore GW flow or pressure. At this point the control room would have the dispatched operator check the valve alignment in accordance with procedure 2.2.71 (referenced in the annunciator response procedure) to verify the correct configuration. This action would result in identifying the division 2 supply valve was closed and the cross-tie valves were open (with no division 1 pumps operating). Upon restoring GW, the dispatched operator would verify pressure and flow are nominal. At this point, two opportunities existed to recover GW flow. In addition, an operator would have been dispatched to monitor division 2 EDG performance while continuing to recover the failed division 1 EDG.

In the event that SW/GW was not recovered (low probability) or the division 1 EDG, then the operating SW pump would fail at some time into the event. An additional annunciator would alarm in the control room alerting the operators to a loss of all SW. If that occurred, then a station black would result from the shutdown of the division 2 EDG since no cooling water would be supplied and a site area emergency would be declared. HPCI and RCIC would continue to control reactor vessel level. Station blackout procedure (5.3SBO) would be entered and personnel would be dispatched to recover an emergency diesel generator. The emergency response organization would establish plans to support recovery of power sources (normal and emergency) and SW/GW.

After 4 hours (assumed SBO coping time), it is assumed the station batteries would be lost. Reactor vessel level will begin to lower as a function of steaming. At or before reactor vessel level reached the top of active fuel (approximately 2 hours after the batteries fail), a general emergency would be declared. This action would result in a

J-6

minimum protective action recommendation of evacuation of all sectors out to two miles and the affected sectors out to five miles. If needed all sectors can be evacuated out to ten miles with an average evacuation time of 62 minutes for adverse weather conditions.