UNDERTAKING J1.8

Undertaking

TO PROVIDE DURATIONS THAT STORAGE IS BEING USED DURING EACH OF THE TRANSFERS FROM EACH OF THE UNITS 1, 2, 3, AND 4

Response

The 125 m^3 of storage in the Downgraded D2O System and the 75 m^3 of storage in the D2O Cleanup System are necessary to complete the processes of upgrading (i.e., removing light water from the heavy water) and clean-up (i.e., removal of impurities) of downgraded water flushed from the moderator systems of Units 3, 1 and 4 while the units are undergoing refurbishment. The primary purpose of these tanks is not long-term storage of downgraded/upgraded water during unit refurbishment outages, but instead the facilitation of the above processes which are necessary steps in OPG's heavy water management plan.

OPG is not able to define set storage durations of downgraded water in the Downgraded D2O tanks and the heavy water awaiting cleanup in the D2O Cleanup tanks. This is because the TRF undertakes these activities (upgrading and cleanup) depending on process availability and need in order to have reactor grade heavy water available for purposes of satisfying the needs of the Ontario nuclear fleet. These activities are influenced by several interdependent variables, which can change from one refurbishment outage to the next. For example, the active TRF cycle (and the necessity and duration to store heavy water in the 200 m^3 of Downgraded and Cleanup tanks) is dependent on the timing of TRF outages, the amount of downgraded water generated by operating units that requires upgrading, and the schedule and volume of heavy water shipments from Bruce Power. The duration of storage in these tanks also depends on other heavy water management activities ongoing at Darlington, equipment performance and the various types of impurities that are contained in the heavy water drained during refurbishment.

Moderator drain during the Unit 2 refurbishment was also processed for upgrading and clean-up. As explained in Ex. D2-2-10, Attachment 5, OPG temporarily reconfigured the HWMB to create adequate storage space for this water. Piping connections between the HWMB storage tanks and the TRF allowed for the processing to occur and where necessary, water was drummed to keep separate the various grades of water until it was returned to reactor grade. With the D2O Storage Project facility available for Unit 3, OPG was able to flush the Unit 3 moderator with a large volume (approximately 130 m3) of demineralized water following the moderator drain, which avoided the need to use low curie heavy water to detritiate the moderator system. This approach was employed to lower the amount of radioactivity in the moderator thereby reducing refurbishment staff dose levels and lowering emissions.