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INL INITIAL NOTIFICATION REPORT

Entered By:	C. P. Forshee
Date Entered:	30 May 2010
Site:	ATR Complex
Responsible Organization:	ATR Operations
Title:	Unplanned Shutdown Of The ATR Due To Higher Than Normal Stack Effluent Radiation Levels
Discussion of Event/Condition:	**Summary:** Since the INR of 27 May 2010, "Increased Radioactivity in the ATR Primary Coolant System (PCS) and Stack Effluent", spikes of varying magnitude in stack effluent noble gas activity continued to be observed. The indications remain consistent with a minor defect in a fueled experiment which periodically vents buildup of fission product gases to the primary coolant. As reported in the INR on 27 May, action levels for additional notification (including to senior INL management) and controlled shutdown of the reactor based on the results of monitoring primary coolant activity and stack effluent activity were established. The action levels were: 1) notification for stack effluent total nuclide activity greater than 60 Ci/day or PCS water activity greater than 0.10 μCi/ml and 2) reactor shutdown for stack effluent total nuclide activity greater than 100 Ci/day or PCS water activity greater than 0.15 μCi/ml. At 0640 on 30 May 2010, the 0541 real time monitor (RTM) sample data became available (one hour time delay between sample and display of results) and the stack effluent discharge rate for total nuclides was 105 Ci/day. **Action Taken:** Notifications to management and preparations for a controlled normal reactor shutdown were made. PCS water activity for a sample drawn at the same time was .0802 μCi/ml. Reactor shutdown was completed at 0849.
Safety Significance:	Low. The reactor was shut down based on increasing release of fission products to the primary coolant and evidence of a failed experiment. Continued operations could have resulted in significant impact to subsequent plant maintenance and operations. This type of failure and the maximum stack effluent and PCS water activities observed were well within those established in the safety basis for the facility.
Reportability:	No reportability criteria were met.