

N309. CECIL Lances Bruce's Boilers

Over the past few years Ontario Hydro has become increasingly concerned about accumulations of sludge in its nuclear plant boilers, so a comprehensive sludge management program has been instituted to combat build-up. This included developing CECIL (Consolidated Edison Combined Inspection and Lancing) equipment for CANDU boilers, requiring a significantly reconfigured robotic system as well as modifications to the boilers themselves.

CECIL was developed to help extend the life of steam generators by providing better secondary side maintenance. CECIL 4 is a tele-operated robot which can remotely perform PWR steam generator secondary side inspections, soft and hard sludge removal, sludge sampling and foreign object search and retrieval.

Initial development of the CECIL equipment for Bruce began in March 1993. The first field use at Bruce A unit 4 boilers began just five months later on August 9, 1993. Site mobilization, cleaning, and demobilization for the four boilers of the east bank required 42 days. A combination of barrel spraying and inter-tube lancing removed sludge to the tubesheet throughout the cold leg and throughout most of the hot leg. An average of almost 1,000 pounds of wet sludge was removed from each boiler. Cleaning the four boilers of the west bank began on October 1 and was completed in twenty days, eight days ahead of schedule. Over 8,500 pounds of wet sludge was removed from the eight boilers.

For more, "CECIL Lances Bruce Boilers," by J. Malaugh and D. Monaghan, Nuclear Engineering International, pp. 23-25, March 1994.