

**ABSTRACT OF WET SCRAPE SAMPLING CAMPAIGN
BRUCE 'B' UNIT 6 - SPRING '95**

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Part of OHN's Periodic Inspection Program requires that pressure tube material is regularly sampled in selected reactors. One parameter to be measured by this sampling is the concentration of Deuterium (D2) at various sites in a number of pressure tubes. In the case of the lead CANDU unit (Unit 3 at Bruce A) this sampling is carried out by regular removal of a selected fuel channel for a full examination of the pressure tube material. For other CANDU units the sampling is carried out by scraping pressure tube material from selected fuel channels. In the case of multi-unit stations 6 fuel channels are sampled in the lead unit; for Bruce B this is Unit 6.

The OH program of PT scrape sampling started some 8 years ago with an extensive program in Pickering using a 'dry scrape' concept developed by AECL which had been proven as a reliable 'on-reactor' process at Douglas Point. The 'Dry' scrape sample technique uses tools that are delivered into an empty and isolated channel by personnel at the reactor face. This technique needs:

- outage time for defuelling and channel isolation by feeder freezing
- considerable worker-rem expenditure at the reactor face and in feeder cabinets.

It also incurs a substantial financial penalty in replacing the partly irradiated fuel with new fuel. The original 'Dry' scrape tooling was therefore modified to the

'Wet Scrape' process; this allows the scrape tool to be delivered to a full fuel channel with fueling machines. The 'Wet Scrape' concept was proved at Bruce B some three years ago; however, before it could be used in a reactor fuel channel, it was found that the original concept allowed scrape samples to be contaminated by D2 absorbed into the sample during the scraping process. Therefore the concept had to be altered by adding a 'Light Water' injection capability to each of the wet scrape tools.

Injection of light water past the scrape tool sample cutters throughout their cutting stroke prevents the freshly exposed and highly chemically reactive Zinc-Niobium in the samples from reacting with PHOTO DO-

The six Bruce B Unit 6 pressure tubes that were sampled were chosen from the highest fluence fuel channel population. Each tube was sampled in four different axial positions in either the 11 o'clock' or 1 o'clock' positions. The process of channel selection defines the fuel channels, the axial sampling positions and one of the 11 or 1 o'clock positions on the PT circumference.

The selection process was carried out by FCIMD (CIGAR and PIPE inspection section) advised by RESD and by Bruce B operations staff. Analysis of the scrape samples was carried out by AECL personnel in the hot cells at their Chalk River Laboratories.