LETTERS TO THE EDITOR

A FRENCH PROCESS FOR TRITIUM REMOVAL FROM CANADIAN HEAVY WATER

In the "Canadian Experience with Tritium—The Basis of a New Fusion Project," Drolet et al.[1] describe, in particular, a "Tritium Removal Facility" (TRF) to be installed at Darlington.

It should be noted that the current experience used for this TRF is not Canadian, as the title of the paper may lead an unknowing reader to believe, but French. The process used was developed by the Commissariat à l'Energie Atomique (CEA) and protected by patent.[2] The first plant was built at Grenoble, France to detritiate the heavy water of the Laue-Langevin Institute, and has been working successfully ever since it was commissioned in 1971. It has been abundantly described in the literature.[3-7]

Finally, the Darlington plant detritiation facility is built for its essentials by Sulzer Brothers and their Canadian subsidiaries, as licencees of CEA for the use of basic patent, since the building of the Grenoble plant by CCM (Procédés Sulzer).

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A RESPONSE TO "A FRENCH PROCESS FOR TRITIUM REMOVAL FROM CANADIAN HEAVY WATER"

Concerning the views expressed by Roth[1] of the French Commissariat à l'Enérgie Atomique on the source of Canadian Tritium Removal Facility (TRF) experience, I would first like to acknowledge the oversight to the readers of *Nuclear Technology/Fusion* and Dr. Roth for failing to cite his work and that of his co-workers in the paper. Ontario Hydro's Darlington TRF does indeed make use of the combination vapor phase catalytic exchange and cryogentic distillation process patented by the French and applied at their Grenoble Separation Plant in France.

The Darlington TRF does, however, represent a major step forward in tritium removal technology, and has involved extensive additional research and engineering design by Ontario Hydro. The facility under construction at Darlington involves a scale-up of more than an order of magnitude from the Grenoble plant. The conceptual design for this facility was prepared by Ontario Hydro. This design includes extensive process innovations, including the use of hydrogen rather than helium as a coolant, and dual purpose cold boxes, which also act as containment vessels—a significant improvement in inherent plant safety. Sulzer Canada are providing process technology and equipment for the Darlington TRF.

In addition to the development of new technology for the basic separation process, Ontario Hydro has developed support processes including the conceptual design of the air clean-up system. For tritium immobilization and storage,

both conceptual and detailed design are being provided directly by Ontario Hydro. A number of new tritium technology developments have occurred during TRF design that have not been incorporated in the Darlington TRF but which are now part of the Canadian design experience. These include conceptual design of an integrated tritium removal and heavy water upgrading plant, and extensive R&D on recombiners and electrolysis systems, which are alternate packages for future tritium removal facilities. This work was not discussed in our paper. Finally, the Canadian tritium experience discussed in the paper goes far beyond the Darlington TRF. It is our view that the experience we have gained with tritium in all aspects of the Canada deuterium uranium heavy water reactor program is essential to the design and safe operation of both the Darlington TRF and future fusion devices.

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REFERENCE

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