Capsules

"The Seaway" at 25

Nineteen eighty-four marks the 25th anniversary of the St. Lawrence Seaway, the system of locks, canals, and channels that permits navigation of the St. Lawrence River from Montreal to Lake Ontario, Lake Erie, and the upper Great Lakes. Before the seaway was built, NRC's Hydraulics Laboratory constructed a model of it to test all hydraulic conditions involved with the river. This section of the model represents the seaway in the Cornwall area.

NRC

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Water as a Cutting Tool

Ask most people what they use water for and they'll probably say "to drink, to shower in, or to keep my garden green." Ask the National Research Council's Dr. Mohan Vijay the same question and he answers "to cut through steel-reinforced concrete, granite, aluminum and just about any other material."

Vijay (vee-jay) works with waterjet cutters, tools whose 'blade' is a high-pressure stream of water. Engines as powerful as 150 kilowatts (200 horsepower) propel up to 80 litres of water a minute through a nozzle, which is usually thimble-shaped and varies in size from 0.076 to 0.635 millimetres in diameter. Leaving the nozzle at pressures up to 310 megapascals (45,000 psi), the water is capable of quickly slicing through most materials without much mess, waste, or disturbance to surrounding material.

"The industrial applications for waterjet cutters are enormous," explains Vijay. "And though they've been around for more than a decade, recent developments in high-pressure pumps have made these cutters more reliable, and thus more economically feasible, than ever."

Waterjet cutters are already widely used for tough cleaning jobs (like knocking marine growth from offshore oil rigs) and are starting to be used in the mining industry. Some companies like Inco and Falconbridge are investigating their feasibility, and in the coal mines of the Kaiser Corporation in British Columbia, waterjets are now at work. Jet cutters can slice through concrete and could be of use in the construction industry, especially for disposing of the debris left when a building is torn down.

But jet cutters can also handle jobs requiring more finesse. The NRC has developed a precision instrument capable of accurately cutting fur, alu-