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Canada, for the first time will host the tenth world congress on the prevention of occupational accidents and diseases, May 8-13, 1983 in Ottawa.

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Canadian unmanned submersibles make a splash

A small British Columbia firm, International Submarine Engineering Limited (ISE), has established a foothold in the world of unmanned submersibles.

Its underwater machines, which look more like giant meccano sets than mini-subs, seem to suit their trollish acronyms, TROV and TREC (for the curious, Tethered, Remotely Operated Vehicles and Tethered Remote Camera). But what the equipment lacks in aesthetics is more than made up in functional capability.

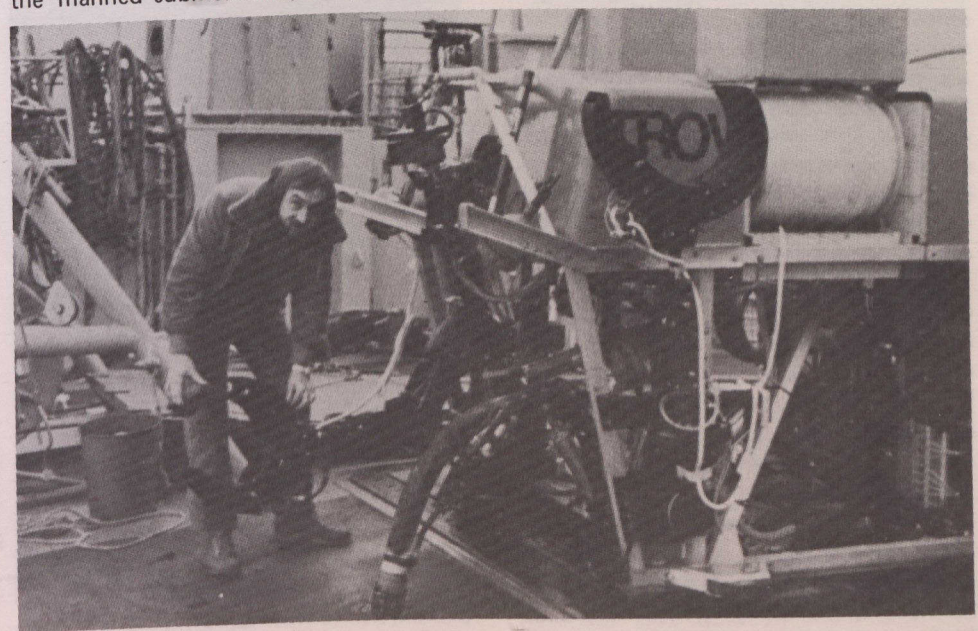
Jim McBeth, an engineer with the firm, sums up their attributes. "Our unmanned submersibles can carry out many functions performed by divers, and at less cost. In certain situations, the submersibles have even greater capabilities, such as strength, range and endurance."

Unmanned submersibles are a fairly new phenomenon in the underwater world. They are a natural derivative of their larger cousins, the manned submersibles, such as the ones used by marine scientist Jacques Cousteau. McBeth explains: "Because of the disadvantages of the manned submersibles, they can cost up to $1 million and are so heavy that they require special handling ships, they have been relegated to a very minor role in underwater operations. Simple economics dictated the need for smaller, cheaper vessels to penetrate the market for underwater vehicles.

ISE builds three main types of submersibles: a TREC for underwater surveillance with a video camera for viewing and electric motors for propulsion; a TROV equipped with a crab-like mechanical arm for doing just about anything a diver can and more, closing valves, recovering torpedoes or carrying a sonar such as the one used in the search for the *Titanic;* and a DART, the sleek member of the family, used for surveillance in narrow channels such as effluent pipes.

Umbilical cord

In operation, all three submersibles are controlled by an umbilical cord which tethers them to a command centre on board a surface vessel. An operator monitors the submersible's progress and manoeuvers it by transmitting signals to the vehicle's propulsion system. In the



International Submarine Engineering Limited

This TROV's arms are equipped with a special grasping mechanism.