

Underwater High Adventure

Tourist submarines are turning into big business for a Vancouver firm that launched its fifth sightseeing submarine last June. Sub Aquatics Development Corporation — the world's only manufacturer and operator of passenger submarines — has built three subs for the Caribbean tourist trade and a fourth for Hawaii.

"The fifth sub, christened *Atlantis V*, went into operation at Guam, a popular Japanese tourist destination, last fall," said Andrew Mowatt, marketing vice-president for Sub Aquatics. "And *Atlantis VI* and *VII* are already under construction," he said.

Diving to depths of 45 m, the battery-powered subs carry up to 46 passengers through a living underwater world, gliding past exotic fish, sponge gardens, grottos and coral formations. These depths give access to underwater areas of greatest marine life interest and colour which are out of the normal range of scuba divers, not to mention non-scuba diving tourists!

Sub Aquatics went into the tourist submarine business five years ago after company president Dennis Hurd, an experienced submersible builder and operator for off-shore drilling companies, noticed that oil company executives couldn't resist taking their friends and families for a trip on the submersibles. "When we'd take a client on board for a dive, they'd get really excited," says Hurd. "I felt there was a real market for this type of experience."

Hurd was right. In three years of operation, company subs have carried more than 300 000 passengers in 8 700 day and night dives, resulting in overwhelming market response and customer satisfaction.

Submarines are non-polluting and environmentally safe. They have also proven to be extremely reliable in operation.

Diving to depths of 45 m, tourist submarines carry passengers through a living underwater world of exotic fish, sponge gardens, grottos and coral formations.

Security for Valuable Documents and IDs

With increasingly sophisticated copying technology it has become easier to tamper with and forge documents. But thanks to new methods developed by the National Research Council (NRC), such things as the forging of drivers' licences can now be prevented.

In British Columbia, a Vancouver firm has picked up on the NRC's idea and will be producing all of that province's driver's licences using this new technology. The process involves coding cards and security documents with a thin coating of iridescent clear plastic that changes colour in an unpredictable way.

George Dobrolowski, senior researcher with the NRC and director of the research group that developed the technology, explains that the process provides results similar to what can be seen on credit cards — the hologram that changes colour depending on the lighting — but is based

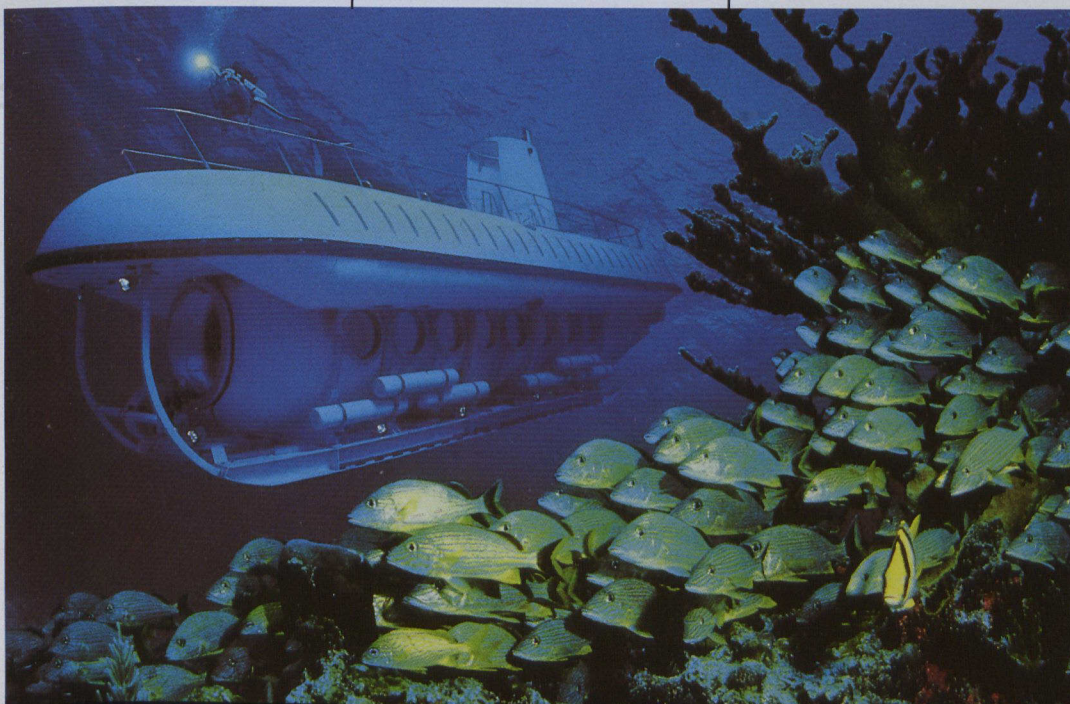
on a different physical principle. "It is based on interference of light in thin films," he explains. "Soap bubbles and oil slicks on wet pavement, for instance, are based on this principle."

Dobrolowski believes that this new technology is going to make a big difference in curtailing the forgery of documents. On a document that uses the interference of light principle, "colours will change or some kind of logo will appear depending on the angle at which the document is viewed," he says. "And this, of course, is an effect that you cannot duplicate by photocopying or photography or printing."

With this technology, anyone will be able to look at a document, view it at different angles and look for any changes. Says Dobrolowski: "If there's no change, the document doesn't have the protective device, and is therefore suspect."

The practical applications of this interference of light technology are numerous: for driver's licences, passports, visas, airline tickets, birth certificates — in fact for any type of valuable document.

According to Dr. Dobrolowski, the NRC is at the leading edge of this technology and is currently working closely with private companies and universities. In his view, there are many fascinating technological and scientific applications of this new interference of light technology on the horizon.



60984 81800