

THE KURSK –COULD AUSTRALIA HAVE HANDLED A SIMILAR ACCIDENT?

The recent tragedy in the Barents Sea with the Russian Oscar II class submarine KURSK was a stark reminder of the inherent dangers in operating submarines. It begs the question "How would the RAN have dealt with a similar situation?"

Fortunately, foresight shown by the Navy's leaders in the early 90's resulted in Australia having access to the most capable and cost-effective rescue system in the world. Should an accident befall one of Australia's submarines, the Maritime Commander would have taken on the role of Submarine Search and Rescue Authority (SSRA) and, once the location and plight of the submarine was established, initiated the mobilisation of the Submarine Escape and Rescue Service (SERS).

Within 12 hours of the call-out, the SUBSUNK Rescue Suite (SRS) would have been on the road heading for the closest port to the nominated Mother Ship and the site of the accident. For situations in South Australia and Western Australia, this would mean that the Defence Maritime Services (DMS) vessels *SEAHORSE SPIRIT* or *SEAHORSE STANDARD* would be used; elsewhere, other previously identified rig tenders would be chartered. Having reached that port (36 hours at a maximum), mobilisation of the equipment to the ship would take a further 24 hours and, within 72 hours of the call-out, the ship would be ready to sail.

Transport to the ship would normally be by road train inside Australia although any one component is portable in C-130 aircraft. Overseas deployment would require a large freight aircraft such as an Antonov An-124 or a C-5 Galaxy. Commercial 747 freighter aircraft are also candidates although loading and unloading requires specialised equipment not held at every airport. Once in an aircraft, the actual destination is almost irrelevant; SERS could go to Singapore, Murmansk or anywhere else in the world.

While all this was occurring, a smaller ship equipped with a Remotely Operated Vehicle (ROV) would have made its way to the site so that emergency life support stores (ELSS) could be "posted" in pressure-tight pods through the submarine's escape tower if necessary. Submarines carry sufficient ELSS for 7 days in a disabled situation, but you never know what delays might occur or what else might be needed.

SERS is a commercially operated service provided by the Australian Submarine Corporation (ASC) that maintains the Australian Submarine Rescue Vehicle (ASRV) *Remora* (which it owns), a set of hyperbaric transfer and treatment chambers capable of decompressing up to 72 people and a large but portable Launch and Recovery System (LARS) capable of safe operation in up to sea state 5. A small, enthusiastic team of four maintains this equipment in tip-top condition ready for deployment around the clock and they were all ready for immediate deployment should a request for Australian assistance with the KURSK have been received.

When deployed, this small team is supplemented by a further 17 from the offshore oil industry as well as medical personnel and divers from the RAN. Coordination of the rescue effort is carried out by the RAN's Submarine Escape and Rescue Manager with the title CRF. All in all, up to 78 people would be embarked to carry out this mission.

Remora is a former diving bell converted into a Remotely Operated Vehicle (ROV) similar to the ROVs used in the offshore oil industry and the Double Eagles used for mine disposal on the *HUON*-class mine countermeasure vessels (MCMV). Because a diving bell has a strong tendency to remain upright, the more normal inverted hemisphere (or "skirt") used as an interface with the submarine has been replaced by a version with two rotary joints. This allows *Remora* to "mate" with the flat rescue (or 'DSRV') seat around the submarine's escape hatch even if it is lying at angles up to 60° as the KURSK was originally reported to be.

Since all power is provided from the surface through its 914m armoured electro fibre-optic umbilical, *Remora* is blessed with significant thrust and can operate in currents of up to 3

knots. Once mated to the hatch, the same power provides the ability to pump the skirt dry even when over 500m deep and, once the pressure between *Remora* and the submarine is equalised, the escape hatch can be opened to allow transfer of survivors. *Remora* has room inside the bell for six survivors plus an attendant who assists survivors in and operates the ASRV hatch.



Remora is recovered onboard *SEA HORSE SPIRIT*

Back at the surface and recovered onboard the Mother Ship, *Remora* can be connected to a transfer chamber if the pressure inside the submarine had increased above that of normal atmosphere. This would be very likely since any disabled submarine must have suffered some flooding for its own ballast tanks not to have been able to bring the boat to the surface. Transfer can take place even if the pressure is up to 5 times normal atmospheric pressure (the equivalent of swimming at 40m). It is, of course, necessary for the escape compartment not to be flooded.

Transfer complete, *Remora* is reconfigured and returns for another rescue cycle inside 3 hours. A "standard" Collins class with 45 crew could therefore be evacuated in 8 cycles although a larger submarine crew would clearly take longer. Through use of a standardised rescue seat, *Remora* is compatible with most submarines in the world – even the Russians have a similar seat.

The Submarine Escape and Rescue Service was established in January 1995 after the delivery of *Remora* to ASC from Vancouver, Canada by Hard Suits Inc., makers of the atmospheric diving system "Newtsuit". *Remora* was conceived, designed, built, tested and delivered (by air) inside 10 months and has inspired the US Navy to replace its capable but expensive Deep Submergence Rescue Vehicles (DSRV) with two vehicles based on Australia's ASRV.

Had the accident aboard *KURSK* left at least some sections intact with survivors, I am confident that *Remora* had the capability to rescue them. As it was, the tragedy played out on our TV screens only served to demonstrate how vital it is that submarine operating navies have a credible and timely rescue capability available to them.

Most of the systems available to such navies in the Asia-Pacific region will shortly showcase their capabilities in a major demonstration of regional cooperation. The exercise, codenamed *PACIFIC REACH*, to be held during the first half of October 2000 in waters off Singapore, will involve the rescue systems of Japan, Republic of Korea and the USA with supporting submarines from Japan, Korea, USA and Singapore. Unfortunately, *Remora* will be unavailable for the exercise but Australia will be holding its own exercise, *BLACK CARILLON 2001* in April 2001 off Perth, WA.

Frank Owen

Frank retired from the RAN as a Commander in January 1999 after 28 years in uniform, the last four and a half of which he was Submarine Escape and Rescue Project Director. He is the Managing Director of InDepth Project Management Pty Ltd which currently provides project management services to the Undersea Warfare Branch of the Defence Materiel Organisation in Russell Offices, Canberra. An abbreviated version of this article has been published in the RAN Navy News.