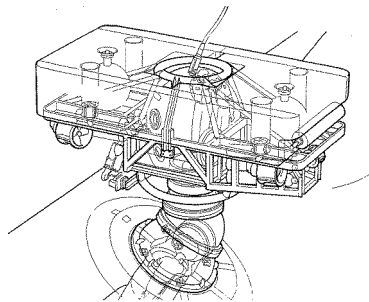


INDEPTH RESCUE

A Newsletter for Submarine
Rescue Professionals

VOLUME 1 ISSUE 3 SEPTEMBER 2004



Submarine Rescue with an Australian Twang

From the perspective of InDepth Project Management Pty Ltd, an independent consultancy specialising in submarine rescue and safety management.

Welcome to the third issue of InDepth Rescue, an occasional newsletter produced from the offices of InDepth Project Management Pty Ltd. Since the last newsletter, much has occurred in the field. Fortunately, there has been no call for actual rescue but several major exercises have been held, the NATO Submarine Rescue System tender has been decided, the ISMERLO office has been fully established and members of the rescue community has met in various fora around the world, continuing to foster the spirit of cooperation that has marked the development of this vital activity since those fateful days of August 2000.

It's now almost ten years since the RAN Submarine Escape and Rescue Project was formed and nine years since Remora made her first dive. Since then, the USN has embarked upon an ambitious program to revolutionise its escape and rescue capability drawing on the lessons of the Remora program and NATO has concluded that the most suitable technology to replace the UK's venerable LR5 is a variant of that vehicle.

In our last issue, readers may have observed a less than subtle dig at the process surrounding that project. We now take the opportunity to acknowledge the relatively blistering pace set by the NSRS Project Team in issuing, evaluating and deciding upon a winner. While not privy to all the technical details, we take the opportunity to provide an overview of the winning solution in this issue. The

artist's impression of LR7-variant proposed by Rolls Royce is reproduced here¹.



The main thrust of this issue of the newsletter, however, is to propose a better way for smaller navies to acquire a submarine capability. The proposal, put before the Asia-Pacific Submarine Conference held in Fremantle, WA in mid-September 2004, draws on the principles underpinning NSRS while recognising the more disparate nature of international relationships in the Asia Pacific region.

In this issue, I also discuss a development within NATO for International Interoperability and take a look at progress of the USNs Pressurized Rescue Module (courtesy OceanWorks International).

COOPERATIVE ACQUISITION

Does EVERYBODY need their own system?

Even before the horrors of the *Kursk* brought home to submarine-operating navies around the world their responsibilities with regard to rescue, there has been a general trend towards meeting that need.

It has become almost a Statement of Principle that ownership of submarines carries an associated responsibility to make provision for the rescue of those persons unfortunate enough to be trapped inside a submarine which is unable to surface. NATO, in fact, went some way to such a declaration in the lead-up to its NSRS but that particular initiative seems not to have been pursued to its final conclusion.

In acquiring new submarine capability, navies often seek advice on the subject of rescue from the suppliers themselves. While they may indeed have expertise in this area, it would be easy to cast dispersions at their objectivity. Would you actually approach Ford for the design of a tow-truck when buying a car? Ford would be tempted to deny that its cars are likely to break down!

What tends to happen is that the cost of the acquisition program can be seriously affected by

¹ <http://www.rolls-royce.com/marine/downloads/naval/nsrs.htm>
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the cost of acquiring a rescue system **and supporting a credible, responsive capability**. Those support costs are not insignificant and, together with the other implications of ownership can result in a flawed understanding of the real capability.

The implications of ownership are significant. Since the detail of a rescue system is more complex than often seems evident at first sight, it is quite likely that the first-time customer will not be in possession of enough understanding to permit the development of clear requirements. Similarly, the implications of maintaining a rapid response capability are often more far-reaching than might be first envisaged, to the extent that the benefits of having your own rescue system in your backyard can be more than compensated by the millstone that constant high level readiness imposes.

Having your own system does provide an improved ability to control any security aspects surrounding submarine rescue although the experience of submarine accidents in the modern age is that an open approach to information flow assists rather than hinders the rescue operation.

The most significant deterrent to individual ownership is that the real costs of **maintaining** that capability are far greater than are generally recognised when first procured. Not only does the provider of the capability need to maintain the equipment and personnel in first-rate condition ready for instant deployment with high degrees of redundancy, but its infrastructure needs such as transport and communications may not be able to be met by a single nation.

Europe addressed this conundrum by during a time of radically shrinking defence budgets by embarking upon a cooperative acquisition strategy, the NATO Submarine Rescue System (NSRS) despite a record of cooperation that is littered with wrecks. Even NSRS suffered from the withdrawal of a number of potential Partner Nations before settling on a group comprising UK, France and Norway.

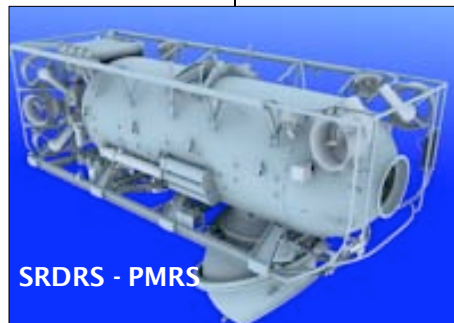
The situation faced by many smaller nations in the Asia-Pacific region to whom submarine ownership is a new experience is that the acquisition of an indigenous rescue capability is part and parcel of the new program. The alternative (and

often apparently most logical) method is to negotiate a MOU with the USN and link into its worldwide coverage.

Regrettably, the reality is that, until the new Submarine Rescue and Diving Recompression System (SRDRS) becomes operational (and experience is gained in operating the system), the only system that can be deployed with confidence is the Submarine Rescue Chamber (SRC). While SRC is a well-proven and robust system, its inability to Transfer Under Pressure (TUP) and weather limitations make it less attractive. The Deep Submergence Rescue Vehicle (DSRV) is undoubtedly the most capable rescue vehicle ever built but its weakness is its reliance on a dwindling number of specially configured host nuclear submarines which are unlikely to be available when required.



Since the SRDRS is modelled on Australia's Remora, an arrangement with that country would also seem to be a viable option. Regrettably, Australia is not blessed with a reliable air freight system, Remora's air portability is yet to be proven and its host Navy's methodology for responding to an overseas incident was found wanting during the Kursk tragedy. Australia in my opinion, therefore, represents a useful backup but not yet a reliable source of a rescue capability for all nations in the region.



The other systems in South-East Asia are those belonging to Japan and the Republic of Korea. Capable systems that they are, they are ship-borne and thus have a limited radius of action in the timeframes presented by a submarine disaster.

Nothing therefore seems to provide a "silver bullet". The best model on which to base any form of cooperation would seem to be that of NATO but, without the form of organisational "umbrella" that NATO provides, it is difficult to see how the inevitable problems would be resolved.

The Proposal

My proposal is to adapt the NATO solution to the Asia-Pacific situation using a commercial solution. In the Asia Pacific Submarine Conference, there exists a forum ideally suited to act as a focal point for submarine rescue. Although nominally established to discuss all submarine matters, security considerations have resulted in

the selection of rescue as the only “safe” area. The APSC, and its predecessor the WESTPAC Submarine Rescue Symposium, have acted as a catalyst for improved contact between submarine operating nations in the region.

If member nations were to be able to reach some form of consensus as to how their individual requirements might be incorporated into a collective set, a commercial arrangement could be established between the nations and a rescue service provider. In large part, this has become the model for all new rescue systems with Australia basing its Submarine Escape and Rescue Service (SERS) on the UK Submarine Rescue System (UK SRS). The USN has also adopted this model and NSRS will also use it. All of those systems follow the Government Owned, Contractor Operated (GOCO) model¹.

COCO

Since there is neither a single Government nor a treaty-based organisation in this instance, a more appropriate arrangement would be Contractor Owned, Contractor Operated (COCO). COCO provides many benefits:

- There is little initial financial outlay for the Customer;
- The service is Performance-driven rather than being based around a specified technical solution. In this way, risks are transferred to the Contractor;
- Costs can be shared between all nations;
- Since the service cost would be in the form of a contract, expenditure would be less subject to annual variations (except as far as exercises are concerned);
- All nations would have access to the best capability available with the Contractor having flexibility to adapt and improve to remain abreast of current trends and practices; and
- The system would be complementary to the USN, NATO and other national capabilities.

How Might it Work?

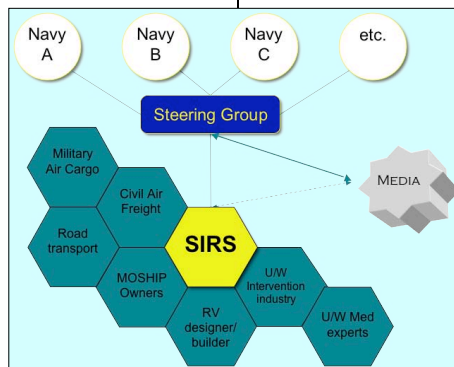
Firstly, interested nations would have to agree among themselves what the model might be and how they would like it to work. For this, a Work-

ing Group would have to be established to work through the legal and operational issues.

Once the framework has been agreed, the WG (which by now may be termed a Joint Steering Group) can then define its User Requirements. For this to occur, there is considerable guidance they can draw on from such sources as NATO, USN and other rescue-capable countries in the region. We at IDPM are also in a strong position to provide independent advice.

The JSG could then issue a Request For Tender or, should the legal position make that problematic, engage an independent body to act as Broker and Project Manager.

The successful Tenderer (let’s call it Submarine International Rescue Service – SIRS, for example) would then go about arranging the necessary finance to establish a complete air-portable rescue and decompression system. SIRS would also have responsibility for developing a network that would include:



- Air Cargo operators (civilian and military);
- Road transport companies;
- Owners/Operators of potential MOSHIPS;
- Pilots and technicians from the underwater intervention industry;
- Hyperbaric medicine experts, etc

Since Public Affairs is always such an important facet of submarine rescue, the primary contact with the media would be through the JSG. Not only would this free SIRS from interruption during the initial phase, but it would ensure national sensitivities could be respected.

SUBSUNK

If an actual SUBSUNK were to occur, the affected Navy (through its SSRA) would become the primary Customer and would assume responsibility for liaison with national military assets, diplomatic aspects of any deployment, recall and/or provision of medical personnel and all Public Affairs. The costs of the deployment would be recovered from that Navy.

Deployment to support a SUBSUNK involving a non-member Navy would be a matter between SIRS and that Navy and would be addressed in the over-arching contract.

¹ The Australian SERS was originally COCO but the equipment has now been acquired by the Government.
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Conclusion

While much of the detail underpinning such a proposal needs to be fleshed out, I feel that this is an idea whose time has come. The Asia-Pacific region has played host to more submarine developments and acquisitions than any other in the last few years and, in the absence of an umbrella organisation such as NATO, would also play host to an ever-increasing number of individual rescue systems ... or none at all. SIRS would provide the smaller nations access to an affordable, flexible capability in which they can have some "ownership".

NATO SUBMARINE RESCUE SYSTEM

(Reprinted courtesy UK Navy News - 15 Jun 04)

Rolls Royce has won a £47 million contract to provide and operate a new submarine rescue system for Britain, France and Norway.

The main element of the NATO Submarine Rescue System, or NSRS, will be a 32ft, 27 ton submarine operated by a crew of three which can dive to a sunken boat and attach itself to a hatch to rescue those trapped inside the submarine, bringing them to the surface in batches.

NSRS - SRV

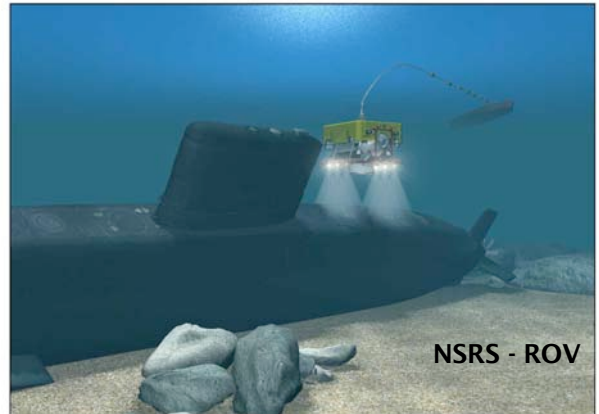


Staff based at Clyde Naval Base at Faslane in Scotland will be able to respond with 72 hours to emergency calls from anywhere in the world, according to the Ministry of Defence.

Minister for Defence Procurement Lord Bach said: "This system will give us and our partners the most effective submarine rescue system available.

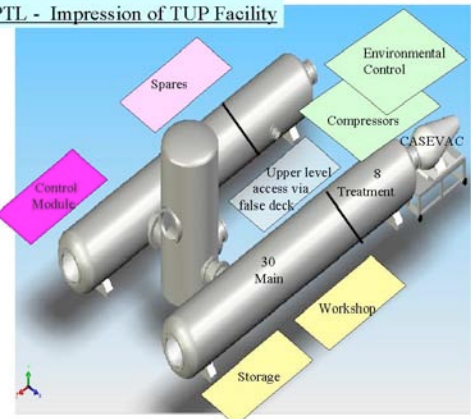
"Our submarines are painstakingly designed with safety in mind and their safety record is impeccable, but they operate in the harshest of environments and it is vital we have an effective rescue capability.

"This project is a fine example of how working with partner nations can bring great benefits by sharing both costs and expertise."



Rolls Royce will also supply an unmanned submersible which will locate the sunken submarines, and other support equipment such as decompression chambers and medical facilities.

IPTL - Impression of TUP Facility



The contract covers the support and operation of the system for the first ten years of its life.

The new system replaces the current rescue submarine based on the LR5 submersible vessel, which is reaching the end of its life.

LR5 was made available for the rescue operation after the Kursk sank in the Barents Sea in the summer of 2000.

The NSRS will be owned by Britain, France and Norway but operated by a contractor. Although procured by these three nations, it could be made available to help any nation, anywhere in the world.

In an emergency, heavy-lift aircraft would fly the submarine and support equipment to an airport close to the sunken submarine, and the rescue system would be transferred to a suitable military or commercial vessel at a convenient port.

The NSRS will be compatible with almost any NATO and non-NATO submarines, including the new Astute-class boats.

The rescue vehicle itself will be equipped with sonar and video, a heavy-duty cutting arm and large viewing port, and will be able to dive to depths of 600 metres.

It is scheduled to go into service at the end of 2006 and run for up to 25 years.

Editor's Note: The observant reader will note the presence of an umbilical on the SRV. This is understood to have been incorporated to bring the same level of communications clarity enjoyed by the RORV community as well as a means of assisting in capturing the vehicle prior to recovery. An interesting development given the strong views held by some members of the rescue community regarding the risk of umbilicals being fouled in hydroplanes etc.

Those even more observant (and possessing a good quality printer(!)) will also note that the ROV appears to have a skirt and pressure vessel. In fact, the image is captioned "RORV - Sub.jpg". The UK DPA website relating to NSRS (<http://www.mod.uk/dpa/projects/nsrs.htm>) actually says "...On arrival at the scene the mother ship will launch a rescue vehicle - either free swimming or remotely operated from the surface - which will 'mate' with the escape hatches of the submarine on the seabed." Hopefully this discrepancy is just that.

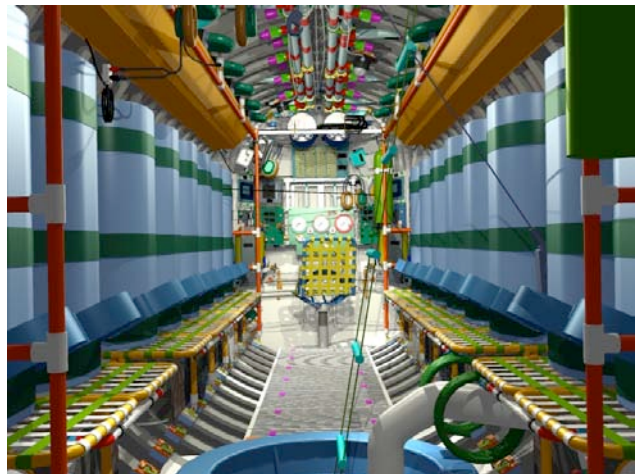
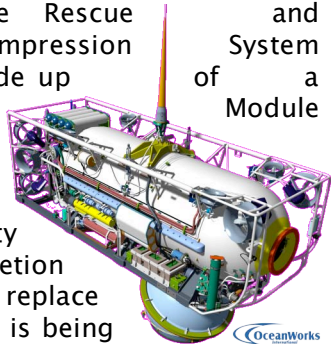
ST PETERSBURG

NATO's Submarine Escape and Rescue Working Group (SMERWG) continued its trailblazing ways with its latest meeting being the first to be held outside a NATO country. An invitation by Russia was graciously accepted and the SMERWG met in beautiful St Petersburg in early July. Having had the opportunity to visit this city in 1996, I can only feel a pang of jealousy for those fortunate enough to visit this time.



USN PRESSURIZED RESCUE MODULE

The Submarine Rescue and Diving Recompression System (SRDRS) is made up of a Pressurized Rescue System (PRMS) and a Surface Decompression System (SDS). With priority being given to completion of the PRMS in order to replace DSRV *Mystic*, the PRMS is being designed and built by OceanWorks International of Vancouver, Canada. PRMS is an evolution of *Remora* but will deliver far greater capability especially in relation to survivor capacity (18 v 6) as the internal drawing illustrates. PRMS will incorporate an articulated skirt (as pioneered with *Remora*) with a 45° capability. The whole system (SRDRS) will be operated by Phoenix International under a GOCO arrangement.



PRMS - Internal

INTERNATIONAL INTEROPERABILITY IN SUBMARINE RESCUE

Brussels is home to several fine hostelrys but none is more significant to the international submarine rescue community than "The Dead Horse". Belgians (and others) may be forgiven for not being able to find this particular establishment on the internet, but if one was to search for the "King of Spain" (or Le Roi d'Espagne), the fine architecture of La Grand Place would be revealed. It was not the



pursuit of architecture, nor even the opportunity to pat the stuffed horse, that brought a number of industrialists to Brussels in February 2004, but rather a meeting called by the NATO Industrial Advisory Group (NIAG).

The group has now been formally established with a line of funding from NATO under the chairmanship of Cdr (rtd) Alan Hoskins. The scope of work reads

"To provide an Engineering document on the interoperability specifications for national submarine rescue systems, so that those specifications could, if required, be included in the design of future naval auxiliary and support vessels or commercial vessels, in order to increase the number and availability of submarine rescue vessel platforms.

This will enable rescue organisations to maximise the potential numbers of suitable Rescue Ships/Platforms, minimise the Time to First Rescue, and maximise the numbers of lives saved in any SUBSUNK scenario.

The study will be presented in such a way as to allow designers to build features for interoperability with the Rescue Spreads."

The study is due to be conducted over the next twelve months with a group of industrialists from UK, US, Canada, France, Italy, Germany, Norway, Sweden, Russia, Turkey and Australia.

NEW HAND AT THE HELM

InDepth Rescue takes this opportunity to welcome a new hand at the helm of Submarine Rescue in the RAN. LCDR Geoff Wadley has recently taken over as Submarine Escape and Rescue Manager (SERM) at HMAS STIRLING in Western Australia.

Geoff tells me that *"As far as my career goes, I joined the Navy in 1987 and had my first "real" sea job as a Navigator in a Patrol Boat out of Darwin. On completion of that posting I decided to change to submarines and commenced initial training in 1990. After qualifying on HMAS OVENS I was posted to COLLINS where I remained for all of the first of class trials. Following successful completion of the Submarine Warfare Officers Course and PWO*

course, I joined NEWCASTLE as one of the surface PWOs. I remained here for two years prior to joining WALLER as a watch leader. On completion of this job, I had a short period ashore prior to joining HMAS DECHANEUX as XO in late 2001. After a very rewarding, and trying, two years I left DECHANEUX to undertake the Netherlands Submarine Command Course (Perisher) in Feb of 2004. On completion of this course, I completed the American Submarine Command Course (previously known as PCO) in Hawaii."

I asked Geoff for a photo but was advised that the only photos ever taken of him were in bars during Perisher and that they were not fit for public consumption! I think he was referring to the photos, not the bars.

THE BUSINESS

Finally, the "Plug". If you're in the business of submarine rescue or safety management and feel you could benefit from actual project and operational experience, give us a call. Take a look at our website, read some of the papers but don't let it end there. Make contact.

The website is a good source of information about the Australian system in particular and has several excellent images captured during Exercises Pacific Reach 2002 and Black Carillon 03-2.

Frank Owen

