

## Submariners' salvation - New rescue system completes trials

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**A new submarine rescue system, owned jointly by France, Norway and the UK, has successfully completed trials off the coast of Norway.**



The NATO submarine rescue vehicle is launched in Husnes Fjord, Norway

The free-swimming rescue vehicle concluded a successful 'mate' with the Norwegian submarine Uredd at 87 metres in Husnes Fjord, just south of Bergen, last month.

In the same trials the vehicle completed a deep dive to 610 metres to demonstrate its vast capability. While not all the deep water acceptance trials were completed in full, there were enough key events for the trials to be declared a success. Trials to include testing hatch operations at depth, angled 'mating' up to 60 degrees and the ability to recover the vehicle from rough seas will take place soon.

When it comes into service it promises to offer a complete rescue package for trapped submariners, should the unthinkable happen on their submarine, anywhere in the world.

"The NATO submarine rescue system is nearing the end of a complex period which has combined design, development, manufacture and demonstration," said Commander Dickie Burston, leader of Defence Equipment & Support's NATO Submarine Rescue System team. "It will now move forward and provide the nations with a world class capability."



A view of the treatment chamber looking through to the 30-person main decompression chamber

The system is jointly owned by France, Norway and the UK and will provide an effective rescue capability within a whole life cost of £157 million over 30 years.

It will complement the new US Submarine Rescue Diving and Recompression System based in San Diego. Both are due in service this year, are capable of worldwide deployment and will

be available to all submarine-operating nations. The system consists of a free-swimming rescue vehicle with an A-frame portable launch and recovery system, a transfer under pressure facility to safely decompress personnel from a pressurised submarine, and an intervention system for survey and rescue preparation.

It is at the final stage of a three-year design and manufacture period under a ten-year contract with Rolls-Royce Power Engineering including support and operation.

For the trials last month, the system was mobilised to the mother ship Harstad, a Norwegian coastguard vessel, which sailed from Glasgow on 26 January 2008.

The system comfortably survived a rough passage to Cape Wrath which saw 74-knot winds, 10-metre seas and 30-degree pitching. All systems operated correctly on reaching Norway. Four full mating sequences were completed, with stores being passed through the hatches of the Norwegian submarine.



The first successful mate and hatch operation between the vehicle and a live submarine on 6 February 2008

Crew from the submarine, including the captain, clambered up into the vehicle for a look around.

On its deepest dive the rescue vehicle, which has previously been pressure tested to depths of 840 metres, went down in 100m steps to just over 600m with full system checks at each depth. Cdr Burstson said:

"Tom Heron, the senior pilot and one of the most experienced submarine rescue operators in the world was delighted with the trial, commenting on the stability, manoeuvrability and power available and how solid she felt at 610m, with none of the usual creaks and groans heard at great depths."

Further trials are planned over the next six months. Deployment next month from the MV Argonaute provided by the French Navy will include a two-day medical exercise to test the transfer under pressure facility and develop casualty handling and co-ordination of rescuees.

Air portability trials, training and more exercises will continue in the summer and there may be full participation in NATO's exercise 'Bold Monarch' off Norway in late May and early June 2008.

The project is managed by the MOD's Defence Equipment & Support team on behalf of the three nations. When in service it will be managed by In Service Submarines Integrated Project Team and the existing LR5 rescue submersible and Scorpio remotely operated vehicle will leave operational service.



Back on the surface after a successful trial

For Cdr Burston the tests have been a major milestone:

"As a former submarine commander I do not expect submarines to sink," he said. "They are well designed, built and maintained, the crews are highly trained and the boats are well operated.

"But it is not possible to guard against all eventualities and completely eradicate equipment failure, human error and just plain accidents.

"Submarines still hit uncharted sea-bed pinnacles or have major fires on board and, while the crews manage to get them safely back to port on almost every occasion, if a submarine should sink and some of the crew remain alive on board, it is fundamental that the navies are able to effect rescue.

"The submarine rescue system will give us and any other nation that wishes to be associated an outstanding cost-effective solution to the accident that we hope will never happen again."

An extra challenge facing the team is to find a name for the rescue vehicle.

"SRV1 sounds rather dull," said a team member. "An appropriate name is needed to reflect its role in saving life from great depths at sea."

### **The system at a glance**

- the system will be based at Faslane on the Clyde
- it will be maintained at 12 hours' notice to mobilise by road and air to a mother ship
- it can rescue a crew from depths of 40 to 610m, at angles of up to 60 degrees and with internal pressures as high as 6 bar
- it will be fully air portable but will operate in sea state 6 (5m high waves) and remain on station in 10m seas
- size, weight, strength and flexibility have been balanced to ensure fast mobilisation and reliable commissioning to meet a time to first rescue target of 72 hours
- the vehicle is powered by advanced sodium nickel batteries with higher power-to-weight/space ratio than traditional lead acid batteries used in current rescue vehicles
- a fibre optic umbilical will provide video, communications and data link to the command team on the mother ship
- the vehicle, designed and built by perry slingsby system ltd of Kirkbymoorside, will have a crew of two pilots and an attendant, can rescue 15 people at a time and will normally operate a four-hour cycle.

<http://www.mod.uk/DefenceInternet/DefenceNews/EquipmentAndLogistics/SubmarinersSalvationNewRescueSystemCompletesTrials.htm>

