

NORTHERN CROWN 2021

For two weeks, the Northern Crown submarine rescue exercise has been conducted in parts of southern Baltic sea. The first week, the First Submarine Flotilla practiced on its own, connecting the URF (submarine rescue vessel) to a Swedish submarine.

After five days, the international staff from NATO Submarine Rescue System (NSRS) joined in Karlskrona harbor.

NSRS is a tri-nationally owned peacetime emergency submarine rescue capability, operated by Norway, France and the United Kingdom, and is able to operate at depths down to 600 m.

It was designed to deal with pressurized rescue scenarios such as that encountered in the tragic submarine accident involving the Russian submarine Kursk in year 2000.

In 2009, the three nations entered into Memorandum of Understanding with Sweden to assist each other with submarine rescue when each system carries out maintenance or is not available.

Due to the fact that the pandemic restrictions were not yet enforced, the exercise was conducted without the Swedish Navy's medical Submarine Rescue Group (MURG), which is normally always participating in some form. Crews at URF have further honed their skills in connecting by submarine and a few new URF pilots are in training. Of course, there will also be a lot of practice for everything from deck crew to operators on the jetty and the crew of the zodiac who assist in the launch and capture of the URF. After completing their own exercises, the staff at HSwMS Belos worked hard to unload the URF and reconfigure the deck



in order to receive the NATO Submarine Rescue System (NSRS).

The NSRS includes a Submarine Rescue Vessel (SRV) named Nemo, which carries up to 15 submariners from a disabled submarine, a Remotely Operated Vehicle (ROV), a pressure chamber system built in containers, personnel from the three countries and personnel from the contracted company JFD that maintains, transports and operates Nemo.

Pressure chambers are required for the crew on board the submarine to be able to be brought to the surface, without having decompression sickness, which can be the consequence if you have been exposed to a higher pressure than the atmospheric pressure present at the surface. The rescue vessel is pressurized to the same pressure as the submarine from which they are supposed to rescue personnel. When the craft comes to the surface, it then docks to an already pressurized chamber system where the crew is taken care of by medical personnel. Lowering the pressure to atmospheric pressure can then take up to several days, depending on how long and what depth the crew has been at.

The whole system is approximately 350 tonnes of equipment and 27 trucks are required to move all the equipment from base to the airport from where it will be flown to an airfield nearest to the submarine emergency. Three Antonov AN-124 and four Boeing C-17 aircraft are necessary to move it by air. It is normal for NSRS to use a MOSHIP without a fitted decompression chamber and instead brings its own modularized chamber complex which is assembled on the MOSHIP and which can accommodate up to 72 people. It takes 18 hours for the Rescue system equipment to be mobilized onto the deck of its MOSHIP which if not naval/military is likely to be a civilian vessel such as an offshore support vessel, and it takes 60 to 90 people to operate part or all of the system.

This time, some 25 representatives from the NSRS partner countries, France, Norway and the UK, were included. The SRV itself, Nemo, arrived by lorry from the UK and was loaded on board by crane on HSwMS Belos by civilian contractors in Karlskrona harbor.

Since there is a big difference between the Swedish URF and Nemo vessel designs, for operations with Belos, a special 'elbow' connection is fitted to enable rescues to be transferred from Nemo into the Ship's decompression chamber system. This connection assembly is mounted on the chamber entry hatch on Belos' deck because Nemo has its pressure chamber connection in the aft part of the vessel unlike the URF which has it underneath. The 'Belos elbow' is kept in Sweden by the Royal Swedish Navy for immediate use should the need arise.

The weather during the week was varied with everything from rain and high wind to finishing with calm water and radiant sun and all planned activities were completed.



A total of seven dives were carried out down to the Swedish submarine where Nemo connected or mated to the submarine's rescue seat and personnel from the submarine opened the hatch and greeted the SRV crew. This provided excellent training for both the NSRS and Swedish teams.

Due to pandemic restrictions, only a Swedish doctor actually went down into the submarine to check out one of the submarine's chefs who had sustained a minor injury.

Commander Richard Cragg RN, from the UK has been responsible for the NSRS as the Project Leader for a year. He is a Submarine Nuclear Marine Engineer and has previously served on several Royal Navy nuclear submarines. Earlier this year NSRS conducted its own submarine rescue exercise in waters around Scotland, but this is the first time he



has taken part in a joint international exercise with the NSRS.

He says he's very happy so far with the exercise. "I went down to the submarine yesterday and saw how well everything works and it gives me confidence that the system works". He is looking forward to training with the Royal Swedish Navy more frequently in the future and planning for future joint exercises are underway and there may be an exercise in Norway in the next couple of years.

France contributed a number of rescue chamber operators (RCO) from the Marine Nationale. One of them

Chief Petty Officer Gerald Routier MN,

a Mine Clearance Diver serving in Toulon at the French Naval Base is a member of CEPHISMER. The French submarine rescue and diving development group. Gerald completed his RCO training this spring and was



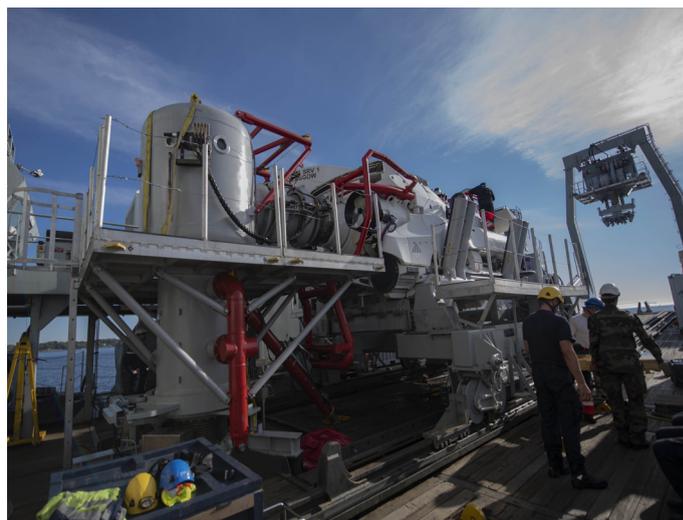
participating for the first time in an NSRS exercise as an RCO. He says:

"It is very good to be able to participate in this exercise and to practice even more of what I learned during the training. I am very pleased with the exercise and it is very beneficial to be practicing with different personnel and MOSHIP". He also says that they have felt very welcome by Belos' staff and that cooperation has been very smooth.

After the last dive of the exercise ended on Thursday, Nemo was connected to the elbow and Belos' pressure chamber system. A stretcher with a casualty

dummy attached was loaded into Nemo's rescue chamber. The procedure for getting a stretcher casualty from the rescue chamber into the Belos system is quite challenging and involves ropes, harnesses and tackles because it is both very narrow and at almost 4 metres high from the bottom of the Ship's chamber to the top of the elbow.

The NSRS and Belos teams worked together to complete the casualty handling procedure and all agreed it was something that was vital to practice and something to repeat in future exercises. Finally the whole system including Nemo was successfully pressurized to prove the hyperbaric integrity of the connections and hatch seals.



One of those who followed the exercise was **Commander Per Frekhaug RNoN**, Submarine Escape and Rescue Officer from Norway. He was there in 2018 when the last joint exercise with HSwMS Belos was carried out and also thinks this year that the collaboration has worked very well.



“It really lifts the competence when we practice together in this way. There has been a gap due to the pandemic and we need closer cooperation to catch up again”. He also says that the Swedes are really good and professional at submarine rescue.

Lieutenant Commander Joakim Classon RSwN, Sweden’s Submarine Escape and Rescue Officer, who was responsible for safety and security during the exercise and was also acting as Rescue Element Commander on the Ship’s Bridge during all launches of the submarine rescue vessels said that:

“Even though not everyone was there in 2018 when we practiced last time, everything has flowed very well. We were even able to do more than was planned, such as the connection of Nemo to the pressure chamber system. Even the weather was with us, even though the wave height was on the edge at the beginning of the week”.



The exercise ended with Nemo unloaded in Karlskrona harbor, and then transported to F17 in Ronneby and flown back to the UK in a Royal Air Force C-17. This was also a vital part of demonstrating the viability of the mutual rescue agreement that Sweden and the NSRS partner nations have in place to support each other’s rescue capability.

