

# London & South of England Lunch & Learn

## Has anyone seen Nemo?

Clyde & Co, St Botolph Building, London, EC3A 7DT



### Tuesday 22nd October

On 22<sup>nd</sup> October 2019 Commander Chris Baldwin presented “Has anyone seen Nemo?” the NATO Submarine Rescue System (NSRS) also known as ‘Nemo’. Built in 2008 by Perry Systems (now part of Forum Technologies).

Nemo weighs 29 tonnes, is 10 metres in length, has a service life of 25 year (2032) and can dive to 700m. Nemo is capable of diving every 4 hours and carrying up to 15 survivors plus 3 crew. Commander Baldwin reviewed the 18 major submarine incidents since 2000, which highlighted the critical contingency role played by the NSRS.

The system is owned and run by France, Norway and the UK. It maintains a standard of 98% operational readiness and in a live rescue operation takes 56 hours to first intervention (worldwide). The first rescue performed within an impressive 72 hours.

A disabled submarine rescue operation consists of three parts:

1. Intervention – Aim is to get to the site of the disabled submarine as quickly as possible in order to replenish the life support equipment. Most western subs carry 7 days’ worth of survival equipment.
2. Rescue – This is dependent on the atmosphere in the disabled submarine. If it is atmospheric pressure then Nemo becomes an elevator to the surface.
3. If the atmosphere is of raised pressure the survivors will need to be processed through “Transfer Under Pressure” system (decompression chamber complex).

The operating personnel of NSRS consists of 2 supervisors, one dive technician, 24 +/- Navy Divers, 16 +/- Navy Medics and can carry 72 survivors.

Nemo’s cockpit maintains an atmosphere of 1 bar and holds 2 pilots. The third and last crewmember is the Rescue Chamber Operator - a volunteer who is responsible for opening and closing the hatch connecting Nemo to the submarine.

This is a particularly demanding job for the crew as they need to keep all survivors calm during the transit back to the surface whilst under higher than normal pressure. They will face decompression themselves on return.

Once the rescue vessel has been manoeuvred onto the disabled submarines escape hatch, a low pressure pump is used to remove water from the hatch seal. This establishes a soft seal which is made hard by using a higher-pressure pump to remove the rest of the water. Once a hard seal is achieved the hatch can be opened, a hammer is used to let the submariners know it is safe to open the hatch!

There are 7 decompression chamber units which are connected by air lock allowing a total of 84 people to be in the system. The system is so big & complex that any one nation would not have enough manpower to operate it alone. The NSRS “Transfer Under Pressure” system is unlike any other in the offshore world.

Decompression profiles are bespoke to overcome challenges the survivors face from a disabled submarine. These decompression profiles have to balance factors such as hyperoxic conditions, pressure hull breaches and other variables to complete a successful rescue.

Report by Harry Henley.