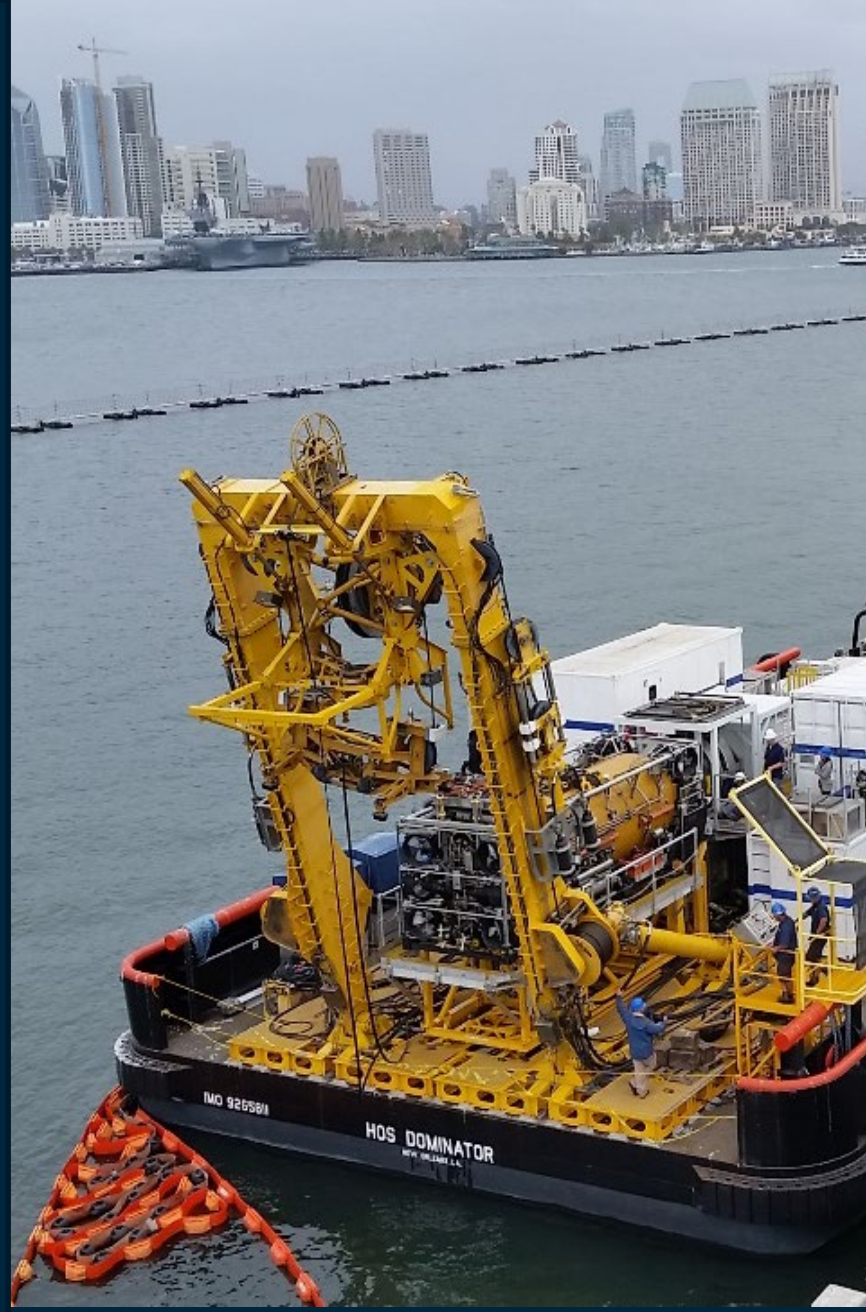
Navy Submarine Rescue on a DP Vessel

October 2022

Liz Hunter – MOSHIP Surveyor



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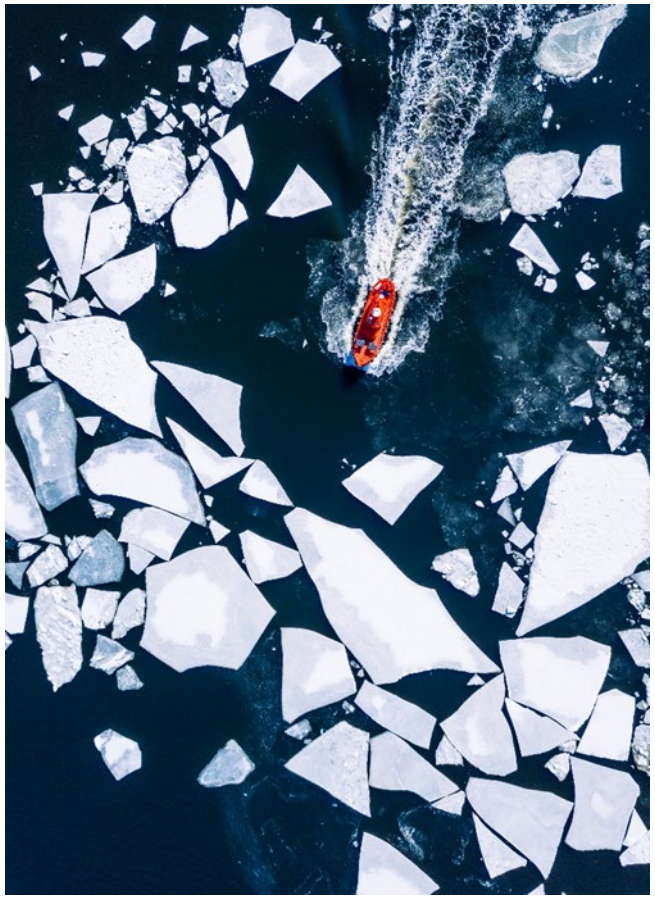
Agenda

- Introduction: Submarine Rescue history
- Technology improvements: MOSHIP Survey process
- Current Policies:
  - ABS
  - U.S. Navy
  - MTS recommendations
  - **Recommendations** (for submarine rescue operations)
    - Have two or more different satellite systems to operate off
    - Acoustic PRS temp install
    - Multiple vessels, relative PRS



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Introduction: Submarine Rescue History

-USS Squalus (SS-192)

Fig 1: One of four of the lightweight mooring anchors that would have to be deployed and installed on a Vessel of Opportunity. Photo credit: Liz Hunter, 11 Jan 2022.

o York Times.

LATE CITY EDITION

ORK, WEDNESDAY, MAY 24, 1939. FF THREE CENTS

59 AWAIT RESCUE ON SUNKEN SUBMARINE 240 FEET DOWN NEAR PORTSMOUTH, N. H.; CONTACT RESTORED AFTER 10-HR. BREAK

SUIT FILED
UBLIC STEEL
THE C. I. O.

tching Back-Pay Triple Costs of 00 for Strike

EXCEED 700

sociates Named, List of Ohioans "Conspiracy"

OPEN VALVE CAUSE

Escape Chamber Rescue, 8 Men at a Time, Will Be Tried Today

THEY TAP MESSAGE, 'COLD'

Salvage Tug on Its Arrival at Dawn Will Speed Score of Divers to Daring Tasks

By MARSHALL E. NEWTON

SUBMARINE THAT SANK OFF THE COAST OF NEW HAMPSHIRE

The Squalus, which is lying helpless 240 feet below the surface with fifty-nine men aboard

ANTI-RED REVEALS LIAISON WITH ROME

Rescue Ships Huddle Helplessly Over Spot Where Squalus Lies

Airplane Survey Shows Sea Smooth—Yellow

Fig 2: New York Times headline in 1939 following the sinking of USS Squalus from: "Timothy Hughes Rare & Early Newspapers," Accessed 09 Sep. 2022.

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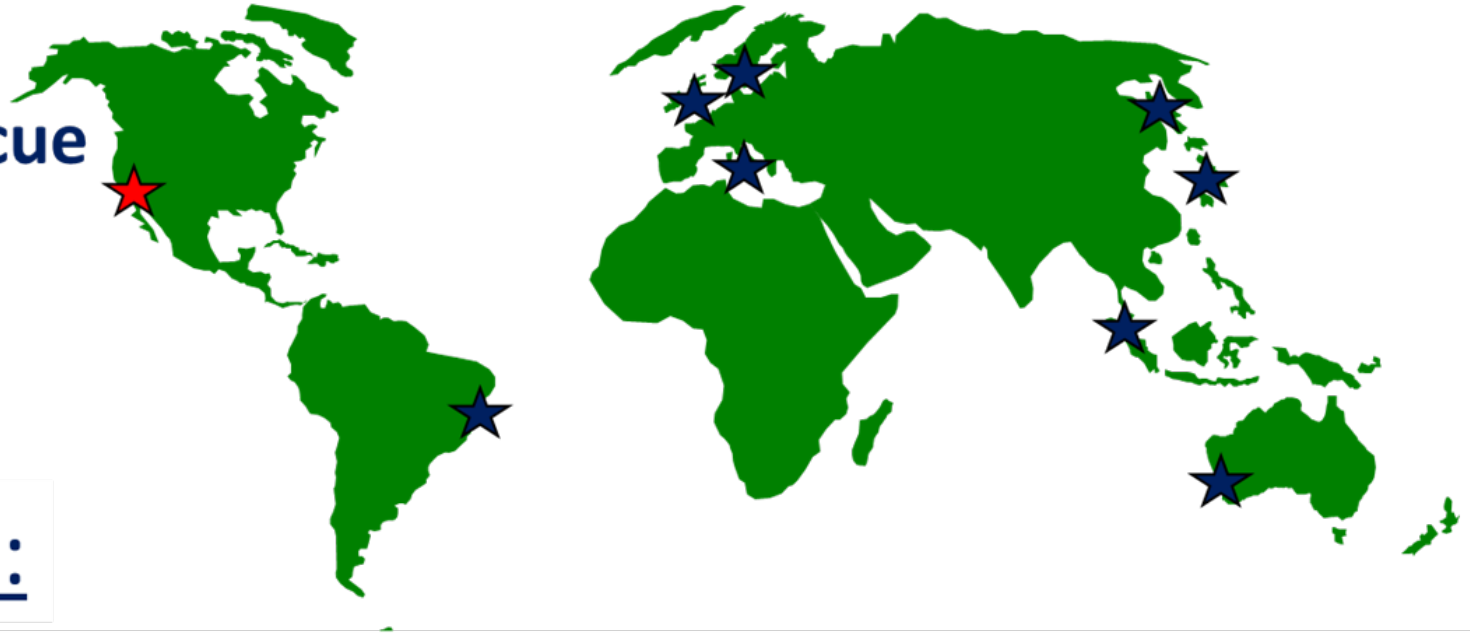
Introduction: Submarine Rescue History

Undersea Rescue Command

- Sole US Provider



Mission:

Work with partners worldwide to provide disabled Submarine Intervention and Rescue in less than 96 hours

-Includes Localization, Mooring, Hatch Preparation, Medical Triage and Initial Treatment

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Introduction: Submarine Rescue (mission sequence)

START:
Receive message at Undersea Rescue Command

Rescue systems and equipment are flown by heavy airlift (C-5 or C-17) to a nearby airfield

System is offloaded for transport to a Vessel of Opportunity (VOO)

Rescue system and support equipment are installed onboard the VOO

VOO transports rescue system and holds position over Disabled Submarine (DISSUB)

END:
PRM rescues up to 16 personnel at a time from the DISSUB

Not pictured: Search, loadout, mooring, intervention or decompression

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Technology improvements: MOSHIP survey process

- Mother Ship (MOSHIP) survey process:
  - Electrical, fuel, compressed air
  - Deck strength and flatness
  - Square footage on main deck
  - DP-Mooring requirements

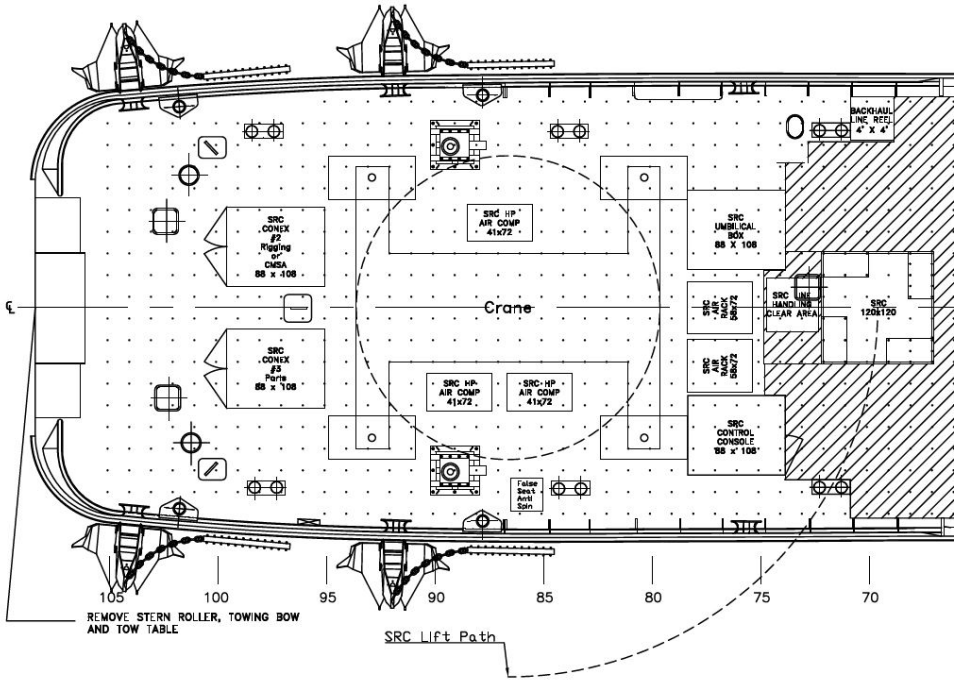

Fig 3: Example of LWMS setup on aft deck of a Vessel of Opportunity (VOO).
Drawn: J. Maltz, PNS, 205.2JM.

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Current policies

- IMO/ABS
- Navy - DP2 PRS

Mother Ship (MOSHIP) Criteria Manual for U. S. Navy Submarine Rescue

REV E

THIS DOCUMENT SUPERSEDES SUBMARINE RESCUE DIVING AND RECOMPRESSION SYSTEM VESSEL OF OPPORTUNITY SPECIFICATION Revision D dated 27 April 2007

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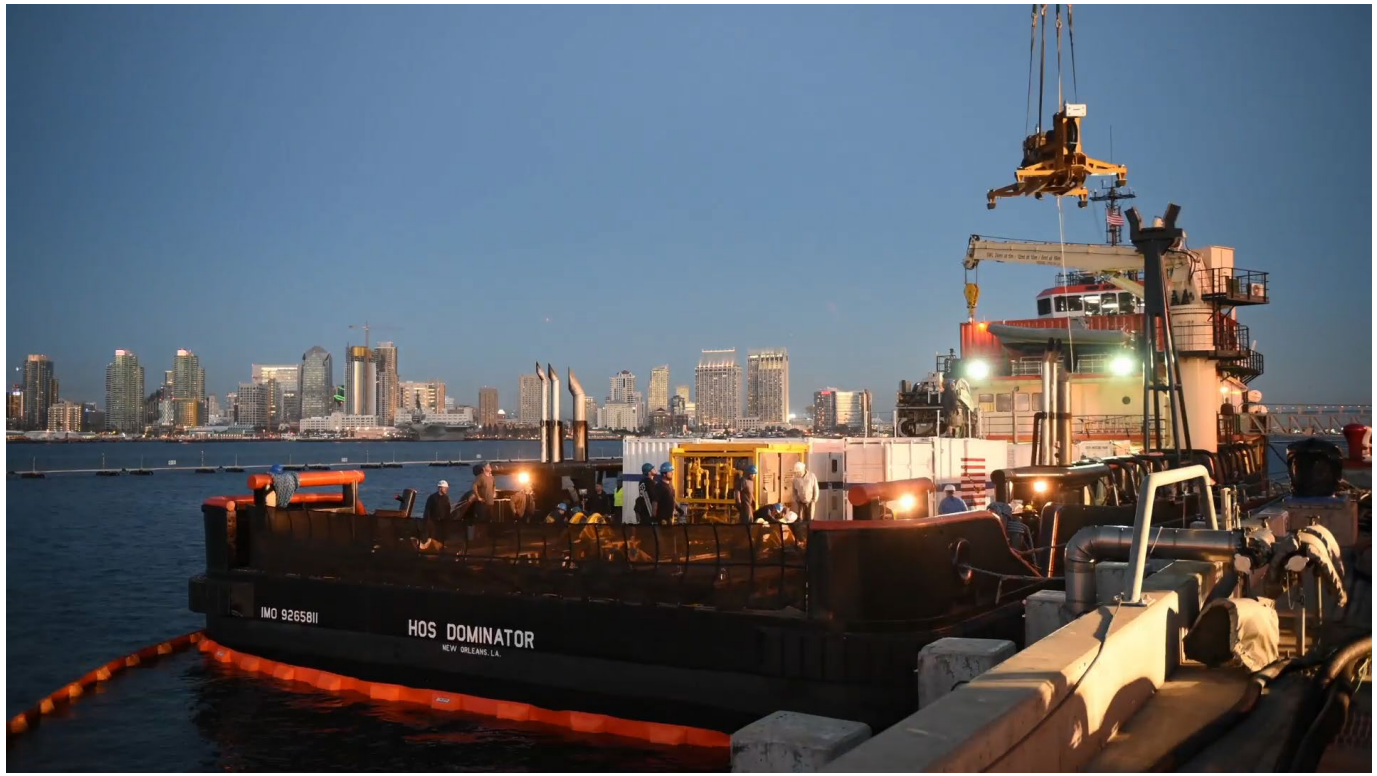

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Recommendations for PRS protocol

(1) If there are targets available for laser or radar PRS, then allow those PRS to be used.

(2) If there are no targets available for laser or radar PRS, recommend mitigating risk to an acceptable level by requiring two different GNSS to be online and available for use.

(3) If there are no targets available for laser or radar PRS, consider installation of acoustic PR system.

(4) If MOSHIP has acoustic PRS, recommend Intervention VOO installs appropriate transponders in seabed around disabled submarine prior to arrival of MOSHIP on scene.

(5) If there are no targets available for laser or radar PRS, consider using Intervention VOO(s) as platforms for relative targets to serve as a secondary principle.

(6) If available, consider an acoustic positioning systems that has an Inertial Aided Navigation (IAN) reference sensor.

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Connecting What's Needed with What's Next™

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