Enhancement of the national competence and awareness against wreck-induced oil pollution – latest activities in Finland

International Dangerous Ship Wrecks Conference 28th January 2021



VAIKUTA

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baltcf

Navy diver going to the salvage operation, September 2019 (photo: J. Rytkönen)

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WRECKS project – Oil Removal Operations – integration of governmental bodies and private sector

- Project is an elementary part of the governmental water protection programme for 2019 – 2023, and is linked to the Baltic Sea Action Plan.
- Sub-project WRECKS is planned for the years 2019 – 2021.
- However, some tasks or missions would be continued after the end of 2021
- Total budget is 4 M€ for the WRECKS

SYKE



National Wreck Project - Resources

- Responsible organisation, SYKE – under the coordination of the Ministry of the Environment
- Finnish Navy,
- Finnish Frontier Guard
- Traficom (Finnish Transport Safety Agency)
- The Finnish Heritage Agency
- Private Sector, such as diving companies, sub sea
- SYKE professionals etc...



Divers in the Archipelago Sea, November 2019. Photo: H. Kankaanpää

VESIENSUOJELUN TEHOSTAMIS-OHJELMA

Main Goals

- Main goal is to ensure that all the partners have necessary competence and preparedness related to the wrecks and oil removal operations.
- The direct goal is to remove oil(s) from one or two wrecks, update the competence of authorities, build up refeshment training cources and collect best practices for underwater salvage works.
- Important part of the project is to develop follow up methods to survey the wrecks and to focus on the most critical objects.
- After the completion of the project the authorities will have the better understanding of the wrecks and their environmental pollution risk potential. The project will also launch recommendations how to follow up wrecks with sampling and surveying tools, and how to build up oil removal operations when necessary (costs, risks, responsibilities, hybrid models ? Etc.)

Execution Plan - roughly

- Project leadership by SYKE
- Year 2019 surveying phase, selecting the target(s) for oil removal, Site investigations, hydrodynamic studies, diving camp(s), 3D modelling, oil removal budgeting and plans, tendering processes & budgeting for 2020 and 2021 (draft)
- Year 2020 oil removal operation(s) if possible two targets draft plan for governmental bodies and identify their duties for wrecks
- Year 2021 oil removal operation, site studies, impact assessment, reporting, plans for govermental bodies and their liability within wrecks, draft wreck surveying pland to be realized as a part of the normal water quality surveying process (?)

further operations.... In 2022 ->

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Risks of Operations and Salvage Executions

- Responsible organisations ?
- Ownership ?
- Poor condition of the wreck, location, sensitive areas
- Uncertainties when estimating amount of oil
- War wrecks ammo and mines close to the objects
- Trawls/ sediments/cargo covering the bunker/fuel tanks to be emptied
- Required resources versus economics ^{S Y K} Environmental conditions - delays



MS Volare wreck salvage by the Estonian experts in Saarenmaa, Estonia (Photo: J. Rytkönen)

Execution in 2019

SYKE

- In Year 2019 the main goal was to be prepared for the oil removal operations and to define the status quo of the governmental and private sector's ability for wreck salvage operations;
- Nine wrecks were studied by The Finnish frontier Guard and SYKE two of those objects were deeper than 70 m.
- Glider was used for underwater hydrocarbon level measurements;
- ARANDA got new devices for wreck studies
- Bucket Dredger VELI outside Hanko was operated by a joint operation of the Finnish Navy and SYKE
- Two smaller coastal wreighters sunk in the Archipelago Sea were studied and 3D modelled – they were selected as targets for 2020

Selected new tools for ARANDA and TURVA

- 1. Multibeam Echosounder System (MBES) in operation
- The MBES and its accessory components are required to be operable within the entire Baltic Sea with excellent spatial coverage (swath) and depth resolution.
- 2. Side Scan Sonar System (SSSS) in operation

SYKE

- The SSSS is required to be operable within the entire Baltic Sea within the boundaries set by the current data cable.
- Extension to Sub Bottom Echosounding System (SBES) in operation
- The SBES is required to be operable within the entire Baltic Sea and also in shelf areas of the world ocean.
- 4. LARS wet bell diving support system for VL TURVA operative in June 2021

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SC304 Komsomolets

- Sank in 1942
- Registered also in:Museoviraston muinaisjäännösrekisteriin target No. 2241.
- Red line in the drawing gives an idea about the wreck location on the bottom.
- Oil tanks can be reached.



26 m



Veli, Chain bucket dredger

- sank 1987 during towing
- Oil removal operation was weeks 39...40
- training

ΚE

S Y







Ilmarinen upside down in the depth of 80 m



Kuva 29: Sukellus- ja dokumentointialueet hylyllä. Kuva: Pekka Kumpula.



Anttila, M et al. Panssarilaiva Ilmarisen hylyn dokumentointi. Raportti Merivoimille. 2015





Här ligger de fem vraken som landskapets oljeskydd håller ögat på. Var och ett av vraken tros innehålla ett partusen liter billig diesel.

The wreck site in Kihti area was investigated in the late Fall 2019 and again in the Spring time 2020 by ARANDA and diving teams Subzone and Badewanne





Reeling visible in the subsea photos

Cargo hold emty – sugar roots away – cargo hatches visible in the subsea photos







Hanna Marjut https://youtu.be/PMMpJXcw



50.0 m

















Fortuna

* 60 05,141' N / 21 02,471' E, 23,7 m
** 60 05,122' N / 21 02,381'E, 28,4 m
*** 60 05,131' N / 21 02,455' E, 26,2 m
**** 60 05,122' N / 21 02,424' E, 22,1 m
***** 60 05,102' N / 21 02,102' E, 29,7 m
***** 60 05,093' N / 21 02, 439' E, 27,8



m





Fortuna – MBES draft image made in June 2020)

Photo by Badewanne





SYKE



Badewanne divers (left) and naval salvage diver (right)

ARANDA cruise, week 37 (September 7->)

- Survey was conducted to study four war wrecks:
 - destroyer Gordyi, a Russian wreck – leaking time to time;
 Leaked oil when visiting
 - Submarine S12 in Estonian waters (in two parts)
 - Submarine L2 in Estonian waters
 leaking time to time
- Submarine Sc311 leaking time to time. Leaked oil when visiting





Activities for the rest of the year 2020 !

- Weeks 39 and 40; training of the HALLI's crew in Pansio
 Naval Base and cruise to the Archipelago Sea
 - Refresment trainings mammouth dredging, underwater welding and cutting, drilling;
 - Oil removal systems.

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 Possible survey of the wreck Beatris (or trawler Bärbel ?)



Activities for the rest of the year !

- Week 43 (October 19 ->):
- Cruising close to the Utö island, surveying wrecks
- Rigel
- Simson; <u>www.faktaomfartyg.se/simson 1915.htm</u>
- Due to the rough weather and some technical problems the cruising did not gave any additional data







Proposed main activities 2021

- SYKE and the Finnish Border Guard;
 - LARS diving bell testing and training
 - Surveying missions and Lifting up Paravan
- SYKE & Navy: Oil removal operation / wreck Beatris and Paravan
- International tender oil removal operation designated object
- Proposal for the liability and responsibilities of governmental agencies
- Suggestion for the wreck surveying programme Helcom, neighboring countries

International Wreck seminar in the Fall time



After the EU BONUS funded SWERA project our goal was to study more these wrecks (11 items)

Wreck No./Name	Oil Amount	Sank Down	Notes
Gnevnyj –Wreck A*	max 500 ton	24.6.1941	water depth ?
Ilmarinen – Wreck B*	93 ton	13.9.1941	water depth 70 m
Pravda – Wreck C*	93 ton	17.9.1941	location and water depth ?
Riegel – Wreck D	25 ton	28.11.1966	water depth 40 m
S5 – Wreck E*	max 200 ton	28.8.1941	water depth unknown
Smetlivyi – Wreck F*	max 500 ton	4.11.1941	> 70 m
Surovyi – Wreck G*	max 500 ton	14.11.1941	> 70 m
Translubeca – Wreck H	137 ton	31.12.1975	Out of Rauma
Z35 – Wreck I*	max 800 ton	12.12.1944	Totally destroyed when sinking
T-203 – Wreck J*	96 ton	24.10.1941	
Wischaven – Wreck K	?	7,1,1960	61° 10.000' N , 20° 30.000' E
			WGS84 – location not accurate



https://www.syke.fi/projects/swera

Further development of the VRAKA model



SYKE



By Hanna Landquist /Chalmers University

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27.1.2021

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Progress achieved.....

- Governmental resources and facilities have been identified, equipments tested and trainings performed.
- SYKE's R&D vessel ARANDA is linked to the subsea operations due to the new devices and the modern laboratory onboard.
- Various sub tasks have been performed with the aid of the private sector.
- Oil(s) taken from three wrecks.
- List of risk wrecks 24 items.
- Three Naval ships and Border Guard's TURVA used in operations; crew trained and motivated for operations.



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