

CRUISE REPORT



R/V Aranda

Cruise 08/2022

HYLYT 1 2022
28.8.2022 – 2.9.2022

This report is based on preliminary data and is subject to changes.

Objectives of the cruise

The objectives of the cruise were:

- 1) Undertaking a pre-salvage survey of wreck "Simson", assisted by personnel from Waves Group, and in co-operation with ROV operating company Olxus oy
- 2) Draft out the future co-operation with Finnish Navy and Finnish Coast Guard

Table 1, scientific crew

Name	Time onboard	Organization
Flinkman Juha	28.08.2022 - 02.09.2022	SYKE
Harri Kankaanpää	28.08.2022 - 02.09.2022	SYKE
Tommi Kontto	28.08.2022 - 02.09.2022	SYKE
Jere Riikonen	28.08.2022 - 02.09.2022	SYKE
Stuart Leather	28.08.2022 - 02.09.2022	WAVES GROUP
Allan Stuart	28.08.2022 - 02.09.2022	WAVES GROUP
Jussi Santala	28.08.2022 - 02.09.2022	RVL
Toni Silvennoinen	28.08.2022 - 02.09.2022	RVL
Jari Valvio	28.08.2022 - 02.09.2022	RVL
Patrik Lehto	28.08.2022 - 02.09.2022	MV
Tuomas Runola	28.08.2022 - 02.09.2022	MV
Mikko Simola	28.08.2022 - 02.09.2022	LOXUS
Pentti Kokki	28.08.2022 - 02.09.2022	LOXUS
Ilia Anttonen	28.08.2022 - 02.09.2022	LOXUS

Cruise Route

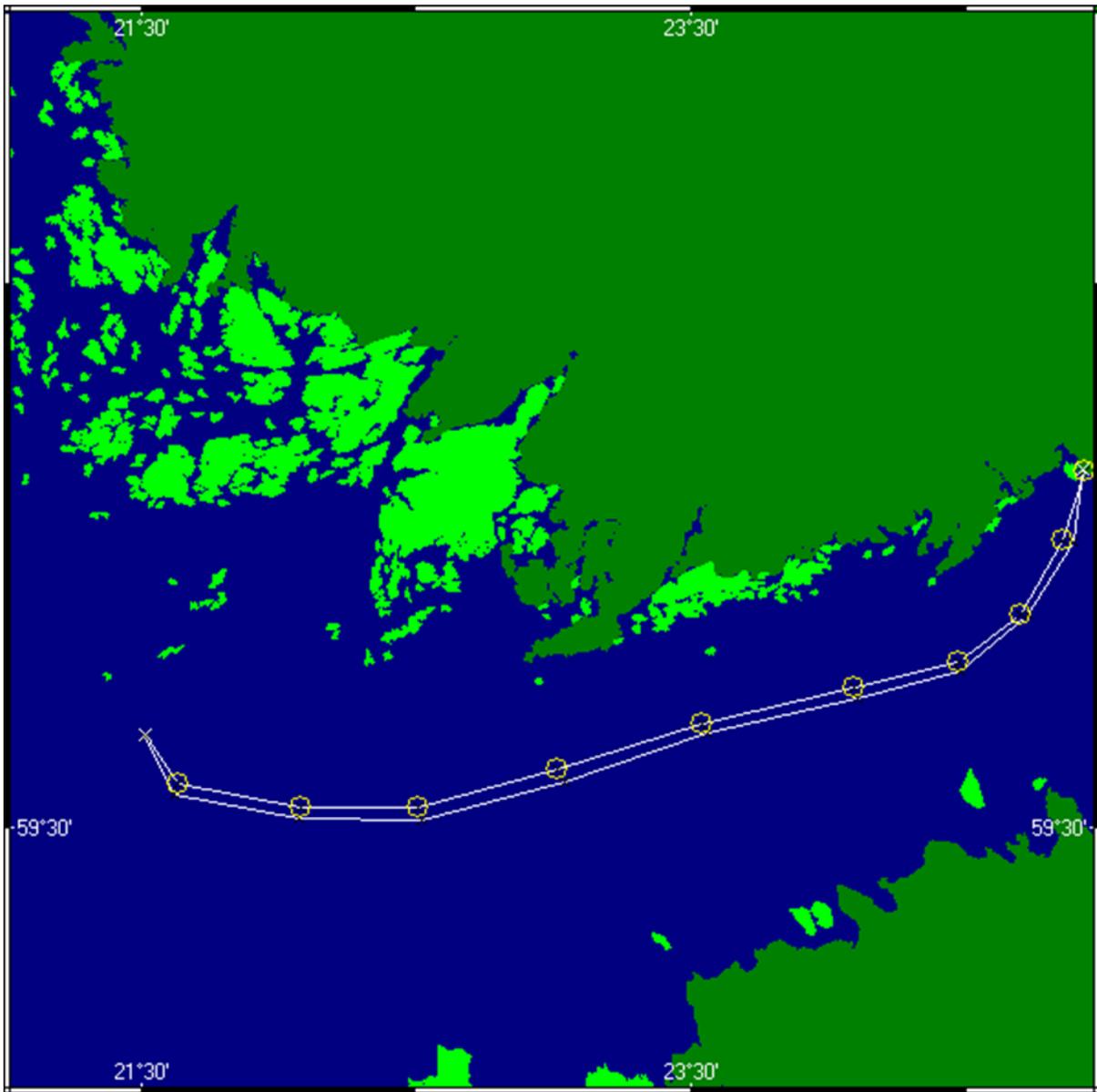


Figure 1 Cruise route

Finnish Environment Institute
Agnes Sjöbergin katu 2
FI-00790 Helsinki
Finland
<http://www.syke.fi/en>

Finnish Meteorological Institute
Erik Palménin aukio 1
P.O. Box 503
FI-00101 Helsinki
Finland
<http://en.ilmatieteenlaitos.fi/>

General execution of the cruise, observations and important findings

Cruise departed from Helsinki on the evening of 28th Aug, with most of the scientific crew onboard. On Monday morning we arrive at the wreck site of "Simson" located at N59°40.29, E021°30.82. Here the rest of the scientific crew arrive, transferred to Aranda from CG vessel by rib. Work commenced immediately with MBES echosounder work, followed by ROV investigations of the wreck. Simson had carried 30 tons of diesel fuel at the time of sinking, so the main aim was to find out if the fuel is still onboard.

The wreck lies in approximately 60m. depth, and visibility at the site is fair, about 3-5 meters. Both hydroacoustic imaging and ROV investigations reveal that the wreck lies on seabed upright on even keel, sunk to soft sediment practically to main deck level. The wreck is significantly covered by limestone rock rubble that had fallen down from the barge the tug had been towing. Work continued during daylight hours (practically 12 h each day), after which the vessel retired to anchorage on the west side of Utö island for the night. This was the regular pattern for work in following days.

ROV operations were conducted so that a larger ROV "Chinook" was used for general filming of the wreck, and investigating details on deck such as breather tubes, engine room skylight etc. In order to view the fuel tanks in the engine room, a smaller "FiFish Pro V6" ROV was used to enter the engine room via open engine room skylight. The entry was successful, engines and other details could be observed, but the tops of the fuel bunker tanks could not be reached due to their difficult location. All during the operations, a contact was maintained with the original Chief engineer of the tug Simson, who had been onboard during her sinking. His knowledge of the wreck proved to be extremely helpful at all stages of the entire pre salvage survey process.

On Thursday 1st Sept we started the work by taking water samples directly above the engine room skylight at various depths from practically deck level to surface. After that a series of sediment samples from port side of the wreck, in order to find out if any oil had slipped into sediment layers (Fig 2.). After this we continued with further ROV work. Before leaving the site, we also tested Aranda's SSS which operated flawlessly.

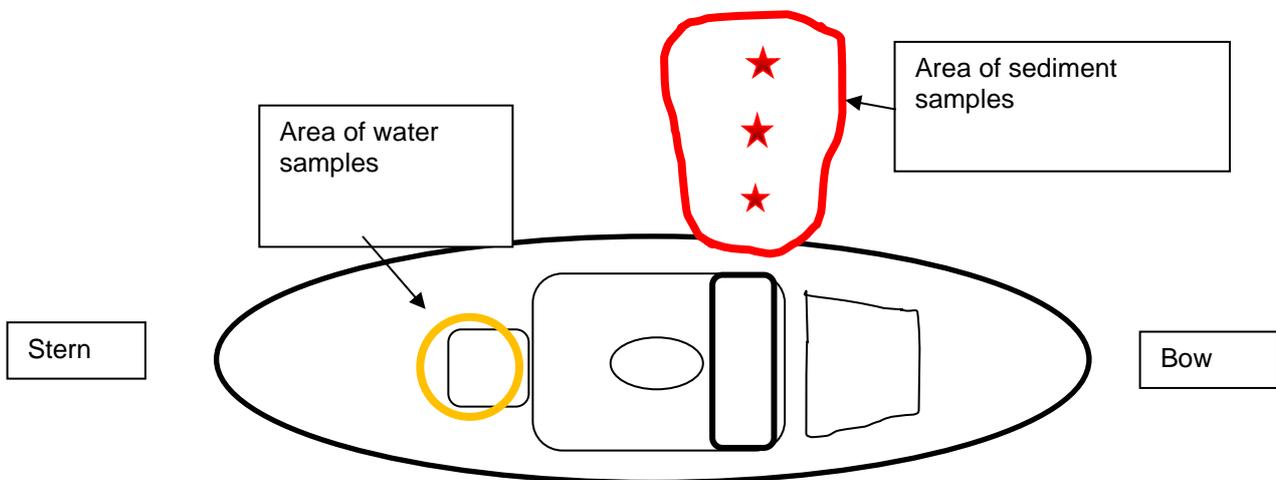


Fig 2. Water- and sediment sample locations in relation to wreck

The cruise ended at Helsinki on Friday morning 2nd Sept 2022.

Conclusions

Weather was very windy during the ops, but luckily the wind was from the north, enabling us to carry on ops while in DP. All cruise objectives were met, and despite the fact that we failed to directly observe the bunker tanks in the engine room, the investigation revealed that the tank breather tubes had corrosion holes allowing the diesel fuel to escape through them. Also, it was estimated that the half-full bunker tanks, equipped with closing breather tubes could not have withstood the rapidly generated pressure of 7 bars due to quick sinking to 60m. depth, and hence must have been imploded. Diesel fuel has then flown out of the tanks, the upright wreck and to the surface. The sinking was in fall of 1978, the area being far from frequently used shipping lanes, so it is quite possible that the oil slick thus produced has gone unnoticed.

The cruise proved to that our planned concept of using our R/V Aranda, own personnel, and working in co-operation with consultant company, specialist ROV operating company, and Finnish authorities (Navy, Coast Guard) was most successful, warranting further pre salvage operations to be carried out in a similar way.

List of stations

Index	location [WGS-84]	Depth [m]	Aika [UTC]
0283	N59°40.29', E021°30.82'	60m	05.