



Diving Report

Alabama Wreck Depth Survey

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Leask Marine Ltd.
6 Crowness Road
Hatston Industrial Estate
Kirkwall, Orkney,
KW15 1RG

Leask Marine Wales Office
2nd Floor, Pier House
Pembroke Dock
Pembrokeshire
SA72 6TR

Leask Marine (Ireland) Ltd
Unit 3
Olympic House
Pleasant Street
Dublin 8
D08 H67X

Raptor Anchoring Ltd
6 Crowness Road
Hatston Industrial Estate
Kirkwall, Orkney,
KW15 1RG

🇪🇺 T: +44 1856 874 725
🇬🇧 T: +44 1792 482 469
🇮🇪 T: +353 (0) 196 85 955

E: info@leaskmarine.com
W: www.leaskmarine.com



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1 INTRODUCTION

The SS Alabama was on passage from Copenhagen to Baltimore and was driven into Stornoway seeking shelter. She sank there, possibly after a fire.

Leask Marine has been contracted to carry out a reconnaissance survey and assessment of the wreck SS Alabama near Stornoway.

The purpose of the operation is to assess how much of the wreck projects above -7m and -8m LAT.

In order to obtain the best results during the survey, Leask Marine identified a swept area of 100m long by 14m wide, surveying up to 2m from each end of the beam where required resulting in a total width of 18m.

To ensure the vessel follows a straight line, we have used the EIVA NaviPac software survey spread for accurate readings of location.

The survey consisted of a total of 51 waypoints; the distance between each waypoint varies between 2-5m; when additional sweeps were required the distance between waypoints was reduce to 1m.

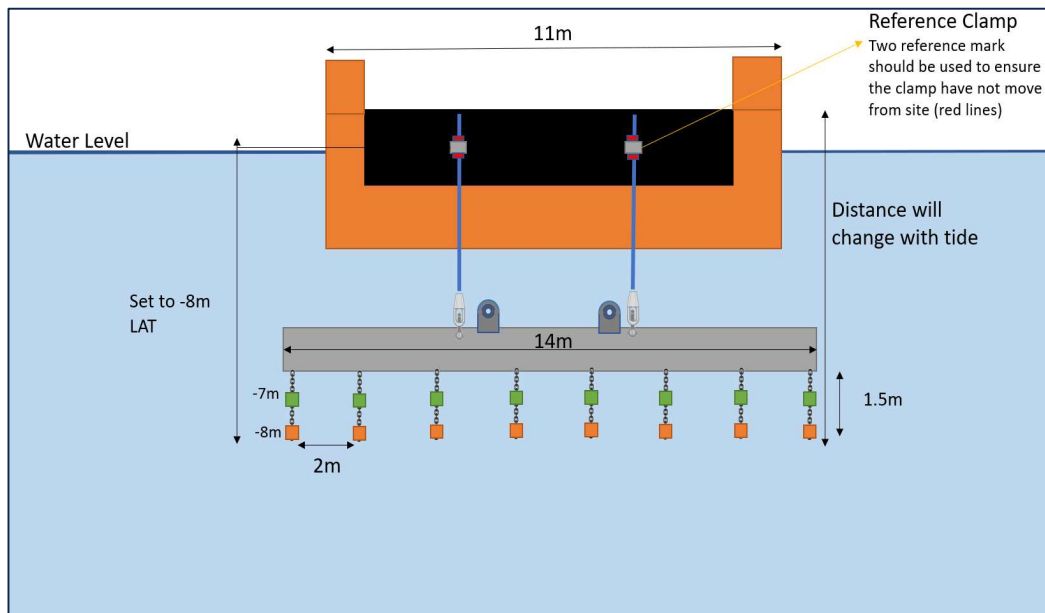


Figure I: Survey Beam Setup

Constant communication was kept between the surveying team and Stornoway Harbour in order to adjust the height of the survey beam according to the tide level relevant to LAT.

1.1 Document Objective

This document outlines the findings obtained during the diving depth survey of SS Alabama Wreck.

2 FINDINGS

The findings of the diving survey have been separated into three different tables.

Each table shows at the top row the maker number on the survey beam and the rows are the waypoints of the survey, each square will have a number that represents the water depth where an object was identified relative to the LAT surface. (0 m)

	PORT	SURVEY BEAM POINTS														STB			
Survey Line	16	14	12		10		8		6		4		2		0	-2	Distance Covered		
	16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	-2	metres	WAYPOINTS
44	-	-	-	-	-	-	-	-	7.4	-	-	-	7	7	-	-	-	21	WP08
45	-	-	-	-	-	-	-	-	-	8	-	7.9	7	7	-	-	-	19	WP07
46	-	-	-	-	-	-	-	-	-	-	-	-	6.4	6.4	-	-	-	18	WP06
47	-	-	-	-	-	-	-	-	-	7.1	-	7.9	-	-	-	-	-	17	WP05
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	WP04
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	WP03
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	WP02
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	WP01
SS ALABAMA STERN- SURVEY START																			

SS ALABAMA STERN- SURVEY START

Figure 2: Example of finding table

For example, the way to read the highlighted square of the figure above would be: On waypoint 5 (WP05) at marker 4 of the survey beam, an object was identified at a water depth of -7.9m LAT.

It is also possible to know the distance of the object from the beginning of the survey, using the same example we know that WP05 was recorded at 17m from the start of the survey.

The survey started at the stern of the SS Alabama at WP01 and finishes 104m at the bow of the SS Alabama WP51.

Marker 0 of the survey beam is located at the starboard end of the wreck and marker 14 is located at the port side.¹

¹ Please note that survey line and waypoints are not the same. The survey line column is merely a reference use during the creation of the finding tables.

2.1 -7m LAT Survey

STORNOWAY ALABAMA SURVEY																			
Survey -7m LAT, Depth of identified objects																			
	STB	SURVEY BEAM POINTS															PORT		
Survey Line	16	14	12	10	8	6	4	2	0								-2	Distance Covered	
	16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	-2	metres	WAYPOINTS
SS ALABAMA BOW- SURVEY END																			
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	WP51
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	WP50
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	WP49
4	-	-	6.7	6.7	-	-	-	6.5	-	-	-	-	-	-	-	-	-	98	WP48
5	-	-	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	96	WP47
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	WP46
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	92	WP45
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90	WP44
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	WP43
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85	WP42
11	-	-	-	-	-	-	-	-	6.8	-	-	6.9	-	-	-	-	-	83	WP41
12	-	-	-	-	-	-	-	-	-	-	6.2	6.7	-	-	-	-	-	81	WP40
13	-	-	-	-	-	-	-	-	-	-	5.6	-	-	-	-	-	-	79	WP39
14	-	-	-	-	-	-	-	-	-	-	-	-	6.7	-	-	-	-	77	WP38
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	WP37
16	-	-	-	5.3	6.8	2.7	6.9	6.9	-	6.4	-	-	6.6	-	-	-	-	73	WP36
17	-	-	-	6.5	6.5	6.5	-	-	-	-	-	-	-	-	-	-	-	71	WP35
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69	WP34

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	STB	SURVEY BEAM POINTS															PORT		
Survey Line	16	14	12		10		8		6		4		2		0		-2	Distance Covered	
	16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	-2	metres	WAYPOINTS
19	-	6.5	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67	WP33
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65	WP32
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63	WP31
22	-	-	-	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	61	WP30
23	-	4.7	4.7	4.7	4.7	4.2	-	-	-	-	-	-	-	-	-	-	-	59	WP29
24	5.7	5.7	5.7	4.7	4.7	-	-	-	-	-	-	-	-	-	-	-	-	57	WP28
25	-	-	-	-	-	-	-	6.7	-	-	-	-	-	-	-	-	-	55	WP27
26	-	-	-	-	-	6.6	6.2	4.7	4.7	4.7	6.5	-	-	-	-	-	-	53	WP26
27	-	-	-	-	-	-	-	-	4	4.2	-	-	-	-	-	-	-	52	WP25
28	-	-	-	-	-	-	5.4	5.4	5.4	-	-	-	-	-	-	-	-	51	WP24
29	-	-	-	6.9	6.9	5.4	-	5.8	-	-	-	-	-	-	-	-	-	49	WP23
30	-	-	-	-	-	5.4	5.6	-	-	-	-	-	-	-	-	-	-	48	WP22
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	WP21
32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	WP20
33	-	-	-	-	-	-	-	-	-	-	-	-	6.6	6.6	6.6	5.3	-	43	WP19
34	-	-	-	-	-	6.3	6.3	-	-	-	-	6.4	5.3	5.3	5.3	5.3	-	41	WP18
35	-	-	-	-	-	-	-	6.8	-	-	-	-	5.6	5.6	5.6	5.6	-	39	WP17
36	-	-	-	-	-	-	6.9	-	-	6.2	5.7	-	-	-	-	6.9	-	37	WP16
37	-	-	-	6.85	6.85	-	-	-	-	-	-	-	-	-	-	6.9	6.9	35	WP15
38	-	-	-	-	-	-	6.1	-	-	-	-	-	-	-	-	-	6.9	33	WP14
39	-	-	-	-	-	-	6.1	-	-	-	-	-	-	-	-	-	-	31	WP13
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29	WP12
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27	WP11
42	-	-	-	-	-	-	-	6.9	-	-	6.65	6.65	6.65	6.65	-	-	-	25	WP10
43	-	-	-	-	-	-	-	-	6.9	-	-	-	-	-	-	-	-	23	WP09

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	STB	SURVEY BEAM POINTS																PORT		
Survey Line	16	14	12		10		8		6		4		2		0		-2	Distance Covered		
	16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	-2	metres	WAYPOINTS	
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	WP08	
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19	WP07	
46	-	-	-	-	-	-	-	-	-	-	-	-	6.44	6.44	-	-	-	18	WP06	
47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17	WP05	
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	WP04	
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	WP03	
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	WP02	
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	WP01	
SS ALABAMA STERN- SURVEY START																				

Table I: Findings, above -7m LAT

2.2 -8m LAT Survey

STORNOWAY ALABAMA SURVEY																			
Survey -8m LAT, Depth of identified objects																			
	PORT	SURVEY BEAM POINTS														STB			
Survey Line	16	14	12	10	8	6	4	2	0	-2	Distance Covered								
	16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	-2	metres	WAYPOINTS
SS ALABAMA BOW- SURVEY END																			
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	WP51
2	-	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	WP50
3	8	7.5	-	-	-	-	8	8	-	-	-	-	-	-	-	-	-	100	WP49
4	-	7.4	6.7	6.7	-	-	7.2	6.5	7.8	7.3	-	-	-	-	-	-	-	98	WP48
5	7.4	7.2	6.5	-	-	7.8	-	-	-	-	-	-	-	-	-	-	-	96	WP47
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	WP46
7	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	92	WP45
8	-	-	-	-	-	-	-	8	-	7.2	7.5	8	-	-	-	-	-	90	WP44
9	-	-	-	-	-	-	-	-	-	7.2	7.5	-	-	-	-	-	-	88	WP43
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85	WP42
11	-	-	-	-	-	-	-	-	6.8	7.9	7.9	6.9	-	-	-	-	-	83	WP41
12	-	-	-	-	-	-	-	7.1	-	7.2	6.2	6.7	7.9	8	-	-	-	81	WP40
13	8	8	8	8	8	8	7.2	7.2	7.2	7.2	5.6	7.9	7.9	8	-	-	-	79	WP39
14	-	-	-	7.2	7.2	7.2	7.5	8	-	-	-	7.2	6.7	-	-	-	-	77	WP38
15	-	-	-	7.7	7.7	7.8	7.7	-	-	-	7.3	-	-	-	-	-	-	75	WP37
16	8	7.2	7.2	5.3	6.8	2.7	6.9	6.9	7.1	6.4	7.2	7.2	6.6	8	-	-	-	73	WP36
17	-	-	-	6.5	6.5	6.5	7.1	7.1	-	7.2	-	7.6	-	-	-	-	-	71	WP35
18	-	8	8	7.2	7.2	7.2	7.2	-	-	-	7.2	-	-	-	-	-	-	69	WP34

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	PORT	SURVEY BEAM POINTS																STB		
Survey Line	16	14	12		10		8		6		4		2		0		-2	Distance Covered		
	16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	-2	metres	WAYPOINTS	
19	-	6.5	6.5	7.2	-	-	7.2	7.2	-	-	-	-	-	-	-	-	-	67	WP33	
20	7.6	7.6	7.6	7.6	8	8	7.6	7.6	7.8	-	-	-	-	-	-	-	-	65	WP32	
21	-	-	-	-	-	-	7.2	-	-	-	-	-	-	-	-	-	-	63	WP31	
22	-	-	-	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	61	WP30	
23	-	4.7	4.7	4.7	4.7	4.2	-	-	-	-	-	-	-	-	-	-	-	59	WP29	
24	5.7	5.7	5.7	4.7	4.7	-	-	-	-	-	-	-	-	-	-	-	-	57	WP28	
25	-	-	-	-	-	-	-	6.7	-	-	-	-	-	-	-	-	-	55	WP27	
26	-	-	-	-	-	6.6	6.2	4.7	4.7	4.7	6.5	-	-	-	-	-	-	53	WP26	
27	-	-	-	-	-	-	-	-	4	4.2	-	-	-	-	-	-	-	52	WP25	
28	-	-	-	-	-	7.3	5.4	5.4	5.4	-	-	-	-	-	-	-	-	51	WP24	
29	-	-	-	6.9	6.9	5.4	-	5.8	-	-	-	-	-	-	-	-	-	49	WP23	
30	-	-	-	-	-	5.4	5.6	-	-	-	-	-	-	-	-	-	-	48	WP22	
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	WP21	
32	-	-	-	-	-	-	-	7.3	-	-	-	-	-	-	-	7	-	45	WP20	
33	-	-	-	-	-	-	-	-	-	-	-	7.2	6.6	6.6	6.6	5.3	-	43	WP19	
34	-	-	-	7.8	7.8	6.3	6.3	7.1	7.1	7.8	7.8	6.4	5.3	5.3	5.3	5.3	-	41	WP18	
35	-	-	-	-	-	7	7	6.8	6.8	7	7.1	-	5.6	5.6	5.6	5.6	-	39	WP17	
36	-	-	-	-	-	7.9	6.9	7.2	7.2	6.2	5.7	-	-	-	-	6.9	-	37	WP16	
37	-	7.4	-	6.9	6.9	7.2	-	-	7.6	7.6	-	-	-	-	-	6.9	6.9	35	WP15	
38	-	-	-	-	-	-	6.1	-	-	-	-	-	-	-	-	-	6.9	33	WP14	
39	-	-	-	-	-	-	6.1	-	-	-	-	-	8	8	-	-	-	31	WP13	
40	-	-	-	-	-	-	7.8	-	-	-	-	-	-	-	-	8	-	29	WP12	
41	-	-	-	-	-	-	-	-	-	7.4	7.4	-	8	8	-	-	-	27	WP11	
42	-	-	-	-	-	-	-	6.9	7.7	-	6.7	6.7	6.7	6.7	-	-	-	25	WP10	
43	-	-	-	-	-	-	-	-	6.9	-	7.2	7.2	7.2	7.2	7.2	-	-	23	WP09	

	PORT	SURVEY BEAM POINTS																STB		
Survey Line	16	14	12		10		8		6		4		2		0		-2	Distance Covered		
	16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	-2	metres	WAYPOINTS	
44	-	-	-	-	-	-	-	-	7.4	-	-	-	7	7	-	-	-	21	WP08	
45	-	-	-	-	-	-	-	-	-	8	-	7.9	7	7	-	-	-	19	WP07	
46	-	-	-	-	-	-	-	-	-	-	-	-	6.4	6.4	-	-	-	18	WP06	
47	-	-	-	-	-	-	-	-	-	7.1	-	7.9	-	-	-	-	-	17	WP05	
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	WP04	
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	WP03	
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	WP02	
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	WP01	
SS ALABAMA STERN- SURVEY START																				

SS ALABAMA STERN- SURVEY START

Table 2: Findings, above -8m LAT

2.3 -7m & -8m LAT Surveys Overlap

Legend:



Objects Identified in between -7m and -8m LAT

Objects Identified above -7m LAT water depth

STORNOWAY ALABAMA SURVEY																			
Survey -8m LAT, Depth of identified objects																			
	PORT	SURVEY BEAM POINTS															STB		
Survey Line	16	14	12	10	8	6	4	2	0	-2	Distance Covered								
	16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	-2	metres	WAYPOINTS
SS ALABAMA BOW- SURVEY END																			
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	WP51
2	-	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	WP50
3	8	7.5	-	-	-	-	8	8	-	-	-	-	-	-	-	-	-	100	WP49
4	-	7.4	6.7	6.7	-	-	7.2	6.5	7.8	7.3	-	-	-	-	-	-	-	98	WP48
5	7.4	7.2	6.5	-	-	7.8	-	-	-	-	-	-	-	-	-	-	-	96	WP47
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	WP46
7	-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	92	WP45
8	-	-	-	-	-	-	-	8	-	7.2	7.5	8	-	-	-	-	-	90	WP44
9	-	-	-	-	-	-	-	-	-	7.2	7.5	-	-	-	-	-	-	88	WP43
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85	WP42
11	-	-	-	-	-	-	-	-	6.8	7.9	7.9	6.9	-	-	-	-	-	83	WP41
12	-	-	-	-	-	-	-	7.1	-	7.2	6.2	6.7	7.9	8	-	-	-	81	WP40
13	8	8	8	8	8	8	7.2	7.2	7.2	7.2	5.6	7.9	7.9	8	-	-	-	79	WP39
14	-	-	-	7.2	7.2	7.2	7.5	8	-	-	-	7.2	6.7	-	-	-	-	77	WP38
15	-	-	-	7.7	7.7	7.8	7.65	-	-	-	7.3	-	-	-	-	-	-	75	WP37

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	PORT	SURVEY BEAM POINTS															STB		
Survey Line	16	14	12		10		8		6		4		2		0		-2	Distance Covered	
	16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	-2	metres	WAYPOINTS
16	8	7.2	7.2	5.3	6.8	2.7	6.9	6.9	7.1	6.4	7.2	7.2	6.6	8	-	-	-	73	WP36
17	-	-	-	6.5	6.5	6.5	7.1	7.1	-	7.2	-	7.6	-	-	-	-	-	71	WP35
18	-	8	8	7.2	7.2	7.2	7.2	-	-	-	7.2	-	-	-	-	-	-	69	WP34
19	-	6.5	6.5	7.2	-	-	7.2	7.2	-	-	-	-	-	-	-	-	-	67	WP33
20	7.6	7.6	7.6	7.6	8	8	7.6	7.6	7.8	-	-	-	-	-	-	-	-	65	WP32
21	-	-	-	-	-	-	7.2	-	-	-	-	-	-	-	-	-	-	63	WP31
22	-	-	-	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	61	WP30
23	-	4.7	4.7	4.7	4.7	4.2	-	-	-	-	-	-	-	-	-	-	-	59	WP29
24	5.7	5.7	5.7	4.7	4.7	-	-	-	-	-	-	-	-	-	-	-	-	57	WP28
25	-	-	-	-	-	-	-	6.7	-	-	-	-	-	-	-	-	-	55	WP27
26	-	-	-	-	-	6.6	6.2	4.7	4.7	4.7	6.5	-	-	-	-	-	-	53	WP26
27	-	-	-	-	-	-	-	-	4	4.2	-	-	-	-	-	-	-	52	WP25
28	-	-	-	-	-	7.3	5.4	5.4	5.4	-	-	-	-	-	-	-	-	51	WP24
29	-	-	-	6.9	6.9	5.4	5.4	5.8	-	-	-	-	-	-	-	-	-	49	WP23
30	-	-	-	-	-	5.4	5.6	-	-	-	-	-	-	-	-	-	-	48	WP22
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	WP21
32	-	-	-	-	-	-	-	7.3	-	-	-	-	-	-	-	7	-	45	WP20
33	-	-	-	-	-	-	-	-	-	-	-	7.2	6.6	6.6	6.6	5.3	-	43	WP19
34	-	-	-	7.8	7.8	6.3	6.3	7.1	7.1	7.8	7.8	6.4	5.3	5.3	5.3	5.3	-	41	WP18
35	-	-	-	-	-	7	7	6.8	6.8	7	7.1	-	5.6	5.6	5.6	5.6	-	39	WP17
36	-	-	-	-	-	7.9	6.9	7.2	7.2	6.2	5.7	-	-	-	-	6.9	-	37	WP16
37	-	7.4	-	6.85	6.85	7.2	-	-	7.6	7.6	-	-	-	-	-	6.9	6.9	35	WP15
38	-	-	-	-	-	-	6.1	-	-	-	-	-	-	-	-	-	6.9	33	WP14
39	-	-	-	-	-	-	6.1	-	-	-	-	-	8	8	-	-	-	31	WP13
40	-	-	-	-	-	-	7.8	-	-	-	-	-	-	-	-	8	-	29	WP12

Survey Line	PORT	SURVEY BEAM POINTS																STB	Distance Covered	
	16	14	12		10		8		6		4		2		0		-2			
	16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	-2	metres	WAYPOINTS	
41	-	-	-	-	-	-	-	-	-	7.4	7.4	-	8	8	-	-	-	27	WP11	
42	-	-	-	-	-	-	-	6.9	7.7	-	6.65	6.65	6.65	6.65	-	-	-	25	WP10	
43	-	-	-	-	-	-	-	-	6.9	-	7.2	7.2	7.2	7.2	7.2	-	-	23	WP09	
44	-	-	-	-	-	-	-	-	7.4	-	-	-	7	7	-	-	-	21	WP08	
45	-	-	-	-	-	-	-	-	-	8	-	7.9	7	7	-	-	-	19	WP07	
46	-	-	-	-	-	-	-	-	-	-	-	-	6.44	6.44	-	-	-	18	WP06	
47	-	-	-	-	-	-	-	-	-	7.12	-	7.9	-	-	-	-	-	17	WP05	
48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	WP04	
49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	WP03	
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	WP02	
51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	WP01	
SS ALABAMA STERN- SURVEY START																				

Table 3: Overlap results of -7m & -8m LAT

3 SURVEY DETAILS

The following table contents all the waypoint positions used during the diving survey. The positions are given on UTM Zone 29 coordinates and WGS 84 coordinates.

WAYPOINT	UTM ZONE 29	WGS 84
WP01	E653691.56 N6453624.87	058° 11' 49.211" N 006° 23' 6.335"W
WP02	E653686.98 N6453626.64	058° 11' 49.274" N 006° 23' 6.611"W
WP03	E653682.31 N6453628.26	058° 11' 49.332" N 006° 23' 6.893"W
WP04	E653677.60 N6453629.98	058° 11' 49.394" N 006° 23' 7.177"W
WP05	E653673.26 N6453630.27	058° 11' 49.408" N 006° 23' 7.441"W
WP06	E653669.13 N6453631.76	058° 11' 49.461" N 006° 23' 7.690"W
WP07	E653667.35 N6453632.66	058° 11' 49.493" N 006° 23' 7.797"W
WP08	E653665.38 N6453633.92	058° 11' 49.536" N 006° 23' 7.915"W
WP09	E653663.60 N6453635.02	058° 11' 49.573" N 006° 23' 8.021"W
WP10	E653662.29 N6453635.95	058° 11' 49.605" N 006° 23' 8.099"W
WP11	E653658.58 N6453637.08	058° 11' 49.646" N 006° 23' 8.323"W
WP12	E653656.29 N6453637.91	058° 11' 49.676" N 006° 23' 8.461"W
WP13	E653654.51 N6453638.64	058° 11' 49.702" N 006° 23' 8.568"W
WP14	E653652.87 N6453639.56	058° 11' 49.734" N 006° 23' 8.666"W
WP15	E653651.37 N6453639.99	058° 11' 49.749" N 006° 23' 8.757"W
WP16	E653648.09 N6453640.69	058° 11' 49.776" N 006° 23' 8.956"W
WP17	E653646.56 N6453641.57	058° 11' 49.806" N 006° 23' 9.048"W
WP18	E653644.64 N6453642.14	058° 11' 49.827" N 006° 23' 9.164"W
WP19	E653642.96 N6453642.96	058° 11' 49.856" N 006° 23' 9.265"W
WP20	E653641.27 N6453644.02	058° 11' 49.892" N 006° 23' 9.366"W

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WAYPOINT	UTM ZONE 29	WGS 84
WP21	E653638.60 N6453644.24	058°11'49.903"N 006°23'09.528"W
WP22	E653637.79 N6453645.17	058° 11' 49.934" N 006° 23' 9.576"W
WP23	E653636.94 N6453645.61	058°11'49.949"N 006°23'09.627"W
WP24	E653634.91 N6453646.13	058°11'49.968"N 006°23'09.750"W
WP25	E653634.23 N6453646.53	058° 11' 49.983" N 006° 23' 9.791"W
WP26	E653633.51 N6453646.95	058°11'49.997"N 006°23'09.833"W
WP27	E653632.08 N6453648.03	058°11'50.033"N 006°23'09.918"W
WP28	E653629.94 N6453647.47	058°11'50.018"N 006°23'10.050"W
WP29	E653628.25 N6453648.50	058°11'50.053"N 006°23'10.151"W
WP30	E653625.94 N6453650.34	058°11'50.116"N 006°23'10.288"W
WP31	E653624.20 N6453650.70	058°11'50.129"N 006°23'10.394"W
WP32	E653622.23 N6453651.05	058°11'50.143"N 006°23'10.514"W
WP33	E653620.26 N6453651.25	058°11'50.152"N 006°23'10.634"W
WP34	E653619.08 N6453652.21	058°11'50.185"N 006°23'10.704"W
WP35	E653616.68 N6453652.72	058°11'50.204"N 006°23'10.849"W
WP36	E653615.00 N6453652.91	058°11'50.212"N 006°23'10.952"W
WP37	E653612.77 N6453653.79	058°11'50.243"N 006°23'11.086"W
WP38	E653610.80 N6453654.57	058°11'50.271"N 006°23'11.205"W
WP39	E653609.20 N6453655.64	058°11'50.308"N 006°23'11.300"W
WP40	E653606.88 N6453656.02	058°11'50.323"N 006°23'11.441"W
WP41	E653605.36 N6453657.05	058°11'50.358"N 006°23'11.531"W
WP42	E653601.05 N6453658.88	058°11'50.423"N 006°23'11.791"W
WP43	E653600.08 N6453659.26	058°11' 50.437"N 006°23' 11.850"W
WP44	E653599.12 N6453659.65	058°11'50.450"N 006°23'11.907"W

WAYPOINT	UTM ZONE 29	WGS 84
WP45	E653597.25 N6453660.69	058°11'50.486"N 006°23'12.019"W
WP46	E653595.37 N6453661.12	058°11'50.502"N 006°23'12.133"W
WP47	E653593.85 N6453661.91	058°11'50.529"N 006°23'12.224"W
WP48	E653591.74 N6453662.33	058°11'50.546"N 006°23'12.352"W
WP49	E653589.76 N6453663.16	058°11'50.575"N 006°23'12.471"W
WP50	E653587.96 N6453663.85	058° 11' 50.600"N 006° 23' 12.580"W
WP51	E653586.07 N6453664.5	058° 11' 50.623" N 006° 23' 12.694"W

Table 4: Waypoint Positions

Figure 2 shows the plotted waypoints over the contour level created after the findings of the survey.

Thanks to the figure obtained by combining the waypoints grid and the contour depths it is easier to visualise at which marker and at what waypoint the shallow areas located.

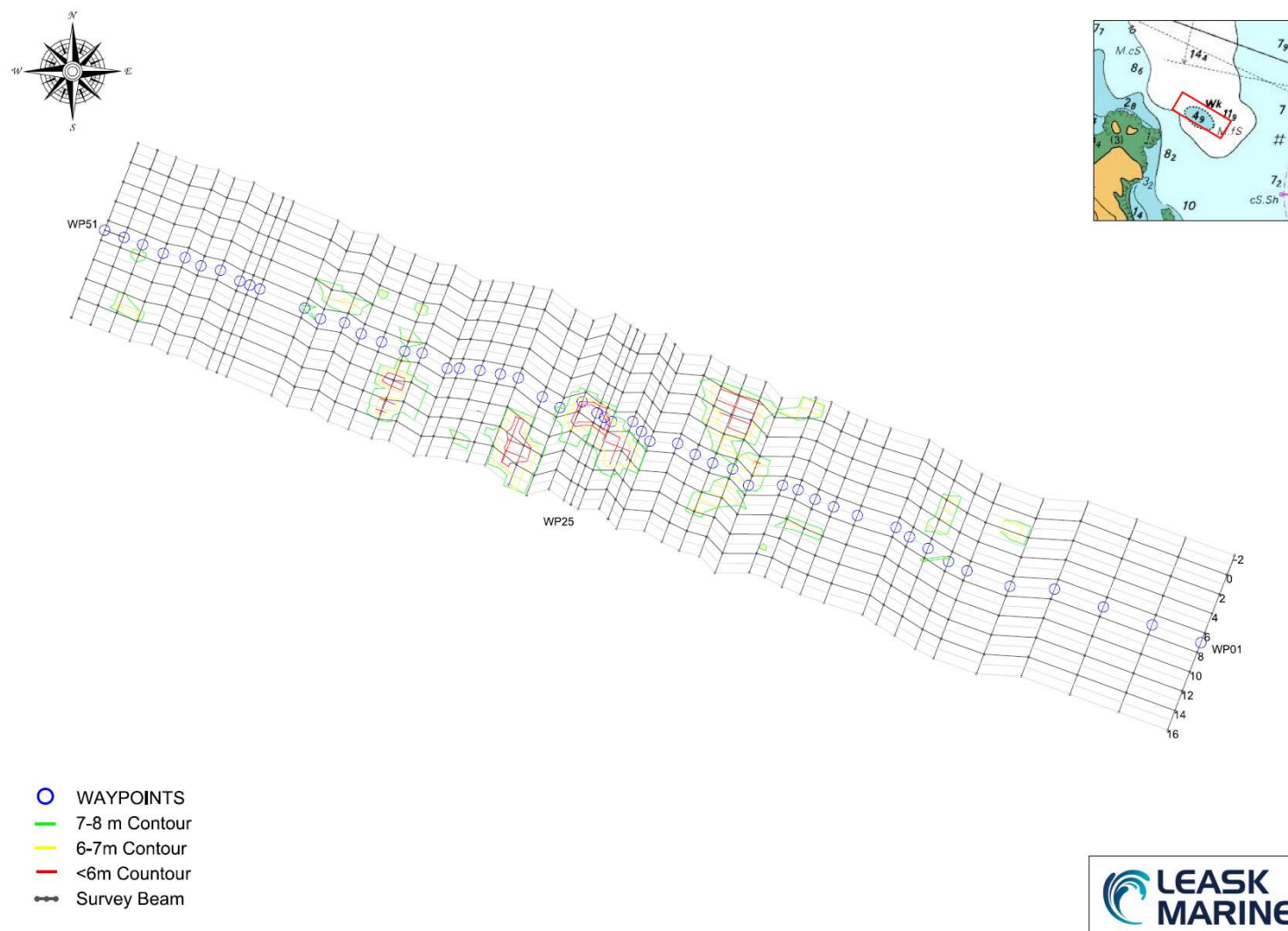


Figure 3: Survey waypoints and Contour Depths

3.1 Contour Graph

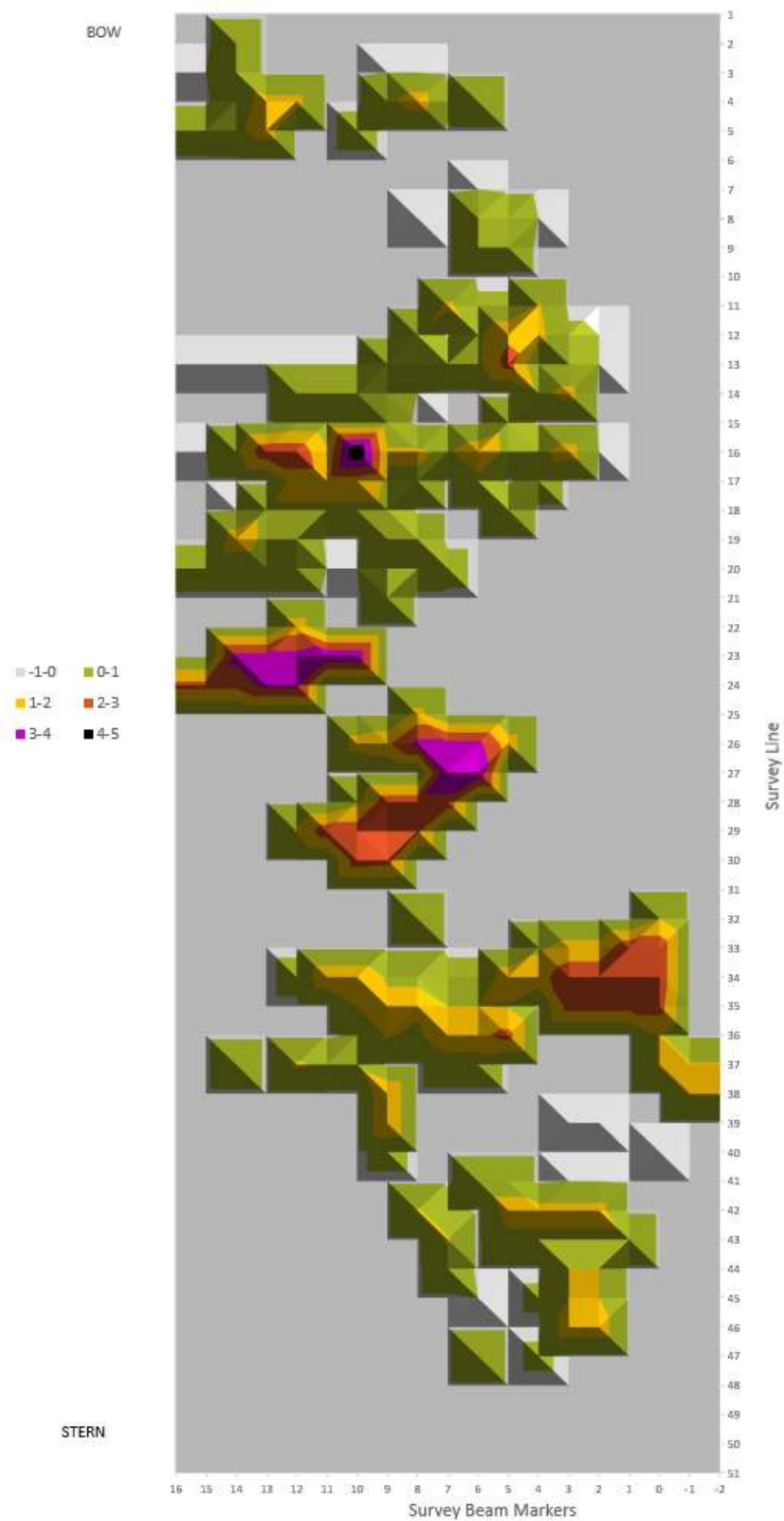


Figure 4: Contour Graph

Represented in the graph below are the contour levels obtained during the diving survey.

- Band -1-0 represent all the areas where no objects were recorded at any of the specified depths
- Band 0-1 represent objects identified between water depth of -8m to -7m (LAT)
- Band 1-2 represent objects identified between water depth of -7m to -6m (LAT)
- Band 2-3 represent objects identified between water depth of -6m to -5m (LAT)
- Band 3-4 represent objects identified between water depth of -5m to -4m (LAT)
- Band 4-5 represent objects identified between water depth of -4m to -3m (LAT)

The graph can be interpreted by the length of material that required to be removed in order to reach -8m LAT water depth.

If the target water depth is -7m LAT, then all the areas in green or grey should be ignored.

The grey areas show the zones where either no objects were found, or the objects are equal or below -8m LAT

3.2 WP Pictures

The diving team has identified that around 70% of the identified elements are a mix between Angle Iron, I Beams and Steel Plates

The thickness of the steel components ranges from 4mm to 14mm

Some of the identified pieces were "flexible" steel, beams or plates with high concentration of corrosion; however, several other objects still hold a considerable amount of rigidity throughout the wreck.



Figure 5: "Flexible" Steel

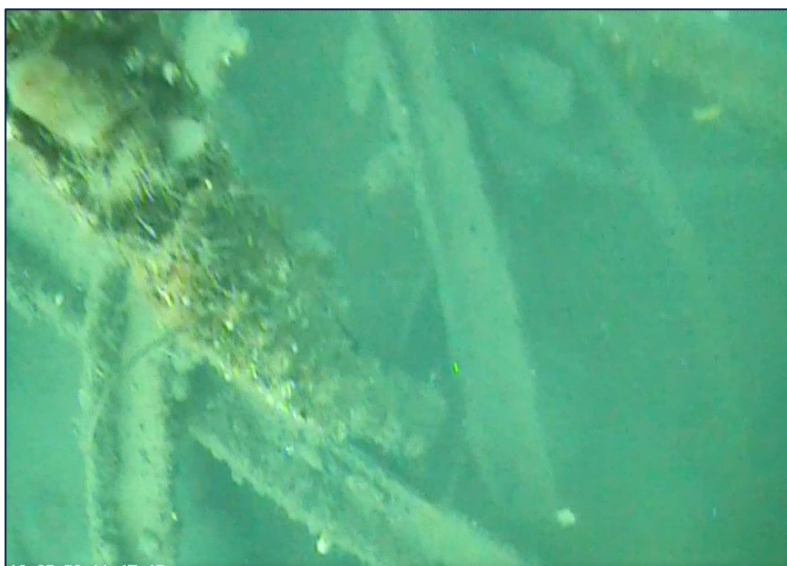


Figure 6: I Beams

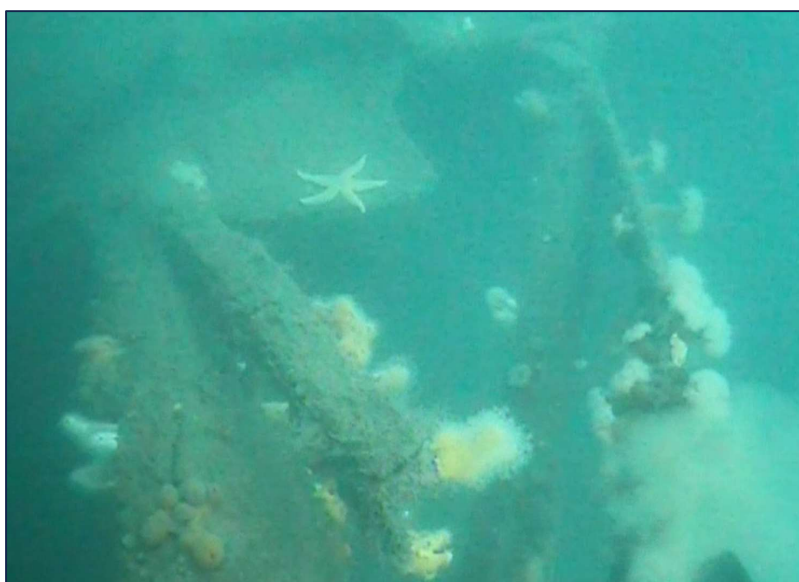


Figure 7: Angle Beams

WP18 & WP36 contain two of the highest recorded structures during the survey, in both cases an I beam

In WP16, WP17, WP19 & WP26 mixtures of materials identified shown in the pictures below.

From WP16 to WP19, the diving team identified what appear to be the frames of the wreck.



Figure 8: Structure found at WPI6

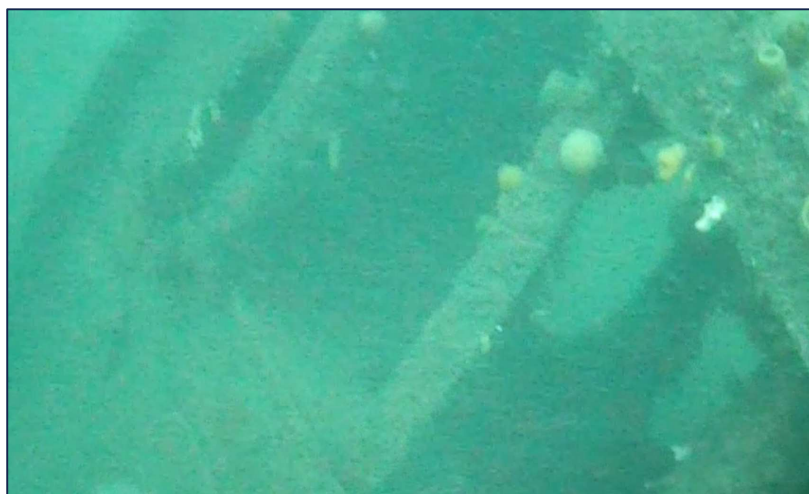


Figure 9: WP 17 - Frames Structure

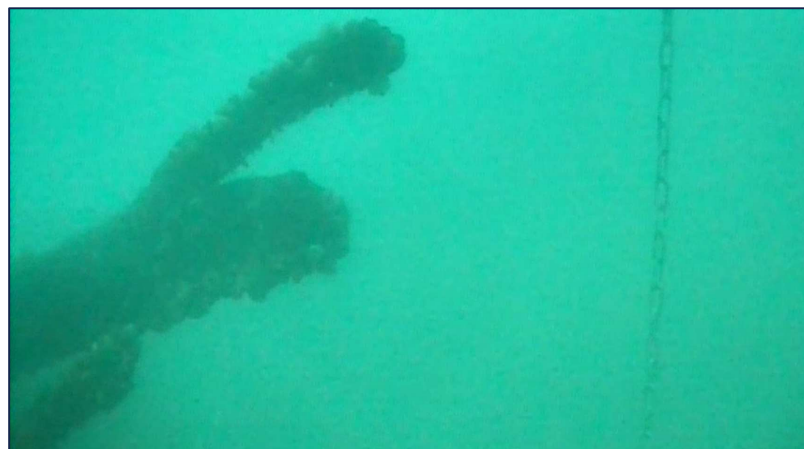


Figure 10: WPI8 Protruding angle beams

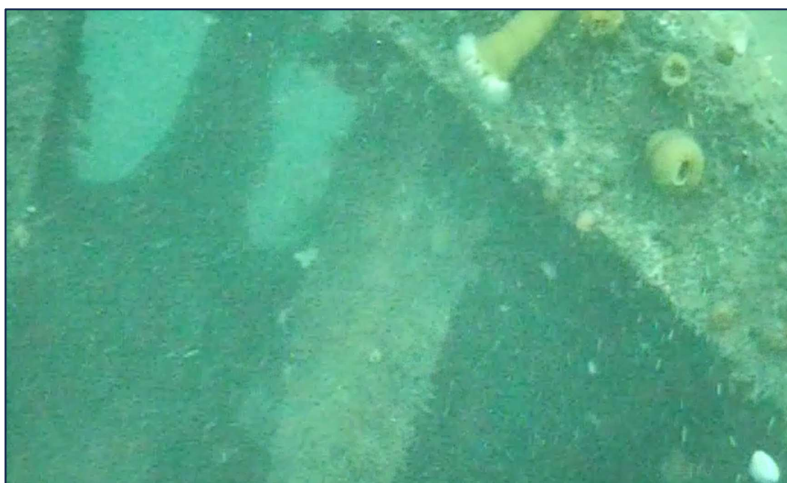


Figure II: WPI9 Frames Structure



Figure I2: WP26 Remains of a winch



Figure I3: WP36 Highest Point throughout the survey

WP 25:

During the survey, one of the highest points identified was between markers 6 and 7. It consists of two I beams protruding from the wreck at an angle, both of them rising at WP24 up to WP26 being the highest points as can be seen in Figure 14

While moving forwards and re-adjusting the height of the survey beam on WP26, both I beams were pushed down by the survey beam to an elevation of -4.7m LAT, Figure 15 shows the slope, shape of the beams after being pushed down by the survey beam.

Figure 16 & Figure 17 show the new highest point at WP25 previously recorded at -3.5m at marker 6 and -3.2 at marker 7, these dimensions have changed as the survey beam pushed down on both I beams by approximately 0.5m giving a new height of -4.2m at marker 6 and -4 at marker 7.

Given that the survey beam was able to push down the steel beams it can be assumed that there is a minimal structural strength on the steel, Figure 16 shows the fracture caused by the bending action.



Figure 14: Protruding I beam



Figure 15: Slope angle after being pushed down



Figure 16: Fracture on I beam



Figure 17: New Highest Point

WP36:

As previously mentioned, at WP36, the highest object was identified throughout the conducted survey.

An I Beam protruding 3.5m above the survey beam giving a depth of -2.7m LAT at marker 10.

The I beam can be described as rigid and fix at the base and extend out through water column to the surface where is not stable

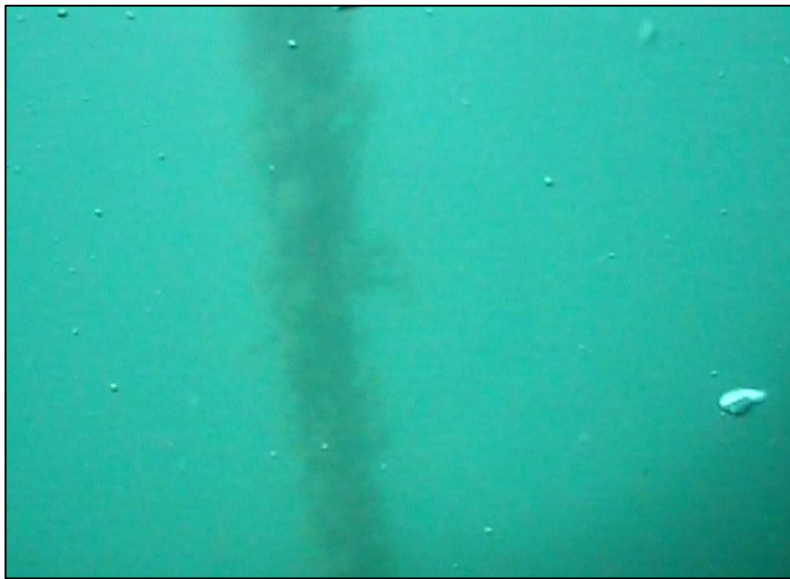


Figure 18: I beam WP36



Figure 19: Base of I Beam at WP36

4 CONCLUSION

Using as reference Table 3: Overlap results of -7m & -8m LAT Leask Marine has been able to identify the total number of detected points at each marker and through all the diving survey.

Points Identified	Survey Beam- Marker Points																	Total Identified Points
	-2	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	
Above -8m LAT	2	7	4	13	14	13	15	18	15	19	20	17	11	15	9	12	6	210
Above -7m LAT	2	5	3	5	7	4	6	4	6	8	8	7	5	8	5	3	1	87

Table 5: Identified objects per marker

Table 5 shows the total points identified above both -7m LAT and -8m LAT. A total of 210 points were identified for the complete survey, 87 points out of the 210 are located only above -7m LAT.

The marker number 9 was the marker with the highest number of objects identified for the -8m LAT findings survey with a total of 20 identified points. For the -7m LAT survey, the markers with most objects identified are marker 8,9 and 12 with a total of 8 identified points each.

Also, from Table 3 is possible to note that no objects above -7m LAT can be found until WP06 (Distance 17m) where a single beam was identified crossing from marker 2 to marker 3.

With table and the contour graph is easier to pinpoint the areas where there is a higher concentration of found objects.

From the results of the -7m LAT survey, four main hotspots were detected.

The first hotspot (#1) only cover from WP35 to WP36, making it the smallest hotspot, covering a total distance of 2m, and from marker 8 to marker 13 on its widest part (6m) at the middle of this area the divers found the highest point of the survey at a water depth of -2.7m LAT. (Figure 18: I beam WP36).

The average water depth of hotspot #2 is the shallowest of all the survey with an average of -4.9m LAT.

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STB	SURVEY BEAM POINTS															Port	Distance Covered	WAYPOINTS
16	14	12	10	8	6	4	2	0	-2	-2								
16	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	-2	m	WAYPOINTS
SS ALABAMA BOW- SURVEY END																		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	104	WP51
-	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	102	WP50
8	7.5	-	-	-	-	8	8	-	-	-	-	-	-	-	-	-	100	WP49
-	7.4	6.7	6.7	-	-	7.2	6.5	7.8	7.3	-	-	-	-	-	-	-	98	WP48
7.4	7.2	6.5	-	-	7.8	-	-	-	-	-	-	-	-	-	-	-	96	WP47
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	94	WP46
-	-	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	92	WP45
-	-	-	-	-	-	-	8	-	7.2	7.5	8	-	-	-	-	-	90	WP44
-	-	-	-	-	-	-	-	-	7.2	7.5	-	-	-	-	-	-	88	WP43
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85	WP42
-	-	-	-	-	-	-	-	6.8	7.9	7.9	6.9	-	-	-	-	-	83	WP41
-	-	-	-	-	-	-	7.1	-	7.2	6.2	6.7	7.9	8	-	-	-	81	WP40
8	8	8	8	8	8	7.2	7.2	7.2	5.6	7.9	7.9	8	-	-	-	-	79	WP39
-	-	-	7.2	7.2	7.2	7.5	8	-	-	7.2	6.7	-	-	-	-	-	77	WP38
-	-	-	7.7	7.7	7.8	7.65	-	-	-	7.3	-	-	-	-	-	-	75	WP37
8	7.2	7.2	5.3	6.8	2.7	6.9	6.9	7.1	6.4	7.2	7.2	6.6	8	-	-	-	73	WP36
-	-	-	6.5	6.5	6.5	7.1	7.1	-	7.2	-	7.6	-	-	-	-	-	71	WP35
-	8	8	7.2	7.2	7.2	7.2	-	-	-	7.2	-	-	-	-	-	-	69	WP34
-	6.5	6.5	7.2	-	-	7.2	7.2	-	-	-	-	-	-	-	-	-	67	WP33
7.6	7.6	7.6	7.6	8	8	7.6	7.6	7.8	-	-	-	-	-	-	-	-	65	WP32
-	-	-	-	-	-	7.2	-	-	-	-	-	-	-	-	-	-	63	WP31
2	-	-	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	61	WP30
4.7	4.7	4.7	4.7	4.7	4.2	-	-	-	-	-	-	-	-	-	-	-	59	WP29
5.7	5.7	5.7	4.7	4.7	-	-	-	-	-	-	-	-	-	-	-	-	57	WP28
-	-	-	-	-	-	-	6.7	-	-	-	-	-	-	-	-	-	55	WP27
-	-	-	-	-	-	6.6	6.2	4.7	4.7	4.7	6.5	-	-	-	-	-	53	WP26
-	-	-	-	-	-	-	-	-	4	4.2	3	-	-	-	-	-	52	WP25
-	-	-	-	-	-	7.3	5.4	5.4	5.4	-	-	-	-	-	-	-	51	WP24
-	-	-	6.9	6.9	5.4	5.4	5.8	-	-	-	-	-	-	-	-	-	49	WP23
-	-	-	-	-	5.4	5.6	-	-	-	-	-	-	-	-	-	-	48	WP22
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	47	WP21
-	-	-	-	-	-	7.3	-	-	-	-	-	-	-	-	7	-	45	WP20
-	-	-	-	-	-	-	-	-	-	7.2	6.6	6.6	6.6	5.3	-	-	43	WP19
-	-	-	7.8	7.8	6.3	6.3	7.1	7.1	7.8	7.8	6.4	5.3	5.3	5.3	5.3	-	41	WP18
-	-	-	-	-	7	7	6.8	6.8	7	7.1	5.6	5.6	5.6	5.6	-	-	39	WP17
-	-	-	-	-	7.9	6.9	7.2	7.2	6.2	5.7	4	-	-	6.9	-	-	37	WP16
-	7.4	-	6.85	6.85	7.2	-	-	7.6	7.6	-	-	-	-	6.9	6.9	-	35	WP15
-	-	-	-	-	6.1	-	-	-	-	-	-	-	-	-	6.9	-	33	WP14
-	-	-	-	-	6.1	-	-	-	-	-	-	-	-	-	-	-	31	WP13
-	-	-	-	-	7.8	-	-	-	-	-	-	8	8	-	-	-	29	WP12
-	-	-	-	-	-	-	-	-	7.4	7.4	-	8	8	-	-	-	27	WP11
-	-	-	-	-	-	6.9	7.7	-	6.65	6.65	6.65	6.65	-	-	-	-	25	WP10
-	-	-	-	-	-	6.9	-	-	7.2	7.2	7.2	7.2	7.2	-	-	-	23	WP09
-	-	-	-	-	-	-	-	-	7.4	-	-	7	7	-	-	-	21	WP08
-	-	-	-	-	-	-	-	-	8	-	-	7.9	7	-	-	-	19	WP07
-	-	-	-	-	-	-	-	-	-	-	-	6.44	6.44	-	-	-	18	WP06
-	-	-	-	-	-	-	-	-	7.12	-	-	7.9	-	-	-	-	17	WP05
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	WP04
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	WP03
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	WP02
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	WP01
SS ALABAMA STERN- SURVEY START																		

Figure 20: Identification of -7m LAT hotspots

The last hotspot (#4) contains what the divers identified as the most prominent and most substantial structure of the survey, the frames sections on the wreck (WP16 to WP19).

The frame sections were described as a thick double steel plate structure, with considerable rigidity

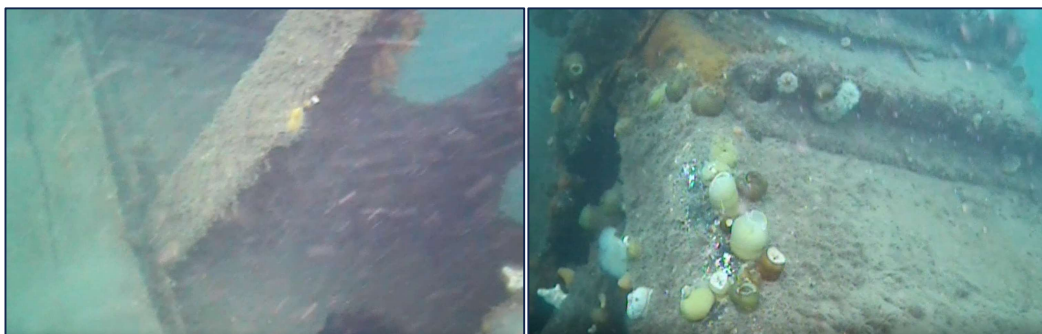


Figure 21: Wreck Frames

The survey found that most of the steel plates still conserved a substantial thickness and have been categorised as “hard work” to cut through them by the diver.

The steel plates are concentrated at two main points of the ship. The first area were the divers had detected thicker plates is towards the stern of the vessel, WP14-WP19.

The second area starts at WP37 to WP41 where the diver found a mix of different plates thickness overlapping each other, which complicates its removal.



Figure 22: Overlapped steel plates

Another consideration noted from the diving team is that in more than one location it is only visible a hard steel sheet, without knowing what kind of structure support might be laying underneath.

The wreck preserves a sound rigidity on 80% of the elements found from WP05 to WP19.

The steel elements that seem to have less structural strength are angle irons or I/H beams protruding alone from the wreck as is the case of WP 25.

Towards the middle of the wreck we found the zone with high concentration of cross over between angle iron beams and I beam.

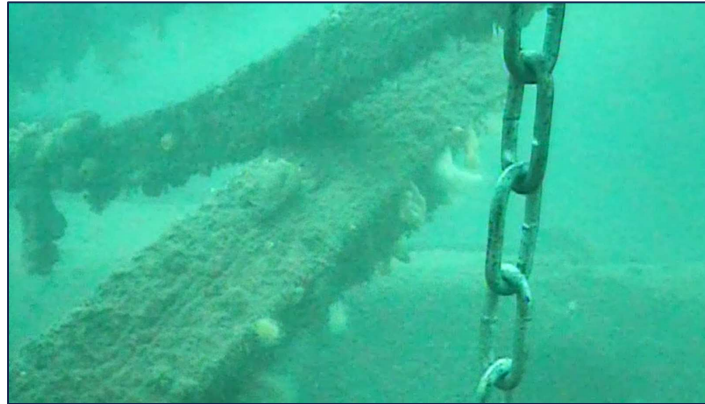


Figure 23: Crossed-over Steel beams

The divers noted that a high level of corrosion is visible throughout the steel of wreck

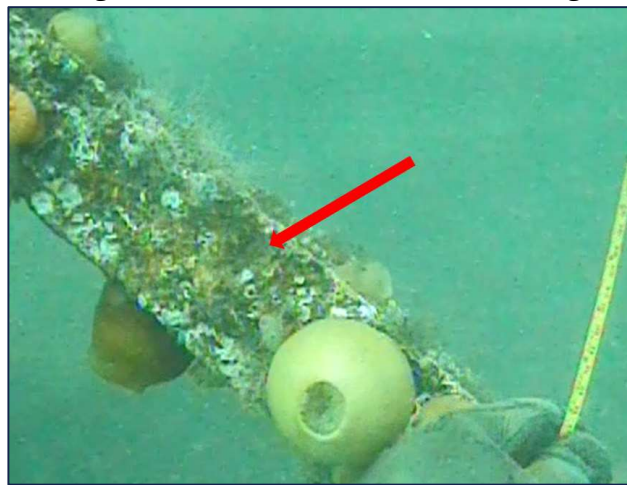


Figure 24: Corrosion on steel

Other details that diving team was able to identify is that the vessel is laying on its port side and some machinery is still on-site as is the case of a vessel winch (WP26) and the propeller of the ship was found at stern of the wreck.

After analysing the results of this report, it is possible to conclude that less material will be removed if the chosen water depth is -7m LAT with only 87 identified points. However, in both scenarios (-7m or -8m LAT), the removal of the frames structures is required to a certain degree which is most likely to become the hardest structure to remove.



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