



## **NEPTUNE WRECKS PROJECT REPORT**

### Foreword

Members of Southsea Sub-Aqua Club are proud to present this NEPTUNE Wrecks report as a record of all of the activities and investigations into local wrecks in the Portsmouth to Selsey Bill area. The project was a natural follow-on to our highly successful Tanks and Bulldozers investigations of 2008 and concerns a number of wrecks believed to be associated with the maritime phase of the WW2 Invasion of Normandy (Operation NEPTUNE).

This report is testament to what individuals and/or groups of divers can achieve with the help and support of others. These wrecks are not the ancient wooden ships of long ago or the valuable treasures that grab the public attention, but they are associated with tragedies of a more modern era – a time of war, conflict and ultimately victory which have a real and direct relevance to the vast majority of people along the South Coast and beyond. Below the water these reminders of the valiant efforts of the men involved in the largest ever maritime invasion are not evident to many and we aim to share with others the results of our efforts so that their contribution in history is not forgotten.

Alison Mayor  
Project Leader - NEPTUNE Wrecks  
Southsea Sub-Aqua Club  
BSAC 0009  
31 May 2010

All enquiries about the content of this report should be addressed to Alison Mayor, Southsea Sub-Aqua Club. email [secretary@southseasubaqua.org.uk](mailto:secretary@southseasubaqua.org.uk) or Fort Widley, Portsdown Hill Road, Portsmouth, Hampshire PO6 3LS. The report is subject to Copyright and therefore not to be reproduced without permission of the owner.



## Neptune Wrecks Project Report

### Table of Contents

Part 1	Report Summary	Annexures
		Annex A Tanks & Bulldozers Project Update Attachment 1 to Annex A T&B Robust or not?_
Part 2	Project Planning	
		Annex A – Neptune Wrecks Team
		Annex B – Risk Assessment
		Annex C – Dive Programme
Part 3	Diving Activities	
		Annex A – Diver Schedule
Part 4	Survey Findings	
		Annex A – Site Plan for 20004 (LCT)
		Annex B – SeaSearch Survey Reports
		Annex C – Site Plane for 20009 (Barge)
		Annex D – UKHO Data Sheets
Part 5	Historical Research	
		Annex A – Reference Publications
		Annex B – LCT(A)s in Normandy at H-Hour on D-Day
Part 6	Results, Reporting and Outreach	
		Annex A – Newspaper and Magazine Articles
		Annex B – DiverSE 10 presentation
		Annex C – Flyer for Bomb talk
Part 7	Neptune Wrecks and the Future	
		Annex A – English Heritage Project Design LCT(A) 2428: An Assessment for Scheduling in the Marine Zone

In addition an enclosed CD includes a video clip from the BBC Coast Programme (Series 4 Episode 1)

Note: Financial report forwarded under separate cover to the BSA Jubilee Trust.



## **NEPTUNE WRECKS PROJECT REPORT**

### **Part 1 - Report Summary**

Southsea Sub-Aqua Club is delighted to produce this follow-on report to the Tanks and Bulldozers project carried out and reported upon in 2008.

Having successfully solved the mystery of how a collection of World War 2 armoured fighting vehicles (2 Centaur Tanks and 2 D7 Armoured Bulldozers) came to rest on the sea bed 8 miles south of Bracklesham, West Sussex, members of Southsea Branch were keen to locate the wreck of the ill-fated Landing Craft Tank (LCT) from which they had been lost.

Our detailed research into the formerly Top Secret war diaries and files finally revealed the story behind their sinking. The tanks and bulldozers had been lost from LCT(A) 2428, when she capsized whilst under tow on the morning of 6<sup>th</sup> June 1944 – D Day as part of Operation NEPTUNE. The LCT(A) had been assigned to 'J' Force as part of the Canadian lead assault of Juno beach and had British Royal Marines and Canadian troops onboard. All onboard were rescued and returned safely to Portsmouth. LCT(A) 2428 did not sink immediately after the capsize, but had floated on for some time before finally being sunk by gunfire from the Rescue Tug 'Jaunty'.

This project should therefore be considered an extension to the original Tanks and Bulldozers Project as it seeks to complete the historical record and document the wrecks as they are today. An update to the initial Tanks and Bulldozers report was produced in 2009 and is attached at Annex A to this Part 1 for reference and as a bridge between the two survey projects. In addition, this report also gives an opportunity to provide details on the further exciting developments of the work previously carried out in 2008 as detailed in the initial Tanks and Bulldozers report of October 2008.

In working to locate possible wreck sites in the area for the LCT(A) 2428, Branch members became aware of a number of other unidentified wrecks which also appeared to have a connection with Operation "NEPTUNE". Operation Neptune was the code - name given to the Maritime phase of Operation "OVERLORD" (The invasion of Normandy by sea and the liberation of France).

Rather than limit the project to one wreck site, the Branch set about investigating a number of wrecks all of which were believed to have a connection to Operation NEPTUNE and these follow-on investigations could be the start of a longer term project to record many wrecks which were associated with Operation NEPTUNE in the area.

For this project we examined the following wrecks;

UKHO 20004 – known locally as the ‘Patch’ Landing Craft Tank.  
UKHO 20244 – Barge.  
UKHO 20009 – Barge.  
UKHO 19117 – Landing Craft Tank.  
Uncharted WW2 tank in Bracklesham Bay.  
UKHO 20008 – Tanks & Bulldozers.

Once again the wreck sites have revealed a number of surprises and this continues to re-enforce the reasons for carrying out this work. The discovery of a 500lb WW2 bomb at the LCT site had a significant impact on the diving programme but also added to the mystery and intrigue which continues to unfold the more we investigate these sites.

We have also used a number of techniques to survey the sites, with pleasing results. As well as the traditional tape-measure and slate we were fortunate to have the opportunity to try using a side-scan sonar. This together with the measurements, sketches, video, photographs and a recovered propeller has informed much of the subsequent historical research required to discover more about these wrecks.

The level of interest remains high from the general public and historical groups /organisations that are always keen to hear what we have discovered and where able, kindly assist the Branch in their research. This interaction is invaluable and also does much to promote the Branch and demonstrate the positive and responsible approach to wreck diving that our divers have worked hard to develop. As with the Tanks and Bulldozers, the Branch has had significant dealings with other organisation, experts and the public through a wide range of media.

The recognition by English Heritage (EH) of the historical importance of these wrecks as a direct result of the work we have carried out to date has been one of the most rewarding developments. EH has begun a project to examine the case for protecting the wrecks of LCT (A) 2428 and the Tanks & Bulldozers. The EH project will consider as a test case the use of Ancient Monuments legislation, which as a result of an amendment in 2002 provides for the designation of vehicles, aircraft and other special interest sites within the 12 mile territorial limits. We will be working closely with EH in the project work and this is a great opportunity for us to learn more from the experts by being involved with a full archaeological project.

SSAC has also delighted to have been recognised for its work by receiving a number of national awards in both the diving and archaeological arenas. The members of Southsea Sub-Aqua club wish to thank British Sub-Aqua Jubilee Trust for continued support and also the Nautical Archaeology Society and Silent Planet Ltd for their practical assistance with the surveys and to many others who have provided advice and information.

We hope you enjoy reading this report, thank you to all those who contributed to it.

Annexures:

Annex 1A – Tanks and Bulldozers – Project Update dated March 2009.

Annex 1A – Attachment 1 – Tanks & Bulldozers Condition report





The British Sub-Aqua Jubilee Trust

**SOUTHSEA SUB-AQUA CLUB  
TANKS & BULLDOZERS  
PROJECT UPDATE**

16 June 2009

Dear Trustees,

Thank you for continuing support of Southsea Sub-aqua Club and its work to investigate wrecks associated with the D Day Landings and Operation Neptune. Since submitting our Tanks & Bulldozers Project report in October last year the project has continued to go from strength to strength and I thought you may wish to be updated on developments and events that have happened since the report was written.

**Report Distribution**

In addition to the copy for the BSA Jubilee Trust, the report was widely distributed with additional copies going to the following organisations/people;

- BSAC HQ – Mary Tetley (Chief Executive), Tony Marshall (Vice Chairman), Andy Hunt (Expeditions Officer), and Jane Maddocks (Heritage/Wrecks Officer);
- English Heritage - Mark Dunkley, (Maritime Archaeologist (ALSF));
- Nautical Archaeological Society – Mark Beattie-Edwards (Project Manager);
- Ministry of Defence (Naval Heritage Section) – Amanda McKelvie;
- The Tank Museum – David Fletcher (Historian);
- Naval Historical Branch – Maj. Mark Bentinck RM Rtd (Historian);
- The D Day Museum - Andrew Whitmarsh (Military Historian);
- The National Monuments Register;
- MCA, The Receiver of Wreck – Rebecca Tye, (Deputy Receiver of Wreck);
- The LST and Landing Craft Association (Royal Navy) – Tony Chapman (Archivist/Historian);
- The Royal Marines Museum – Maj. Mark Little RM Rtd (Historian);
- Royal Marines Armoured Support Group – Maj. Steve Congreve RM (Officer Commanding);
- BBC 2 Coast – David Symonds (Producer/Director);
- UK Hydrographic Office – Paulette Steer, Seabed Data Centre (Wrecks);
- Portsmouth Naval Base Historical Society – David Fricker;
- Mr Bruce Hunt – Saltash, Cornwall (Son of crew member from LCT(A) 2428 - Able Seaman Charles R Hunt).

The report was well received with complementary replies received from many people, in particular the Commanding Officer of the new RM Armoured Support Group who shared it with his Marines on tour in Afghanistan. As a diver himself, Major Congreve was pleased to see the wrecks and the 'marine' life now inhabiting them.

**Raising Public Awareness and Outreach**

The Tanks and Bulldozers project was well publicised at the time in the national and local press/media, much of which is detailed in the Project report. Since the report was written a full 4 page article was published in the Jan 09 edition of Dive Magazine, and has it has

featured in many other publications such as 'Tank' (the magazine of the Tank Regiment), Britain at War and Classic Military Vehicle magazines. The story of the Tanks & Bulldozers has also been covered in many newsletters including the LST & Landing Craft Association newsletter 'Kedge Hook'. I have also written another full article for the Defence Estates annual publication 'Sanctuary' which promotes work carried out in the fields of natural history, conservation and archaeology across the Ministry of Defence estate. The BBC 'Coast' programme featuring the Tanks and Bulldozers survey is due to be broadcast in the first episode of the new series (BBC2 on 14<sup>th</sup> July at 8pm).

### **Family connections**

As a result of the extensive publicity a relative of one of the crew of LCT (A) 2428 contacted me as a part of his research into his late father's/family history. Able Seaman C R Hunt had been interviewed following the capsizing of the landing craft and it was his account, retrieved from National Archive files, that confirmed the details of the event that led to the loss of the armoured fighting vehicles and the subsequent sinking of the Landing Craft. We visited his son, Bruce Hunt at his home in Saltash in February 2009 and shared our knowledge of what we had found during our research. Bruce's father passed away 15 years ago and like many veterans, had said little about the events he witnessed in WW2 and so Bruce had no knowledge of what had happened to his father during Operation Overlord. He proudly showed me many photographs of his father, aged 22 at the time of the incident, and such documents as his service record and dog tags.



**Figure 1 Able Seaman Charles Hunt**

I found this experience very moving and it brought the whole project to life with this added personal perspective which made me more determined to locate LCT (A) 2428 and complete the story.

### **Public Talks and Presentations**

Southsea Sub-Aqua Club has also been continuing to publicise the project on the Branch's web site and through a series of public engagements. In January 09 we gave a talk to Gosport Horticultural Society – a surprising audience but it turned out that many of the attendees had been around during the war years and recalled the preparations and build-up of Operation Overlord. The talk was well received and we have subsequently been asked to speak at Lee-on-Solent next year.

On a larger scale, I have been asked to present at the Nautical Archaeological Society Annual Conference on 7<sup>th</sup> November this year, the Portsmouth Museums Society, and also at the International Shipwreck Conference to be held at Plymouth in February 2010.

As a result of ongoing co-operation with the D-Day Museum, members of Southsea Sub-Aqua Club put on a display at the Museum on the 6<sup>th</sup>/7<sup>th</sup> June, to coincide with the 65<sup>th</sup> Anniversary of D-Day. Over 10,000 visitors visited the museum over that weekend and club

members spoke to a number of veterans and their families about their experiences and the work the Branch has been doing in the area.



**Figure 2 – A lovely opportunity to meet D Day Veterans**



**Figure 3 - D Day Museum visitors were very interested in what we had discovered**

Whilst understandably the main focus of the weekend was the commemoration of the events of D Day and Operation Overlord, we were surprised by the significant interest shown by the visitors over the weekend. There was a genuine appreciation for what we had achieved with the Tanks and Bulldozers project and the Museum were delighted with the display which brought a D Day event into the present day. The Head of the D Day Museum is exploring the possibility of establishing a more permanent display about the Tanks & Bulldozers project using video/photographs taken from the survey report.

### **The Future Protection of the Tanks and Bulldozers site**

On reading the report English Heritage (Mark Dunkley) became very interested in the site primarily because of the rarity of the Centaur Tanks and Caterpillar D7 Armoured Bulldozers. Only 2 others Centaurs remain as war memorials in France, and at least one of these is thought to have been pieced together and rebuilt from a number of damaged tanks. The Armoured Bulldozers were also thought to be the only surviving examples although I am now in correspondence with a private collector who owns what is believed to be the only other example of its type. Mark Dunkley's interest was the possibility of using the dive site as a test case in the event that the new Heritage Bill is passed and becomes Law. Unfortunately the Heritage Bill was dropped from the Her Majesty the Queen's speech last year but it is hoped that it will still become Law in the future.

Existing legislation only provides for the protection of shipwrecks but under the proposed new Heritage Bill would allow other types of special/historical interest sites to be designated and protected, including aircraft, vehicles and other underwater features. Mark is keen to use the Tanks and Bulldozers site as a test case for designation as historic vehicles and asked me to provide further information on the condition of the wrecks and the risks to the site. Mark also wanted my view of whether the site was considered 'robust' or if the tanks and bulldozers should be afforded some additional degree of protection. Earlier this year I provided Mark with a short report with my personal assessment of the condition and risks of the site to aid the English Heritage assessment of the site. I have attached a copy for your information.

### **Nautical Archaeology Society - Adopt a Wreck**

Southsea Sub-Aqua Club has adopted the Tanks and Bulldozers wreck site under the NAS 'Adopt a Wreck' Scheme and will continue to monitor the site in the coming years. The tanks and bulldozers 'Sleeping Centaurs' was chosen as one of 5 projects to be covered in a new poster campaign being run by the NAS. 500 posters (size A3) have been printed and will be used to promote the Adopt a Wreck scheme at NAS publicity events and by SSAC as promotional material for the wreck site and the Branch.

### **Peter Small Jubilee Trust Award**

Southsea Sub-Aqua Club were delighted and very proud to be awarded the Peter Small Jubilee

Trust Award at the 2008 Diving Officers' Conference. The £1,000 cheque associated with the prize has been used to purchase new equipment including a fuel tank for the Club RIB 'Alan Blake'. Whilst the RIB is beginning to show its age, the new fuel tank, installed under the console, will allow a much greater range and also additional deck space for divers. The remaining money has been used to purchase some basic scuba training equipment.

### **This year's project – 'Neptune Wrecks'**



With the very generous support of the BSA Jubilee Trust and Silent Planet Ltd., we hope to build on the work carried out last year with the main focus being the location/identification of LCT (A) 2428 in order to complete the story of the loss of the Tanks and Bulldozers. However when researching sites which may be that of the LCT, it became apparent that there are a number of nearby wrecks, particularly barges or dumb lighters, which may have been used in support of the Normandy Invasion forces and may be worthy of investigation as a part of a project examining wrecks associated with the Normandy Invasion.

Over 1000 of these river barges/vessels played a vital part in the Normandy Invasion by making many voyages across the English Channel providing much needed supplies, repair facilities, water and food. The craft were not designed for sea crossings and were primarily used for river work where they would be towed by tugs. The majority had no engine or steerage – particularly challenging in a Channel crossing when being towed by minesweepers or other vessels. Some were made of concrete because of the shortage of steel.

The story of these craft is not well known amongst the general public and many of these wrecks are deteriorating fast. The identification of these wrecks as an LCT or barge will not be straight forward as they were not robust vessels and may have collapsed or be buried. We are hoping that some will have a cargo which may help with identification.

In January this year I made a presentation to SSAC members about the idea to look for LCT (A) 2428 but also to examine some of these barges as a part of a wider initiative to look at other wrecks in the area which may have a connection with the Normandy Invasion. The members were keen to get involved and several have offered to help with the management of the survey and research of individual barge wrecks. I have enclosed a copy of the presentation for your information.

If successful, we will be able to include details of our findings at the NAS and International Shipwreck conferences and also any further events/publications that the Branch is involved in during the 65<sup>th</sup> Anniversary year of the Invasion of Normandy.

### **Thank you for your support**

I and all the other members of Southsea Sub-Aqua Club would like to thank the BSA Jubilee Trust for the generous support in this ambitious project. Whilst these wrecks may not have the historical importance of some of the wooden wrecks of centuries ago (complete with cannons etc.), they do have a valued place in our more modern history which we have already found to be of significant interest to the general public. Many of those we have spoken to recently have family connections with events of WW2 and D-Day but their story/contribution may soon be forgotten in the years to come. Operation Neptune remains the largest ever maritime invasion and each of these vessels played their part in this major turning point of WW2. Last year Southsea Sub-Aqua Club set the record straight over one small but nevertheless traumatic event on the morning of 6<sup>th</sup> June 1944, and as a result we have raised awareness of the events that took place as a part of the preparations for the Normandy Landings and discovered some unique wrecks not far from our own coastline. This year we are keen to build on this success and work with others to raise historical awareness and promote the best of British club diving in all respects.

As suggested, I have completed an entry form for consideration for the Duke of Edinburgh's Award and will be submitting the supporting report/paperwork shortly.

I hope you are pleased, as we are, of the achievements to date of Southsea Sub-Aqua Club. The Branch has been careful to acknowledge the contribution of the BSA Jubilee Trust has



made in supporting the work of club members in carrying out its work. Please be assured that we will strive to make this year's project as successful as possible.

Yours sincerely,

Alison Mayor  
Southsea Sub Aqua Club  
BSAC 0009

Attachment 1 – T & B Condition report for English Heritage (February 2009)  
Attachment 2 – Neptune Wrecks presentation (January 2009)

## **Annex 1B**

Alison Mayor  
7 Douglas Gardens  
Havant  
Hampshire  
PO9 5TG

10<sup>th</sup> February 2009

Mark Dunkley  
English Heritage

Dear Mark,

### **TANKS & BULLDOZERS WRECK SITE – ROBUST OR NOT?**

It was nice to meet you again at the Licensee meeting in Plymouth and exciting to hear that the Tanks & Bulldozers wrecks have been thought of as a possible test case for 'special interest - vehicles' designation in the event that the draft Heritage Bill is passed. Thank you for the opportunity to provide some details of the condition of the wrecks and my own thoughts as to what risks they face in the future.

The wreck site itself is small, only 30m x 20m and the vehicles lay in a shallow scour at a depth of 20m, 8 miles south of the nearest launch site at Bracklesham, West Sussex. The site is not easy to find as the wrecks do not stand very proud above the general sea bed level. However with the recent publicity of the site, together with improvements in wreck locating technology/GPS etc and their relatively shallow depth, I anticipate more divers to visit the site in the future. The site was first recorded by the Hydrographic office in the mid 1970's and it has been visited by local divers for many years. I suspect the majority of 'valuable' artefacts had been removed many years ago.

These are very rare historic vehicles and the site offers a unique opportunity to see them in the marine environment with other artefacts that allow the visitor to appreciate the events that resulted in their sinking. In my opinion, the wider history associated with these wrecks greatly improves the experience of visiting the site.

### **Condition of wrecks**

In my view the tanks and bulldozers are in remarkable condition given the fact that they have been underwater for almost 65 years. They are easily recognisable as tanks/bulldozers and because of their solid construction they have withstood the marine environment well. That said there is evidence of deterioration as a result of interference by divers and others (boats). Looking at each of the main wrecks in turn I can offer the following comments and observations about their condition and my own thoughts about possible causes and future threats. I am not an expert in these things but it may illustrate the robustness of the site – or not, as the case may be, which may aid a decision as to what level of protection may be appropriate should they be considered further for designation.

**Tank A** lies almost upside down and as a result much of the turret is buried into the sea bed. However there is one small open hatchway. The tank has lost much of its tracks and track pieces lie on the sea bed around the tank. It is not in as good condition as the other tank (B).



Image 1 – Tank A. Front view – (Image Martin Davies)

In this image you can see the open hatch above the gun and the hatch cover on the sea bed. You can also see the remnants of ropes which have been tied to the wreck. I believe these ropes to be from small dive boats who have secured themselves to the wrecks to conduct diving activities and then cut the ropes once divers have returned. There was evidence of both line and potting fishing.



Image 2 Tank A front view (2) (Image Martin Davies)

In this image (2) you can see that the tracks are missing from the tank in many places. This may have been caused by the way the tanks were secured in the landing craft when it capsized but my belief is that it has occurred as a result of boats mooring themselves on to the tank. The underside of the tank is beginning to show signs of deterioration and holes have appeared in the plating though this also provides a excellent haven for marine life.

**Tank B** lies at an angle of approx 45 degrees and therefore the turret is more visible. The driver and turret hatches are open and it is also possible to see into the engine compartment. The majority of track is present though as with Tank A the plating on the underside is deteriorating.



Image 3 Tank B front view. It is possible to view inside the tank through the open hatch. (Image Alison Mayor)

**Bulldozer A** is in better condition than the other bulldozer. It lies on its left hand side with its large plough/scoop pointing upwards. Other than the engine cover being open there is little sign of obvious damage, though underside plating is developing holes.



Image 4 Bulldozer A (Image Martin Davies)

**Bulldozer B** Sadly the plough of Bulldozer B has broken off and lies on the sea bed just in front of the bulldozer. Anecdotal reports from regular divers said this happened in the last 2-3 years.



Image 5 Bulldozer B Front view. The blade/plough has broken off from the ramming arms. (Image Alison Mayor)



This is the most significant damage to the bulldozer and I can only speculate as to what had caused the plough to become detached. It could be from a boat tethering or anchoring in the area. I believe the plough weighs almost 3 tons

### **Other Artefacts**

**Ammunition** There are many rounds (50+) of High Explosive 95mm ammunition at various levels of decay. I am advised by the Historian at the tank museum that they contain a substance called Amatol – a mixture of TNT and nitro-glycerine and should not be disturbed.

**4x4 car** -There is also the remains of a 4x4 car. Here again there is evidence of interference with ropes being tied to one of the axles. This axle is some distance away from the other parts of the vehicle.



Image 6 Car axle with rope lies alongside Tank A and several meters away from the rest of the vehicle. (Image Martin Davies)

**Landing Craft Anchor and propellers.** We found 2 x four bladed propellers on the site of the same size that would have been used by a landing craft. (37" diameter). I don't believe them to be brass and therefore of little value commercially but are capable of being removed. The Danforth 'Kedge' anchor, of the size and type used by Tank Landing Craft, is located just behind the turret of Tank B. It would be difficult to remove because of its position. It is believed to weigh approx 7 cwt.

**Gun Barrel.** Although this was believed by local divers to be a field gun there is no gun carriage on the site and I think it may be the barrel of an anti-aircraft gun from the landing craft. Again it could be lifted, but unlikely given all the years it has remained undisturbed.





Image 7 One of two 4 bladed propeller (Image Martin Davies)

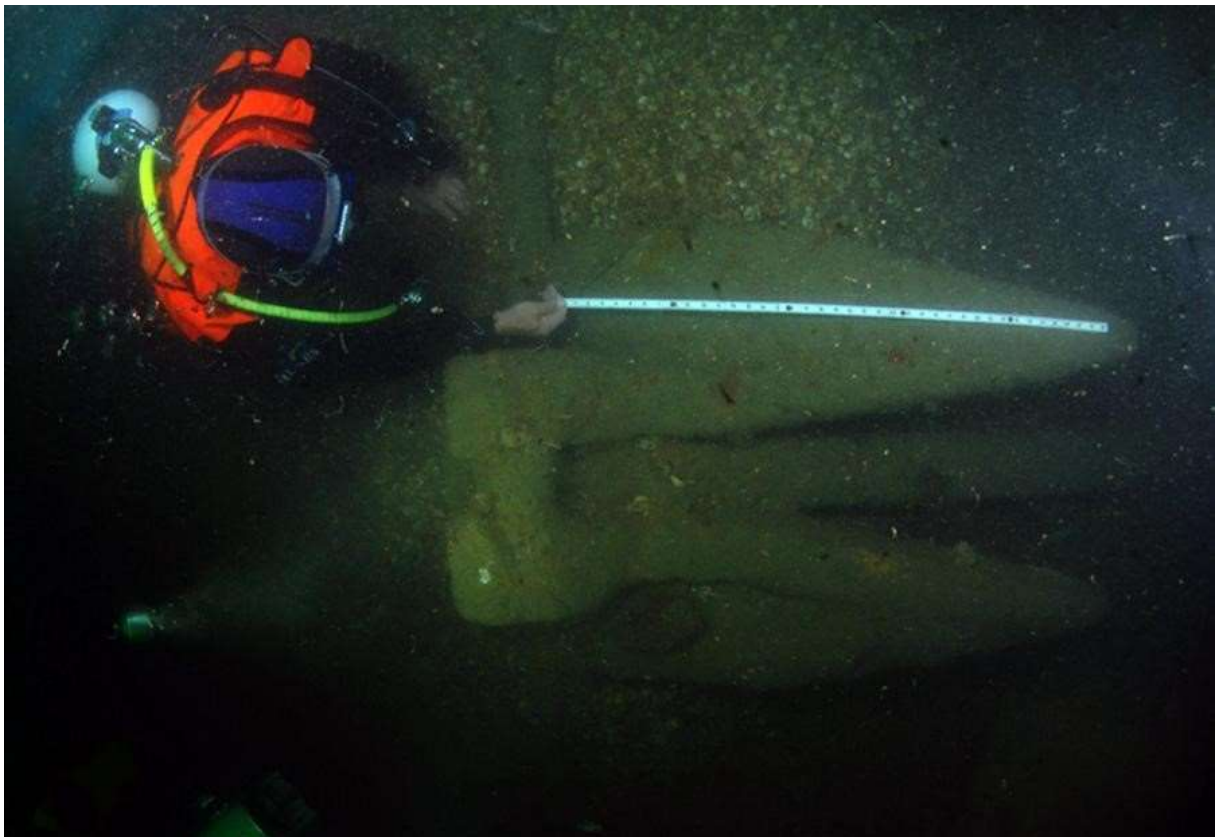


Image 8. Kedge anchor. (Image Martin Davies)

There are other 2 'porpoise' ammunition sleds and minor artefacts such as small rounds of ammunition but these are not under significant threat in my opinion.

### **Summary/conclusion**

Whilst their strong construction has enabled these armoured fighting vehicles to remain relatively well preserved after almost 65 years on the sea bed there is probable evidence that interference by divers and fishing activities has resulted in damage to the vehicles. The loss of the Bulldozer B plough and the tracks of Tank A being the most serious damage to the wrecks.

Care needs to be taken in the way boats anchor at the site, to either fish or dive. My opinion is that the majority of damage to the vehicles has been as a result of boats attempting to secure to the site for diving or fishing purposes.

I hope you will find the above information of help. Please feel free to contact me if you need any further information. [Alisonmayor2003@yahoo.com](mailto:Alisonmayor2003@yahoo.com) Tel :07740873255

Yours sincerely

Alison Mayor  
SSAC Tanks & Bulldozers Project Leader

# **NEPTUNE WRECKS PROJECT REPORT**

## **Part 2 – Project Planning**

### **1. Introduction**

Plans for a follow-on project, initially to find the wreck of LCT (A) 2428, began to develop after a meeting with the son of a survivor of the incident. On 7<sup>th</sup> June 1944, Able Seaman Charles R Hunt, Royal Navy, was interviewed on his return to his base at Westcliffe. His account of the capsize and subsequent sinking of LCT (A) 2428 was one of the key documents which provided evidence to support the account of how the tanks and bulldozers had come to rest on the sea bed.

Mr Bruce Hunt contacted me via the LST and Landing Craft Association historian/ archivist Tony Chapman. Tony had greatly assisted me in trying to find out about the Landing Craft Tanks lost during WW2 and I was pleased to assist help him resolve / clarify another incident whilst researching the Admiralty War diaries for Operation Neptune. We visited Bruce Hunt at his home in Saltash, Cornwall and listened as he proudly spoke of his father's WW2 history and were able to share with him the findings of our work in researching the incident where his father's LCT had capsized and the documents associated with the event. Speaking to Bruce made us determined to find the wreck of the ill-fated LCT (A) 2428 and complete the story.

### **2. Early Research**

Whilst researching potential locations for LCT (A) 2428 it became very clear that there was a much more challenging project ahead, and the number of wrecks in the area with a potential link to WW2 and Operation NEPTUNE was very significant. There are numerous remains of barges, Mulberry harbour units, Military/Naval vessels or craft and coast protection/defences in the area which are linked to WW2 and the Invasion of Normandy. We highlighted 4 wreck sites which were considered for further investigation from the UKHO data records in an area to the south of Bracklesham and Selsey Bill. Latitude/Longitudes as follows;

- UKHO site no 20004 - 50 38' .220N 000 46' .400W (Landing Craft Tank?)
- UKHO site no 20009 - 50 38' .577N 000 56' .464W (Barge/dumb lighter)
- UKHO site no 20244 - 50 38' .350N 000 52' .867W (Barge/dumb lighter)
- UKHO site no 20243 - 50 38' .317N 000 52' .833W (Barge/dumb lighter)

### **3. Project Aims**

Following the enormous success of the Tanks & Bulldozers project in 2008, members of SSAC were keen to explore, record and possibly identify these four WW2 wrecks associated with Operation Neptune (the naval element of Operation Overlord). Of particular interest was confirming the location/identity of the Landing Craft Tank which was carrying the Tanks & Bulldozers (surveyed by the Branch in 2008) when it capsized on 6 June 1944. In addition perhaps as the beginning of a longer term and much larger project there was a desire to investigate 3 other sites believed to be Thames Barges. These barges were used extensively in support of Operation Overlord to provide vital services and supplies. Many of the river barges or 'Dumb Lighters' (i.e. powerless and rudderless) were converted for specific tasks such as kitchens, water carriers, repair workshops, but their participation in the Normandy Invasions remains relatively unknown by the general public.

The primary aims of the Neptune Wrecks project were to;

- a) Produce a site plan and systematic survey of site believed to be that of a Landing Craft Tank and, if possible, to confirm it as the landing craft connected to the Tanks & Bulldozers site (LCT(A) 2428),
- b) Explore/ record up to 3 other wreck sites believed to be those of Thames Barges with the aim of identifying the type of barge concerned,
- c) Undertake historical research associated with all sites,
- d) Working with various experts/organisations, continue to raise awareness within the general public of the enormous effort of the Allies in the Invasion of Normandy and finally to,
- e) Promote the great recreational diving opportunities there are along the South Coast

The project plan was submitted to the British Sub-Aqua Jubilee Trust in support of a grant application which was subsequently approved by the Trustees in June 2009 and we are very grateful to the Trust for continuing to support our work in such a generous way. We were also very fortunate to receive the support of Silent Planet Ltd who for the 2<sup>nd</sup> year running brought the hard boat 'Top Gun' from Portland and provided a fantastic diving platform for the main survey event.

#### **4. Project Objectives**

The Project objectives were listed in 3 categories, those of the Project itself, those of Southsea Sub-Aqua Club for the benefit of its membership and, in association with other organisations, those that promote a greater understanding of the wrecks and their role in the Normandy Invasion through dissemination of the project findings to the general public and diving community through an 'outreach' programme as follows;

##### **a. Objectives**

- To locate the wreck that may be that of LCT(A) 2428
- To locate 3 other wrecks believed to be WW2 Thames Barges.
- To produce a site map/plan for each site by reference to the position, orientation and size of each of the wrecks.
- To record details of each of the wrecks in terms of their distinguishing features and condition etc including photographs.
- To identify the make/model/age of the wrecks.
- If possible – establish how and when they were lost at sea.
- To record the typical marine life to be found on the wrecks.

##### **b. Branch benefit Objectives**

- To provide an opportunity to work together as a branch at all levels and 'dive with a purpose' with a rewarding outcome.
- To practice and improve diving skills and survey techniques at an individual and team level.
- To build on the success of the Tanks and Bulldozers project and complete the story of their sinking along with that of their landing craft.

##### **c. Outreach Objectives**

- To publicise the results of our work as widely as possible.
- To raise awareness of recreational diving along the South Coast and the profile of BSAC, Southsea SAC, NAS and SeaSearch.
- To work with other organisations and the general public to exchange information about wrecks and their part in the invasion of Normandy and the subsequent

liberation of France under Operation Overlord in this the 65<sup>th</sup> Anniversary year of D Day.

## **5. Background**

Our 2008 project to investigate the Tanks and Bulldozers site identified the vehicles as Centaur CS IV tanks and Caterpillar D7 Armoured Bulldozers and through historical research into Royal Naval/Royal Marines war diaries and other documents we were able to establish that these armoured fighting vehicles were lost from a Landing Craft Tank (LCT) namely LCT (A) 2428, on the morning of 6 June 1944.

The LCT was part of 'J force', a Canadian invasion force which was to land at Juno Beach in support of the 3rd Canadian Infantry Division and 2nd Canadian Armoured Brigade). Juno Beach stretched from Saint-Aubin-sur-Mer on the east to Courseulles-sur-Mer on the west.

## **6. The Dive Sites**

In researching the possible location of the LCT the UK Hydrographic Office kindly supplied data sheets for all unknown wrecks/obstructions within a 5 mile radius of the Tanks & Bulldozers site. Although there are several Landing Craft in the area, the most likely site, for a number of reasons, is 3 miles east of the Tanks and bulldozers site.

### **Dive site 1 – UKHO Site 2004 LCT**

UKHO site number 20004 which is also mentioned in Dive Sussex (no 42) as follows;

"Dive Sussex entry (42). "Landing Craft, Type unknown 50 38 12N; 00 46 19W. This vessel lies almost exactly due north-south, and there is some doubt what kind of craft she is, as she is completely upside down and flat bottomed. Divers think that if she is not a tank landing craft, she might have been some sort of motorised barge for use in the D Day landings. Her hull is 4m proud of the sand-shingle sea bed in 20m of water, and she is 160ft long by 30ft wide by 8ft. She originally carried three small bronze propellers. The steel plate of which she is made is very thin and holes are appearing in many places."

Enquiries with local divers and skippers indicate that the site is also known locally as the "Patch Landing Craft" and that the wreck is broken into 3 parts and has deteriorated significantly being mostly buried or collapsed. Divers report only a skeleton of the wreck remains and this will make survey and identification much more difficult. There were a few discrepancies, in particular the length of the wreck (160 ft) which appears to be too long to be a LCT (A) of 114ft but if it is broken into 3 then this may explain the difference. The positive indicators of a flat bottomed craft with 3 propellers lying upside down still make this the prime candidate for LCT (A) 2428. UKHO data sheet also indicates that the wreck has been swept by lines which will have dispersed the wreck across a larger site.

### **Dive site 2 – UKHO site no 20243 – Barge?**

Survey dated 1988  
Intact Barge or Dumb Lighter.  
General Sea bed depth 15m, scour 1.5m, top of wreck 13.7m.  
Lies NE/SW at the top of a 10 to 15m underwater cliff face.  
Close (S/E) to wreck 20243

### **Dive Site 3 – UKHO site no 20244 – Barge?**

Survey dated 1987  
Intact Barge or Dumb Lighter.  
General Sea bed depth 15m, scour 1.5m, top of wreck 13.7m.  
Lies NE/SW at the top of a 10 to 15m underwater cliff face.  
Close (S/E) to wreck 20243

#### **Dive Site No 4 – UKHO site no 20009 – Barge?**

First located March 1977.  
Diver Report 1978. "Identified as twin engined steel barge with large cylindrical container completely filling hold. Wreck upright and intact. Max height about 12 ft. Suggest it may have been a D-Day fuel or water barge."  
(M Walsh)  
HMSML Gleaner Sept 2003. General depth 19m. Top of wreck 15.9m. No scour. Lies 045/225 degs. Poor magnetic anomaly. Intact and upright on a small 1.5m high outcrop.  
Length 30m width 15m

Wreck sites 2, 3 and 4 were not sites offered by local charter skippers in the area and we were not to find anyone who had previously dived them.

### **7. Project Plan**

The project was developed over several months as a natural progression from the Tanks and Bulldozers project. The more detailed dive planning stages continued right up to the survey and required adjustment to take account of unforeseen circumstances and developing research findings.

The following activities were completed during the planning stages;

- a. **Establish the feasibility of Project overall in terms of resources and site location.** This was achieved by research of potential dive sites using UKHO wreck data sheets, Receiver of Wreck information and local knowledge and records. We contacted local skippers, other local BSAC branches as well as diving publications and web sites. The Deputy Receiver of Wreck (Rebecca Tye) was contacted and she has advised that there are no restrictions on the diving on the sites. Amanda McKelvie from the Naval Heritage section, Ministry of Defence (MOD) was notified of our intention to dive/survey the sites. The MOD has little information on the sites and would be very interested to see the project report following the survey. It was stressed that there was a possibility of unexploded ordnance. The MOD stated that it accepts no liability in respect of diving activities on the site.
- b. **Confirm interest within the Club and support from the Committee.** The intention to carry out the survey project was advertised on the SSAC Yahoo Group Site (our main email communication to all SSAC members) and also by a presentation to more than 40 club members on 22 January 09. The meeting briefed club members on the initial research findings and the aims of the project. After only a few days of publicising the project more than a twenty club members had registered an interest in taking part in the project and a number of people have volunteered to undertake specific tasks as part on their own diving development/ qualifications. Support was also obtained from SSAC Committee at the meeting of Dec 08. The experience and abilities of those interested and key members to assist in the overall management roles have been identified.



- c. **Consult /research best practice and guidance for running a similar project. (BSAC and NAS).** Mark Beattie-Edwards of NAS was very interested in the project happy to provide advice as the project progresses. Guidance from the BSAC web site on various aspects of the project including the Risk Assessment Toolkit, Dive and Expedition Planning was used to develop the project and diving plans.
- d. **Identify possible sources of funding and support (BSAC Jubilee Trust or alternative options).** The BSAC web site provided useful advice and guidance on possible funding assistance for the project through the Jubilee Trust. We were successful in the grant application submitted to the Jubilee Trust and received funds in June 2009.
- e. **Project Management and Planning.** Work to establish a team and develop detailed plans covering all aspects of the Project continued up to the point of the dive surveys. We applied lessons from the management of projects building on the experience gained from our Tanks and Bulldozers project. Some of our members took up the challenge of being able to manage the work on one of the individual dive site and to deliver a project in order to progress their own personal development.
- f. **Identify additional training requirements.** The BSAC Wreck Appreciation course which was run in the Branch in 2008 provided divers with some of the basic techniques they needed to take part in the survey exercise. Pool sessions to practice survey techniques were also be made available. Good buoyancy and finning techniques would be essential to conduct the survey efficiently and safely - especially given the extra task loading that divers would be undertaking. In order to ensure safety of diving operations First Aid and O2 courses were completed (Feb 09) with over 12 club members taking part.
- g. **Identify what additional expertise may we need and where/how to get it?** Additional expertise would be required primarily in WW2 history, Operation NEPTUNE and LCT/Thames Barges construction. We have worked closely with Tony Chapman the Historian / Archivist from the RN Landing Craft Association and his sister organisation in the USA for details about the construction/specification of LCT (A)s. In addition advice about the vessels and events of Operation NEPTUNE was obtained with the assistance of Andrew Whitmarsh at the D Day Museum, Portsmouth. Following the D Day landings, ships, landing craft and barges continued to provide much needed vehicles and supplies until the end of June 1944. There was also the likelihood that information from the Canadian veterans association may be of use as many of the troops on board LCT(A) 2428 were Canadian.
- h. **Communication and Outreach.** Internal communications were managed through regular briefings/meetings and also via the Club's Yahoo Group site. A project notice board was set up at the Club house which had details of presentations and interesting documents. A presentation was given to club members in January 09 to start the project and begin the work needed to make it a success and regular briefings occurred thereafter. Press releases were issued to local press/media and the SSAC web site ([www.southseasubaqua.org.uk](http://www.southseasubaqua.org.uk)) was regularly updated. Building on the success of the Tanks and Bulldozers project there continued to be a good potential for continued public/media interest as well as the more specialised diving, archaeological, military and WW2 historical communities. This was a great opportunity to bring the activities of the club to public attention and disseminate information. The outreach aspect was carefully planned to make sure that the project, its findings, Southsea Sub-Aqua Club, and the BSAC receive positive exposure as a result. Images and video were managed by Diving Officer Martin Davies who will be able to take images for publication as well as identification of the

vehicles. The PR and educational aspects of the Project are one of the key benefits and we were conscious that this was an opportunity which needed to be maximised.

- i. **Health and Safety considerations.** Vital to the success of the Project was the safety of all divers and participants for the duration of the survey. A Diving Risk Assessment was prepared in accordance with BSAC guidance and was monitored and amended as additional hazards are identified. It was essentially treated as a living document throughout the planning stage and during the diving operations.
- j. **Dive programme/timescales.** In consultation with the skippers and the with the approval of Diving Officer a full dive/survey programme was prepared taking account of tidal and environmental factors, depth, hazards and the objective of each stage of the survey programme. Plans were amended to account for unforeseen changes, such as the bomb, but also slightly more foreseeable issues such as the weather conditions.
- k. **Plan the survey** – The survey was updated as the programme progressed. Initial exploratory dives with the SSAC RIB or above-water data obtained with the side-scan sonar equipment helped to inform the survey plan.
- l. **Identification of Equipment required.** Some survey equipment was purchased by the Branch for the Tanks and Bulldozers project. We were grateful to the Nautical Archaeology Society for the opportunity to use their side-scan survey equipment for the project.
- m. **Financial estimate for the project.** A financial estimate for the project was prepared and submitted with the grant application. Expenditure was monitored by the Branch Treasurer. The final account is submitted as a stand-alone document to this report. The main cost was the boat charter. The cost of a normal charter was reduced by Silent Planet (Dave and Liisa Wallace) who gave their time free of charge so that they could take part in the project. This meant we maximised the amount of diving we did within the budget. We also used the Club RIB more which allowed more diving on the wrecks to be conducted. One lesson we learnt on the tanks and bulldozers project was that the cost of fuel was the main opportunity for cost growth and is not easy to forecast. A greater contingency for fuel price increases was included in the budgeting. Any unforeseen costs were apportioned equally between the project members based on the number of diving days.

## 8. Diving/Survey

This stage was the most productive and resource intensive element whilst Branch members undertook diving and survey. All activities were planned up to the last minute to ensure safety and adopting best practice in accordance with BSAC 'Safe Diving Practices' booklet 2007 – a copy of which was given to all team members. The activities associated with this stage included;

- Confirm weather and general conditions ok for dive, slack water window and dive time.
- Overall dive brief including boat safety etc
- Safety Equipment check/ Diver equipment check (DSMBs, air, torches, slates etc)
- Establish buddy pairs depending on level of experience and capabilities.
- SEEDS brief (Safety Exercise Equipment Discipline & Signals).
- Buddy Checks
- Monitor throughout dive and record dive statistics (time depth air etc)

- Collect recorded data from each dive and analyse findings to establish accurate site map.
- Risk Register reviewed before and after each dive
- All safety equipment checked before each dive.
- A de-brief carried out after each dive.

## **9. Data evaluation and reporting**

This stage brought together all the information and data with the aim of providing firm evidence from which a number of conclusions may be drawn. The intention was to make available the findings of the project to as wide an audience as possible as well as form the basis of further work if needed. These activities included;

- Using data from the dives - plot measurements to produce a site plan and record the location, orientation and condition of the wrecks and any significant items of interest found.
- Compare data and photographs in order to establish age/model of wrecks.
- Seek to establish how/when they were lost at sea.
- Report on marine life observed on the site to the Marine Conservation Society under the SeaSearch scheme.

## **10. Surveys Undertaken**

- Initial survey – The aim was to find all 4 wrecks on the site and mark their positions accurately by GPS (note - DGPS was used during side-scan surveys). We used the Side-scan sonar to locate some of the wrecks but we could not locate them all. The barge 20243 was not visible on the sides-scan and was not located during the underwater survey of neighbouring wreck 20244. Where possible a simple site map which could be used for future planning and briefing was produced. This was done by using our own RIB or friends motorboat to save the expense of a charter boat.
- Marking Out/Line laying – Where practicable we laid lines connecting major elements of the wrecks and measuring the distance/orientation of the wrecks generally to start the creation of a site plan. This proved problematic on the Landing Craft site when lines broke under the weight of accumulating seaweed and strong currents.
- Detailed survey of each wreck, size, depth/height etc any special features that would aid possible identification (including photographs).
- Survey also looked at marine environment (SeaSearch).

The plans were adjusted to take account of other emerging opportunities and as a result we took the opportunity to investigate 3 wreck sites which were not part of the original plan. We dived the Tanks and Bulldozers site to investigate further the artefacts which we had thought were 'porpoises' and also the wreck of another LCT (Site 19117) which was to be an alternative if the wreck 20004 had not been possible to identify as LCT(A) 2428. We also took the opportunity to investigate a solitary tank in shallow water in Bracklesham Bay. Where possible we tried to dive on both slack water opportunities – i.e. 2 dives per day but this was dependent on tide times and weather.

## **11. The Diving Plan**

The relatively shallow depth allowed most of the qualified divers within the Branch the opportunity to take part in the project, and even those unable to dive were able to take part in the training exercises, marshalling dives and also the research/data gathering.

Sample dive plans for a typical 2 dive day were been prepared, based on air and Nitrox (36% usage). These plans showed the benefits of the Nitrox mix over air in terms of longer no stop diving on both dives. As a result there was no need to do any decompression diving and this will be the plan for the dive programme.

SSAC is fortunate to have its own Nitrox compressor which benefited divers and project by reducing the risk of DCI and increasing bottom times. A number of Nitrox workshops were delivered within the Branch to allow the majority of club members to benefit from the use of Nitrox.

The safety of all divers at every stage of the survey was paramount. A full risk assessment was developed and maintained/monitored throughout the dive programme noting any additional risks as they arose. Actions were taken wherever practicable to reduce risks by means of additional control measures such as planning, training, briefing, additional equipment and expertise as appropriate. The Diving Officer is ultimately responsible for the health and safety of all participants in the project and he was fully involved in all stages of the project. He appointed Dive Managers to marshal the dives including the recording diving data depth/time/air etc.

Generally diving teams of 4 or 12 depending on the dive platform (RIB or Hard Boat) would conduct the survey dives. All diving was conducted in buddy pairs with each diver carrying a DSMB. Although relatively shallow the visibility can be an issue, splitting the diving to allow each buddy pair to survey an individual wreck will hopefully reduce overcrowding. Divers were reminded of the need for good buoyancy and finning techniques especially when conducting survey tasks.

## **12. Risk Assessment**

A full and comprehensive Risk Assessment (See Annex 2B) was undertaken for all stages of the project but the most critical is the Diving Risk Assessment. Each Risk was allocated a 'Risk Evaluation' Score based on the frequency (rare = 1, Occasional = 2 and Frequent =3) and severity (minor injury = 1, major injury = 2 and fatal = 3). The Risk Assessment has been prioritised as a result of the scoring. The key diving hazards were identified as;

- Diver illness, such as heart attack
- Depth
- Entanglement
- Separation – diver/diver and diver/boat
- Out of Air
- Weather/environmental
- Equipment failure

The Risk Assessment informed the dive briefing as well as the planning and equipment requirements. Wherever practicable a risk control measure was identified and made known to the project team and Diving Officer.

Of course there were risks to the overall project though not as many. These too were identified, control measure established, implemented and monitored. Significant project risks were considered to be;

- Shortfall in funding
- Cannot find site
- Poor data recording
- Not enough divers

- Poor weather

The Risk Assessments were living documents throughout the life of the project with new risks being added as they became known, or closed if they are no longer relevant.

As it happened we did have 2 of these risk materialise – We could not find the site of barge 20243 and we suffered from bad weather on occasions. The risk we did not foresee was the inability to dive on the Landing Craft Site (20004) as a result of the Coastguard (MCA) putting a 1 mile exclusion zone around the site because of the bomb.

### **13. Participants and Roles**

Over 20 divers took part and key positions/roles were as follows;

- Project Management and survey planning – Alison Mayor, with sub-project of the barge 20009 being managed by Pete Dolphin.
- Dive Management & Health & Safety – Martin Davies (SSAC Diving Officer) and any Dive Managers appointed by him. Dave & Liisa Wallace as Skippers.
- Skippers, Dave and Liisa Wallace, Silent Planet Ltd and Simon Bradburn SC Charters Ltd, SSAC members as appropriately qualified to coxswain our RIB 'Alan Blake'.
- Research and recording/reporting, final reports Alison Mayor
- Financial accounting, Rachael Brealey (SSAC Treasurer)
- Training Officer, John Strutt (SSAC Training Officer OWI)
- PR/Media/Web site, Alison Mayor

The full details of all participants Annex 2A.

### **14. Qualifications and Training**

The exact depth of the LCT dive site (20004) was found to be shallower than expected which enabled all qualified members to take part. The other 3 planned sites were in the 15-20m range and therefore everyone to participate was able to participate. The 20m maximum depth is suitable for Nitrox and its use was encouraged to reduce the risk of DCI and extend the bottom time when the survey is conducted. Since the introduction of Nitrox into the diver training programme the majority of Branch members have been trained in the use of Nitrox and as the club has its own Nitrox membrane compressor it is readily available to those who are qualified.

### **15. Logistics, Equipment and Resources**

We used a combination of the Club RIB 'Alan Blake' and charter vessels 'Top Gun' (Silent Planet) and 'Storm Force 8' (SC Charters) for the diving activities. The Club RIB only comfortably take four divers with a coxswain and the LCT dive site (20004) is nearing the edge of the RIB's fuel range so was not be used for the main survey activities. Where practicable the RIB was used to confirm the marks and to undertake an initial reconnaissance of the site. The main survey was conducted from the hard boat Top Gun which can take 12 divers and equipped with a lift. Top Gun is fitted with excellent safety, communications and navigational equipment and the skipper Dave Wallace is a trained Lifeboat man.

#### **a. Safety & Boat Equipment for use on SSAC RIB Alan Blake**

- O2 kit, RescueEAN, First Aid box,
- Fuel, GPS VHF Radio, Flares, Tool kit, Echo sounder etc

- Ropes, oars, anchor, shot lines, buoys
- Charts and Passage Plan

The sites were reasonably accessible and the 20m maximum depth meant that no specialist diving equipment was required for long periods of decompression etc. Normal diving equipment suitable for diving in UK waters in poor visibility was required including DSMB, torches, compass, line cutter/knife, etc.

#### **b. Diving Equipment**

Normal scuba equipment, DSMB (one per diver), compass, torch etc.

Additional equipment was required to undertake the survey tasks underwater to record the measurements taken.

#### **c. Survey equipment**

- Datum/baseline, and suitable fixing pegs/rods
- Markers for control points
- Tape measures, slates/pencils/transparencies,
- Ropes, buoys, clips, cable ties etc.

### **16. Funding and Budgeting**

A final reconciliation from the cost estimate has been produced (See separate enclosure to report) based on the final costs of charter fees, equipment costs, consumables and also unforeseen costs such as additional trips, equipment (side-scan cost) and publicity material. The cost of the project was been significantly reduced thanks to the very kind offer of Skippers Dave and Liisa Wallace to provide their time free of charge. This increased the project value for money in terms of the amount of surveying we were able to achieve.

### **17. Outcomes and Reports**

The following documents have been produced as a result of the project.

- Overall Project report. Recording the programme of events, the actual data and information taken from the sites and the conclusions we have been able to draw from the information gathered during the whole project including that from last year's Tanks and Bulldozers survey. The report includes lessons learned through the execution of the project.
- Site Plans. Including the survey results of the site and details of each wreck site.
- Photographs and video of each of the wrecks and diving activities.
- Marine life survey of the site/wrecks in SeaSearch reporting format.
- Results of finding/research into the type/age etc of wrecks.
- Diving log/record sheets.
- Articles for publication in local, historical and diving press.
- Report will be copied to Ministry of Defence (Naval Heritage Branch). English Heritage, the National Monuments/Records Office, Receiver of Wreck, D Day Museum, UK Hydrographic Office, Landing Craft Association and NAS.
- Report to the Jubilee Trust/BSAC including final accounts for the Project.
- Details of outreach activities and engagement with the Public and other organisations.

The findings of survey and summary reports are to be included on the SSAC Web Site ([www.southseasubaqua.org.uk](http://www.southseasubaqua.org.uk)) so they are freely available via the World Wide Web.



These documents are intended to be a permanent record of our findings for years to come. We have been able to draw some reasoned conclusions which will go some way to answering the many obvious questions that these sites raise. It is also a great achievement for the Branch in which all involved can be very proud of.

Annex 2A – List of participants  
Annex 2B – Risk Assessment  
Annex 2C – Dive Programme

**NEPTUNE WRECKS - RISK ASSESSMENT**

<b>NAME</b>	<b>BSAC NO</b>	<b>GRADE</b>	<b>EXPERIENCE</b>	<b>ROLE</b>
ALISON MAYOR	A742727	A/D	NAS Intro, Parts 1 and 2, RYA2 Powerboat, Diver First Aid, O2 Admin, Advanced Nitrox Diver, SeaSearch Observer and MCS Marine life ID, Chart work and Position Fixing, Practical Rescue Management, Assistant Club Instructor	Neptune Wrecks Project Leader Diver/Surveyor Report writer Jubilee Trust applicant on behalf of SSAC
DAVID BANKS	A652966	SPORT	Search and Recovery, SeaSearch	Diver/surveyor
MARTIN DAVIES	A724785	A/D	Diver Cox, RYA level 2, Day skipper/ watch leader, VHF radio, Recompression Chamber Operation, Compressor Operation, O2 admin, DPM, ADT, Chart work & Position Fixing, Search & Recovery, Explosives & Advanced Explosives, Underwater Photography, SeaSearch Observer and MCS Marine Life ID, Assistant Club Instructor, NAS Part 1. Advanced Nitrox Diver	Diving Officer Photographer/ videographer Diver/Surveyor
TOM TEMPLETON		D/L/	Open Water Instructor, CCR diver.	Assistant Diving Officer Diver / Surveyor Coxswain
DEREK BOWER	A705417	D/L	Advanced Nitrox Diver SeaSearch Observer, MCS Marine life ID	Diver/Surveyor
DAVE PURVIS	A712568	A/D	Open Water Instructor, BSAC NITROX Instructor, TDI Basic TRIMIX, TDI Adv NITROX & Deco Procedures	Training Officer Diver/Surveyor
JIM FULLER	A723932	A/D	O2, VHF, RYA Powerboat II, Adv Nitrox, 1st Aid, Assistant Club and Theory Instructor, ERD, Adv Nitrox Diver, SeaSearch Observer.	Diver/Surveyor Logistics

**NEPTUNE WRECKS - RISK ASSESSMENT**

JOHN STRUTT	A789318	D/L	OWI	Diver/Surveyor
RICHARD HOBSON	A130920	D/L	Assistant Club Instructor, Advanced Nitrox , Extended Range Diver, Photographer	Diver/Surveyor Photographer
DAVE GILBERT	A278851	D/L	Nitrox Diver	Diver/Surveyor
RACHAEL BREALEY	A752231	SPORT	Nitrox Diver	Finance /budget manager
PETE DOLPHIN	A345678	A/D	DRS,VHF, Boat Handler, NOx1, RYA INST, Open Water Instructor, NAS Part 1, SeaSearch Observer	Diver/Surveyor Photographer Project leader Barge 20009 Technical drawing
JIM SMITH	A779040	SPORT	Nitrox Diver	Diver/Surveyor
PHILLIP JACKSON	A706282	SPORT	Nitrox Diver,	Diver/Surveyor RIB Coxswain
JOHN BOHEA	A120617	A/D	Boat Handler, Chartwork and Position Fixing, Search and Recovery	Diver/Surveyor RIB Coxswain
DAVID WALLACE	A672287	A/D	BSAC Advanced diver, PADI Assistant instructor, TDI Gas blending instructor, IANTD CCR mod 3, IANTD Trimix diver, GUEF, O2 admin, First aid, VHF, Long range, Radar, O2 admin, sea survival, Commercially endorsed Yacht Master Offshore. RYA Advance powerboat instructor – Planning and Displacement.	Hard Boat Skipper First aider Videographer
LIISA WALLACE	TBA	A/D	BSAC Advanced diver, PADI Assistant instructor, TDI Gas blending instructor, IANTD CCR mod 3, IANTD Trimix diver, GUEF, O2 admin, First aid, VHF, Long range, Radar, O2 admin, sea survival,	Hard Boat Skipper First aider Videographer

**NEPTUNE WRECKS - RISK ASSESSMENT**

			Commercially endorsed Yacht Master Offshore. NAS Parts 1 and 2.	
RICHIE ROSS	A654066	A/D	CCR diver, Asst Club Instructor, Nitrox Diver	Videographer
TONI BATES	A756927	D/L	Nitrox Diver, OWI, SeaSeach Observer.	Diver/Surveyor Project Leader Barge 20243 SeaSearch surveyor
MARK HOBBS	A789822	Sport	Nitrox Diver	Diver/Surveyor
NEIL JEFFREY	A754331	Sport	Air Diver	Diver/Surveyor
DAWN BARNARD	A738389	D/L	Nitrox Diver	Diver/Surveyor
JAMES SEPHTON	A763137	O/D	Nitrox Diver	Diver/Surveyor
POLLY BUCKINGHAM	A790541	O/D	Nitrox Diver	Diver/Surveyor Researcher
ALISON BESSELL	A474222	SPORTS	Advanced Nitrox Diver, PRM Seasearch surveyor	Diver/Surveyor SeaSearch report
TRACY JACKSON	A744030	D/L	Advanced Nitrox Diver	Diver/Surveyor First Aid
JIM YATES	A754330	Sport	Air Diver	Diver/Surveyor
STUART QUEEN	A790366	D/L	Nitrox Diver, Search & Recovery	Search & Recovery Diver/Surveyor

**NEPTUNE WRECKS - RISK ASSESSMENT****SOUTHSEA SUB-AQUA CLUB****“NEPTUNE WRECKS” SURVEY****6<sup>TH</sup> TO 10<sup>TH</sup> August 2009****SELSEY BILL/BRACKLESHAM BAY, WEST SUSSEX**

The dive sites are 8 to 10 miles offshore in the Bracklesham Bay/Selsey Bill area and so diving on the site needs to be conducted from a boat. The risks identified in this risk register are those associated with open water diving from a hard boat or RIB in tidal/temperate waters.

All diving will be authorised by the Diving Officer or his authorised Dive Manager and conducted in accordance with the BSAC Safe Diving Practices guidelines (January 2009). A project briefing meeting will be given to the whole team before the survey to address the diving and survey activities including the risks associated with the tasks. Before leaving harbour the Skipper and Dive Manager will brief all on board Top Gun about the safety equipment/procedures on the boat and before each dive SEEDS briefs for will be carried out. All divers will be required to complete buddy checks. Additional risks identified at any time will be brought to the attention of all divers.

<b>No</b>	<b>HAZARD</b>	<b>WHO</b>	<b>RISK EVALUATION</b>	<b>CONTROL MEASURES</b>	<b>IMMEDIATE MEASURES TO DEAL WITH CONSEQUENCES IF RISK DOES OCCUR</b>
1	Running out of air	All divers	High (5)	<ul style="list-style-type: none"> <li>• All cylinders to have pressure gauges – regular monitoring in buddy pair.</li> <li>• Careful dive planning including calculation of air requirements for dive. Apply 'Rule of Thirds'.</li> <li>• Regular monitoring of air by buddy</li> <li>• All divers to carry alternative air source Use of pony cylinders or twin sets if possible</li> <li>• First aid and O2 kit to be available.</li> </ul>	<ul style="list-style-type: none"> <li>• Ascend to surface.</li> <li>• Administer O2 if required by suitably trained first aider.</li> <li>• Treat buddy for shock if required.</li> </ul>
2	Rapid Ascent	All divers	High (5)	<ul style="list-style-type: none"> <li>• Progressive training especially in buoyancy control.</li> <li>• Diving monitored by</li> </ul>	<ul style="list-style-type: none"> <li>• O2 administration by suitably qualified first aider.</li> <li>• Advise coastguard/emergency</li> </ul>

**NEPTUNE WRECKS - RISK ASSESSMENT**

				boat/surface cover in order to provide immediate assistance/recovery. <ul style="list-style-type: none"> <li>• Correct weighting and good buoyancy skills.</li> <li>• Dry suit and DSMB deployment training.</li> <li>• Visual datum when ascending e.g. shot line.</li> <li>• Secure weighting system.</li> <li>• First Aid and O2 kit to be available on site.</li> </ul>	services as appropriate. <ul style="list-style-type: none"> <li>• Initiate Emergency services Plan if required.</li> <li>• Treatment of buddy for shock if required.</li> </ul>
3	Diver separation	All divers	High (5)	<ul style="list-style-type: none"> <li>• Dive Manager to advise separation drills.</li> <li>• Divers to stay in buddy pairs.</li> <li>• Contact between buddies to be maintained throughout the dive.</li> <li>• Divers to wear strobes and carry torches on dives.</li> <li>• Use of buddy lines where appropriate.</li> <li>• First Aid kit and O2 kit to be available on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Divers to surface in accordance with separation drill and re-establish contact with each other and surface cover.</li> <li>• Surface cover to render assistance as required.</li> <li>• First aid to be administered if required.</li> </ul>
4	Reduced Underwater Visibility	All divers	High (5)	<ul style="list-style-type: none"> <li>• Divers to stay in Buddy pairs.</li> <li>• Divers to use strobes, torches and buddy lines to avoid separation.</li> </ul>	<ul style="list-style-type: none"> <li>• Abandon dive if conditions do not permit safe diving</li> <li>• All Divers to surface.</li> <li>• Dive Manager to monitor divers and abort dive if necessary.</li> </ul>
5	Strong currents –	All divers	High (5)	<ul style="list-style-type: none"> <li>• Consult tidal atlas/charts</li> </ul>	<ul style="list-style-type: none"> <li>• Notify Emergency</li> </ul>



**NEPTUNE WRECKS - RISK ASSESSMENT**

	separation from boat			<p>and skipper for slack water times.</p> <ul style="list-style-type: none"> <li>• All divers to carry SMB and any other surface location markers such as flags, whistles, torches, strobes, epirob, flares.</li> <li>• Diver in/out count log to be completed.</li> <li>• First Aid kit and O2 to be available on site.</li> </ul>	<p>services/Coastguard of events/position.</p> <ul style="list-style-type: none"> <li>• Assistance from Buddy.</li> <li>• Buddy to raise alarm at surface.</li> <li>• Diver to be removed from water ASAP</li> <li>• First aid and O2 administration if appropriate.</li> </ul>
6	Heart Attack	All	Medium/High (4)	<ul style="list-style-type: none"> <li>• Self certified medical or Medical referral.</li> <li>• General diving health awareness in training.</li> <li>• First aid and O2 kit available on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Basic Life Support administered by buddy or first aider.</li> <li>• Initiate Emergency services action plan.</li> <li>• Treat others for shock as appropriate.</li> </ul>
7	Ear problems	All divers	Medium/High (4)	<ul style="list-style-type: none"> <li>• General diving health awareness in training.</li> <li>• Teaching equalisation techniques in training.</li> <li>• Divers should not dive when suffering from a cold or congestion.</li> <li>• First Aid Kit to be available on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Ascend from depth.</li> <li>• Assistance from buddy, first aider, or instructor.</li> <li>• Rinse with fresh water.</li> </ul>
8	Entanglement with nets/lines/underwater obstacles	All divers	Medium/High (4)	<ul style="list-style-type: none"> <li>• Dive Manager to brief of hazardous areas and additional hazards whilst undertaking survey.</li> <li>• Divers to carry cutting tools such as knife / scissors etc. in</li> </ul>	<ul style="list-style-type: none"> <li>• Assistance from Buddy.</li> <li>• Buddy to raise alarm at surface.</li> <li>• Diver to be removed from water ASAP.</li> <li>• First aid and O2 administration if appropriate.</li> </ul>

**NEPTUNE WRECKS - RISK ASSESSMENT**

				an easily accessible place. <ul style="list-style-type: none"> <li>• Streamline equipment.</li> <li>• Survey Lines to be clearly marked.</li> <li>• First aid and O2 kit to be available on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Notify Emergency services if appropriate.</li> <li>• Treat buddy for shock if required.</li> </ul>
9	Water /air temperature	All divers	Medium/High (4)  (Diving in summer months – likely to be heat problems rather than cold)	<ul style="list-style-type: none"> <li>• All divers to wear appropriate protective suits including hoods and gloves as necessary.</li> <li>• Plenty of fluids available, sun hats/sun tan lotion.</li> <li>• Delay the donning of dive suit.</li> <li>• First aid kit to be available on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide first aid treatment for hyperthermia.</li> <li>• Hospitalise if required.</li> </ul>
10	Loss of buoyancy at surface	All divers	Medium/High (4)	<ul style="list-style-type: none"> <li>• All buoyancy devices to be checked prior to dive.</li> <li>• Dive to be aborted in any sign of BCD malfunction detected.</li> <li>• Jettison weight belt/system when on surface</li> <li>• Inflate BCD at surface</li> <li>• First Aid kit and O2 kit to be available on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Buddy to render assistance at the surface.</li> <li>• Divers to raise alarm to surface cover.</li> <li>• Administer first aid as appropriate.</li> </ul>
11	Diving equipment malfunction	All divers	Medium/High (4)	<ul style="list-style-type: none"> <li>• Divers to check functionality as part of buddy check before entering water on every dive</li> <li>• Alternate air source to be carried by all divers.</li> </ul>	<ul style="list-style-type: none"> <li>• Dive to be aborted.</li> <li>• Buddy to render assistance and both divers to ascend to the surface.</li> <li>• First aid and O2 to be administered as appropriate.</li> </ul>

**NEPTUNE WRECKS - RISK ASSESSMENT**

				<ul style="list-style-type: none"> <li>• All equipment to be checked regularly and serviced in accordance with manufacturer's instructions.</li> <li>• First Aid kit and O2 kit to be available on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Treat buddy for shock if required.</li> </ul>
12	Rough surface water conditions	All	Medium/High (4)	<ul style="list-style-type: none"> <li>• Check weather forecast immediately prior to setting sail /dive and recorded in dive plan.</li> <li>• Take sea sickness medication if susceptible to motion sickness.</li> <li>• Diving aborted by Dive Manager in the event of adverse weather conditions.</li> <li>• Surface conditions to be monitored (fog/heavy swell).</li> </ul>	<ul style="list-style-type: none"> <li>• Assistance from buddy or boat crew to exit water.</li> <li>• Divers to exit the water.</li> <li>• Administer appropriate first aid.</li> <li>• Hospitalisation if required.</li> </ul>
13	Unexploded munitions/ordnance	All	Low/High (3)	<ul style="list-style-type: none"> <li>• MOD has warned of the possibility of unexploded ordnance – all divers to be briefed.</li> <li>• No removal of artefacts from site and no touching of anything that looks even remotely like munitions whilst conducting survey.</li> <li>• Diving monitored by boat/surface cover in order to provide immediate assistance/recovery.</li> </ul>	<ul style="list-style-type: none"> <li>• O2 administration by suitably qualified first aider.</li> <li>• Treat buddy for shock if required.</li> <li>• Advise coastguard/emergency services of position/events.</li> </ul>
14	Unexplained	All divers	Medium/High (4)	<ul style="list-style-type: none"> <li>• Trained First aider on site</li> </ul>	<ul style="list-style-type: none"> <li>• Recover casualty from the water</li> </ul>

**NEPTUNE WRECKS - RISK ASSESSMENT**

	Unconscious/non-breathing or seriously ill casualty (e.g., embolism, allergic reaction, near drowning)			<ul style="list-style-type: none"> <li>First Aid kit and O2 kit available on site</li> <li>Emergency services plan</li> </ul>	<ul style="list-style-type: none"> <li>Administer first aid and O2 as appropriate, try to establish from buddy what happened.</li> <li>Seek medical advice.</li> <li>Emergency Services Plan – Advise Coastguard of events/position.</li> <li>Hospitalise casualty.</li> <li>Treat others for shock if required.</li> </ul>
15	Missed decompression stops or Casualty displaying symptoms of DCI	All divers	Medium/High (4)	<ul style="list-style-type: none"> <li>Dive plans to be prepared and approved by Diving Officer/Dive Manager</li> <li>Divers to be reminded about the need to keep to the dive plan and monitor times/air etc especially when carrying out other tasks.</li> <li>First Aid and O2 kit available on site.</li> </ul>	<ul style="list-style-type: none"> <li>Administer first aid and O2 as appropriate.</li> <li>Seek medical advice.</li> <li>Emergency Services Plan – Notify coastguard of events and position.</li> <li>Hospitalise – evacuate to recompression chamber ASAP (with buddy and dive computer).</li> </ul>
16	Boat Propeller	All divers	Medium/High (4)	<ul style="list-style-type: none"> <li>Entry/exit controlled by skipper</li> <li>Use of SMB mandatory on the surface.</li> <li>Display 'A' flag when divers in water.</li> </ul>	<ul style="list-style-type: none"> <li>Administer first aid and O2 as appropriate.</li> <li>Seek medical advice.</li> <li>Emergency Services Plan.</li> <li>Hospitalise.</li> </ul>
17	Man overboard	All	Medium/High (4)	<ul style="list-style-type: none"> <li>Skipper boat brief to include Man Overboard drill.</li> </ul>	<ul style="list-style-type: none"> <li>On sighting of lost casualty advise skipper for recovery.</li> <li>Establish position/time and notify Coastguard - Emergency Services Plan.</li> </ul>
18	Engine failure/ boat sinking	All	Medium/High (4)	<ul style="list-style-type: none"> <li>Skipper Boat Brief</li> <li>GPS, VHF</li> <li>Life jackets and life rafts</li> </ul>	<ul style="list-style-type: none"> <li>Establish accurate position and immediately inform coast guard.</li> <li>Follow instructions of skipper.</li> </ul>

**NEPTUNE WRECKS - RISK ASSESSMENT**

				<ul style="list-style-type: none"> <li>Flares/signalling equip etc</li> </ul>	
19	Deteriorating weather	All	Medium/High (4)	<ul style="list-style-type: none"> <li>Consult latest weather and shipping forecast in advance of the dive.</li> <li>Have a contingency plan.</li> <li>Brief Diver recall system.</li> <li>Monitor weather during the dive.</li> </ul>	<ul style="list-style-type: none"> <li>Notify Coastguard of position if difficulties encountered.</li> </ul>
20	Mask squeeze	All divers	Medium (3)	<ul style="list-style-type: none"> <li>Use mask that encloses eyes and nose.</li> <li>Training in mask equalisation.</li> </ul>	<ul style="list-style-type: none"> <li>Assistance from buddy, first aider or instructor.</li> </ul>
21	Injury from falling cylinders or other heavy objects, on boat or entry into the water. Floating debris in water.	All	Medium (3)	<ul style="list-style-type: none"> <li>Cylinders to be well secured on boat and laid flat ashore.</li> <li>Weight belts and dive equip to be stowed carefully.</li> <li>Care when entering/exiting water not to collide with other divers. Enter only when directed by the Skipper or Dive Manager.</li> </ul> <p>First Aid kit to be available on site.</p>	<ul style="list-style-type: none"> <li>First aid from Buddy, first aider or Instructor as appropriate.</li> </ul>
22	Trips, slips and stumbles	All	Medium (3)	<ul style="list-style-type: none"> <li>Dive manager to brief of hazards, slippery surfaces, steps and trip hazards.</li> <li>No running on the boat.</li> <li>First Aid kit to be available on site.</li> </ul> <p>All equipment to be carefully stowed on boat.</p>	<ul style="list-style-type: none"> <li>Remove casualty from danger and administer first aid as appropriate.</li> <li>Hospitalise if required.</li> </ul>

**NEPTUNE WRECKS - RISK ASSESSMENT**

23	Contact with other water users	All divers	Medium (3)	<ul style="list-style-type: none"> <li>• Divers to dive in buddy pairs and use SMB when approaching the surface.</li> <li>• Skipper to raise 'A' flag and monitor surrounding boat traffic warning them of divers in water over radio as necessary.</li> <li>• Consult other water users and Coastguard as required.</li> </ul> <p>First Aid and O2 kit to be available on site.</p>	<ul style="list-style-type: none"> <li>• Remove casualty from water.</li> <li>• Administer first aid as required including shock.</li> <li>• Seek medical advice if necessary.</li> <li>• Hospitalise if necessary.</li> <li>• Treat buddy for shock if required.</li> </ul>
24	Failure or malfunction of O2 kit / run out of O2	All divers	Medium (3)	<ul style="list-style-type: none"> <li>• Ensure O2 kit is checked before every dive.</li> <li>• Ensure O2 kit is regularly serviced.</li> <li>• RescueEAN to be available on site.</li> </ul>	<ul style="list-style-type: none"> <li>• Administer Nitrox using RescueEAN.</li> <li>• Seek medical advice.</li> </ul>
25	<i>Illness from water quality</i>	<i>All divers</i>	<i>Low (2)</i>	<ul style="list-style-type: none"> <li>• <i>Take a water sample for analysis.</i></li> <li>• <i>First Aid kit to be available on site.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Provide first aid at the scene.</li> <li>• Seek medical advice.</li> </ul>



**DIVE PROGRAMME**

The positions of the wrecks are in an area 8 to 12 miles South and East of Bracklesham and Selsey Bill and within 5 miles radius of the Tanks & Bulldozers site. Lat/Longs are as follows;

- 50 38' .220N 000 46' .400W (Landing Craft?)
- 50 38' .577N 000 56' .464W (Barge/dumb lighter)
- 50 38' .350N 000 52' .867W (Barge/dumb lighter)
- 50 38' .317N 000 52' .833W (Barge/dumb lighter)

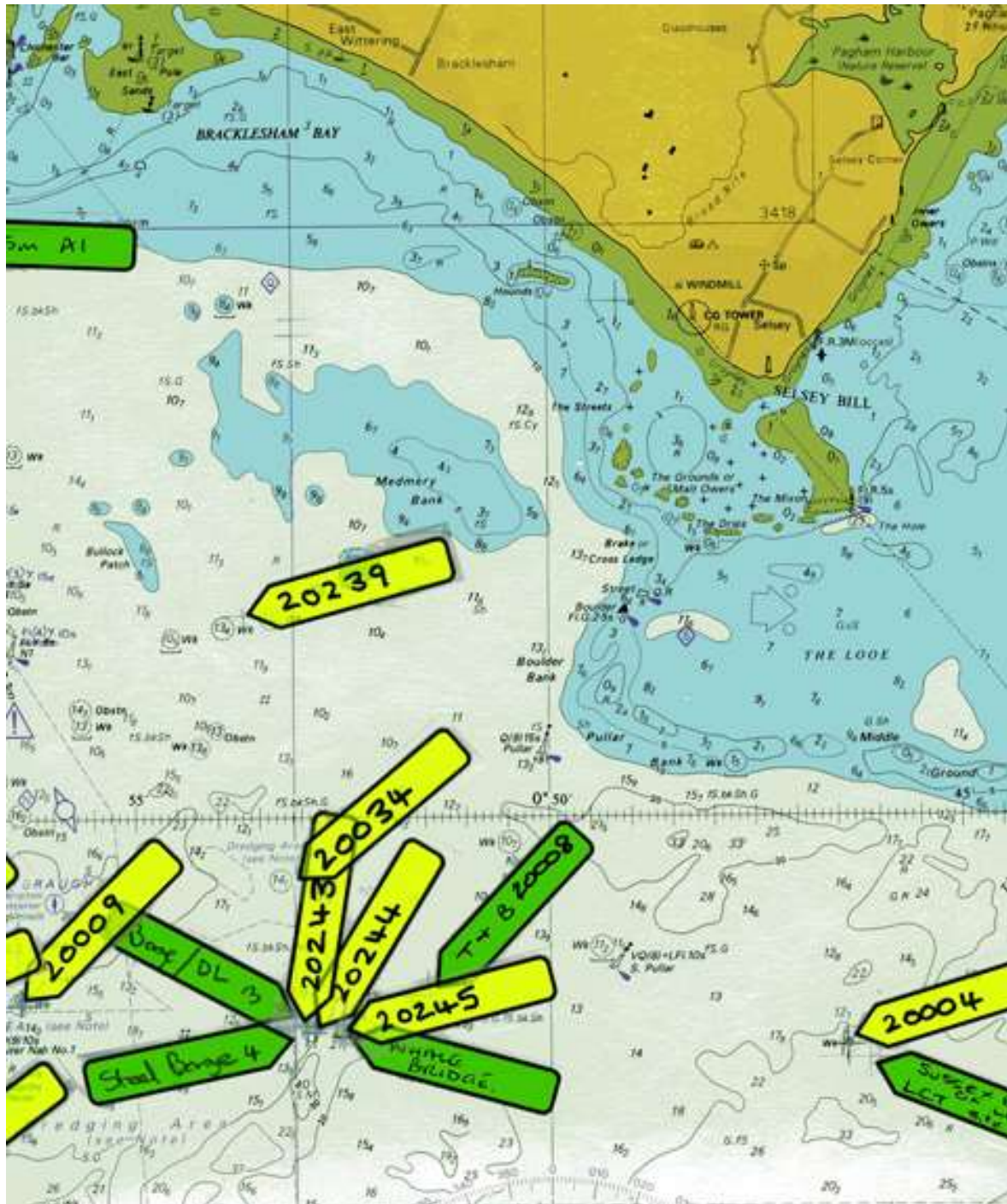


Figure 1- UKHO chart showing location of LCT (20004) and barges (20009, 20243 & 20244)

The Tidal atlas and advice from the Skipper is for diving the site 90 mins before High Water Portsmouth and 60 mins before Low Water Portsmouth. The best time being the latter and on a neap tide.

### **Exploration Dives**

Exploratory diving on the 4 wreck sites will be undertaken as tide and weather permit using a combination of the SSAC RIB and local Charter RIB 'Storm Force 8'. These initial dives are intended to locate the wreck sites and obtain accurate marks for them but also to familiarise ourselves with the environment and layout of the sites so that the survey exercise can be planned in detail. A number of days have been built into the SSAC dive schedule for 2009 for this purpose.

Passage plans, based on RIB launching at Bracklesham have been prepared.

### **Main Survey Dives**

These dives will be conducted using the excellent hard boat 'Top Gun'. TOP GUN is a (Portland 10)10 metre hard boat with a hydraulic diver recovery lift. It is powered by two large Perkins Sabre diesels and cruises with twelve divers on board at around twenty knots making travelling time to most of the wrecks around 45 minutes.

Top Gun operates under an MCA Category two (yellow) certificate (up to 60 miles offshore), and she is equipped with MCA required safety equipment that is inspected on a regular basis and has modern navigation and communication technology on board. Top Gun has a large deck space for divers as well as purpose built benches for kitting up and resting. Divers are always welcome into the comforting warmth of the wheelhouse. Hot drinks are available and there is an onboard toilet.

Tidal predictions for Portsmouth Harbour on the days of the Survey are as follows; (note: All times are expressed as BST).

<b>Date</b>	<b>HW</b>	<b>LW</b>	<b>HW</b>	<b>LW</b>	<b>Sunrise</b>	<b>Sunset</b>
Thu 6 <sup>th</sup> Aug 09	00:48 4.41m	05:56 1.20m	13:12 4.54m	18:13 1.38m	05:38	20:41
Fri 7 <sup>th</sup> Aug 09	01:22 4.52m	06:30 1.09m	13:44 4.64m	18:46 1.29m	05:39	20:39
Sat 8 <sup>th</sup> Aug 09	01:54 4.59m	07:02 1.03m	14:16 4.70m	19:19 1.23m	05:41	20:37
Sun 9 <sup>th</sup> Aug 09	02:28 4.60m	07:33 1.01m	14:50 4.70m	19:51 1.22m	05:42	20:36
Mon 10 <sup>th</sup> Aug 09	03:02 4.56m	08:06 1.04m	15:24 4.64m	20:24 1.24m	05:44	20:34

The shaded areas represent those tides which are suitable for diving the site with dive times as follows;

<b>Date</b>	<b>LW (60 mins before LW)</b>	<b>HW (90 mins before HW)</b>	<b>LW (60 mins before LW)</b>	<b>Sunrise</b>	<b>Sunset</b>
Thu 6 <sup>th</sup> Aug 09	04:56 1.20m	11:42 4.54m	17:13 1.38m	05:38	20:41

## **NEPTUNE WRECKS – DIVE PROGRAMME**

### **Annex 2C**

Fri 7 <sup>th</sup> Aug 09	05:30 1.09m	12:14 4.64m	17:46 1.29m	05:39	20:39
Sat 8 <sup>th</sup> Aug 09	06:02 1.03m	12:46 4.70m	18:19 1.23m	05:41	20:37
Sun 9 <sup>th</sup> Aug 09	06:33 1.01m	13:20 4.70m	18:51 1.22m	05:42	20:36
Mon 10 <sup>th</sup> Aug 09	08:06 1.04m	13:54 4.64m	19:24 1.24m	05:44	20:34

It is likely that some dives will be cancelled due to adverse weather and some opportunities will be either very early or late in the day which may affect the ability to dive safely. Where the diving has to be cancelled we will endeavour to finish the survey using our own or charter RIBs.

It is proposed to conduct a series of 10 dives to conduct the survey during the period 6<sup>th</sup> to 10<sup>th</sup> August 2009. The main focus will be the Landing Craft site 20004 where it is intended to spend 3 days diving, followed by 1 day at the 2 main barge sites (2 barge sites being very close together). At the end of each exercise the sites will be cleared of any lines/markers etc.

We will embark on Top Gun at Eastney/Langstone pontoon 90 mins before dive time with the view to boat leave 1 hour before dive time.

### **Search Techniques**

Initial location of the dive sites will be made by reference to the UK Hydrographic Office data, and which point echo sounders will be used to locate the wrecks. Once the wrecks have been found, shot lines will be used as a point of reference around which to conduct the detailed search of the sea bed using the boat echo sounder equipment. The wrecks may only stand one or two metres proud of the seabed and so may not be easy to locate. Another possibility would be to use a magnetometer to search the sea bed for evidence of shipwreck.

Once one or more wrecks have been marked by a buoy this will be used as the descent point for the divers who will then undertake searches on the sea bed surrounding the wreck.

Teams of divers will be deployed in 90 degree arcs from the dive site (North, East, South and West) using distance lines to increase the search area e.g. 5m for 90 degrees – clockwise direction, followed by 10m for 90 degrees anticlockwise direction etc. In the event of another point of interest being found its approximate distance and bearing will be recorded and a SMB deployed to mark its point at the surface.

Once the area surrounding the wrecks has been searched and marked a rough site plan will be established and used for the more detailed survey on the following days.

### **Dive Management**

All diving operations will be conducted in accordance with BSAC 'Safe Diving Practices' 2009 and will be overseen by the Branch Diving Officer (Martin Davies) or his appointed Dive Manager(s) as appropriate. It is essential to work with the Skipper, who has ultimate responsibility for the boat will ensure the safe and successful outcome of each days diving. All divers will receive a daily brief on the safety of the boat and its equipment as well as a

more general diving brief (SEEDS) relating to the diving activities, survey exercises and hazards/risks.

Buddy pairs will be established based on experience, capability, dive plans and the specific objectives of the dives. Initially experienced divers with Search and recovery skills will be needed to find the wrecks and other points of interest. After the wrecks have been located and marked it will then be a more routine but carefully planned measurement exercise where all members can get involved. Following which the photographic, video and marine life exercises can take place. Matching these tasks to divers/buddy pairs' experience, skills and availability will need to be carefully managed. With so many divers expressing a wish to take part (almost half the club membership) it may also present quite a challenge to try to give everyone the opportunity to get involved. Using the Club RIB will provide additional opportunities to take part.

All divers will carry DSMBs and have an Alternative Air Source and other safety equipment (e.g. knives/cutters/torches/strobes). Buddy checks will be conducted before each dive. There will be a diver log kept by the appointed Dive Manager recording the details of each divers air in/or, depth, time etc. The Dive Manager will also operate a diver 'count' system to ensure that all divers are accounted for at the end of each dive.

The relatively shallow depth (15-25m) means that there are no special requirements for long decompression/trapezes etc and there are no known hazards such as overhead environments etc to consider. This should mean that the diving routines can be relatively simple although there is a possible task loading issue, which with training and practice can be minimised.

All safety equipment (O2 and First aid kits etc) will be checked before each dive and O2 administrators/first aiders will be identified as a part of the briefings.

### **Dive Plans**

The depth of the wrecks is such that there is benefit from the use of Nitrox by all divers who are qualified to do so. The use of Nitrox 36% will reduce the possibility of DCI and extend the bottom time to the point where multiple dives, possibly over several days can be safely undertaken without the need for decompression.

SSAC is fortunate to have its own Nitrox membrane compressor which can deliver Nitrox up to 40%. Following the installation of the compressor the majority of divers within the Branch are now qualified in the use of Nitrox and those in training will be able to use it once they have qualified. The use of Nitrox will therefore be widely promoted and recommended for the survey exercise, though will not mandated.

Two indicative dive plans have been produced to reflect a typical diving day as a part of the survey exercise – one for Air and one Nitrox 36% (using BSAC 88 and Nitrox tables). For twin set and Re-breather divers a longer dive time will be possible.

### **Dive Plan – Air**

#### **Dive 1**

<b>CTC</b>	<b>A</b>				
	<b>Depth</b>	<b>Dive time</b>	<b>9m stops</b>	<b>6m stops</b>	<b>Surfacing Code</b>
<b>Plan</b>	24	20	0	0	F
<b>Just Longer</b>	24	24	0	0	F

## NEPTUNE WRECKS – DIVE PROGRAMME

### Annex 2C

<b>Just Deeper</b>	27	20	0	0	F
<b>Worst Case</b>	27	24	0	0	F

Surface Interval 5 hours

#### **Dive 2**

<b>CTC</b>	<b>B</b>				
	<b>Depth</b>	<b>Dive time</b>	<b>9m stops</b>	<b>6m stops</b>	<b>Surfacing Code</b>
<b>Plan</b>	24	20	0	1	G
<b>Just Longer</b>	24	24	0	1	G
<b>Just Deeper</b>	27	20	0	1	G
<b>Worst Case</b>	27	24	0	3	G

#### **Indicative Air requirements**

(Assumes 25 SLM breathing rate and 1/3<sup>rd</sup> reserve and 15L cylinders).

#### **Dive Plan 20 mins at 24m = 3.4 bar Absolute**

15L x 232 bar = 3480L free air

80 bar reserve = 1200L reserve

3480 – 1200L = 2280 available air

3.4 bar x 25 SLM x 20 mins = 1700L

Leaving 580L free (+1200L reserve)

**Dive Plan Nitrox 36%****Dive 1**

CTC	A				
	Depth	Dive time	9m stops	6m stops	Surfacing Code
Plan	24	30	0	0	D
Just Longer	24	35	0	0	D
Just Deeper	27	30	0	0	D
Worst Case	27	35	0	0	E

Surface Interval 5 hours

**Dive 2**

CTC	B				
	Depth	Dive time	9m stops	6m stops	Surfacing Code
Plan	24	30	0		F
Just Longer	24	35	0	1	G
Just Deeper	27	30	0	1	G
Worst Case	27	35	0	1	G

**SURVEY PROGRAMME****DAY 1 - Thursday 6th August – Landing Craft Site****Dive 1 - Dive Time 11:42 - High Water dive**

**Exercise:** Locate wreck, shot and begin search of surrounding area using 4 diver buddy pairs searching in a 90 degree pattern. Mark each corner of wreck site, note distance, and direction/bearing.

**Dive 2 – Dive time 17:13 - Low Water dive**

**Exercise** Continue search to extend the site area and possibly identify additional points of interest, taking note of distance/relation to other artefacts. Compose a rough outline map which will allow a Base Point to be selected.

**DAY 2 - Friday 7 August – Landing Craft Site****Dive 1 – Dive Time 12:14 - High Water dive**

**Exercise** Continue search patterns in wider area and rope together. Set up Base Point which will form the point that all objects are measured from. The Base Point needs to be fairly central in the site. Mark 'Control Points'.  
Photo and video

**Dive 2 – Dive Time 17:46 - Low Water dive**

**Exercise** Take measurements from the Base Point to the Control Points will be taken. Mark other Points of Interest (POI) etc. Photo and video.



**DAY 3 – Saturday 8<sup>th</sup> August – Landing Craft Site**

**Dive 1 – Dive Time 12:46 – High Water dive**

**Exercise** Continue measurements (distance and bearing) between each artefact/point of interest from Control Points to Base Point.  
Sea Search survey.  
Photo, sketch & video

**Dive 2 – Dive Time 18:19 – Low Water dive**

**Exercise** Site clear up.

**DAY 4 – Sunday 9<sup>th</sup> August - Barge site 20009**

**Dive 1 – Dive Time 13:20 - High Water dive**

**Exercise** Locate wreck, identify position/orientation, depth, length & beam etc.  
Photo, sketch, video.  
Attach control points for measurements.  
Begin SeaSearch survey by those qualified to do so.

**Dive 2 – Dive Time 18:51 - Low Water dive**

**Exercise** Measurements, Seasearch and perimeter search. Remove control points clear site.

**DAY 5 – Monday 10<sup>th</sup> August - Dive site 20243 & 20244**

**Dive 1 – Dive Time 07:06 - Low Water dive**

**Exercise** Locate wrecks, identify position/orientation, depth, length & beam etc.  
Photo, sketch, video.  
Attach control points for measurements.  
Begin SeaSearch survey by those qualified to do so.

**Dive 2 – Dive Time 13:54 - High Water dive**

**Exercise** Measurements, SeaSearch and perimeter search.  
Remove control points clear site.

**Initial ‘Debrief’ that evening at the club house – All invited!**

# NEPTUNE WRECKS PROJECT REPORT

## Part 3 - DIVING ACTIVITIES

### General

Whilst the majority of dives were conducted during the main programmed survey opportunities to dive the sites initially selected for the Neptune Wrecks were also sought in order to better inform the survey planning. In addition we also took the opportunity to visit a number of other sites which were also believed to be connected to Operation Neptune. All diving was conducted in accordance with BSAC Safe Diving Practices and there were no incidents on any of the dives.

### Location of Sites

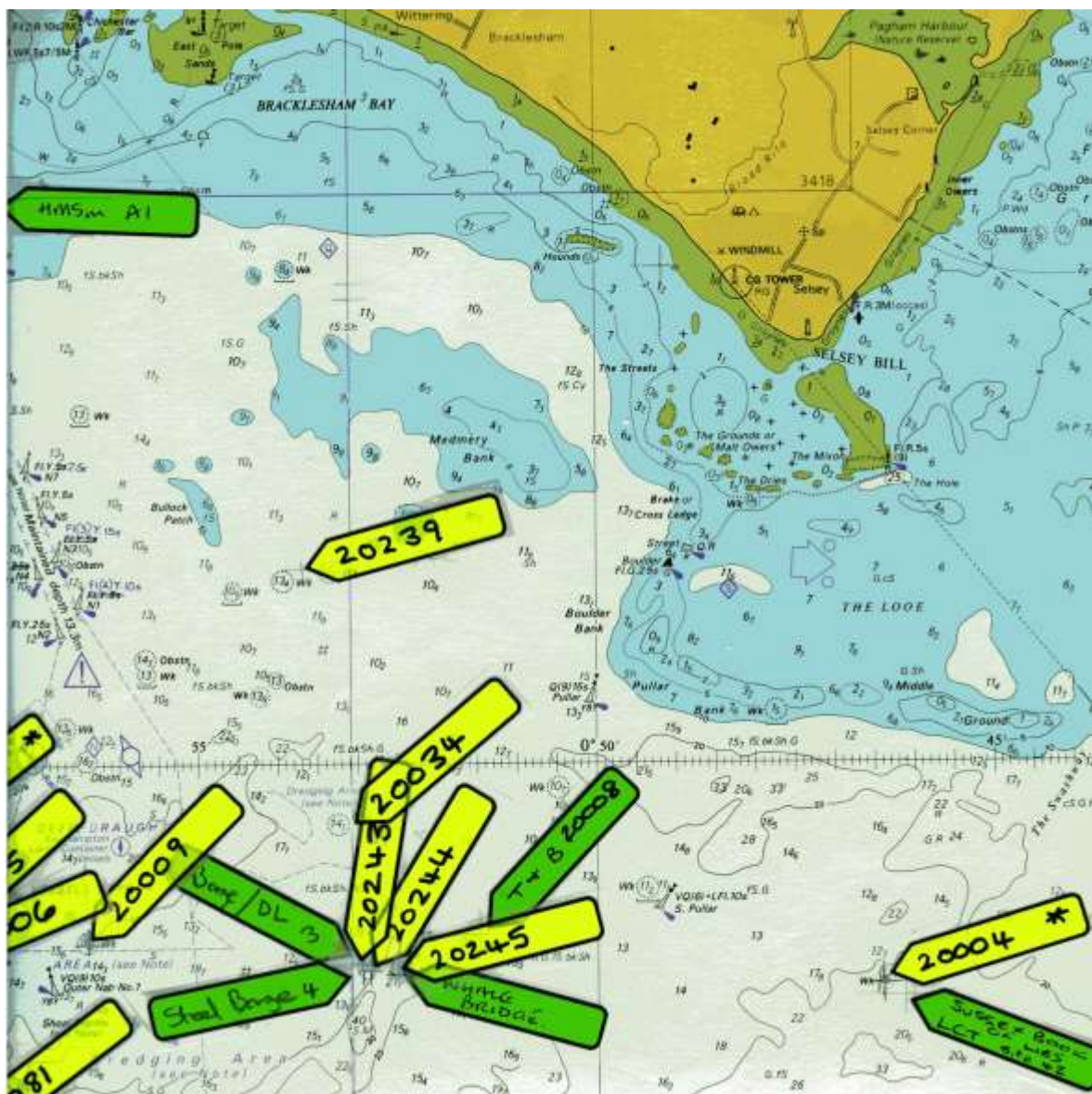


Figure 2 - Chart showing position of Dive Sites

All sites were within the Selsey to Portsmouth area and the majority of sites are 20m deep or less. Only the LCT site UKHO 19117 was deeper at 30m. In general dive times were up to 60 minutes but were dependent on depth, diver, cylinder size/gas and tides.

## Dive Boats

The main survey was conducted and managed from the boat Top Gun with diving also taking place from Storm Force 8 and the Club RHIB 'Alan Blake' when possible for exploratory or additional survey work.

- Top Gun. Owned by Liisa and Dave Wallace of Silent Planet Ltd, Top Gun is a very well equipped dive boat with diver lift and a full range of safety and navigational equipment. Based in Portland she was brought to Portsmouth specifically for the survey.



Figure 3 - Top Gun, our dive platform for the main survey (Image Martin Davies)

- SSAC RHIB 'Alan Blake'. Named after our Branch founder chairman 'Alan Blake' is a small 5.2m Avon RHIB. Now almost 20 years old and beginning to show her age, the RHIB has recently invested in Alan Blake using prize funds from the 'Peter Small Award' by installing a new fuel tank under the console to increase the distance/range and also makes available more deck area for divers and their equipment. A new GPS was also purchased with monies from the Peter Small Award. The branch has also recently installed a stainless steel 'A' frame which will provide additional storage for safety equipment.





Figure 4 - SSAC's RHIB 'Alan Blake' (Image Alison Mayor)

- 'Storm Force 8' Southern Coast Charters. Operating from Bracklesham beach in West Sussex, Storm Force 8 is a 8.6m fully equipped RHIB capable of taking 12 divers. Skipper Simon Bradburn has been kindly helping us with our research and was the one who told us about the solitary Valentine tank in Bracklesham Bay. His boat is ideal for trips to the Tanks and Bulldozers site.

## Main Survey (6<sup>th</sup> to 10<sup>th</sup> August 2009)

For each dive from Top Gun a daily dive manager was appointed who recorded divers in and out of the water along with dive times and maximum depths as well as providing additional assistance and safety cover. Briefings were conducted before each dive and buddy checks carried out. A tag system was used as an extra safeguard to check that all divers had returned from diving operations. Minimum decompression diving was required due to the relatively shallow depths and the use of Nitrox gas. Divers either returned to the shot line or put up a delayed SMB if they were unable to return to the shot line.



Figure 5 - Divers kitting up for a dive (Image David Purvis)

There were two dives a day planned making use of both slack waters, the boat collected divers from the Eastney pontoon and then travelled to the site, the journey time of around 45 minutes. The weather was very good for the first four days with calm, warm and sunny conditions being enjoyed by the team. However the final day saw the weather break with strong winds from the West being forecast. We therefore cancelled the final day and Top Gun returned to Portland immediately after the dive on Sunday 9<sup>th</sup> August. The following dives were completed;

6 <sup>th</sup> August	2 dives on site 20004 (LCT)
7 <sup>th</sup> August	2 dives on site 20004 (LCT)
8 <sup>th</sup> August	1 dive on site 20004 (LCT) + 1 dive on site 20244 (Barge)
9 <sup>th</sup> August	1 dive on site 20009 (Barge)
10 <sup>th</sup> August	cancelled due to poor weather

A full list of those who took part in the survey is at Annex 3A.

For site 20004 (LCT) the shot line was deployed on the wreck and tied into the wreck, divers descended the shot each dive and this formed a reference point for the rest 5 dives on the site during the survey. From this line divers moved out in different directions to search for various parts of the wreck. Sites 20009 and 20244 were only dived one during the main survey and so a permanent shot was not required.

## **Statistics**

A total of 18 divers performed 37 dives during the survey period over the 4 days, with one day (10<sup>th</sup>) being lost due to poor weather.



Figure 6 - Descending the shot line (Image Alison Mayor)

## **Site 20004 – ‘Patch’ Landing Craft Tank**

The wreck of the ‘Patch’ landing craft lies at a general seabed depth of between 18 to 22m on a mixed seabed of rock, sand and shingle. The wreck itself is distributed within an estimated area of 100m by 30m. The craft itself has broken into its 3 sections and these separated sections now form the basis of the main wreckage.

All diving was done on Nitrox mixes between 32 and 36%, this would maximise dive times within the slack water period. Slack water was calculated at 1 ½ hours before HW and 4 ½ hours after HW. The slack water period was around 45 minutes before any significant current would start to run.

The general visibility on the site was around 3 to 4m; this was reasonably good for the area that the wreck lays. The wreck is difficult to find as there is not a great deal raised off the seabed. The stern area still forms a lump on the echo sounder as does the remains of the bulkhead structure which was nick-named the “goal posts”.





Figure 7 - Measuring the LCT propeller (Image Martin Davies)

After the discovery and reporting of the large bomb found at the site the Coastguard placed a 1 mile exclusion zone around the site. This meant that we were unable to visit the site to carry out further survey work until it was dealt with and the site made safe some 8 weeks later, by which time the weather had closed in.

### **Site 20244 - Barge**

This barge was a difficult target to find and took a lot of skill and understanding of how the wreck was lying in order to spot it and dive it. Previously we had done a side scan sonar survey of the site and again although we had identified the wreck's position it was a small target and appeared to be upright on the bottom.

One dive was carried out on the site; the wreck does lie upright on a sandy silt seabed. Measurements and photographs were taken to try to establish the type of the vessel and what it had been used for.

The wreck lies in a general depth of 20m, the barge is around 15m long and intact, it is not clear how the vessel sunk, there is some impact damage towards the bow on the port side, but this does not look sufficient to sink the craft.

The dive was done whilst still with a current running and so added to the challenge of survey measuring and photography. Again the use of Nitrox gas was made extensive use of in order to gain as much information during the dive. The visibility on the site was around 3 to 4 m and it was difficult to move away from the wreck to gain an appreciation of how it was lying on the seabed as conditions would not allow. The shape of the barge made it difficult to determine the bow or stern and

also because there was no form of propulsion or steerage. From the information gained it is estimated that the barge is upright and laying on its starboard keel. The construction of the barge suggested that it was some kind of mooring platform with bollards on each of the 4 corners. No engine or propelling mechanism was seen, the barge was covered mainly with a small single open hatch way.

### **Site 20009 - Barge**

One dive was completed on this barge during the main survey. Reported originally as some kind of water/oil carrier the large cylinder has been wire swept and the cylinder was not evident on the wreck. The Barge lies at 20m and was dived on slack water. The structure that is left is mainly the ribs and bulkheads, it is not clear whether the barge was propelled or towed, and a lot of the structure has collapsed inward. Some artefacts were seen around the perimeter and embedded in the seabed which is hard clay covered in shingle. The barge sits upright. The site has been fished heavily and there is a lot of line and pots around and over the wreck.



Figure 8 - Poor visibility at the site made video and photography difficult videoing the barge spare propeller (Image Alison Mayor)

Visibility on the site was generally 2-3m but with a lot of particles in the water and it was quite dark. Measurements and photographs along with some video footage were taken despite the challenging conditions.

### **Site 20043 Barge/Obstruction**

We were unable to locate this wreck, with the description of the barge being on the edge of an underwater cliff face, this was not visited and is to be the subject of further investigation.

### **Other dives carried out on NEPTUNE wrecks**

In addition to those dives carried out as part of the main survey the following dives were also carried out by members of the Branch as either pre-survey or additional survey using the Club RHIB 'Alan Blake' or charter RHIB Storm Force 8'.

<b>Date</b>	<b>Site</b>	<b>Vessel</b>
26 April 2009	UKHO 19117 – LCT	Alan Blake
24 May 2009	UKHO 20009 – Barge	Alan Blake
11 August 2009	UKHO 20009 – Barge	Alan Blake
13 August 2009	Valentine Tank	Storm Force 8
27 September 2009	UKHO 20008 Tanks & Dozers	Storm Force 8
4 October 2009	Valentine Tank	Alan Blake
2 May 2010	Tanks & Bulldozers	Storm Force 8
23 May 2010	UKHO 19117 – LCT	Alan Blake

### **Site 20009 Barge**

Two dives were made from SSAC's RHIB, the first was an exploratory dive having located the wreck and the second just after the main survey was complete to recover a propeller that had been discovered on the deck of the barge. The Propeller was to be cleaned and examined for evidence of makers name to assist in the identification of the wreck. The propeller was made out of bronze and weighed 28Kg.

### **Tanks & Bulldozers**

Two dive trips were completed on the Tanks & Bulldozers site with 8 divers on both occasions. These were visit of the site to confirm all was well as part of the NAS adopt a wreck scheme but also to examine the 'porpoises' to look for more clues as to whether they were they are more likely to be part of the door ramp assembly from the LCT. This was also an opportunity for a number of new members to the club to dive the site. The first dive was in reasonable conditions with relatively good visibility, however it also coincided with another charter boat (Wittering Divers) placing divers on the site which proved to be too many to be able to conduct any meaningful work. The second dive, in May 2010 was in difficult sea conditions and with very poor visibility. Only two pairs of divers from the trip found the wrecks.

### **Valentine Tank – Bracklesham Bay**

Two short dives were made on this wreck which is not believed to be recorded by the UKHO. The tank sits upright on a sandy seabed with no other wreckage around. The depth of the wreck is 14m. Four divers from SSAC have visited the site.

Photographs were taken to formally identify the tank which has been confirmed as a Valentine DD Tank. There are with no obvious clues as to how it got onto the seabed

and we could not locate the small propeller that would have been used to drive this 'swimming tank'. The propeller may be buried in the seabed.

### **Site 19117 - Landing Craft Tank**

Two dives have been carried out from 'Alan Blake' on this 30m deep site which lies close to the shipping channel to the east of Portsmouth. Careful planning is required before visiting this dive site to take account of the tidal streams/current and shipping. The first dive was dark and with poor visibility. It was evident that the wreck was very intact but divers were not able to do much more than feel their way around. A more recent visit to the site, in better visibility but still with a plankton bloom allowed some more detailed observations to be made.

### **Bomb Disposal**

Following the discovery and reporting of the bomb found at site 20004 (LCT (A) 2428) the Club worked with the Royal Navy Bomb Disposal Team to help them locate the wreck site and in turn the bomb. Diving Officer Martin Davies was able to accompany the Southern Diving Unit 2 team in their fast RHIB to locate the wreck site. Unfortunately the RN divers could not locate the bomb on this occasion but did locate, remove and destroy the bomb on their next visit to the site a few days later. Martin's first-hand knowledge of the site was a great assistance to the RN EOD team.

Enclosure;

Annex 3A – Diver Schedule for main survey

## NEPTUNE WRECKS

## DIVER SCHEDULE

Date/diver	6 <sup>TH</sup> AUG (THUR)	7 <sup>TH</sup> AUG (FRI)	8 <sup>TH</sup> AUG (SAT)	9 <sup>TH</sup> AUG (SUN) pm	10 <sup>TH</sup> AUG (MON)
1	ALISON MAYOR	ALISON MAYOR	ALISON MAYOR	ALISON MAYOR	ALISON MAYOR
2	MARTIN DAVIES	MARTIN DAVIES	MARTIN DAVIES	MARTIN DAVIES	MARTIN DAVIES
3	LIISA/DAVE WALLACE	LIISA/DAVE WALLACE	LIISA/DAVE WALLACE	LIISA/DAVE WALLACE	LIISA/DAVE WALLACE
4	STUART QUEEN	MARK HOBBS	JIM FULLER	JIM FULLER	STUART QUEEN
5	JIM FULLER	JIM FULLER	JIM SMITH	PETE DOLPHIN	JIM FULLER
6	JIM SMITH	JOHN STRUTT	TOM TEMPLETON	JAMES SEPHTON	PETE DOLPHIN
7	DAWN BARNARD	JIM SMITH	DAVE PURVIS	RICHARD HOBSON	JIM SMITH
8	PHILL JACKSON	PHILL JACKSON	DEREK BOWER	PHILL JACKSON	RICHARD HOBSON
9		JAMES SEPHTON (pm)	TONI BATES	TONI BATES	PHILL JACKSON
10		POLLY BUCKINGHAM (PM)	DAVID BANKS	DAVID BANKS	STEVE HULL
11			PHILL JACKSON	POLLY BUCKINGHAM	JANE MADDOCKS
12			RICHIE ROSS		
			POLLY BUCKINGHAM		
MANAGER	JOHN STRUTT			TOM TEMPLETON	TRACY JACKSON?



# **NEPTUNE WRECKS PROJECT REPORT**

## **PART 4 - SURVEY FINDINGS**

This section covers the results of our survey activities for each of the wreck sites investigated by members of SSAC. Our project adopted a number of survey techniques ranging from basic measurement/sketching and manual recording to more visual photographic, video and side-scan sonar recordings. For the first time we also used Site Recorder 4 SE® software to model our measurements of the Landing Craft site (20004).

### **Side-Scan Sonar**

The Nautical Archaeology Society (NAS) had recently acquired a side-scan sonar and kindly let us trial it for our survey in return for a small donation. We tried out the equipment on three occasions with increasing success as we got used to the equipment. We learnt that conditions need to be very good to obtain reasonable results and the attitude of the 'tow fish' in the water and speed of the boat are critical to obtaining good results. With a degree of trial and error and plenty of patience we have some good images of some of the survey sites and also others we used in the practice sessions.



Figure 9 -Side Scan Sonar equipment kindly loaned by Nautical Archaeology Society (NAS)

The initial attempt at using the side-scan did not provide any meaningful images but did give us an opportunity to test the setting up – in particular to the DGPS which we also installed to obtain accurate positioning data and also the laptop/software etc. The sea was too choppy and we did not have the attitude and weighting of the tow-fish correct but learnt a great deal from this exercise.



Figure 10 Diving Officer Martin Davies launching the side-scan sonar 'fish' (Image Alison Mayor)

Our second attempt was much more successful, and we examined a number of local wreck sites to test the equipment and our techniques for its use. Our third attempt was between dives on the main survey and as conditions were not ideal, again produced a limited result.

During our practice we obtained the following images of local sites – which are included here for general interest. The results for each of our Neptune Wrecks are included in the relevant sections below.

### **Side-Scan Trials**

#### **The site of the Mary Rose 'Hole'**

We passed over the wreck site of the historic Tudor warship 'Mary Rose' which was discovered by a team of Southsea Sub-Aqua Club members led by Alex McKee and first dived in 1966. The main section of the Mary Rose hull was raised from the

seabed in October 1982. The wreck site remains protected under the Protection of Wrecks Act (1973).



Figure 11 Permanent buoy marking the position of the Mary Rose Protected Historic Wreck (Image Alison Mayor)

In the top half of the image below shows the dark shadow caused by the large crater left in the seabed after the Mary Rose was lifted in October 1982. The bright echo to the bottom of the hole is from the diving platform 'Keepclear' which sank in gales in August 1973.



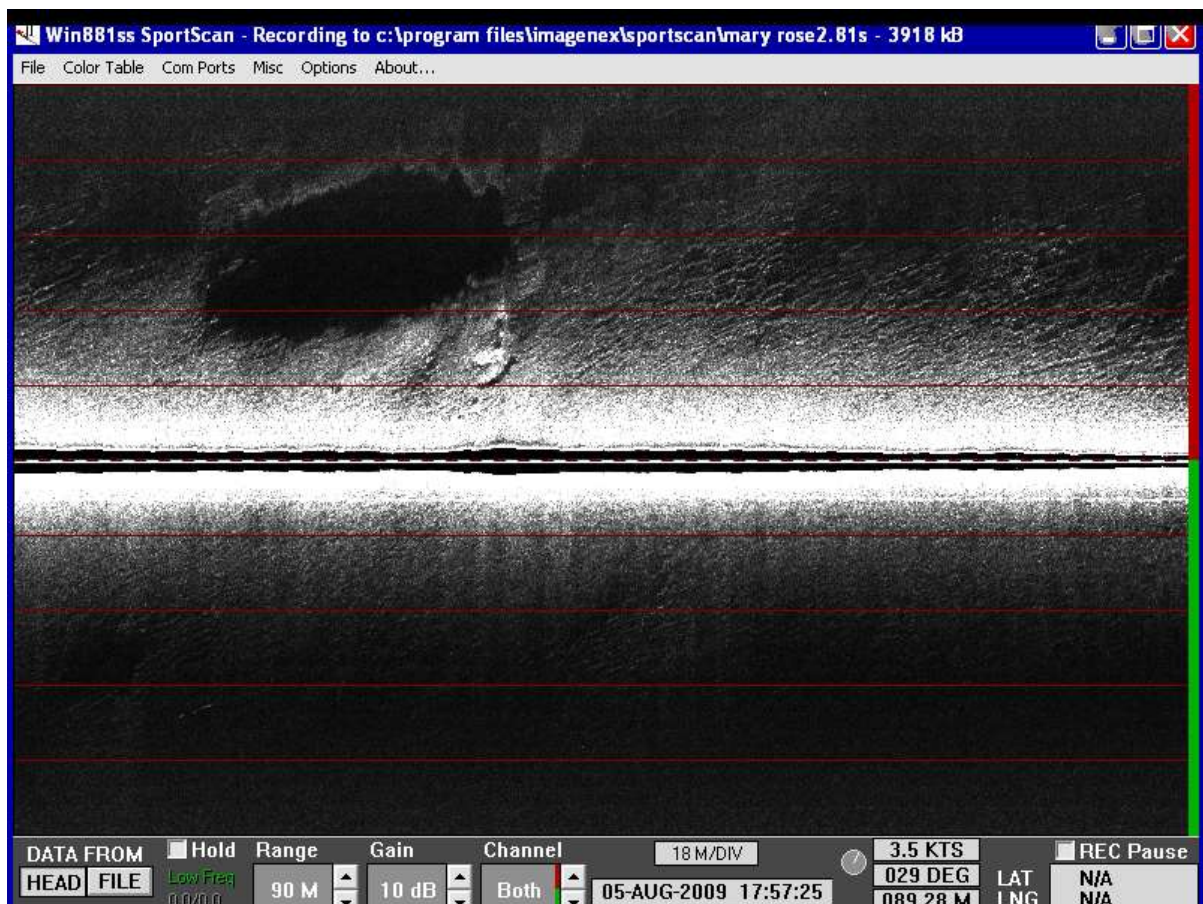


Figure 12 Side scan image of the Mary Rose site

## The Site of the Royal George

**HMS *Royal George*** was a 100-gun [first-rate ship of the line](#) of the [Royal Navy](#), built at [Woolwich Dockyard](#) to the draught specified by the [1745 Establishment](#), and launched on 18 February 1756. She sank at [Portsmouth](#) on 29 August 1782 with the loss of more than 800 lives.

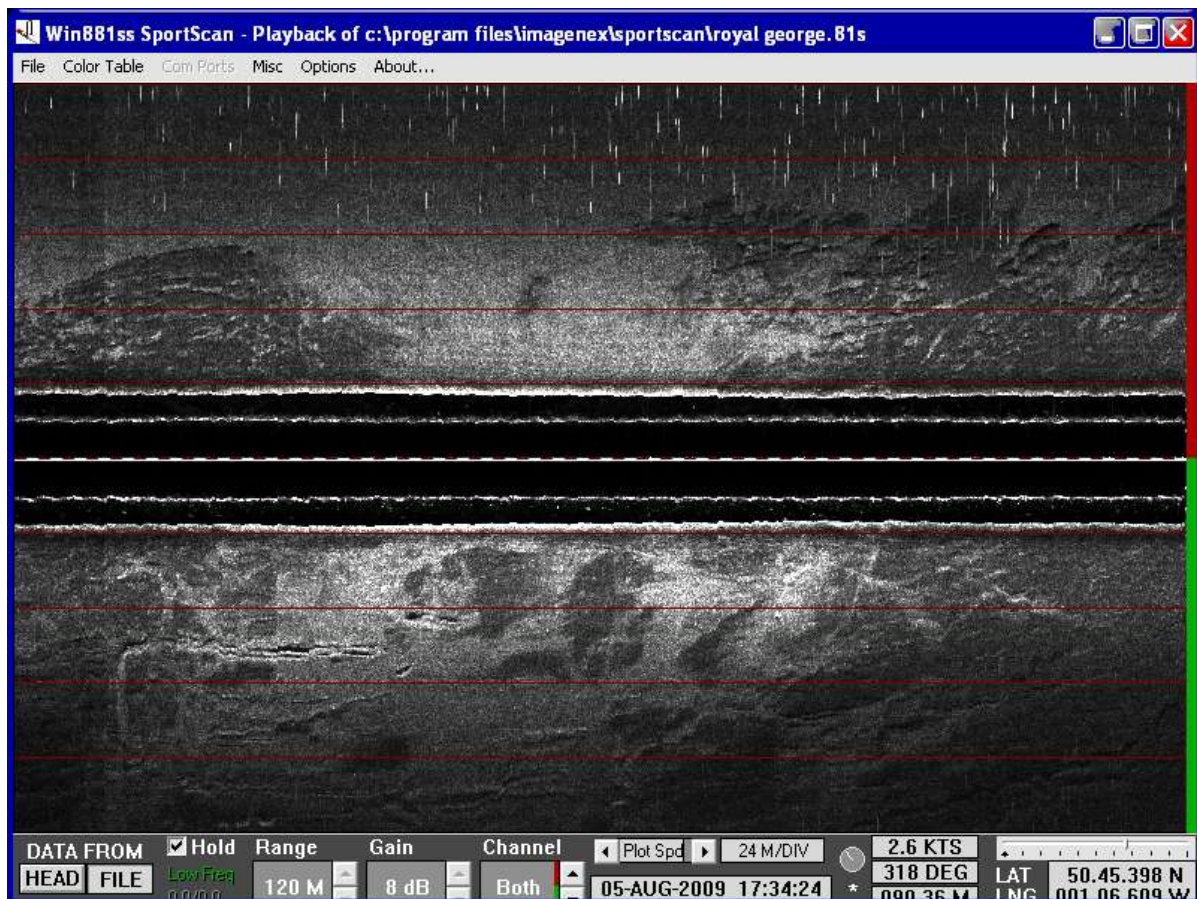


Figure 13 Side Scan Image of the Royal George site.

We used the side-scan to investigate the site of the Royal George, which had been salvaged on a number of occasions. The resulting image above shows that there is no significant as structure left. The markings in the bottom left are possibly the results of large anchors disturbing the sea bed.

Having learnt to use the equipment we then used the side-scan sonar to investigate some of our Project 'Neptune' wreck sites to inform the diving part of the survey.

The following sections relate to the findings of our side-scan and diving survey carried out on WW2 wrecks believed to be associated with Operation NEPTUNE – the maritime phase of Operation OVERLORD - The invasion of Normandy by sea and the liberation of France.

## **Survey Findings Index**

- 1 - Site 20004 – Landing Craft Tank (LCT)
- 2 - Site 20009 – Barge or Dumb Lighter
- 3 - Site 20244 – Barge
- 4 - Site 19117 – Landing Craft Tank
- 5 - Site unknown - Valentine Tank
- 6 - Site 20008 – Tanks and Bulldozers

### Enclosures

- |         |  |
|---------|--|
| Annex A | Site Plan 20004 (LCT) (Site Recorder).                     |
| Annex B | Site Plan 20009 (Barge).                                   |
| Annex C | Sea Search Survey sheets for 'Neptune Wrecks' sites.       |
| Annex D | UKHO Datasheets for 'Neptune Wrecks' sites as appropriate. |

## **1. SURVEY OF THE LANDING CRAFT SITE – UKHO 20004.**

### **General position/observations**

This wreck site was the primary candidate for the LCT(A) 2428. Known locally as the 'Patch' Landing Craft it has been charted for many years and regularly dived.

The position of the wreck according to the UKHO data sheet<sup>1</sup> was given as - 50 38'.220 N : 000 46'.400 W but this proved incorrect and our skipper David Wallace began a systematic search of the area finally locating the wreck at -50 38'.457 N : 000 46'.490W some 452m away (346 degrees true). The site is 6km or 3.7 miles east from the Tanks and Bulldozers wrecks.

The wreck lies in a North / South direction at a depth of between 17m and 21m dependent on tide. The wreck is reported by the UKHO as upside down, which would align with the survivor's report <sup>2</sup>of the capsizing of LCT (A) 2428 and it floating for some time before finally being sunk by gunfire. The UKHO data sheet also records that the site was wire swept on 13 June 2003. This may also have significantly contributed to the break-up of the wreck. The wreck now lies in a number of main sections –

- the stern section, where the engines, guns, winches, rudders, propeller, batteries, bulkhead and armour plating can be found,
- the mid section, where the other bulkhead, deck plate, ammunition and bomb were found,
- the front section where what we believe to be the bow door was found, and
- the debris field, where a number of smaller artefacts were found.

We used a variety of techniques to survey the site which is well dispersed. Visibility ranged from 2m to 4m at best and slack windows were on average about 30-40minutes. Lines established between key points were frequently broken by an accumulation of seaweed and strong currents and this hampered some of the survey work. Nevertheless we still managed to develop a basic site plan of key points of interest and recorded a number of artefacts and pieces of wreck structure which we believe support the theory that the wreck is that of LCT(A) 2428.

### **Side-Scan Survey**

The side-scan proved tricky due to sea conditions and tide. We struggled to get a slow enough pass and only managed to have one clear run which produced the image below.

The wreck site is dispersed and mostly flat, though there is some wreckage visible on the display in the lower part of the image. We believe this to be the stern of the vessel showing 3 engines in the centre (pointing upwards). The bright reflection above the engines is a piece of wreckage where the guns, propeller and winches

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<sup>1</sup> UK Hydrographic Office Wreck Data Sheet No 20004.

<sup>2</sup> ADM 199/1650 HM Ships and Vessels lost: survivors' interrogation reports, etc. (Survivors Reports)



can be found. To the left and right of the 3 engines are sections of bulkhead and armour plating.

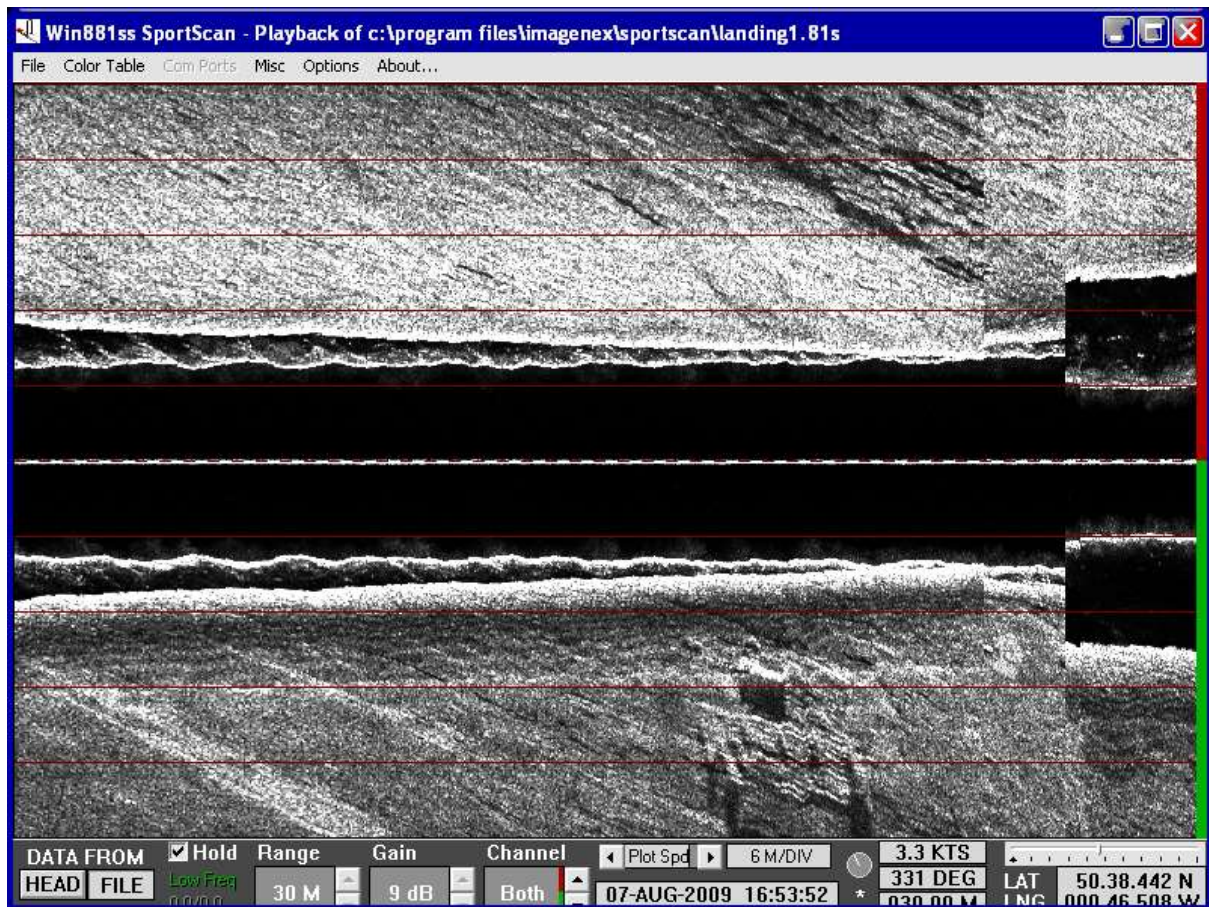


Figure 14 Side Scan Image of the Landing Craft site 20004.

### **Diving Survey of 20004**

A total of 5 dives were made with buddy teams examining various parts of the wreck site. The teams examined the 5 main elements of the wreck.

- 2 pieces of bulkhead frame which became to be known as the 'Goal Posts'
- 3 engines,
- Stern area with propeller, rudder, winches and 2 guns
- Deck and plating
- Debris field including a large bomb and other ammunition.

The total area of the wreck site is significantly more than the basic measurements we took between the main structures and in the poor visibility we did not examine the whole site. One or two buddy pairs missed the main site on the early dives, again because of poor visibility and lines being lost as a result of seaweed and tide. However, a general picture of the site was able to be compiled by reviewing all the diver observations/records and the images/video/side-scan images that had been taken. This was then compared to a detailed schematic and historical photographs found during our research.

## **Site Plan**

Measurements were taken of the goal posts, engines, propeller, deck plating and between three major points of interest – Goal post 1, deck plating and the bomb. The data recorded was input into Site Recorder 4® software resulting in the schematic at Annex A.

The site plan mapping key elements of the site was prepared by SSAC member Jim Fuller based on the measurements taken by a number of SSAC divers over the 5 dives conducted on the site. The measurements to the large WW2 bomb will now be meaningless as the bomb has been removed and disposed of by the Royal Navy SDU Explosive Ordnance Team.

## **Observations and Points of Interest**

### **Goal Posts**

There were 2 pieces of wreck structure which resembled 'goal posts' at the site. The first set, nearest to the shot line was easily identified as it had 3 pipes which ran along its length. They both measured 9.8m (32 feet 6 inches) wide which closely matches the beam or width of a LCT Mk 5. These are assumed to be the remains of bulkheads separating the 3 sections of landing crafts construction.



Figure 15 Image of the 'Goal Post' 1 showing the three pipes that run its length. (Image Martin Davies)

The 2<sup>nd</sup> goal post was close to the engines and at right angles to them. There were some remnants of the sides and armour plating attached to this bulkhead.



Figure 16 - Goal Post 2, showing debris field near engines and part of vessel side (Image Martin Davies).

## **Engines**

We found 3 engines laying parallel to one another and close to the 2<sup>nd</sup> goal post. The engines had prop shafts leading from them but only one could be traced to a propeller. (See below).





Figure 17 - One of three engines and Goal post 2 in the background (Image Martin Davies)

The engines are in good condition but upside down and there were no visible markings. There appeared to be a clutch or small hydraulic gearbox assembly on the engines. They had 5 manifolds (10 pistons) and were 7 feet long to the drive shaft. Further survey work is required to aid identification of the engines is required.

In the vicinity of the Engines were several large batteries and electrical components.



Figure 18 - Batteries and wiring (Image Martin Davies)

### **Propeller**

The three propeller shafts leading from the engines were visible to varying extents. They were bent at right angles to the engines. Two shafts disappeared into the sea bed and under wreck structure but one of the shafts still had the propeller exposed. The 4 bladed propeller appeared to be very similar to the two propellers found at the tanks and bulldozers site with a dimension of 37" diameter – the same was used on Mk5 Landing Craft Tanks. The propeller is not thought to be bronze, but possibly steel and is very similar to the two propellers found at the Tanks and Bulldozers site.



Figure 19 - Propeller - 4 blade and 37 inch diameter (Image Martin Davies)





Figure 20 - Propeller shaft. (Image Martin Davies)

## Rudders

Mk 5 LCTs had 2 rudders and we found two rudders at the site, close to the propeller.



Figure 21 - One of two rudders found at the site (Image Alison Mayor).

## Guns

LCT (A) Mk 5 were armed with two 20mm Oerlikon anti-aircraft guns which were mounted on the bridge section of the Landing Craft. We discovered two gun assemblies at the wreck site one of which was complete. The second gun turret was missing the gun barrel and we believe this may be at the Tanks & Bulldozers site though we need to do more work to establish this connection.



Figure 22 - Turret and breach of one of the 2 guns found at the site. The 2<sup>nd</sup> is missing the barrel. (Image Alison Mayor)

## Winches

There appear to be 2 winches at the wreck site near the guns, rudder and propeller and these are believed to be that used to deploy/recover the landing crafts kedge anchor. No anchor was found at the site but there is a large anchor at the tanks and bulldozers site tucked just under a tank.



Figure 23 - One of two winches found at the LCT site (Image Martin Davies)





Figure 24 - 2nd winch note propeller and engine in background. (Image Martin Davies)

## The Bomb

We were very surprised to find what appeared to be a large bomb at the site. The bomb was 4 feet long and measured 12 inches across the base and was laying on a small piece of wreckage.

After carefully taking measurements and photographs we contacted the Receiver of Wreck, Coastguard and RN Bomb Disposal Team for advice on identification and safety.



Figure 25 A 500lb bomb was discovered at the wreck site. (Image Martin Davies)

The Coastguard implemented a 1000m exclusion zone around the wreck site which lasted for almost 6 weeks. This meant that we were unable to carry out further survey work during this time. The Coastguard issued Safety warnings over the radio every 3 hours and fishermen, divers and other craft were not allowed to operate in the area.

We met with the Royal Navy Chief Petty Officer charged with dealing with the bomb (CPO Kevin Amaira) and briefed him with details of the bomb position based on our survey and also showed him images of the bomb. CPO Amaira confirmed that it was likely to be a 500lb British Aerial Bomb of WW2 era.



Figure 26 Alison Mayor carefully measures the length of the bomb (Image Martin Davies)

SSAC Diving Officer Martin Davies accompanied the RN Team to the dive site to help locate the wreck site. On this first occasion the RN divers were unable to locate



the bomb on the wreck and so a further successful attempt was made the following day.



Figure 27 -RN Bomb Disposal Team towing the bomb to a safe location. (Image courtesy of the RN Southern Diving Unit 2 team).

The Royal Navy were very sympathetic to the work we had been doing and our desire to preserve the site and its history, CPO Amaira proposed to lift the bomb and move it to a safe location before placing it back on the seabed and attaching explosive charges next to it.

This exercise was successfully completed using a large 500kg automatic lifting bag. The bomb was lifted and towed 3 miles to a site identified by the Coastguard where the bomb was set down on the seabed 10m below the surface. The lifting equipment recovered before charges were set around the bomb. The bomb was successfully destroyed.



Figure 28 Bomb being suspended underneath 500kg lifting bag ready to be towed to the safe area for disposal.

(Image courtesy of SDU2 Royal Navy Diving and Bomb Disposal team).

How the bomb came to be at the wreck site remains a mystery. According to the RN team the bomb apparently contained explosives but was un-fused and therefore considered unlikely to have been dropped from an aircraft. However it was also thought unlikely that it would have been part of the LCT(A) 2428 cargo and is not listed on the loading tables for that vessel and would not be appropriate for a first wave assault craft. We also thought that given its weight the bomb would have fallen from the LCT when it capsized – as the tanks and bulldozers had done.

One suggested explanation is that the bomb had been placed on the site by local fishermen who may have trawled it up when fishing in the area. It is rumoured that fishermen place bombs etc on wreck sites so they are no longer in their trawling area.

**We are extremely grateful for the help and assistance given to us by the Southern Diving Unit and the bravery and professionalism shown by their team.**

More about the bomb and our involvement and co-operation with the SDU at Part 6 of this report.

### **Other Ordnance**

We found several different types of ordnance at the site but the presence of more than 30 rounds of High Explosive 95mm shells (as used by the Centaur CS IV tanks and found at the Tanks & Bulldozers site) was a major clue to support the theory that this wreck is that of LCT(A) 2428 from which the tanks & bulldozers were lost when it capsized.



Figure 29 - 95mm HE ammunition (image Jim Fuller)

We also found 20mm anti-aircraft shells and also 303 rifle bullets. A number of 'empty' shell casings were recovered so that we could date them and also research them further but these were later handed to the RN Bomb Disposal Team who subsequently destroyed them.

### **Deck Plates and Door/Ramp**

The remains of the flat bottomed hull and what appeared to be part of the door assembly were found at the site with bollards and other pieces of wreckage including a wash basin.





Figure 30 Decking/Hull (Image Jim Fuller)



Figure 31 – LCT Door/ramp? (Image Martin Davies)

## **Armour Plating**

In the stern area around the engines there was evidence of armour plating on the sides of the wreck plates. This was consistent with the 2 ½ inch plastic armour plating added to LCT(A)s as part of the modification package.



Figure 32 - Armour plating (Image Martin Davies)

## **Marine Life Survey - SeaSearch**

Two members of the survey team conducted marine life surveys under the Marine Conservation Society 'SeaSearch' scheme. A copy of their reports is at Annex C.

The marine life was broadly that which you would normally expect to find in the East Sussex area with a healthy population of crustacean.



Figure 33 - Large edible crabs have made their home in one of the engines. (Image Alison Mayor)





Figure 34 - A lobster takes a walk around goalpost 1. (Image Alison Mayor)

## 2. SURVEY OF THE BARGE SITE – UKHO 20009.

### Site

The wreck lies 045/225 degrees at 50 38.577N 00 56.464W, according to the UKHO record of 2003. We found the position to be 50 38'.365 N : 000 56'.935W on the day of our survey close to the mark on the chart. The UKHO report also states the wreck is 30 metres long 15 metres wide and 3 metres high at a depth of 19m with a least depth of 15.9m.

### Diving Survey

A total of 3 dives were conducted on the site, the second of which was part of the main survey exercise, the other two being from our RIB 'Alan Blake'. Visibility was generally about 2-3 metres, with a slack window of about 45 mins. This site is quite close to Nab Tower and the shipping channel, so care is required when leaving the wreck site. There is evidence of a significant amount of fishing and potting activity in the area and care also needs to be taken not to get tangled in ropes or lines.

### General Description

The barge lays upright in an east/west direction on a shingle sea bed, both stern and bow overhanging sections had collapsed to the sea bed, there were no obvious signs of the 9000 gallon cylindrical tank which the LBO and LBW barge conversions carried, however the port side deck knees were all bent towards the stern. This may be indicative of the removal direction of the tank by trawl or sweeping (as indicated by the UKHO report), or it may just have also been caused by a shot line, or similar dragging through the wreck, and the tank has just collapsed and either been washed away or it remains within the silts contained in the hull. A further search around the wreck area may help to establish the deposition of any remains.

### Site Plan

A site plan, prepared by SSAC member Pete Dolphin is attached at Annex B. Pete kindly managed the survey of this wreck site and this section of the report.

Measurements taken were as follows;

	Metres
Gunnels Height above sea bed, outer starboard side near bow break	2.0
Gunnels Height above silts, inner starboard side near bow break	1.4
Width close to bow break	5.8
Width close to stern break	6.6
Gunnels Height above sea bed, outer starboard side near stern	3.8
Gunnels Height of broken stern section	2.0
Gunnels length break to break port side	16.0



Figure 35 - Ropes and lines from potting/fishing was a hazard to divers.  
(Image Martin Davies)

## **Points of Interest**

### **Battery**

On the initial exploration dive we noted a black rectangular object appearing just above the gravel/shingle sea bed. The word 'Autolite' was visible and embossed into the top. This appears to be a battery, similar to that used by a vehicle.





Figure 36 - 'AUTOLITE' battery found buried in the shingle near the stern  
(Image Martin Davies)

### **Armour Plating**

There were numerous sections of material believed to be armour plating. They were generally of a uniform size of 3 feet long x by 18 inches by 3 inches thick and resembled slabs of marble.



Figure 37 - 3 inch thick armour plating. (Image Martin Davies).

The sections had remains of metal fixings at points in the middle of the sections.



Figure 38 – Armour plating section. (36 x 18 x 3 inches) (Image Martin Davies)

## Propeller

The surprise of the survey was the discovery of a bronze 3 bladed propeller lying on the top of the wreck. The last dive was to recover the propeller for further research as to whether this was a spare for the vessel or cargo. See the Historical research section for further details.



Figure 39 - A bronze propeller found on top of the wreck near the stern.  
(Image Martin Davies)

## Marine Life Survey (SeaSearch)

A marine life survey was conducted by a marine biologist Matt Doggett (SeaSearch Surveyor level report – see Annex C). Marine life was typical of the area and fairly abundant considering the amount of fishing activity evidenced at the site.





Figure 40 - Anemone and other animal turf growing on an abandoned lobster pot.  
(Image Matt Doggett)



Figure 41- Sponges and other animal turf. (Image Matt Doggett).

### 3. SURVEY OF BARGE or DUMB LIGHTER - UKHO SITE 20244

The site of this barge was one that was considered in the early research into the possible site for LCT(A) 2428. The UKHO data sheets for sites 20243 and 20244 are reported to be close together and possibly part of the same wreck. The UKHO reports (see below) were surface only i.e. there was no report of diving being conducted on the wrecks. The sites are relatively close to the West of the Tanks and Bulldozers site and are reported to be by the side of a deep gully (max depth 40m).

The sites were new to us and there was no local knowledge of the sites within the diving community. We began our survey by conducting a side-scan sonar survey in order to locate the site(s) and get an idea of how big and in what direction the wrecks were positioned.

Our side-scan sonar clearly picked up a wreck in the vicinity of the UKHO data sheet marks but we were only able to locate one wreck. We are assuming that this is the site 20244 as this one reports an intact barge rather than an obstruction (20243).

The position of the wreck was found to be 50 38'.379N : 000 52'.944W.

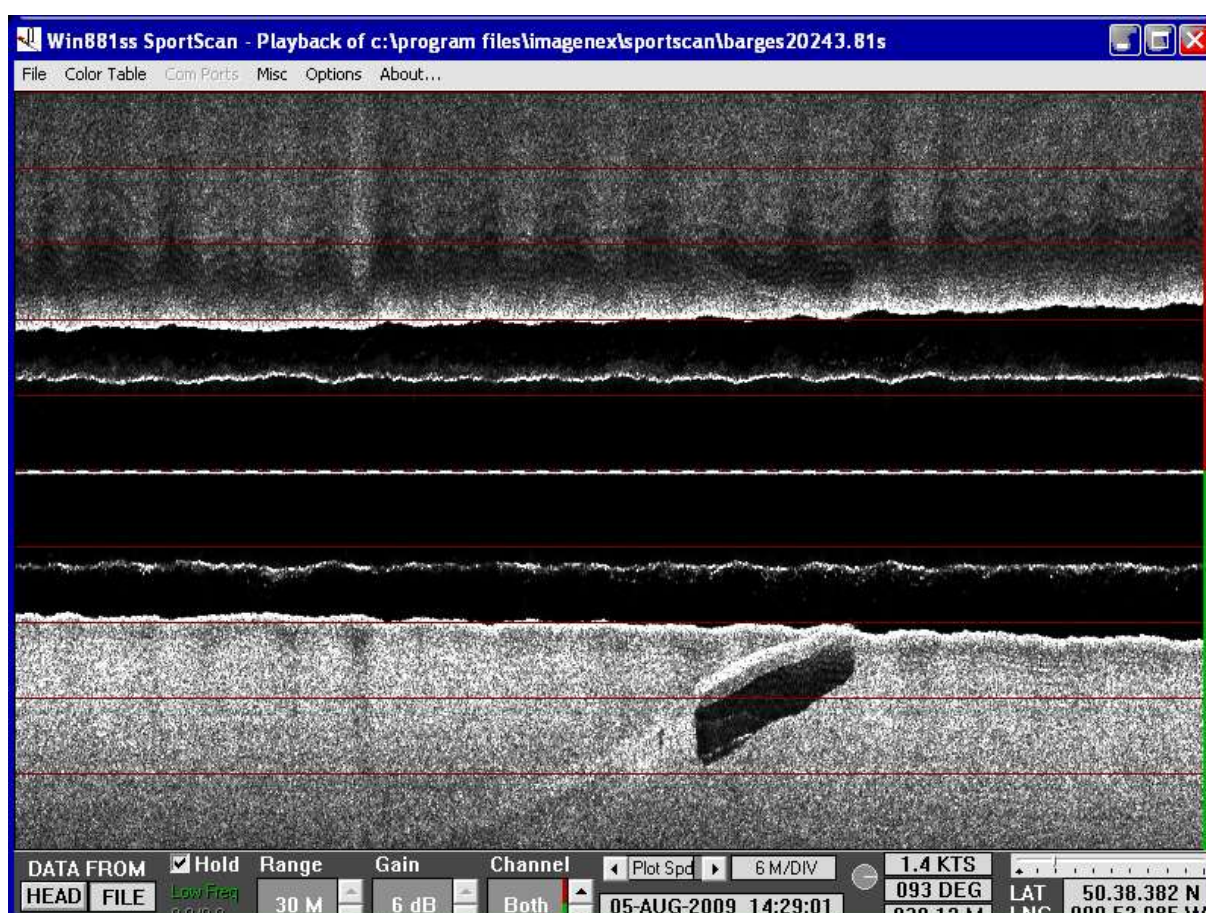


Figure 42 – side-scan sonar image of site 20244

There is a slight shadow in the upper section of the side-scan image but we were not able to find any further trace in additional passes. We intend to revisit the site to explore the immediate area around the wreck.



## General wreck description

The wreck is relatively shallow at 15m and the underwater investigation by divers found the wreck to lying on its side and very intact. It is considered to be of metal construction, probably steel, and had no visible means of propulsion. The wreck was small, approximately 42 feet (12.8m) long and was square at both ends. There was no way of establishing whether there was a bow or stern. The ends and cross section were very squared/angular.



Figure 43 - Barge 20244 - top section. (Image Alison Mayor)

The wreck had a pairs of bollards at each end and some raised pieces of metal structure along the top.





Figure 44 – Bollards on the top end of the wreck (Image Alison Mayor)

There were two openings, one on each site but at opposite ends. Both appeared to be the result of plates being missing but one was larger than the other. On looking inside there appeared to be no connecting sections, each seemed to be a sealed section. The larger hole had a large crack which indicated an area of damage.



Figure 45 - Small opening / hole (Image Martin Davies)



Figure 46 - the crack near the larger opening and velvet swimming crab.  
(Image Martin Davies)

The bottom of the wreck was flat with tapered sides. There was a scour around the wreck.

### **Site measurements/Plan**

Diving conditions were not good with poor visibility and a strong current so only limited measurement could be taken.

Length 42feet 7inches / 12.88m

Beam 16 feet / 4.84m

Height 9 feet / 2.72m

### **Marine Life Survey - SeaSearch**

Two club members conducted a survey of marine life on the wreck in accordance with the MCS SeaSearch scheme. A copy of the survey form is at Annex B. The marine life recorded was typical of that found in the Hampshire to West Sussex coast and included a healthy population of small spider crabs (*Inachus*).



Figure 47 - *Inachus* spider crab on barge 20244. (Image Alison Mayor)



Figure 48 - Squat Lobster in the smaller hole. (Image Alison Mayor)



#### **4. SURVEY OF TANK LANDING CRAFT SITE – UKHO 19117**

##### **General Description**

In the research of UKHO data to find the location of possible wrecks which may have been LCT(A) 2428, we came across the details for 2 LCTs close to the shipping lane to the East of the Isle of Wight. The LCTs are described as upright in approx 30m and this one (19117) is also mentioned in Dive Wight and Hampshire (site no 103). Position is given as 50°43.390' N: 001°03.370' W. UKHO data sheet has position as 50°43.668' N: 001°03.179' W (WGS84)

##### **Diving Survey**

Using our club RIB 'Alan Blake' we located and dived on one of these LCTs finding it in poor visibility and very dark. The actual position was 50 53' .668 N : 001 03' .179W. The wreck lies in a SE/NW orientation. The slack window was very short and we felt our way around the bridge area of the wreck. We did not explore the cargo area so do not yet know whether there are any military vehicles on board. Conditions were not good enough for any good photographs.

We have recently dived the wreck again, with some better results. In slightly lighter but still poor visibility (plankton bloom) we were able to get a better appreciation of the bridge area. The wreck stands about 5m high at the bridge area and points of note were;

##### **Companionways**

The bridge section has a companionway on each side about 4m long, the outer-side of which is supported by three vertical struts. These companionways are not present on the LCT Mk 5 design and the subject of site 20004.

##### **Gun Turret**

There is one gun turret, (missing barrel?) very similar to the cone shape guns found on the Oerlikon 20mm Anti-Aircraft guns. There was a box nearby that, despite being open had ammunition left inside.

##### **Winches**

There was a large winch, but with little line around the reel. There is also what appears to be a capstan.

The Wheelhouse/Bridge is not at the very end of the vessel as is the case with the LCT Mk 5. There is a short section of deck before the stern is reached.

Despite the difficult conditions it was a real pleasure to dive another wreck which is not a regular dive site for dive charters and local divers. The wreck was very intact and the marine life was prolific.

## 5. SURVEY OF WW2 VALENTINE TANK SITE – BRACKLESHAM BAY

### General Observations

Not far from the beach at Bracklesham there is a wreck of a solitary tank conveniently marked by a fishing buoy. The wreck is known to one or two local dive charters and we were kindly taken there by Simon Bradburn (Southern Coast Charters). The wreck is not believed to be recorded by the UKHO and does not appear on a chart to my knowledge neither is it reported in the Dive Sussex guide book.

### Diver Survey

The tank wreck lies upright on a sandy bottom at a maximum depth 14m. The position is 50 44'.254N : 00 51' .973W. There are a number of wire circular fishing pots the ropes of which are wrapped around the tank.

The tank wreck is much smaller than the Centaur tanks found at the Tanks and Bulldozers site. The gun points forward and turret is open and it is possible to look inside.



Figure 49 Valentine Tank - Bracklesham Bay (Image Martin Davies).

The tank was confirmed by David Fletcher from the Tank Museum (Bovington) as a Valentine Tanks which was fitted with a 'skirt' assembly and small bronze propeller and was designed to 'swim' to shore. On a dive subsequent dive, from our club RIB and in poor visibility, we looked for signs of a propeller but with no success. If the propeller is still there it is likely to be buried slightly under the sand/shingle seabed.



## 6. SURVEY OF TANKS & BULLDOZERS SITE- UKHO 20008

The disruption to the survey programme caused as a result of the bomb at the LCT site meant that we were unable to do any further work until the bomb had been dealt with by which time the weather had turned and winter set in. We did however take the opportunity to dive the Tanks and Bulldozers site in September and can provide an update from the last report on this site as a result of this dive.

We had taken the opportunity to pass over the site with the side-scan sonar earlier with some good results.

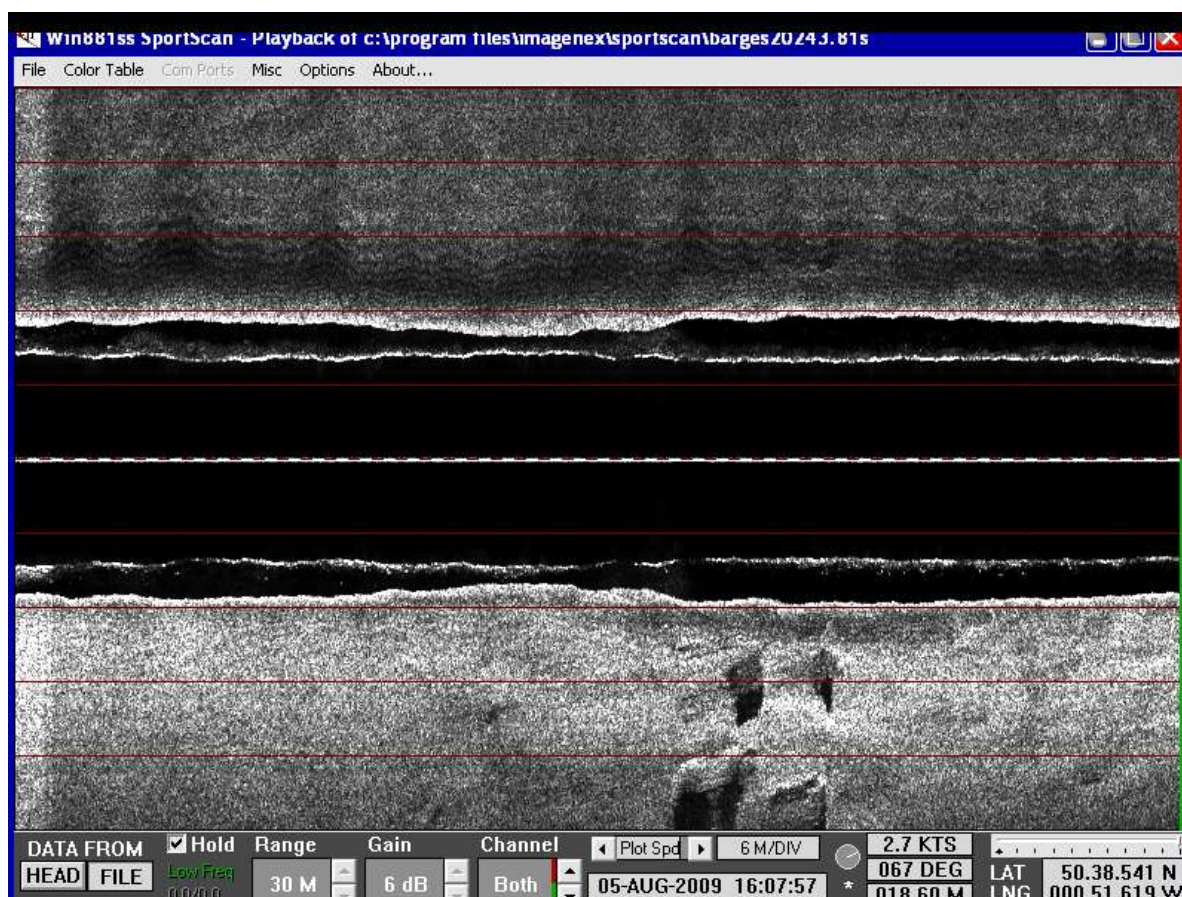


Figure 50 - Side-scan image of the Tanks and Bulldozers site.

### General observations

There was evidence of growing interest in the Tanks and Bulldozers site, presumably as a result of the publicity of the site. There were two local charter boats at the site, each with a boat full of divers. There were also a number of ropes/lines tied or tangled round the wrecks.

Nevertheless, the wrecks appeared to be in the same condition with no obvious or significant deterioration from the initial survey in 2008.



Figure 51 - Lines and ropes tangled around a Centaur. (Image Martin Davies)

## Porpoises (Ammunition Sleds)

We had thought that 2 items found at the site might be waterproof ammunition sleds or 'porpoises' but the thing that puzzled us was that they were not full of HE ammunition. Further research of images of LCT (A)s would indicate that these items may be part of the ramp assembly from the door. There were 3 ramp sections and two appear to be at the Tanks & Bulldozers site.



Figure 52 - Ramp extension from Landing Craft Tank Door? (Image Martin Davies)



Figure 53 - 2nd Ramp from Landing craft. (Image Martin Davies)

We were unable to locate the gun barrel on this occasion.



## Marine Life Survey

The marine life at the site remains at a healthy level despite the reported increased numbers of divers visiting the site with local dive charters. The surrounding seabed is mainly flat with shingle on a London clay base which provides only a limited habitat for many marine creatures. The wrecks provide shelter for a full range of marine inhabitants.



Figure 54 - Sole flat fish (Image Alison Mayor)



Figure 55 - Dahlia anemone (Image Alison Mayor)



Figure 56 Large edible crab (Image Alison Mayor)



We also recorded Conger eels, prawns, bib or pouting. Slipper limpets are present in large numbers and there is a bank of empty slipper limpet shells around the perimeter of the site which is in a shallow bowl/scour. The wreckage is covered with short animal turf of hydroids, sponges and algae. The seabed is grey clay with shingle/pebbles and shells. There are some large edible crabs who continue to guard the site alongside conger eels and lobsters.

Annexures:

Annex A - Site Plan 20004 (LCT) (Site Recorder)

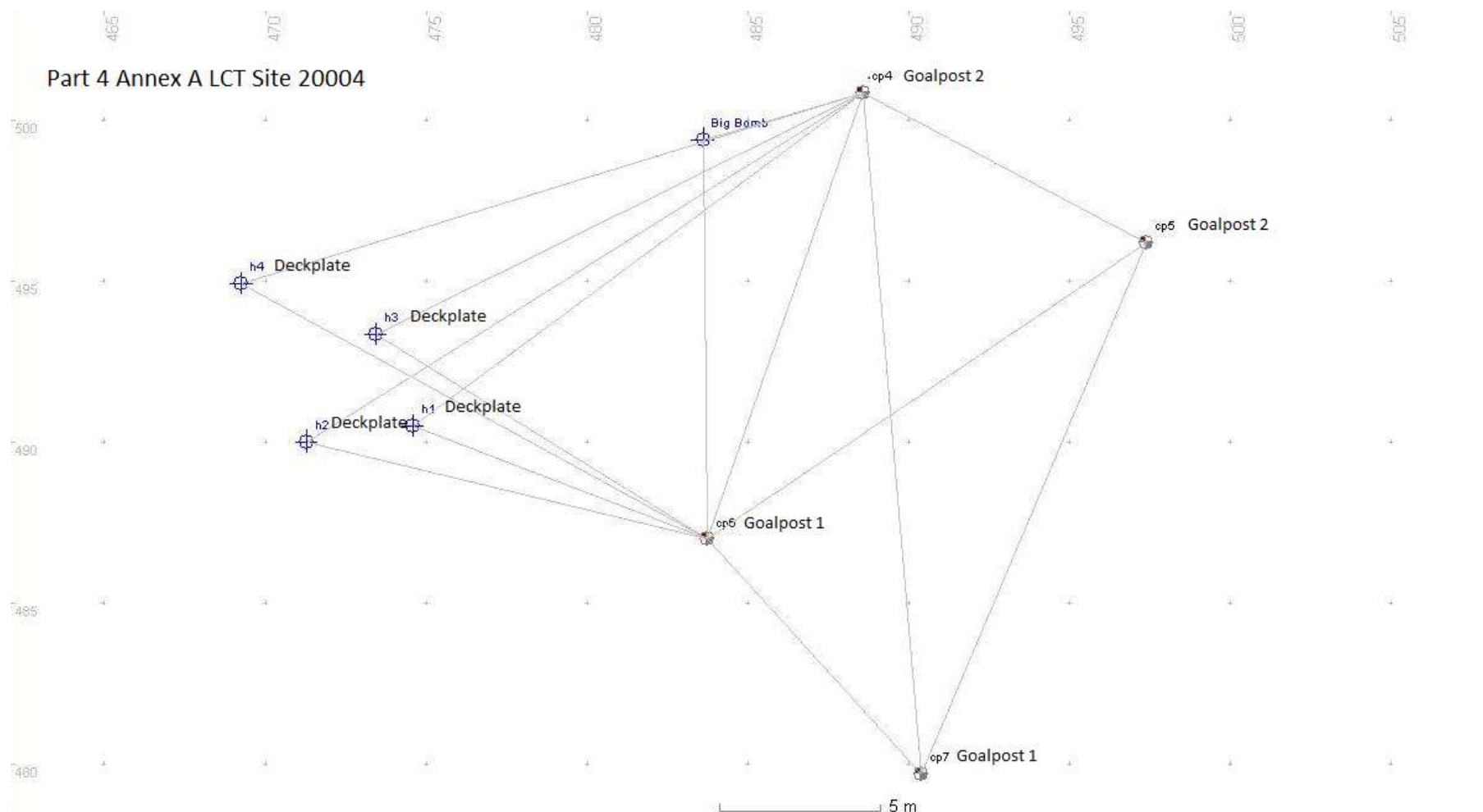
Annex B - SeaSearch Survey sheets for 'Neptune Wrecks' sites as appropriate

Annex C - Site Plan 20009 (Barge)

Annex D - UKHO Datasheets for 'Neptune Wrecks' sites as appropriate.

# Site Plan for 20004 (LCT)

By Jim Fuller



**Site Name : 20004 LCT**

**Site Notes : Project Neptune**

**Measurements:**

From Name(x)	To	Measurement (m)
cp4	h4	20.200
cp6	h1	9.800
cp6	h4	16.500
Big Bomb	cp4	5.200
Big Bomb	cp6	12.400
cp6	h3	12.100
cp4	h3	16.900
cp6	h2	12.800
cp4	h1	17.400
cp4	h2	20.400
cp4	cp5	9.810
cp6	cp7	9.700
cp5	cp7	17.700
cp5	cp6	16.700
cp4	cp6	14.400
cp4	cp7	21.550
cp4	h4	20.200
cp6	h1	9.800
cp6	h4	16.500
Big Bomb	cp4	5.200
Big Bomb	cp6	12.400
cp6	h3	12.100
cp4	h3	16.900
cp6	h2	12.800
cp4	h1	17.400
cp4	h2	20.400
cp4	cp5	9.810
cp6	cp7	9.700
cp5	cp7	17.700
cp	cp6	16.700
cp4	cp6	14.400
cp4	cp7	21.550

# Thank you for completing this form

All that's left for you to do is to either hand it to the Dive Organiser or fold it into thirds along the dotted lines, tuck one part into the other, add a stamp and send it off. Your name and address will be included on the Seasearch database and those of partner organisations. You will also receive Seasearch newsletters and information about other marine surveys and projects.

Please tick here if you do NOT want to be sent newsletters or details of other marine surveys.

For Seasearch use only      Validated by      date  
 Record No      Verified by      date

First fold

Please  
fill in  
this  
section  
before  
folding

Seasearch  
 Marine Conservation Society  
 9 Gloucester Road  
 Ross-on-Wye  
 Herefordshire  
 HR9 5BU

Second fold and tuck in



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## Seasearch Observation Form



This form asks for two types of information from your dive - what the seabed was like and what marine life you saw. Please read the guidance notes before completing the form. By completing this form you will be adding to our knowledge of the near-shore marine environment - helping it to remain fit for life!

Please complete the following sections in a black pen and BLOCK CAPITALS

Name **DAVID BANKS** 0434/1  
 Address **2 ORCHARD WAY**  
**GODMANCHESTER**  
**CAMBS** Postcode **PE29 2AP**  
 Tel: Home **01480 457156** Mobile **07880 88346**  
 Email **dkbanks@ntlworld.com**  
 Buddy's Name **TONY BATES**

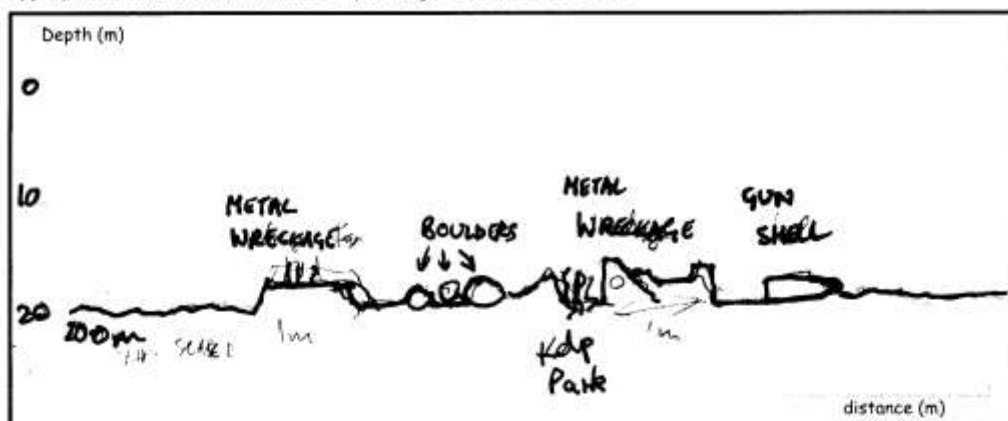
Site Name **LARLING CRAFT TANK** Date of Dive **8 / 8 / 09**  
**20004 (PATCH)** Start of dive **12 : 20**  
 General Location **Mile E4 EAST** Dive duration **45**  
 (inc county) **SOLENT, HAMPSHIRE** U/W visibility **3** m  
**MAX DEPTH 21.9m** Sea Temperature **20** °C  
 Position of centre of site **50° 38' 45" N 0° 46' 49" W** or OS Grid Reference  
 Position derived from (circle) Drift dive? **yes** / no  
 GPS Admiralty Chart OS Map Other Night dive? **yes** / no  
 Did you take any photographs? **yes** / no or video footage? **yes** / no

SOI-3/03



### Description of the seabed

Please draw an approximate profile of the seabed (i.e. a side-on view), labeling features and dominant forms as appropriate. Remember to show the depth range and a distance scale.



Types of seabed present: (please tick all that you saw and circle the dominant one)

Rocky Reef ☐ Boulders ☒ Cobbles and Pebbles ☒ Mixed Ground ☒ Sand and Gravel ☒ Mud ☐ Wreckage ☒ Other ☐

Did you notice anything unusual or noteworthy about the seabed or the marine life?

No

Was there any litter or were there any man-made objects apparent?

YES, BROKEN HUG (RECENT)

### What marine life did you see on your dive?

Seabed cover types (tick all those present)

Kelp forest



Animal turf on rocks



Kelp park



Tall



Mixed seaweeds



Animal Beds (e.g. mussels, brittlestars, scallops - state which)



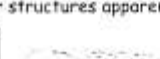
Encrusting pink algae



Sediment with life apparent (tubes, burrows etc)



Barren sediment (no life or structures apparent)



Illustrations by Bob Foster-Smith

Species you saw

Show abundance of each species as Rare, Occasional, Common, or if you're unsure, Present.

Species	R, O, C or P
GOLDSINNY WRASSE	O
BLenny	R
EDIBLE CRAB	R
YELLOW ENCRUSTING ALGAE	O
KELP	O
ANTENNA HYDROID	O
DEAD HANJ FINGERS	O
DAISY ANEMONE	O
MIXED SEAWEED	O
ENCROUTING BOTO ZOA	C

# Thank you for completing this form

All that's left for you to do is to either hand it to the Dive Organiser or fold it into thirds along the dotted lines, tuck one part into the other, add a stamp and send it off. Your contact details will be included on the Seasearch database and those of partner organisations and will be used to send you information about Seasearch and associated projects. It will not be passed to third parties without your consent. The location, dive details, habitats and species information and the name of the recorder will be entered into a database and made available to the participating organisations and the general public. If you do not agree with this use of the data do not submit the form.

for Seasearch use only	validated by	date
Mar-Rec No	entered by	date

Fig 10A



**Seasearch**  
Marine Conservation Society  
Unit 3, Wolf Business Park  
Alton Road  
Ross-on-Wye  
Herefordshire  
HR9 5NB



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Record no

## Seasearch Observation Form



This form asks for two types of information from your dive - what the seabed was like and what marine life you saw. Please read the guidance notes before completing the form. By completing this form you will be adding to our knowledge of the near-shore marine environment - helping it to remain fit for life! Please complete the following sections in a black pen and BLOCK CAPITALS

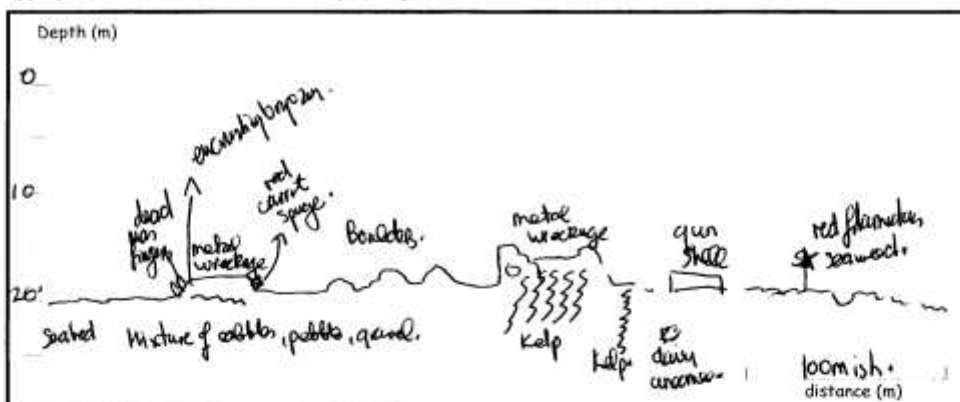
Name	Toni Bates	SPN0 020619.
Address	15 Hooks Farm Way Havant Hampshire	
Postcode	PO9 3DX	
Tel: Home	02392455327	Mobile
Email	toni.bates@btvinter.net.com	
Buddy's Name	David Banks	

Site Name	The Patch Landing		
Craft	LCR Wreck Site 20004		
General Location	Boarner Butlins		
(inc county)	visible		
14 miles east of Eastney			
Date of Dive	08 / 08 / 01	Start of dive	12 : 20 (24hr)
Dive duration	45 (mins)	Max depth of survey	81.6 m
UWV visibility	3 m	Sea Temperature	19 °C
Position at start of dive	50° 0' 38.457" N 0° 46' 19.0" W		
Position derived from (circle)	Other		
GPS Admiralty Chart OS Map	(state)	Drift dive?	yes / no
Did you take any photographs?	yes / no	Night dive?	yes / no
or video footage?	yes / no		

SOI-02/07

### Description of the seabed

Please draw an approximate profile of the seabed (i.e. a side-on view), labeling features and dominant forms as appropriate. Remember to show the depth range and a distance scale.



Types of seabed present: (please tick all that you saw and circle the dominant one)

Rocky Reef ☐ Boulders ☐ Cobbles and Pebbles ☒ Mixed Ground ☒ Sand and Gravel ☐ Mud ☐ Wreckage ☐ Other ☐

Did you notice anything unusual or noteworthy about the seabed or the marine life?

No.

Was there any litter or were there any man-made objects apparent?

Broken mug.

### What marine life did you see on your dive?

Seabed cover types (tick all those present)

Kelp forest



Animal turf on rocks



Short



Kelp park



Tall

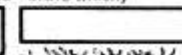


Mixed seaweeds



Animal Beds

(e.g. mussels, brittlestars, scallops - state which)



Encrusting pink algae



Sediment with life apparent (tubes, burrows etc)



Barren sediment

(no life or structures apparent)



Illustrations by Bob Foster-Smith

Species you saw

Show abundance of each species as Rare, Occasional, Common, or if you're unsure, Present.

Species	R, O, C or P
Kelp	O
gold shiny wrasse	R
dogfish	R
red filamentous seaweed	R
carrot spuge	R
dark kelp	R
Uncusky bryozoans	C



All that's left for you to do is to either hand it to the Dive Organiser or fold it into

Things along a dotted line, tick one part into the other, add a stamp and send it off. Your contact details will be included on the Seacsearch database and those of partner organisations and will be used to send you information about Seacsearch and associated projects. It will not be passed to third parties without your consent. The location, dive details, hobbies and species information and the name of the recorder will be entered into a database and made available to the participating organisations and the general public. If you do not agree with this use of the data do not submit the form.

for Seasearch use only

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These  
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Seasearch

Marine Conservation Society

Unit 3, Wolf Business Park

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**Ross-on-We**

Herefordshire

HR9 5NB

Reprinted from *Journal of the American Medical Association*, 2000; 283: 2633-2638.

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Record no.

**Seasearch**  
**Observation Form**

This form is for two types of information from your dive - what the seabed was like and what marine life you saw. Please read the guidance notes before completing the form. By completing this form you will be adding to our knowledge of the near-shore marine environment - helping it to remain fit for life!

Please complete the following sections in a black pen and BLOCK CAPITALS

Name	Tom Bates
Address	15 Hooks Farm Way Havant Hampshire Postcode PO93 0JX
Tel: Home	02392455327 Mobile
Email	tom.bates@btinternet.com
Buddy's Name	David Banks

Site Name		Bugee 2-0009	
General Location (inc county)		1 mile S of low near of rd.	
Position at start of dive		<div> <div>50° 0' 38.59" N</div> <div>0° 0' 56.47" W</div> </div> <div>or OS Grid Reference</div>	
Position derived from (circle)		<div> <div>Other</div> <div>Night dive?</div> </div> <div> <div>yes (no)</div> <div>yes (no)</div> </div>	
GPS Admiralty Chart OS Map		<div> <div>Start of dive</div> <div>1 10</div> </div> <div> <div>Dive duration</div> <div>37 (mins)</div> </div> <div> <div>Max depth of survey</div> <div>23 m</div> </div> <div> <div>UVW visibility</div> <div>1 m</div> </div> <div> <div>Sea Temperature</div> <div>19 °C</div> </div>	
Did you take any photographs? yes (no)		<div> <div>yes (no)</div> <div>or video footage? yes (no)</div> </div>	



Please draw an approximate profile of the seabed (i.e. a side-on view), labeling features and dominant forms as appropriate. Remember to show the depth range and a distance scale.



Was there any litter or were there any man-made objects apparent?

--

## Seabed cover types (tick all those present)

Illustrations by  
Bob Foster-Smith

Show abundance of each species as **Rare**, **Occasional**, **Common**, or if you're unsure, **Present**.

Page 111

# SEASEARCH SURVEY FORM

Form No (leave blank)  

If anything is unclear please refer to the Guidance Notes  
Each pair of divers should complete a form between them  
Please complete all parts of the form. Where there is a \*  
only fill in the information if you know it.



Validated by	Date	Entered by	Date	MR Reference
Recorder leave blank - for Seasearch use				

## Your details

Name <u>MATT DOBETT</u>	Tel No: <u>07713 396984</u> hm/wk
Address <u>165 OAKWOOD DRIVE</u> <u>LURDLAND</u> <u>SOUTHAMPTON</u>	Email: <u>matt.dobett@hotmail.co.uk</u>
	Buddy's Name <u>RONAN</u>
	Name of group or survey <u>SOUTHSEA SAC</u>
Postcode <u>SO16 8EL</u>	

## Dive/Site details

Site name <u>BARRE 0009</u>				Date of dive: <u>02</u> dd / <u>10</u> mm / <u>2009</u> yy	
General location <u>SE OF ISLE OF WIGHT.</u> <u>2.9km at 164° FROM THE NAB TOWER.</u>				Start of dive: <u>13:14</u> (24hr)	
				Dive duration: <u>67</u> (mins)	
				U/W visibility: <u>2</u> m	
				Sea temperature: <u>18</u> °C	
Position	Latitude	Longitude	W or E	Drift dive? yes <input type="radio"/> no <input checked="" type="radio"/>	
Centre of site	<u>50° 38.577</u>	<u>00° 56.464</u>	<u>W</u>	Night dive? yes <input type="radio"/> no <input checked="" type="radio"/>	
For drift dives	Did you or your buddy take any of the following?				
From	<u>0</u>	<u>0</u>	<u>0</u>	photographs	yes <input checked="" type="radio"/> no <input type="radio"/>
To	<u>0</u>	<u>0</u>	<u>0</u>	video footage	yes <input type="radio"/> no <input checked="" type="radio"/>
Or OS Grid Reference Position derived from: (circle) GPS Datum (circle) <input checked="" type="radio"/> GPS Admiralty chart OS map other <input checked="" type="radio"/> WGS84 OSGB36				specimens	yes <input type="radio"/> no <input checked="" type="radio"/>
				seaweeds for pressing	yes <input type="radio"/> no <input checked="" type="radio"/>
Exposure of site: extremely exposed <input type="checkbox"/> v exposed <input type="checkbox"/> exposed <input checked="" type="checkbox"/> mod exposed <input type="checkbox"/> sheltered <input type="checkbox"/> v sheltered <input type="checkbox"/> ext sheltered <input type="checkbox"/>				For the area surveyed, what was	
Max tidal stream: >6kt <input type="checkbox"/> 3-6kt <input type="checkbox"/> 1-3kt <input checked="" type="checkbox"/> <1kt <input type="checkbox"/> v. weak <input type="checkbox"/>				the shallowest depth? (m) <u>22</u> bsl <input type="checkbox"/> bcd	
				the deepest depth? (m) <u>23.5</u> bsl <input type="checkbox"/> bcd	
				Tidal correction to chart datum <input type="checkbox"/> m*	

## Seabed summary

<p>Summarise: a. The main features of the site, b. Any unusual features or species, c. Any human activities or impacts at the site</p> <p><u>A. METAL WRECK OF D-DAY BARRE SITUATED ON A SEABED OF FINE MUD, GRAVEL + PEBBLES. WRECK COVERED IN A THICK ANIMAL FUR.</u></p> <p><u>B. NO UNUSUAL/UNEXPECTED FEATURES/SPECIES OBSERVED.</u></p> <p><u>C. NO MAJOR IMPACTS OBSERVED. POSSIBLE <sup>OLD</sup> LOSSAGE POT NEXT TO WRECK - UNKNOWN DUE TO CORROSION.</u></p>
---

SS1 12/07

1

# Habitat descriptions

Sorry Amy - I did those the wrong way round for some reason!

Complete a box below for each habitat you found on your dive. Normally the shallowest habitat is No. 1 even if you have done the dive deepest first. Each written description should tally with the information entered in the columns and diagrams on the next page. If you found more than 3 habitats, continue your descriptions on another form. Tick boxes where shown, and insert percentages (they must add up to 100%) or assign a score from 1-5 as appropriate. If you are uncertain leave the box blank. The biotope code will be assigned later from your description.

## 1. DESCRIPTION (physical + community)

Seabed consisting mainly of pebbles + gravel in a fan, and with some shells and shell fragments - mainly Crepidula. Hermit crabs and settled dogwhelks were observed as well as juvenile bit/pouting. However, little attention was paid to this habitat owing to poor visibility and no inclination to leave the immediate vicinity of the wedge.

Seabed type: rock ☐ boulders ☐ cobbles ☒ pebbles ☒ gravel ☒ sand ☐ mud ☒ wreckage ☒ other ☐

Communities: kelp forest ☐ kelp park ☐ red seaweeds ☐ enc pink algae ☐ animal turf ☒ ~~rocky substrate~~ ~~shelly substrate~~

animal bed ☐ sediment with life ☒ barren sediment ☐ Biotope Code

## 2. DESCRIPTION (physical + community)

Metal wedge heavily encrusted with hydroids and bryozoans and sponges. Numerous dead sea urchins and decapod crabs. Crustaceans, (crabs + squat lobsters) occupying most crevices as well as numerous limpets and black goblins. Red seaweeds only very occasional. Wedge stanning with pikes, in particular bit/pouting and poor cod.

Seabed type: rock ☐ boulders ☐ cobbles ☐ pebbles ☐ gravel ☐ sand ☐ mud ☐ wreckage ☒ other ☐

Communities: kelp forest ☐ kelp park ☐ red seaweeds ☐ enc pink algae ☐ animal turf ☒ ~~rocky substrate~~ ~~shelly substrate~~

animal bed ☐ sediment with life ☐ barren sediment ☐ Biotope Code

## 3. DESCRIPTION (physical + community)



Seabed type: rock ☐ boulders ☐ cobbles ☐ pebbles ☐ gravel ☐ sand ☐ mud ☐ wreckage ☐ other ☐

Communities: kelp forest ☐ kelp park ☐ red seaweeds ☐ enc pink algae ☐ animal turf ☐

animal bed ☐ sediment with life ☐ barren sediment ☐ Biotope Code



1	2	3
	m	DEPTH LIMITS
25.5	22	Upper (from sea level) (i.e. minimum)
25.5	23.5	Lower (from sea level) (i.e. maximum)
		Upper (from chart datum) *
		Lower (from chart datum) *

%			SUBSTRATUM
			Bedrock type?:
			Boulders - very large > 1.0 m
			- large 0.5 - 1.0 m
			- small 0.25 - 0.5 m
10			Cobbles (fist - head size)
20			Pebbles (50p - fist size)
40			Gravel - stone
10			- shell fragments
10			Sand - coarse
			- medium
			- fine
10			Mud
			Shells (empty - or as large pieces)
			Shells (living - eg mussels, limpets)
	100		Artificial - metal
			- concrete
			- wood
			Other (state)
100	100	100	Total

SCOUR ON WRECK AT BASE (4)

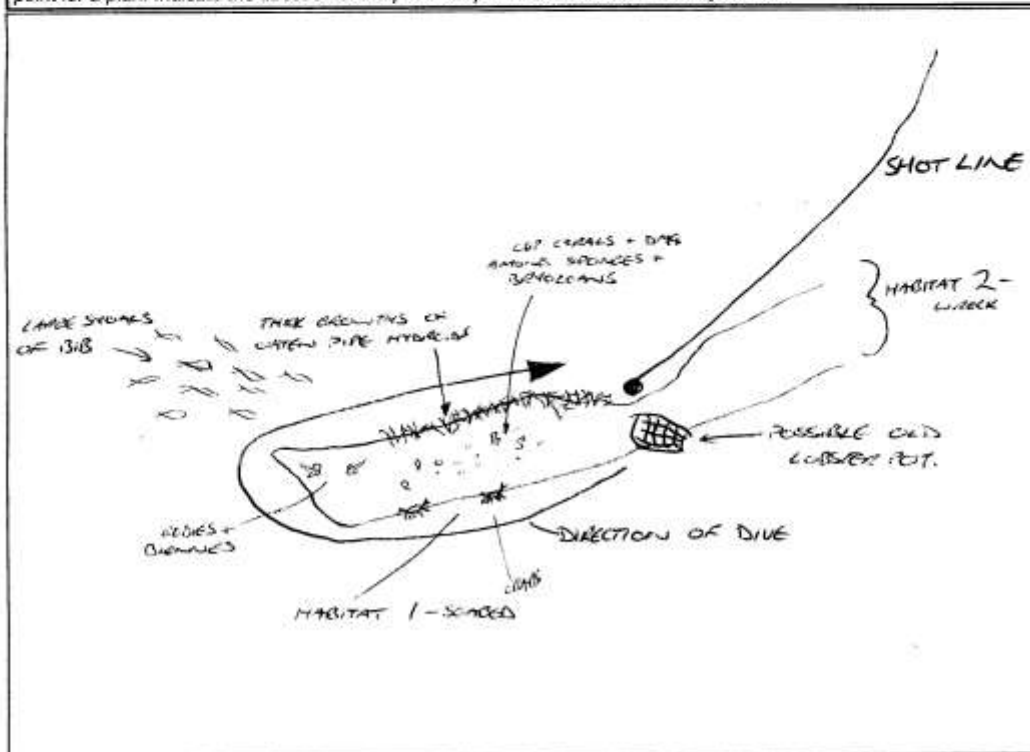
1	2	3
	1-5	FEATURES - ROCK (all categories)
2		Relief of habitat (even - rugged)
2		Texture (smooth - pitted)
4		Stability (stable - mobile)
4		Scour (none - scoured)
2		Silt (none - silted)
1		Fissures > 10 mm (none - many)
1		Crevices < 10 mm (none - many)
4		Boulder/cobble/pebble shape (rounded - angular)
✓		Sediment on rock? (tick if present)

✓	FEATURES - SEDIMENT (1)
	Mounds / casts
	Burrows / holes
	Waves (> 10 cm high)
	Ripples (< 10 cm high)
	Subsurface coarse layer?
	Subsurface anoxic (black) layer?

1-5	FEATURES - SEDIMENT (2)
2	Firmness (firm - soft)
3	Stability (stable - mobile)
5	Sorting (well - poor)

### Sketches and plans

Draw a profile and/or plan of the sea bed you encountered on your dive in the space below. Mark (& number) the different habitats, corresponding to the written descriptions on p.2. Indicate conspicuous and/or characteristic species. Make sure you include depth(s) (vertical axis) and a distance scale (horizontal axis) for a profile and scale and north point for a plan. Indicate the direction of the profile or plan and the direction of any current.





## Species List

Score the abundance of each group of animals and plants in each habitat alongside the name. In the blank spaces list the seaweeds & animals which you were able to identify positively from the different habitats. Use latin names if possible, but if you don't know them, common or descriptive names are acceptable. If you are not 100% sure about any, add a question mark. Do not enter names as guesses - it's better to exclude them than to include incorrect identifications. Give abundances in the columns: Super abundant, Abundant, Common, Frequent, Occasional & Rare. If you did not note abundances, simply enter a P for Present. Continue on a separate sheet, if necessary. If you have a photograph of the species tick the ph column.

	ph	1	2	3		ph	1	2	3
sponges					echinoderms				
<i>Dysidea fragilis</i>	✓		C						
<i>Encrusting sponges</i>	✓		C						
<i>Clathrina coriacea</i>	✓		R						
cnidarians: hydroids, anemones, corals,					sea squirts				
<i>Actinellaea schyphoides</i>	✓		F		<i>Ascidia asatela</i>	✓		O	
<i>Alcyonium digitatum</i>	✓		F		<i>Botryllum argus</i>	✓		O	
<i>Cassiothlypis scintilla</i>	✓		C		<i>Dendrobia granulata</i>	✓		F	
<i>Nemertea pectinacea</i>	✓	O	O		<i>Styela clava</i>	✓		O	
<i>Tubularia indivisa</i>	✓	A							
<i>Anemone indet.</i>	✓		R						
					fishes				
					<i>Trisopterus luscus</i>		A	A	
					<i>Trisopterus minutus</i>		F	E	
worms					<i>Parablennius guttatus</i>	✓		C	
<i>Pomatoceros triquetus</i>	✓		C		<i>Liparis niger</i>	✓		C	
<i>Phoronida</i>			O		<i>Leberis pinguis</i>			C	
<i>Corall worm indet.</i>	✓		F		<i>Chamaelea repens</i>			C	
crustaceans					seaweeds				
<i>Callinectes strigosus</i>			F		<i>Drachiella gaeckelii</i>	✓		R	
<i>Alpheia squinada</i>			F		<i>Elaphoglossum reds</i>	✓		R	
<i>Canthac pagurus</i>			F		<i>Saccharina latissima</i>			R	
<i>Alpheia piper</i>	✓		F						
<i>Alpheia sp.</i>		F	F						
<i>Alpheia sp.</i>	✓		O						
molluscs									
<i>Crepidula fornicata</i>		O							
<i>Hyas reticulatus</i>	✓	O	O						
<i>Exopoda undulata</i>			O						
<i>Calliostoma zephyrium</i>			O						
<i>Glycymeris glycymeris</i>	✓		F		other or continuations				
bryozoans									
<i>Bryozoa sp.</i>			O						
<i>Alcyonium baliense</i>	✓		A						
<i>Encrusting bryozoa</i>	✓		C						
<i>Alcyonium baliense</i>	✓		O						

Continue on a separate sheet if you need to

Once completed, return the form to the Dive Organiser or to: Seasearch, Marine Conservation Society, Unit 3, Wolf Business Park, Alton Road, Ross on Wye, HR9 5NB.  
Your contact details will be included on the Seasearch database and those of partner organisations and will be used to send you information about Seasearch and associated projects. They will not be passed to third parties without your consent. The location, dive details, habitats and species information and the name of the recorder will be entered into a database and made available to the participating organisations and the general public through the Seasearch and NBN websites. If you do not agree with this use of the data do not submit the form.

# Thank you for completing this form

All that's left for you to do is to either hand it to the Dive Organiser or fold it into thirds along the dotted lines, tuck one part into the other, add a stamp and send it off. Your name and address will be included on the Seasearch database and those of partner organisations. You will also receive Seasearch newsletters and information about other marine surveys and projects.

Please tick here if you do NOT want to be sent newsletters or details of other marine surveys.

For Seasearch use only	Validated by	date
Record No	Verified by	date

First fold

Please affix stamp here

**Seasearch**  
**Marine Conservation Society**  
**Unit 3, Wolf Business Park**  
**Alton Road**  
**Ross-on-Wye**  
**Herefordshire**  
**HR9 5NB**

Second fold and tuck in



Seasearch is a joint project co-ordinated by the Marine Conservation Society and supported by: The Heritage Lottery Fund, The Wildlife Trusts, English Nature, Countryside Council for Wales, Scottish Natural Heritage, Environment & Heritage Service Northern Ireland, Joint Nature Conservation Committee, Environment Agency, Marine Biological Association (Murlin), British Sub-Aqua Club, Professional Association of Diving Instructors and Project Aware, Scottish Sub-Aqua Club, Sub-Aqua Association and the Nautical Archaeology Society.

# Seasearch Observation Form



This form asks for two types of information from your dive - what the seabed was like and what marine life you saw. Please read the guidance notes before completing the form. By completing this form you will be adding to our knowledge of the near-shore marine environment - helping it to remain fit for life!

Please complete the following sections in a black pen and BLOCK CAPITALS

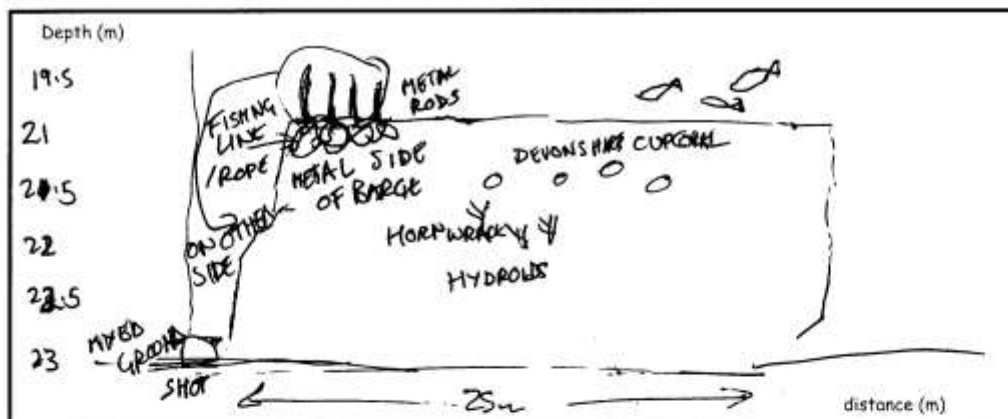
Name	DAVID BANKS	0434/1
Address	2 ORCHARD WAY GODMANCHESTER CAMBS	
Postcode	PE29 2NP	
Tel: Home	01457	457758 Mobile 07887 826346
Email	@ukworlddiver	
Buddy's Name	TONI BATES	

Site Name	BARGE 009	Date of Dive	09/08/09
General Location (inc county)	ON EDGE OF SHIPPING LANE NEAR LOW NEAR NAB	Start of dive	13:12
Dive duration	37m	UW visibility	2m
Sea Temperature	20°C	or OS Grid Reference	50° 38.59' N 0° 56.47' W
Position of centre of site			
Position derived from (circle)	GPS Admiralty Chart OS Map Other		
Did you take any photographs?	yes / no	or video footage?	yes / no

SO1-02/05

### Description of the seabed

Please draw an approximate profile of the seabed (i.e. a side-on view), labeling features and dominant forms as appropriate. Remember to show the depth range and a distance scale.



Types of seabed present: (please tick all that you saw and circle the dominant one)

Rocky Reef ☐ Boulders ☐ Cobbles and Pebbles ☐ Mixed Ground ☒ Sand and Gravel ☒ Mud ☐ Wreckage ☒ Other ☐

Did you notice anything unusual or noteworthy about the seabed or the marine life?

Was there any litter or were there any man-made objects apparent?

FAIR AMOUNT OF FISHING LINE AND ENTANGLED NETS

### What marine life did you see on your dive?

Seabed cover types (tick all those present)

Kelp forest

☐


Animal turf on rocks

☒

Short



Kelp park

☐


Tall



Mixed seaweeds

☐


Animal Beds  
(e.g. mussels, brittlestars, scallops - state which)

☐

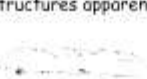

Encrusting pink algae

☐


Sediment with life apparent  
(tubes, burrows etc)

☐


Barren sediment  
(no life or structures apparent)

☐


Illustrations by  
Bob Foster-Smith

Species you saw

Show abundance of each species as Rare, Occasional, Common, or if you're unsure, Present.

Species	R, O, C or P
DEVONSHIRE CUP CORAL	C
HORNWRACK	O
HYDROIDS	C
BIB	C
HERMIT CRABS	R
SEA MAT TALL	C
ENCrustING PINK ALGAE	O



# Thank you for completing this form

All that's left for you to do is to either hand it to the Dive Organiser or fold it into thirds along the dotted lines, tuck one part into the other, add a stamp and send it off. Your contact details will be included on the Seasearch database and those of partner organisations and will be used to send you information about Seasearch and associated projects. It will not be passed to third parties without your consent. The location, dive details, habitats and species information and the name of the recorder will be entered into a database and made available to the participating organisations and the general public. If you do not agree with this use of the data do not submit the form.

for Seasearch use only

validated by

date

MarRec No

entered by

date

5/11/00

Please  
do not  
submit  
this  
form

## Seasearch

Marine Conservation Society  
Unit 3, Wolf Business Park  
Alton Road

Ross-on-Wye  
Herefordshire

HR9 5NB



Seasearch is a joint project co-ordinated by the Marine Conservation Society and supported by: The Heritage Lottery Fund, The Wildlife Trusts, English Nature, Countryside Council for Wales, Scottish Natural Heritage, Environment & Heritage Service Northern Ireland, Joint Nature Conservation Committee, Environment Agency, Marine Biological Association (MarLIN), British Sub-Aqua Club, Professional Association of Diving Instructors and Project Aware, Scottish Sub-Aqua Club, Sub-Aqua Association and the Nautical Archaeology Society.

Record no

## Seasearch Observation Form



This form asks for two types of information from your dive - what the seabed was like and what marine life you saw. Please read the guidance notes before completing the form. By completing this form you will be adding to our knowledge of the near-shore marine environment - helping it to remain fit for life! Please complete the following sections in a black pen and BLOCK CAPITALS

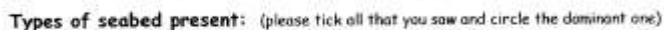
Name	Toni Bate	SP No 0206P
Address	15 Hooks Farm Way Havant Hampshire	
Postcode	PO9 3DX	
Tel. Home	02392 455527	Mobile
Email	toni.bate@btinternet.com	
Buddy's Name	David Bate	

Site Name	Barge 2-0243	Date of Dive	08/08/09
General Location (inc county)	Wootton Bassett	Start of dive	6:15 (GMT)
		Dive duration	45 (mins)
		Max depth of survey	17.9 m
		LMW visibility	3m m
		Sea Temperature	18 °C
Position at start of dive	50° 0' 38.38" N 0° 0' 52.92" W or E	or OS Grid Reference	
Position derived from (circle)	GPS	Drift dive?	yes / no
Admiralty Chart OS Map (state)		Night dive?	yes / no
Did you take any photographs?	yes / no	or video footage?	yes / no

SOI-02/07



Please draw an approximate profile of the seabed (i.e. a side-on view), labeling features and dominant forms as appropriate. Remember to show the depth range and a distance scale.



Rocky Reef	Boulders	Cobbles and Pebbles	Mixed Ground	Sand and Gravel	Mud	Wreckage	Other

Did you notice anything unusual or noteworthy about the seabed or the marine life?

Was there any litter or were there any man-made objects apparent?

--

## Seabed cover types (tick all those present)

**Short** 

1

1




11

\_\_\_\_\_

☐

(tubes



1

sediment  
(structures apparent)

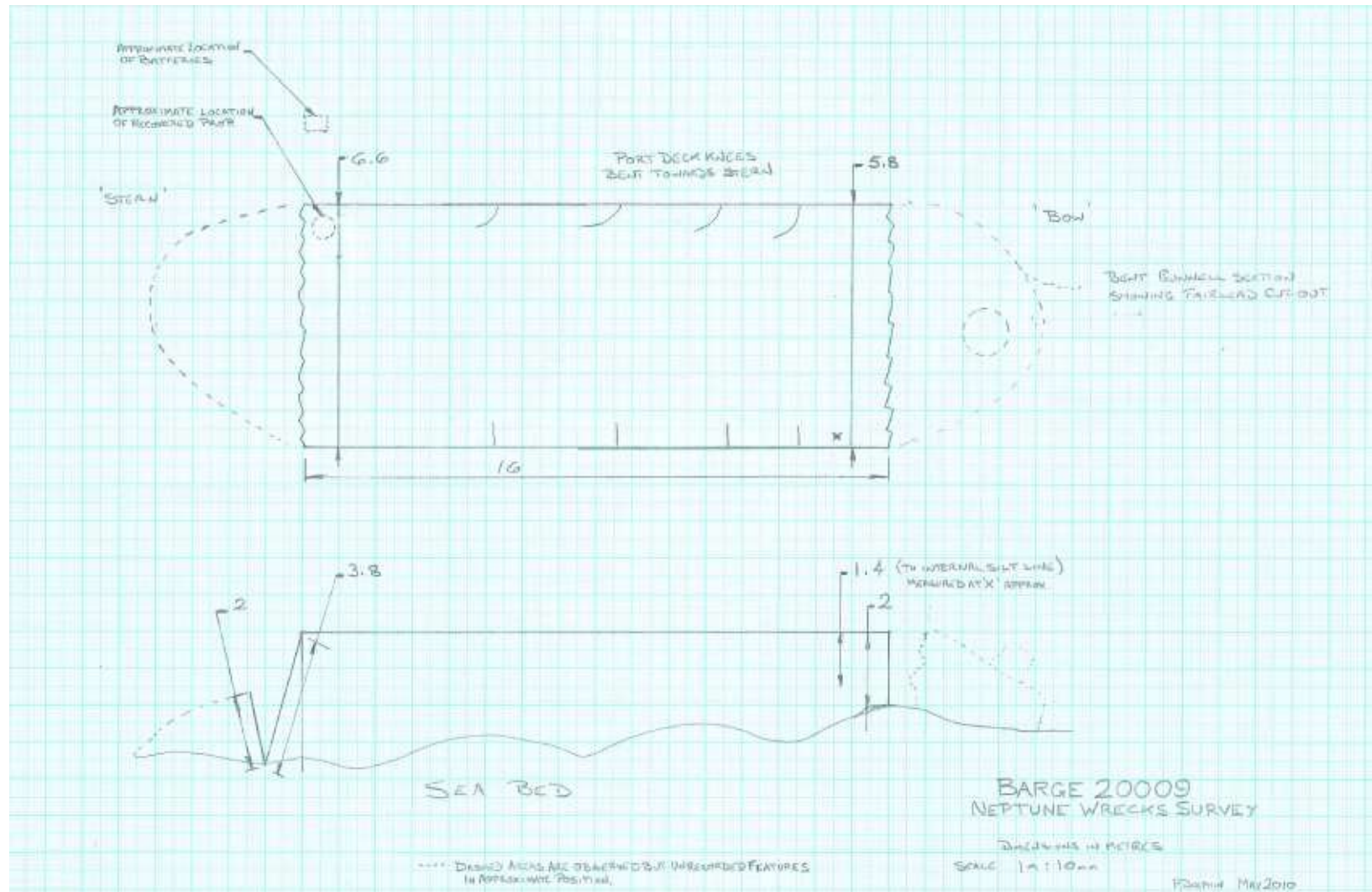
Illustrations by  
Rob Foster-Smith

tions by  
near South

Show abundance of each species as **Rare**, **Occasional**, **Common**, or if you're unsure, **Present**.

Species	R, O, Car P
Herb wrack	C
Seaweed	C
Parrot crabs	C
Tompat blennies	C
Belt	C
dead mano fingers	C

Part 4 Annex C  
Site Plan for 2009 (Barge)  
Pete Dolphin



# UKHO DATA SHEET FOR SITE 20004

<b>Wreck Number</b>	20004	<b>Classification</b>	= Unclassified
<b>Symbol</b>	WK SW 21.0	<b>Largest Scale Chart</b>	= 1652, 2045
<b>Charting Comments</b>			
<b>Old Number</b>	013603085		
<b>Category</b>	Dangerous wreck		
<b>WGS84 Position</b>	<b>Latitude</b> = 50 38'.220 N	<b>Longitude</b> = 000 46'.400 W	
<b>WGS84 Origin</b>	Original		
<b>Horizontal Datum</b>	WGD WGS (1984)		
<b>Position Method</b>	Differential Global Positioning System		
<b>Position Quality</b>	Surveyed		
<b>Position Accuracy</b>	5.0		
<b>Area at Largest Scale</b>	No		
<b>Depth</b>	21.0 metres		
<b>Drying Height</b>			
<b>Height</b>			
<b>General Depth</b>	24 metres		
<b>Vertical Datum</b>	Lowest astronomical tide		
<b>Depth Method</b>	Swept by wire-drag		
<b>Depth Quality</b>	Least depth known		
<b>Depth Accuracy</b>			
<b>Conspic Visual</b>	NO	<b>Conspic Radar</b>	NO
<b>Historic</b>	NO	<b>Military</b>	NO
<b>Non Sub Contact</b>	NO	<b>Existence Doubtful</b>	NO
<b>Last Amended</b>	30/09/2003		
<b>Position Last Amended</b>	30/09/2003		
<b>Position Last</b>	<b>Latitude</b> = 50 38'.200 N	<b>Longitude</b> = 000 46'.317 W	
<b>Name</b>			
<b>Type</b>	BARGE OR LCT		
<b>Flag</b>			
<b>Dimensions</b>	<b>Length</b> =	<b>Beam</b> =	<b>Draught</b> =
<b>Tonnage</b>			
<b>Cargo</b>			
<b>Date Sunk</b>			
<b>Sonar Dimensions</b>	<b>Length</b> = 25.0 metres	<b>Width</b> = 5.0 metres	<b>Shadow Height</b> = 2.5
<b>metres</b>			
<b>Orientation</b>	170/350		
<b>Magnetic Anomaly</b>	Moderate		
<b>Debris Field</b>	NIL		
<b>Scour</b>	<b>Depth</b> = 0.0 metres	<b>Length</b> =	<b>Orientation</b> =
<b>Markers</b>			
<b>General Comments</b>	INTACT, INVERTED, ALMOST BURIED		

## Circumstances of Loss

### Surveying Details

\*\*H2379/75 10.4.75 WRECK LOCATED IN 503812N, 004619W [OGB] USING HIFIX [2 LOP]. APPROX 60MTRS LONG. LYING 165/345DEGS & STANDING UP ABOUT 4MTRS FROM DCS3. (SCES, 7.2.75). INS AS WK 15.0MTRS. - NM 847/75.

\*\*H2318/74 28.8.75 WK EXAM'D 1.7.75 IN 503812N, 004619W [OGB] USING HIFIX [2 LOP]. LEAST E/S DEPTH 21MTRS IN GEN DEPTH 23.2MTRS. SCOUR DEPTH 24.2MTRS. (SCES HI 62/75). NCA.

\*\*H2318/74 28.6.76 WK DIVED ON JUNE 1976. APPROX DIMENSIONS 160FT & 30FT X 8 FT. BARGE OR LCT. FLAT BOTTOMED, LYING UPSIDE DOWN. NO CARGO. STEEL PLATE VERY THIN WITH HOLES. HAD 3 SMALL PROPELLERS. (E GILES & R TODD, 18.6.76). NCA.

\*\*H4822/75 25.3.77 NOT SEARCHED FOR. (FSL WATERWITCH, HI 73/76).

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

\*\*HH091/003/01 30.9.03 EXAM'D 13.6.03 IN 5038.220N, 0046.400W [WGD] USING DGPS. SWEEP CLEAR 21.9, FOUL 22.2MTRS. LEAST E/S DEPTH 21.6 IN GEN DEPTH 24MTRS. NO SCOUR. LENGTH 25MTRS, WIDTH 5MTRS. DCS3 HT 2.5MTRS. LIES 170/350 DEGS. MODERATE MAGNETIC ANOMALY. INTACT AND ALMOST BURIED. (NP 1016, HI 1003A). AMEND TO SW 21MTRS. BR STD.

# UKHO DATA SHEET FOR SITE 20009

Latitude = 50 38'.577 N Longitude = 000 56'.464 W [WGD] Square Number = 136 State = LIVE

<b>Wreck Number</b>	20009	<b>Classification</b>	= Unclassified
<b>Symbol</b>	WK SW 15.8	<b>Largest Scale Chart</b>	= 2037
<b>Charting Comments</b>			
<b>Old Number</b>	013603139		
<b>Category</b>	Dangerous wreck		
<b>WGS84 Position</b>	<b>Latitude</b> = 50 38'.577 N	<b>Longitude</b> = 000 56'.464 W	
<b>WGS84 Origin</b>	Original		
<b>Horizontal Datum</b>	WGD WGS (1984)		
<b>Position Method</b>	Differential Global Positioning System		
<b>Position Quality</b>	Surveyed		
<b>Position Accuracy</b>	5.0		
<b>Area at Largest Scale</b>	No		
<b>Depth</b>	15.8 metres		
<b>Drying Height</b>			
<b>Height</b>			
<b>General Depth</b>	19 metres		
<b>Vertical Datum</b>	Lowest astronomical tide		
<b>Depth Method</b>	Swept by wire-drag		
<b>Depth Quality</b>	Least depth known		
<b>Depth Accuracy</b>			
<b>Conspic Visual</b>	NO	<b>Conspic Radar</b>	NO
<b>Historic</b>	NO	<b>Military</b>	NO
<b>Non Sub Contact</b>	NO	<b>Existence Doubtful</b>	NO
<b>Last Amended</b>	27/11/2003		
<b>Position Last Amended</b>	27/11/2003		
<b>Position Last</b>	<b>Latitude</b> = 50 38'.550 N	<b>Longitude</b> = 000 56'.367 W	
<b>Name</b>			
<b>Type</b>	TM STEEL BARGE		
<b>Flag</b>			
<b>Dimensions</b>	<b>Length</b> =	<b>Beam</b> =	<b>Draught</b> =
<b>Tonnage</b>			
<b>Cargo</b>			
<b>Date Sunk</b>			
<b>Sonar Dimensions</b>	<b>Length</b> = 30.0 metres	<b>Width</b> = 15.0 metres	<b>Shadow Height</b> = 3.0 metres
<b>Orientation</b>	045/225		
<b>Magnetic Anomaly</b>	Slight		
<b>Debris Field</b>	NIL		
<b>Scour</b>	<b>Depth</b> = 0.0 metres	<b>Length</b> =	<b>Orientation</b> =
<b>Markers</b>			
<b>General Comments</b>	INTACT, UPRIGHT		

## Circumstances of Loss

### Surveying Details

\*\*H4824/75 6.2.78 WK, ABOUT 20MTRS LONG, LOCATED 8.3.77 IN 503833N, 005621.4W [OGB] USING SEAFIX [2 LOP]. LEAST E/S DEPTH 15.3 IN GEN DEPTH 18.3MTRS. NO SCOUR. LYING ABOUT 095/275DEGS. (SCES, HI 71/77). CHART AS WK 15.3MTRS. R/S.

\*\*H1284/78 12.6.78 IDENTIFIED AS TWIN ENGINED STEEL BARGE WITH LARGE CYLINDRICAL CONTAINER COMPLETELY FILLING HOLD. WK UPRIGHT & INTACT. MAX HT ABOUT 12FT. SUGGEST IT MAY HAVE BEEN A D-DAY FUEL OR WATER BARGE. (M WALSH, 26.5.78).

\*\*H3847/86 22.3.89 EXAM'D 7.12.88 IN 503833N, 005622W [OGB] USING TRISPONDER [3 LOP]. LEAST E/S DEPTH 16.2 IN GEN DEPTH 21MTRS. NO SCOUR. DCS3 HT 2.9MTRS. LIES N/S ON A SMALL 1.5MTR HIGH OUTCROP. STILL INTACT & GIVES EXCELLENT RESPONSE ON BOTH SONAR & E/S. (HMSML GLEANER, HI 366). AMEND TO WK 16.2MTRS IN REVISED POSN. BR STD.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

\*\*HH091/005/01 27.11.03 EXAM'D 9.8.03 IN 5038.577N, 0056.464W [WGD] USING DGPS. SWEEPED CLEAR 15.8, FOUL 16.1MTRS. LEAST E/S DEPTH 15.9 IN GEN DEPTH 19MTRS. NO SCOUR. LENGTH 30MTRS, WIDTH 15MTRS. DCS3 HT 3.0MTRS. LIES 045/225 DEGS. POOR MAGNETIC ANOMALY. INTACT AND UPRIGHT. (NP 1016, HI 1005). AMEND TO SW 15.8MTRS. BR STD.



## UKHO DATA SHEET FOR SITE 20244

Latitude = 50 38'.350 N Longitude = 000 52'.867 W [OGB] Square Number = 136 State = LIVE

<b>Wreck Number</b>	20244	<b>Classification</b>	= Unclassified
<b>Symbol</b>	WK 11.0	<b>Largest Scale Chart</b>	= 2045
<b>Charting Comments</b>	LEGEND 'WKS' - SEE ALSO WK [20243]		
<b>Old Number</b>	013605732		
<b>Category</b>	Dangerous wreck		
<b>WGS84 Position</b>	<b>Latitude</b> = 50 38'.385 N	<b>Longitude</b> = 000 52'.955 W	
<b>WGS84 Origin</b>	3-D Cartesian Shift (BW)		
<b>Horizontal Datum</b>	OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)		
<b>Position Method</b>	Electronic Distance Measuring System		
<b>Position Quality</b>	Surveyed		
<b>Position Accuracy</b>	13.0		
<b>Area at Largest Scale</b>	No		
<b>Depth</b>	11.0 metres		
<b>Drying Height</b>			
<b>Height</b>			
<b>General Depth</b>	15 metres		
<b>Vertical Datum</b>	Lowest astronomical tide		
<b>Depth Method</b>	Found by echo-sounder		
<b>Depth Quality</b>	Least depth known		
<b>Depth Accuracy</b>			
<b>Conspic Visual</b>	NO	<b>Conspic Radar</b>	NO
<b>Historic</b>	NO	<b>Military</b>	NO
<b>Non Sub Contact</b>	NO	<b>Existence Doubtful</b>	NO
<b>Last Amended</b>	17/03/2000		
<b>Position Last Amended</b>			
<b>Position Last</b>	<b>Latitude</b> =	<b>Longitude</b> =	
<b>Name</b>			
<b>Type</b>	BARGE/DUMB LIGHTER		
<b>Flag</b>			
<b>Dimensions</b>	<b>Length</b> =	<b>Beam</b> =	<b>Draught</b> =
<b>Tonnage</b>			
<b>Cargo</b>			
<b>Date Sunk</b>			
<b>Sonar Dimensions</b>	<b>Length</b> =	<b>Width</b> =	<b>Shadow Height</b> = 3.8
metres			
<b>Orientation</b>	045/225		
<b>Magnetic Anomaly</b>			
<b>Debris Field</b>			
<b>Scour</b>	<b>Depth</b> = 1.5 metres	<b>Length</b> =	<b>Orientation</b> =
<b>Markers</b>			
<b>General Comments</b>			

### Circumstances of Loss

### Surveying Details

\*\*H3847/86 22.3.87 INTACT BARGE OR DUMB LIGHTER EXAM'D 7.12.88 IN 503821N, 005252W [OGB] USING TRISPONDER [3 LOP]. LEAST E/S DEPTH 13.7 IN GEN DEPTH 15MTRS. SCOUR 1.5MTRS DEEP. DCS3 HT 3.8MTRS. LIES NE/SW AT THE TOP OF A 10 TO 15MTR UNDERWATER CLIFF FACE. SONAR HT INDICATES LEAST DEPTH MAY NOT HAVE BEEN OBTAINED. (HMSML GLEANER, HI 366). CHART AS WKS 11MTRS, IN CONJUNCTION WITH WK CLOSE SE [SEE 20243]. - NM 1144/89.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

## UKHO DATA SHEET FOR SITE 20243

Latitude = 50 38'.317 N Longitude = 000 52'.833 W [OGB] Square Number = 136  
State = LIVE

<b>Wreck Number</b>	20243	<b>Classification</b>	= Unclassified		
<b>Symbol</b>	WK 11.0	<b>Largest Scale Chart</b>	= 2045		
<b>Charting Comments</b>	LEGEND 'WKS' - SEE ALSO WK [20244]				
<b>Old Number</b>	013605720				
<b>Category</b>	Dangerous wreck				
<b>WGS84 Position</b>	<b>Latitude</b> = 50 38'.352 N <b>Longitude</b> = 000 52'.922 W				
<b>WGS84 Origin</b>	3-D Cartesian Shift (BW)				
<b>Horizontal Datum</b>	OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)				
<b>Position Method</b>	Electronic Distance Measuring System				
<b>Position Quality</b>	Surveyed				
<b>Position Accuracy</b>	25.0				
<b>Area at Largest Scale</b>	No				
<b>Depth</b>	11.0 metres				
<b>Drying Height</b>					
<b>Height</b>					
<b>General Depth</b>	16 metres				
<b>Vertical Datum</b>	Lowest astronomical tide				
<b>Depth Method</b>	Found by echo-sounder				
<b>Depth Quality</b>	Least depth known				
<b>Depth Accuracy</b>					
<b>Conspic Visual</b>	NO	<b>Conspic Radar</b>	NO		
<b>Historic</b>	NO	<b>Military</b>	NO	<b>Existence Doubtful</b>	NO
<b>Non Sub Contact</b>	NO				
<b>Last Amended</b>	17/03/2000				
<b>Position Last Amended</b>					
<b>Position Last</b>	<b>Latitude</b> =	<b>Longitude</b> =			
<b>Name</b>					
<b>Type</b>	?STEEL BARGE				
<b>Flag</b>					
<b>Dimensions</b>	<b>Length</b> =	<b>Beam</b> =	<b>Draught</b> =		
<b>Tonnage</b>					
<b>Cargo</b>					
<b>Date Sunk</b>					
<b>Sonar Dimensions</b>	<b>Length</b> =	<b>Width</b> =	<b>Shadow Height</b> =		
<b>Orientation</b>	000/180				
<b>Magnetic Anomaly</b>	Strong				
<b>Debris Field</b>					
<b>Scour</b>	<b>Depth</b> = 0.0 metres	<b>Length</b> =	<b>Orientation</b> =		
<b>Markers</b>					
<b>General Comments</b>					

### Circumstances of Loss

### Surveying Details

\*\*H3847/86 22.3.89 SMALL WK/OBSTN EXAM'D 1.11.88 IN 503819N, 005250W[OGB] USING TRISPONDER. LEAST E/S DEPTH 13.8 IN GEN DEPTH 15.5MTRS. NO SCOUR. NO SHADOW ON DCS3. LIES N/S AT THE TOP OF AN UNDERWATER CLIFF FACE. GOOD MAGNETOMETER RESPONSE - COULD WELL BE SMALL STEEL BARGE OR PART OF WK LYING CLOSE NW. (HMSML GLEANER, HI 366). CHART AS WKS 11MTRS IN CONJUNCTION WITH WK CLOSE NW [SEE 20244]. - NM 1144/89.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

Latitude = 50 43'.633 N Longitude = 001 03'.092 W [OGB] Square Number = 135 State = LIVE

<b>Wreck Number</b>	19117	<b>Classification</b>	= Unclassified
<b>Symbol</b>	WK 21.5	<b>Largest Scale Chart</b>	= 2037
<b>Charting Comments</b>			
<b>Old Number</b>	013503297		
<b>Category</b>	Dangerous wreck		
<b>WGS84 Position</b>	<b>Latitude</b> = 50 43'.668 N <b>Longitude</b> = 001 03'.179 W		
<b>WGS84 Origin</b>	3-D Cartesian Shift (BW)		
<b>Horizontal Datum</b>	OGB ORDNANCE SURVEY OF GREAT BRITAIN (1936)		
<b>Position Method</b>	Electronic Distance Measuring System		
<b>Position Quality</b>	Precisely known		
<b>Position Accuracy</b>	25.0		
<b>Area at Largest Scale</b>	No		
<b>Depth</b>	21.5 metres		
<b>Drying Height</b>			
<b>Height</b>			
<b>General Depth</b>	28 metres		
<b>Vertical Datum</b>	Lowest astronomical tide		
<b>Depth Method</b>	Found by echo-sounder		
<b>Depth Quality</b>	Least depth known		
<b>Depth Accuracy</b>			
<b>Conspic Visual</b>	NO	<b>Conspic Radar</b>	NO
<b>Historic</b>	NO	<b>Military</b>	NO
<b>Non Sub Contact</b>	NO	<b>Existence Doubtful</b>	NO
<b>Last Amended</b>	01/09/1980		
<b>Position Last Amended</b>	05/01/1990		
<b>Position Last</b>	<b>Latitude</b> = 50 43'.630 N <b>Longitude</b> = 001 03'.092 W		
<b>Name</b>			
<b>Type</b>	LANDING CRAFT		
<b>Flag</b>			
<b>Dimensions</b>	<b>Length =</b>	<b>Beam =</b>	<b>Draught =</b>
<b>Tonnage</b>			
<b>Cargo</b>			
<b>Date Sunk</b>			
<b>Sonar Dimensions</b>	<b>Length =</b> 50.0 metres	<b>Width =</b>	<b>Shadow Height =</b> 6.0
<b>metres</b>			
<b>Orientation</b>	135/315		
<b>Magnetic Anomaly</b>			
<b>Debris Field</b>			
<b>Scour</b>	<b>Depth =</b> 0.3 metres	<b>Length =</b>	<b>Orientation =</b>
<b>Markers</b>			
<b>General Comments</b>	UPRIGHT		

#### Circumstances of Loss

#### Surveying Details

\*\*H3359/59 22.10.63 WK LOCATED IN 504337N, 010304W USING HSA. LEAST E/S DEPTH 70 IN GEN DEPTH 92FT. SCOUR 2FT DEEP. EXAM'D BY HMS DINGLEY. DIVER REPORTS IT AS ON OLD WK, 100-150FT LONG - SIMILAR TO AN RFA VICTUALLING CRAFT. LIES 310/130DEGS, UPRIGHT WITH BOW SE. (SCES, 1.8.63/HMS DINGLEY). CHART AS NDW. R/S.

\*\*H4661/68 6.5.68 DRIFT SWEPT, CLEAR AT 71, FOUL AT 72FT. LEAST E/S DEPTH 72 IN GEN DEPTH 93FT. SCOUR 2FT DEEP. (FSL WATERWITCH, H525 7/67, 15.6.67). AMEND TO SW 12FMS [21.5MTRS]. - NM 1077/68.

\*\*H2435/72 4.5.72 POSN CONFIRMED. LEAST E/S DEPTH 23.0MTRS [75.5FT]. (SCES, 7.2.72). NCA.

\*\*H4824/75 7.2.78 LOCATED BY SMB IN 1976 IN 504337.8N, 010305.5W. LEAST E/S DEPTH 23MTRS. (SCES, HI 72/77). AMEND TO WK 23MTRS IN 504338N, 010305.5W. R/S.

\*\*H4824/75 21.8.80 EXAM'D 4.7.79 IN 504337.5N, 010304W [OGB] USING TRISPONDER [2 LOP] & HSA. LEAST E/S DEPTH 21.9 IN GEN DEPTH 28MTRS. SCOUR 1MTR DEEP. LIES 140/320DEGS. APPROX 45MTRS LONG. (FSL WATERWITCH, HI 80B/79). AMEND TO WK 21.5MTRS. R/P.

\*\*HH100/351/01 10.7.89 THIS IS THE WK OF A COMPLETE LANDING CRAFT. (H BATES). NCA.

H3847/86 5.1.90 EXAM'D 13.6.89 IN 504336.3N, 010303.8W [OGB] USING TRISPONDER [4 LOP]. LEAST E/S DEPTH 22.0 IN GEN DEPTH 28MTRS. SCOUR 0.3MTR DEEP. DCS3 HT 6MTRS, LENGTH APPROX 50MTRS. UPRIGHT, LYING 135/315DEGS. RECOMMEND RETAIN AS CHARTED. (HMSML GLEANER, HI 366). NCA.

POSITIONS BELOW THIS POINT ARE IN DEGREES, MINUTES AND DECIMALS OF A MINUTE

## **REPORT OF WRECK EXAMINATION    Wreck No: 20008**

General Area: 8 miles South of Bracklesham, West Sussex.

Date Located: N/K

Date Exam'd/Dived\*: 26<sup>th</sup> to 30 July 2008

Vessel Name: Tanks and Bulldozers

Details of Loss (if known): 6<sup>th</sup> June 1944. Lost deck cargo from Landing Craft Tank

Method of Positioning: GPS/DGPS/Other\*      GPS

Located Pos'n: 50° 38.540' N      000°51' .586' W

(Please quote positions in degrees, minutes and decimal minutes)

Is this pos'n referred to WGS84? Yes      Is it corrected to agree with the chart? Yes/No\*

Depth Data:      Least Depth by echo sounder:      mtrs  
General Depth by echo sounder:      mtrs

Depths corrected for height of tide: No\*. If not, Time and date of Least E/S depth:

If echo sounder not used: Depth to bottom by Depth Gauge: 23.1      mtrs  
Height of wreck by Depth Gauge: 20.6      mtrs

Contact Data:      Height above bottom: 2.5m      mtrs (measured\*)  
Length: 30m      mtrs (estimated/measured\*)  
Width/Beam: 25m      mtrs (estimated/measured\*)  
Orientation: 330      °      (Bows:      °)

Sonar Signal Strength: Poor

Magnetic Anomaly:      Magnetometer not used\*

Scour Depth:      mtrs      Scour Length:      mtrs      Direction (Towards):

Bottom Texture:

Debris Field:      Length: 30 mtrs      Direction (towards): 330      °

Buoyage: none

Description (include attitude and whether intact):

WW2 cargo believed to be lost from LCT(A) 2428 on 6 June 1944. 2 Centaur Tanks (intact upside down), 2 Armoured D7 Bulldozers (intact on their side) and the 4x4 vehicle (broken). Gun barrel believed to be from LCT. Quantity of 95mm HE ammunition and other UXO. Kedge anchor and 2 propellers (believed to be spare from LCT) also present on site.

Reported by: Alison Mayor

Date: 10 October 2008

Reported details can be kept as Commercial in Confidence for a period of 5 years, however the object must be charted if significant. Is this to be kept C in C: Yes but only in terms of report/images which are subject to copyright\*

We will assume that photographs and other graphics may be used unless stated otherwise.



# **NEPTUNE WRECKS PROJECT REPORT**

## **Part 5 – Historical Research**

### **Introduction**

This section of our report documents the findings of historical research carried out by club members in their investigation of the wreck sites visited in 2009/10 as part of the project.

The following paragraphs cover the research into the general findings of each wreck site and also a comparison, where appropriate, of particular items of interest on the wreck which go some way to confirming the nature/identity of the wreck. The wrecks are addressed in the same order as in Part 4 – Survey Results, to aid comparison.

A majority of information has been located via the Internet or from publications, but a significant source has also from the assistance of subject matter experts from museums and veterans organisations and also some from engagement with the public. All of which I would like to thank for their time. A list of publications used in the research in support of this report is included at Annex A. Sources have been noted where practicable.

### **OPERATION “NEPTUNE”**

Operation NEPTUNE was the maritime phase of Operation OVERLORD – the invasion of Normandy by Sea and the liberation of France. To this day it remains the largest ever maritime invasion, the sheer scale of which is difficult to comprehend in modern times.



Figure 57 - Landing Craft waiting for the signal Southampton Docks. (IWM)

After 2 years of planning, the invasion force of almost 7,000 ships vessels and craft from 8 different Navies assembled along the South Coast of England at the beginning of June 1944. Delayed by 24 hours as a result of bad weather, the Invasion fleet set sail on the evening of 5<sup>th</sup> June under cover of darkness and in heavy seas. The fleet included many specialist vessels and craft, guarded by warships, all with an assigned role to play which was meticulously planned and rehearsed.



Figure 58 - Invasion force sets sail 5th June 1944. (IWM)

Whilst there are appropriate memorials and indeed an excellent D Day Museum, there are many relics and reminders of the event which are generally go un-noticed in our everyday lives more than 65 years after D Day. Many are part of our coastal landscape, such as the Mulberry Harbour unit at Langstone Harbour. Visible by passengers on Hayling Island ferry it is one example of how this crumbling piece of concrete with such a significant role in history has become part of the landscape for most of the general public.



Figure 59 - Mulberry Harbour Unit at Langstone Harbour.

Many people will be unaware of the huge effort that went into constructing two floating harbours, each the size of Dover, which were assembled in a matter of days on the other side of the English Channel and which were critical to the success of Operation Overlord.



**Research into WW2 history in support of the Project Neptune wrecks investigations.**

**Landing Craft Tank (Armoured) or LCT(A)**



Figure 60 - US Landing Craft Tank Mk 5 (pre conversion) (IWM)

It is believed that 48<sup>3</sup> US built Mark V Landing Craft Tanks were converted for the role they were to play by providing 'Close Support' cover during the initial assault of the Normandy Beaches. 26 of the 48 were loaned back to the United States for the Invasion of Normandy – see Annex B for a fascinating account of the modifications made and of the role played by US LCT (A) 2124 by Lt Cdr Erwin Kaufmann USN

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<sup>3</sup> Tony Chapman – Archivist/Historian of the LST and Landing Craft Association

Rtd. The British and Canadian assault of had 3 flotillas of 8 LCT (A)s for Juno and Sword beaches.

The conversion included the building of ramps on the tank deck to allow Centaur Tanks to fire over the bow on the approaches to the beach and additional 50 tons of armour plating, predominantly around the bridge area, to protect the personnel and craft in the first wave of the attack. In recognition of the modification the LCTs were renumbered to as a '2' in the front – and so LCT (Mk V) 428 became LCT (A) 2428.



Figure 61 - LCT 2285 under conversion to fit tank ramps.

Other than these modifications the craft was generally the same as the other MkV LCTs which had a distinctive rounded bow and were smaller than other British LCTs.

### US LCT (Mk 5) Specification

The Specification for a Mk V is given on the WW2 Landing Craft Tank website (<http://ww2lct.org/mk5/mk5main.htm>) as follows;

Hull Dimensions Length	114 ft. 2 in.
Hull Dimensions Beam	32 ft. 8 in.
Displacement	286 tons (short tons)*
Draught forward	36 in.
Loads carried (max tons)	150 tons (short tons)*
Crew	13

Engine make	Gray Marine
Shaft Horse power	675
Number & Type	3 Diesel
Props	3
Max speed	7 knots (Designed speed 10 knots)
Range in miles	700 at 7 knots
Armour in the wheelhouse	2 1/2 in.
Armour in the gun shields	2 in. plastic ?
Armament	2 20 mm antiaircraft gun **
Armament	2 50 cal. machine guns **

\* Short ton = 2000 lbs U.S. Long ton = 2240 lbs Great Britain

\*\* Armament varied depending on theatre of operation

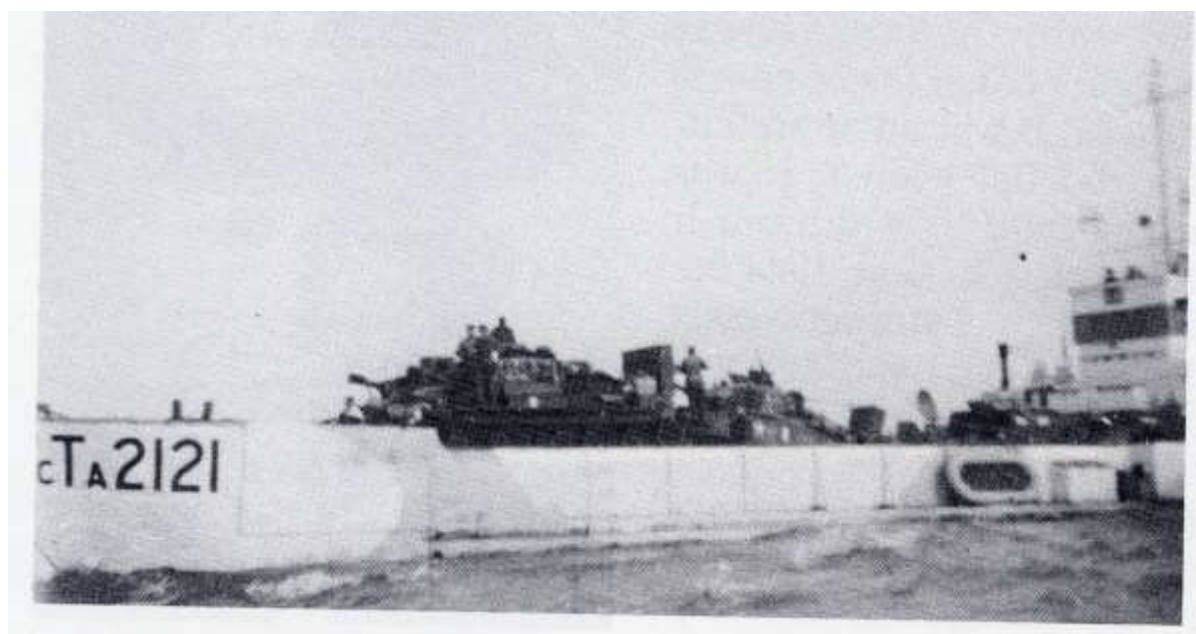


Figure 62 – A rare image of LCT (A) 2121 with Centaur tanks mounted to fire the bow.

The US LCT Mk 5 428 re-designated as HM LCT (A) 2428 was built at New York Shipbuilding (Camden) and was loaned to Britain under the lend-lease arrangement during WW2. The New York Shipbuilding company is no longer trading.

One restored LCT Mk 5 remains today 'Outer Island' is a living memorial in the USA.

#### L.C.T.(5) AS SUPPORT CRAFT

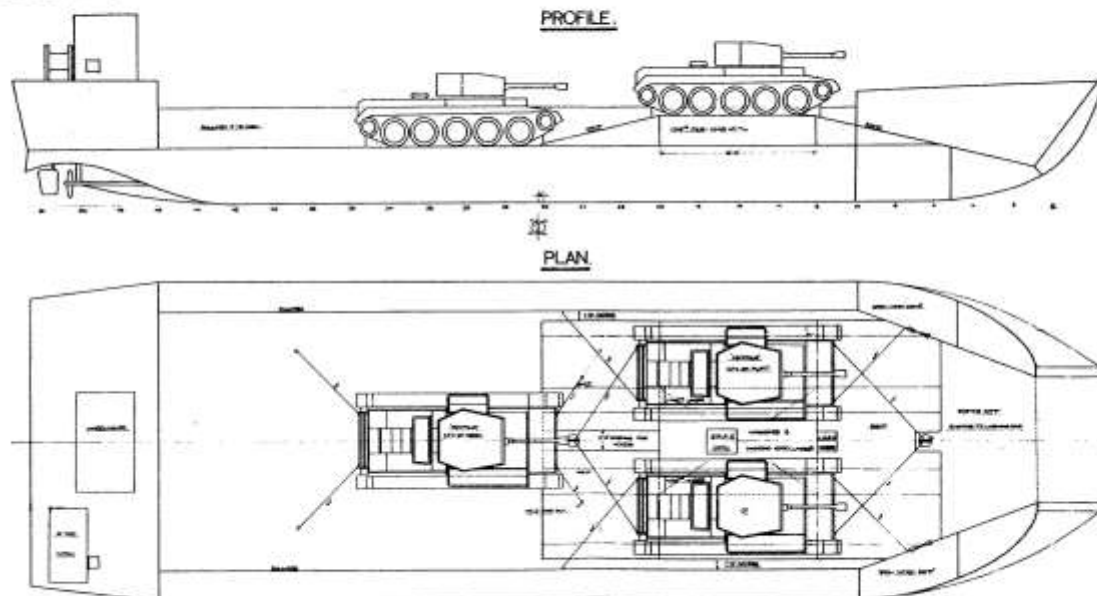


Figure 63 - schematic of modifications to LCT Mk 5 for conversion to provide Close Support

In the space beneath the ramp, additional 95mm HE tank ammunition as stored which could be passed up to the tanks during the assault.

### Beam/'Goal posts'

The beam of 32' 8" aligns with the measurement of 32' 6" taken at the site 20004 and is believed to be the width of the main bulkheads at the stern/bridge area.

### Engines

LCT(A)s had 3 225hp Gray Marine diesel engines. Three engines were found at the site (20004) lying in parallel, just as they would have in the landing craft and illustrated in the schematic at Figure 6 above. As the engines appear to be upside down there were no identification plates visible.

### Propellers

LCT(A)s had three propellers, which could be 3 or 4 bladed. One propeller was clearly visible at the site (20004) and had a diameter of 37 inches. It is possible that the other two propellers are at the site though these could not be found on our initial investigation as the propeller shafts were not always visible.



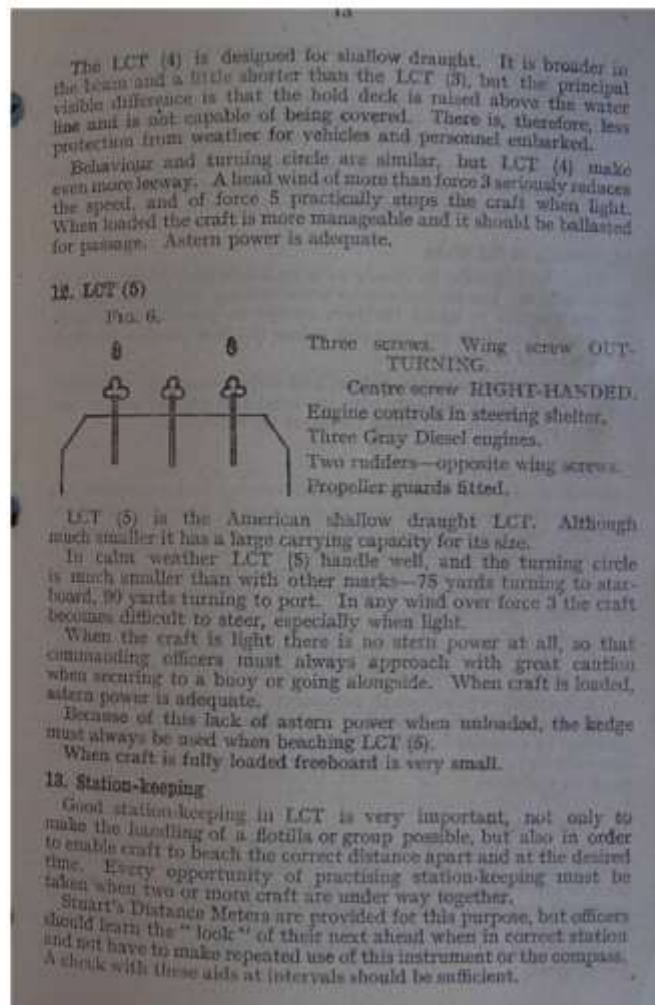


Figure 64 - Extract from Commanding Officer's Manual for LCTs

The propeller found at the site also matched the type as the two found at the Tanks and bulldozers site (which appear to be spares).

## Rudders

The photograph below of an LCT Mk5 and the detailed specification confirms they had two rudders of the same shape as those found at LCT site 20004.

.Figure 65 - Stern of a US LCT Mk 5 showing rudder and propeller

## Armament

As mentioned in the specification, LCT (A)s had two anti-aircraft guns, both positioned on the bridge area.

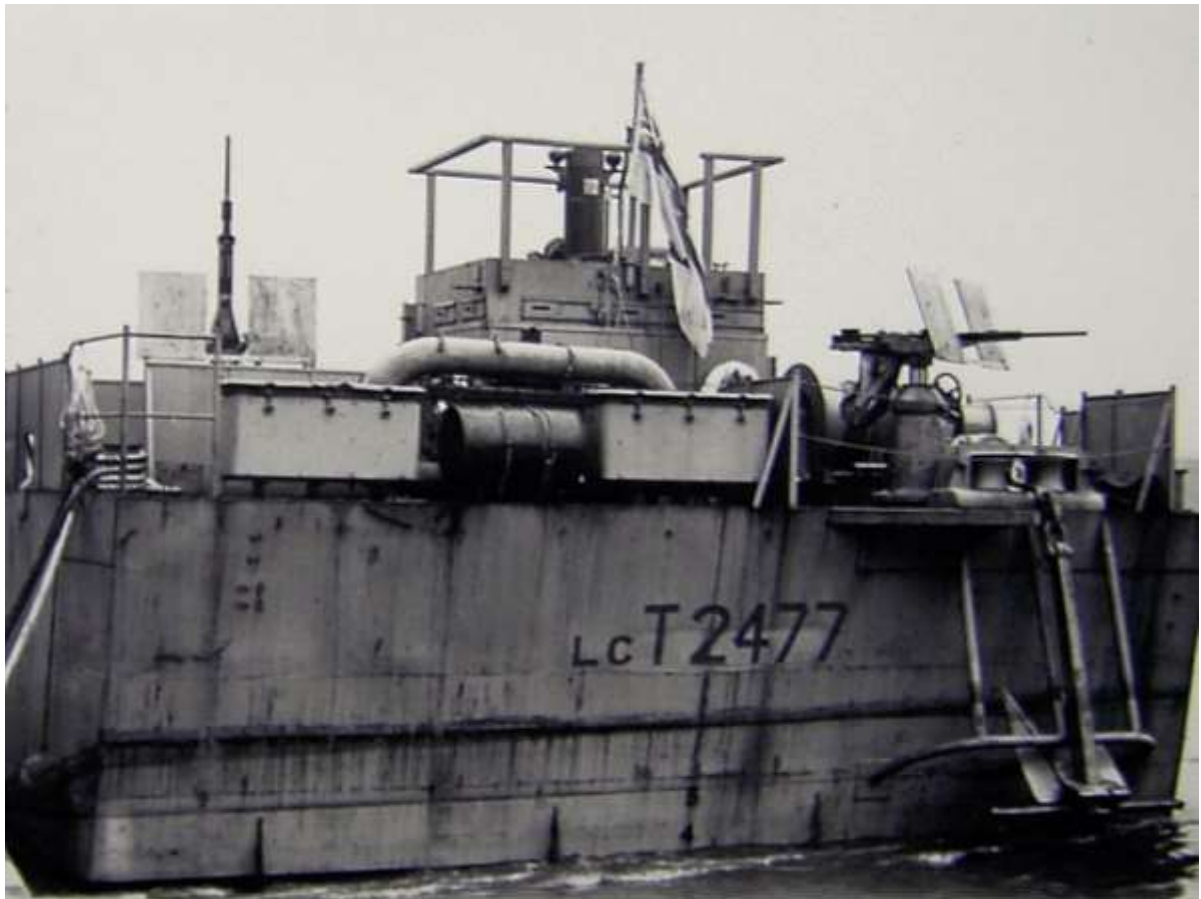


Figure 66 - The stern of LCT 2477 showing 2x Oerlikon 20mm anti-aircraft guns. Note also the large kedge anchor.

The shape and size of these guns are very similar to those found at the Landing Craft site 20004 (see Part 4).



Figure 67 - Oerlikon 20mm Anti-Aircraft gun.

#### Oerlikon 20mm Specifications

<b>Weight</b>	480 kg (without ammunition, including 387 kg of ballast)
<b><u>Caliber</u></b>	20 mm
<b><u>Action</u></b>	<u>API blowback</u>
<b><u>Rate of fire</u></b>	450 rounds per minute
<b><u>Muzzle velocity</u></b>	820 m/s
<b>Maximum range</b>	2,000 meters against aerial targets

#### Ammunition

The presence of a significant quantity of the same 95mm High Explosive shells as used by Centaur tanks was a compelling link of this LCT to the tanks and bulldozers site.

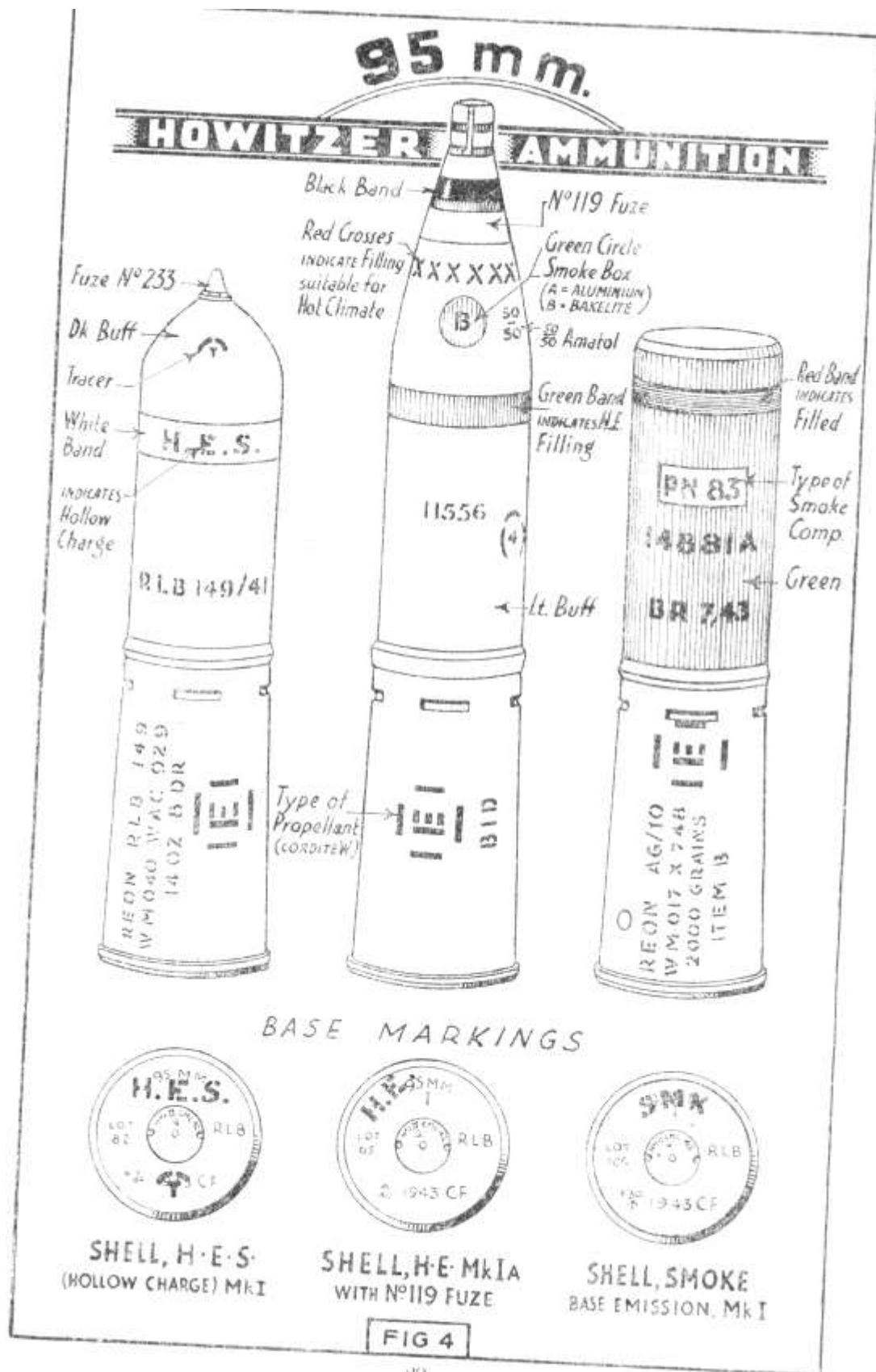


Figure 68- drawings of High Explosive 95mm ammunition - courtesy of Tank Museum



## Barges and Dumb Lighters

### Background

One of the lesser known but nevertheless essential element of Operation NEPTUNE was the role played by a thousand barges and vessels in supplying the invading forces with everything needed to support the Invading forces. The Royal Navy requisition 1,000 Thames barges and lighters and converted many to transport all types of supplies across the English Channel. Many of these barges had no form of propulsion or steerage and were normally towed across the river Thames in peacetime.



Figure 69 - Thames river barge or lighter.

It was an extraordinary task to ask these river vessels to cross the Channel in heavy seas to supply vehicles, spares, ammunition, water, food, fuel, medical and general supplies in support of the Allied troops. Some were converted as workshops and others were even converted to kitchens capable of baking 1000s of loaves of bread each day. The barges were of sturdy steel build and flat bottomed, designed for use in the tidal Thames and able to rest on the sea bed fully laden. The bow and stern of the barges were almost identical overhanging design, they were not powered and had no rudder, (dumb lighters were those without propulsion/steerage) as originally designed. The conversion work often added engines (Chrysler 130 HP petrol) and rudders.

In the book 'Those Wallowing Beauties' author W.D. 'Jim' Jarman tells the story of how these river craft, made the valiant journey time and time again during the days, weeks and months that followed D Day. The book is fascinating reading and includes many veterans' personal accounts of their experiences.



Figure 70 - Thames River barges were towed from one vessel to another.

Approximately 400 of the barge conversions made the crossing to the Normandy beaches on 6<sup>th</sup> June 1944, carrying about 3500 crew. Their role was to provide support for the landings, ferry men and equipment from larger vessels to the beaches and in the case of the Kitchen conversions, feed the crews.

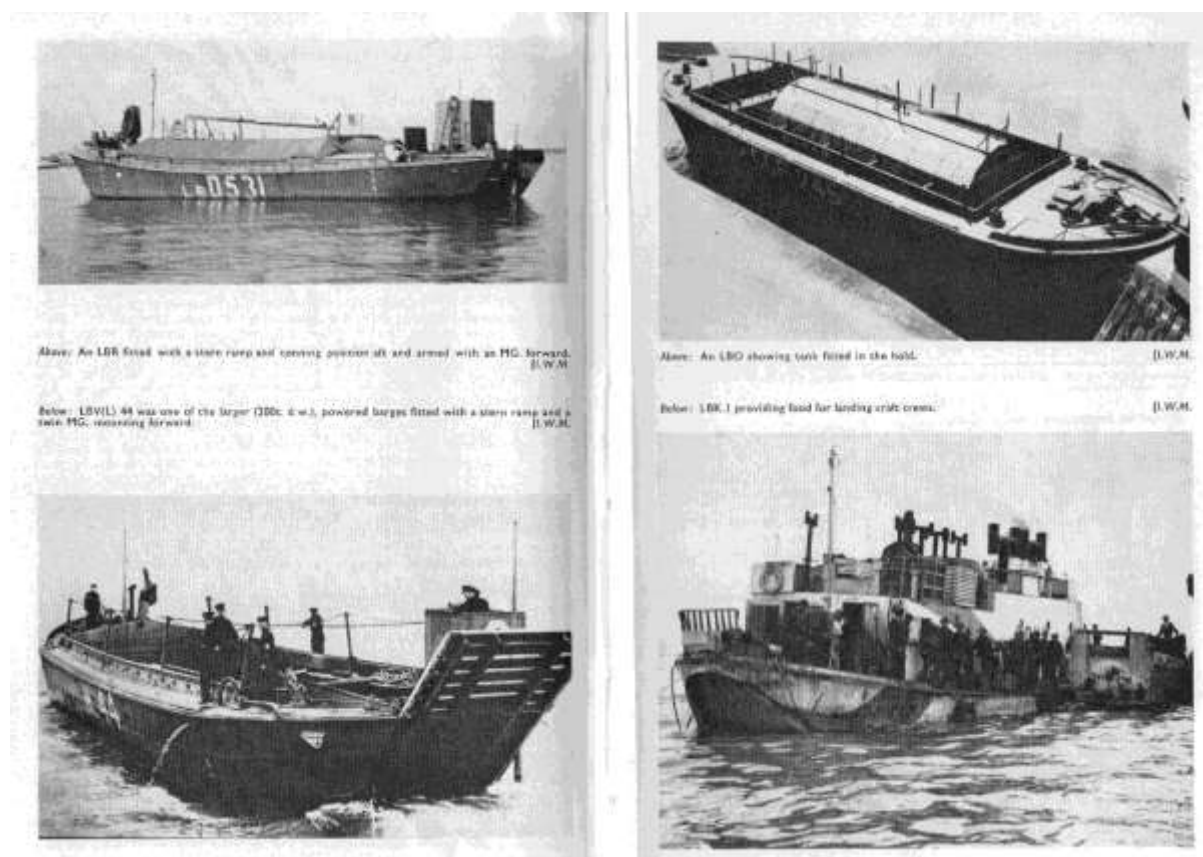


Figure 71- Various types of barge conversions (Those Wallowing Beauties).

One form of barge conversion was to provide for tanks for fuel, various grades of petrol as well as diesel, or water tanks. These vessels were called LBO or LBW as appropriate (Landing Barge Oil or Landing Barge Water). There were no major constructional differences found between these two conversions.

The Fuel and Water conversion was used to resupply smaller vessels from the 40 ton, 9000 gallon tanks they carried. The vessels were refitted with twin Chrysler 130 h.p. petrol engines and a centrally mounted rudder, (unlike most of the other barge conversions). The engines are shown mounted in the stern, on each side with the propeller shaft passing through the overhanging stern. The cylindrical tank mounted in front of them with 3" of concrete along the sides of the barge and the tank itself covered in 2.5" thick plastic armour. There were two 5" hand pumps and the tanks were filled via 2" Admiralty screwed hoses. The barges are stated as being up to 25 metres long, 7 metres wide with a draught between 1.4 and 2 metres.

They would normally have a crew of five, and were armed with two .303 Lewis guns. Being posted to be crew of an LB(O) was very unpopular. They were viewed as floating time bombs and there was also no smoking allowed on board.

The story of the barges capture the interest of Branch members when researching the location of LCT(A) 2428. There seems to be a remarkable number of barges and lighters wrecked in the area, many of which are likely to be associated with WW2 and the Normandy Invasion. As the wrecks are not dived it was a good opportunity to explore some unknown wrecks and try to work out what they might be.

## Barge Site 20009

The site 20009 as recorded on the UKHO data sheet is believed to be of one of these Oil or Water converted barges. This assumption is made on the basis of the UKHO data sheet (2) of the site stating that the wreck contained 'a large cylinder completely filling the hold', and the site survey finding the hold almost completely empty.

The UKHO data sheet also states that the site was swept to a depth of 15.8m in 2003. The measurements taken at the site (as detailed in Part 4) are entirely consistent with the LB (O) or LB (W) theory.

As mentioned in Part 4 we recovered a small bronze propeller from the site to aid research into dating the barge. The propeller was declared to the Receiver of Wreck in the form of a droit form reference 361/09. The purpose of recovery was to try to establish whether the propeller was part of a cargo or whether it was a spare for the vessel.

We carefully cleaned the 3 bladed propeller and revealed the makers' name – J Stone of Deptford' and the size pitch etc of the propeller. Importantly, there was also a date stamped onto the propeller of 1943. Each of the 3 blades is 15" from the centre and the propeller weighs 28kgs.



Figure 72 - Propeller maker "J Stone Deptford" 1943.



The propeller has a number "1804" on the edge of boss and details of the pitch etc. On the side as follows;

**Z. 7504**

**RH 1804**

**DIA. 2-6**

**PITCH 2-10**

J Stone & Co (Deptford) Ltd, were a company of electrical and mechanical engineers who started business in 1848. They manufactured a variety of equipment from fire extinguishers to ship equipment and items for the railway industry. Sadly they are no longer in business having been bought out and absorbed into other companies.

Advice from a club member's colleague working at QinetiQ (Haslar) in Gosport was that the propeller was good quality (because of the high copper content evident from its colour) and that its size and pitch would have made it suitable for a slow vessel. On this advice it is considered likely to be a spare for the barge rather than cargo.

### **Battery**

The battery found buried in the seabed had the name 'AUTOLITE' in raised letters on the top.

The Autolite Company are a famous US manufacturer of vehicle components such as spark plugs and air/oil filters ([www.autolite.com/company/timeline.php](http://www.autolite.com/company/timeline.php)). Established in 1911 Autolite were major suppliers to the US and Allied military and naval forces for a large number of military vehicles including Willys jeeps and various types of Chrysler trucks. It is likely that this battery was used to start the engines of the barge as they were fitted with Chrysler engines.

## Barge Site 20244

It was difficult to determine what this site may be. The steel 'vessel' had no propulsion and no hold. It was more like a pontoon but with angled corners. Having seen photographs of the Mulberry Harbour whale bridge sections some of the floating pontoons or 'beetles' looked a similar shape.



Figure 73 - Whale Bridge and supporting 'Beetles'.

Beetles were made of either steel or concrete depending on how close to the shore they were to be positioned.

Having seen a very detailed section in the D Day Museum about the Mulberry Harbours we sought advice from Andrew Whitmarsh the military historian at Portsmouth D Day Museum and he was able to provide some early drawings of beetles.

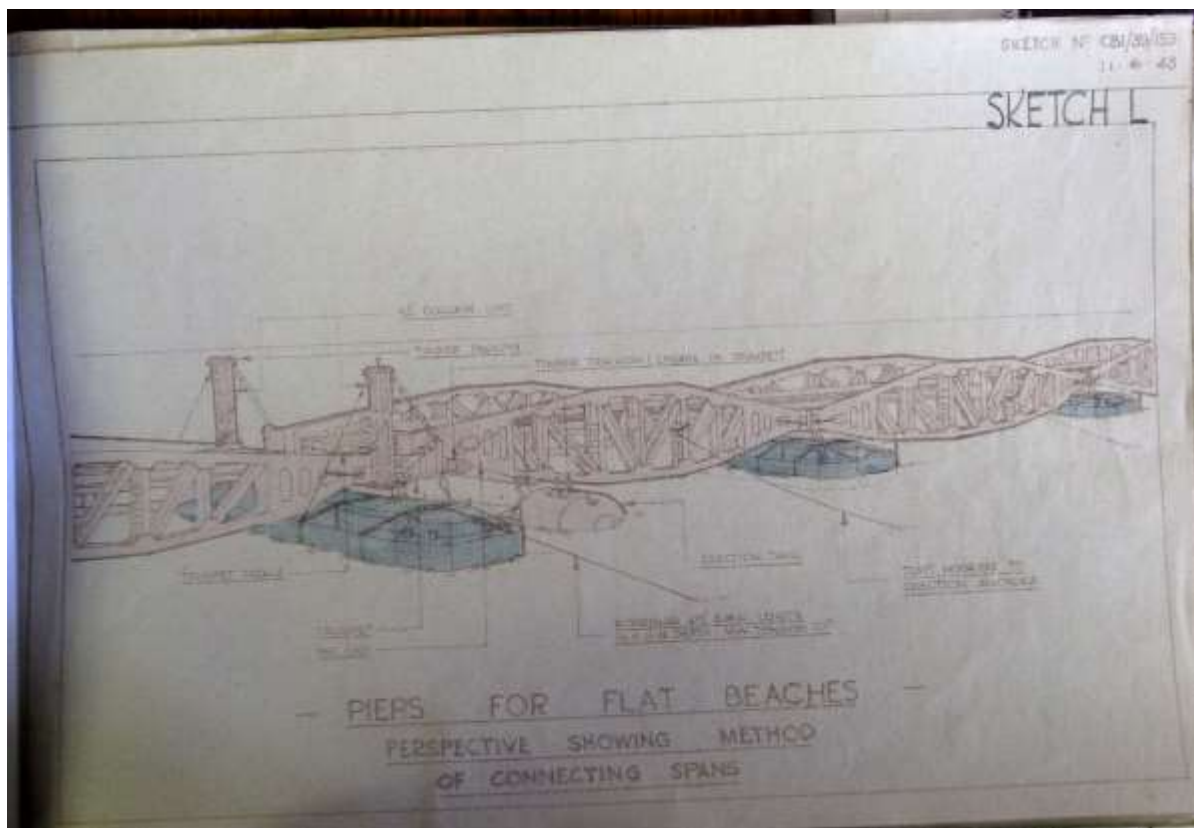


Figure 74 Mulberry Whale bridge and floating Beetle pontoons.

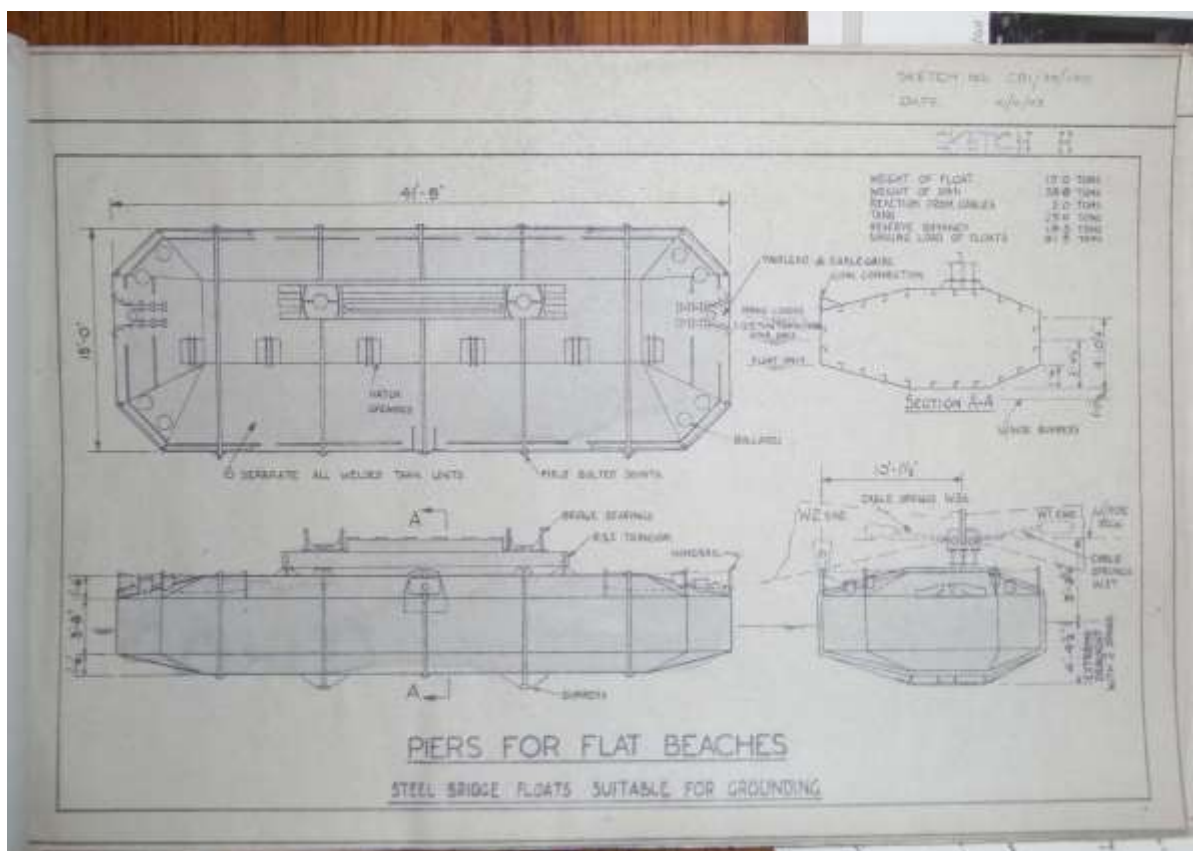


Figure 75 Scale drawing of the steel bridge floats (beetles).

These drawings indicate a size of 41' 9" long and a beam of 15' which is relatively the 42' 7" long and 16' beam that the diving team had measured. Our belief is that the wreck is highly likely to be a steel 'Beetle'.



## **Landing Craft Tank Site 19117**

After our second dive on the site it was clear that the LCT was not the same US designed and build LCT Mk 5 which we had been researching in respect of LCT(A) 2428 (Site 20004). The bridge/wheelhouse area was very different in layout and had companionways on either side. The layout, shape and size of the bridge area are similar to that we have seen of British Built Mk3 LCTs though these vessels are substantially larger than a Mk 5. The wreck is close to the deep water anchorage area and may have been at anchor when she was lost.

I have written to Tony Chapman, archivist and historian for the LST and Landing Craft Association, to request advice in the type of LCT and also if he has any knowledge of Mk 3 LCTs being lost in the area. In some very recent developments Tony has identified the fact that LCT Mk3 427 was lost, with all hands, in the early hours of 7<sup>th</sup> June having made the return Journey from Sword Beach. LCT 427 was in collision with the British battleship HMS Rodney near 'Spitbank Gate' resulting in the loss of all 13 crew.

We intend to look at this wreck, and another site 1/3<sup>rd</sup> mile away to find out more about the type of vessel/craft whilst researching in more detail the loss of LCTs in the area - respectful as always, that these wrecks may be the last resting place for some souls.

## Valentine Tank

We consulted the Historian at the Tank Museum (Bovington) and showed him images of the tank we had dived in Bracklesham Bay. David immediately confirmed it was that of Valentine Tank, and likely to be a 'DD' Duplex Drive version.



Figure 76 - Restored Valentine DD tank with propeller and canvas skirt.



Figure 77 - Valentine tank.

## Valentine Duplex Drive (DD) Tank

Valentine Mk V, IX and Mk XI, made amphibious by the use of Nicholas Straussler's Duplex Drive. These tanks were used by crews in training for the M4 Sherman DD tanks of the Normandy Landings.

The beaches along this stretch of coast, particularly Bracklesham were where numerous rehearsals for the D Day Landings took place. The coastline and sandy beaches were considered similar to that the Allies would find across the English Channel. Fabius 3 took place at Bracklesham Bay

**Exercise Fabius** was a formal exercise for Operation NEPTUNE. (The other was Exercise Tiger, which had occurred a week earlier.). The exercise was planned to start on 2 May 1944, but bad weather delayed it to the next day.

It consisted of six separate exercises:

- **Fabius 1** - elements of the 1st Infantry Division and 29th Infantry Division (United States) practiced amphibious landing at Slapton Sands. Where there had been a disaster in an earlier exercise (Tiger) with many troops killed after an enemy attack.
- **Fabius 2** - elements of the 50th Infantry Division practiced landings at Hayling Island.
- **Fabius 3** - elements of the 3rd Canadian Infantry Division practiced landings at Bracklesham Bay.
- **Fabius 4** - elements of the 3rd Infantry Division and associated units practiced landing at Littlehampton.
- **Fabius 5 and 6** - practice for American and British forces working on buildup of forces and supplies on Allied beaches.

They formed the largest amphibious training exercise of the war. As the final exercise before Operation Neptune, it resembled closely the final operation and no major changes could be made to Operation Neptune.

There has recently been a memorial placed at Bracklesham beach in recognition of the event. There is a very interesting display at the small rescue boat centre about Fabius 3 which has been put together by local residents.

It is likely that this tank was lost during Exercise Fabius 3 in May 1944.



## Tanks and Bulldozers Site 2008

In our 2008 survey of the tanks and bulldozers site we recorded two items which we thought may be porpoise ammunition sleds. Porpoises were towed by Centaurs as a means of taking extra ammunition with them as they progressed inland at the front of the invading forces. Porpoises were waterproofed and could be towed across the beach to the shore. Once moving inland they tended to overhead on roads etc.



Figure 78- Centaur tanks towing a 'porpoise' ammunition sled.



Figure 79 - Tanks & Bulldozers 'porpoise'?



Whilst the size and shape of these items closely resembled the porpoise, there was no ammunition present and we had expected to find some.

Sometime later, when researching Landing Craft images I came across a couple of images which resulted in a change in my mind about these items.

Photo # 80-G-286432 British LCTs 7057, 7064 and 2075 wrecked by the storm of 19-22 June 1944



Figure 80 - Ramp extensions on LCT(A) 2075.

This image of LCT (A) 2075 taken after the storm of 19-22 June 1944 shows 3 ramp extensions to the bow door which are remarkably similar in shape/design to the items previously believed to be porpoises and it is the belief that they are ramps.

We will investigate the Tanks and bulldozers site further to look for a 3<sup>rd</sup> ramp section.

## **Conclusions**

The survey and investigation of these sites has enabled significant progress in establishing the nature of the wrecks, their role in WW2 and their likely link to Operation NEPTUNE.

There is a compelling case for believing that site 20004 is the wreck of LCT (A) 2428. There is physical and documentary evidence to indicate that it is an LCT (A) and directly linked to the tanks and bulldozers site based on the survey of both sites and the historic WW2 war diaries/ documentation.

In respect of the barge sites 20244 (Beetle) and 20009 (Landing Barge Oiler or Landing Barge Water) we have a strong idea of the type of vessel and its role in Operation NEPTUNE.

We have successfully confirmed the type of tank in Bracklesham Bay and the likely event in which it was lost. We will raise a UKHO data sheet to report our findings so it is recorded for the future.

Our investigations of another LCT are in their early stages with some limited data to begin historical research.

We have corrected an earlier assumption regarding the 'porpoises' at the tanks and bulldozers site which we now believe to be door ramp extensions.

Enclosure

Annex A –List of Publications

Annex B - LCT (A) Armor and LCT (A) 2124. Lt Cdr Irwin Kaufmann US.

## Part 5 Annex A

### Reference Publications

#### **Neptune Wrecks Reference Publications**

The following publications were used as reference documents in researching the Neptune Wrecks Project;

Title	Author(s)	ISBN
Dive Wight and Hampshire – A Diver Guide	Martin Pritchard and Kendall McDonald	978-0946020300
Dive Sussex – A Diver Guide	Kendall McDonald	978-0946020287
Those Wallowing Beauties: Story of Landing Barges in World War II	W D 'Jim' Jarman	1 85776 260 6
OVERLORD– D Day and the Battle for Normandy	Max Hastings	(1984 edn)
The D Day Landings	Philip Warner	0 7183 0447 0
Nothing Less Than Victory – The Oral History of D Day	Russell Miller	0 7181 3328 5
Images of England - Portsmouth at War	Andrew Whitmarsh	978 07524 4296 9
D-Day Dawn of Heroes	Nigel Cawthorne	978 1 84193 750 2
Arromaches – History of A Harbour – Mulberry Harbour	Various	978 2 912925 08 04
The Normandy Mulberry Harbours – The Pitkin Guide	Various	1 84165 157 5

## LCT (A)s IN NORMANDY AT H-HOUR ON D-DAY

Lt Cdr Irwin Kaufmann USN Rtd

### LCT (A)s IN NORMANDY AT H-HOUR ON D-DAY

Here is a little bit of amphibious naval history that may have escaped notice. It concerns 26 LCT Mark 5s.

Sometime in late 1943, the planners of Overlord decided they needed more close in firepower. They may have been influenced by the British, especially General Montgomery.

As a result the U.S. Navy Gunfire Support Group was formed. The group consisted of LCGs, LCRs, and LCT (A)s. The LCGs and LCRs were converted British landing craft, respectively, fitted with various guns and rocket launchers. These did not beach; their mission was close in gunfire support. The LCT (A)s were US built LCTs, which were lend-leased to the British for the Mediterranean operations. They were "reverse lend-leased" to the US for Normandy

These LCTs were returned to the UK and sent to various British shipyards to be converted to LCT (A)s-the "A" for "Armored". A "2" was added to the original hull number-therefore my built in Manitowoc, WI, USS LCT124 became USS LCT(A) 2124.

Photo Courtesy Gary Priolo, [NavSource Amphibious Ship Photo Index](#)



Figure 81 LCT 8/LCT (A) 2008 at Normandy, notice the missing bow ramp

Armor was added so these LCT (A)s could go into the beach at H Hour with firepower from two tanks. A wooden ramp of heavy timbers was built so the two tanks side by side up forward could fire going into the beach. The ramp raised them high enough so they could fire over the bow ramp. A last minute problem developed when ramp extenders were added that in an extended



position would prevent firing over the ramp. If retracted during the run to the beach, crewmembers (under fire) would need to flip them to the extended position upon landing. With Yankee ingenuity the 2124 had some wooden wedges made so that the bow ramp could be lowered sufficiently-yet secured-to allow the tanks to fire over the bow ramp extensions. A third tank was fitted with a bulldozer blade to knock down low masonry wall on the beach.

The armor consisted of a two-inch armor plate across the crew quarters aft of the tank deck. The Mark 5 LCT had a hatch from the tank deck to the crew quarters. On these 26 LCT (A)s this hatch was covered by the armor plate so that all access to the crew quarters was by a hatch and ladder from the wheelhouse. To protect crewmembers stationed forward during the landing, one-inch armor plating was wrapped around the bows. Some concrete type armor was placed around the wheelhouse.

The three tanks plus the added armor made for very little freeboard while crossing the channel. We also carried the Army Engineers and the Navy Combat Demolition crew who were responsible for clearing a path through the obstacles on the beach. We towed their LCM across the channel and transferred them to it a few miles from the beach.

We also streamed some makeshift minesweeping gear-paravanes tethered to our stern with manila lines-to clear a mine free path for the landing crafts that would follow. We carried a radar reflector so that the gun-fire support ships could monitor the first wave's progress to the beach. We also switched on a device that was supposed to jam the German fire control radar.

The tanks we carried were attached to Company A, 743rd Tank Battalion.

My belief that the Gunfire Support Group was a somewhat late addition To the Normandy invasion plan is supported by the fact that our small boat flotilla at Little Creek ATB, my original assignment, had practically completed its training when we were suddenly given a few days familiarization with LCTs and sent to the US Navy Base II in Scotland in January, 1944.

We waited in Scotland while our respective crafts were being refitted In the UK. My LCT (A) 2124 was converted in a shipyard on the Thames near London. We accepted the craft from the British on April 5, 1944. Neither my crew nor I had seen a LCT (A) before then. Other of the ~6 LCT (A)s were completed sooner and some later--some made it just in time for the invasion. I was fortunate that I could participate in both the dress rehearsals at Slapton Sands. I substituted for another craft that was not completed in the 1Tiger" rehearsal for Utah beach and took my assigned spot in "Fabius", the rehearsal for Omaha beach.

16 of the LCT (A)s were assigned to Omaha beach and eight to Utah beach.

While on the beach, a shore battery placed at least 10 shells of about 57mm caliber into the 2124. The most serious problem was punctured fuel wing tanks and loss of the anchor as a shell severed the anchor cable. We did

retract but lost power about a mile from the beach because of saltwater in the fuel. Switching fuel tanks got us going again, and with a strong list to starboard, we spent the next week in unloading operations. A landing diagram for my sector of Omaha beach is attached.

Erwin L. Kaufmann, LCDR, USNR (Ret)

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In 1944, an Ensign  
Officer-in-Charge  
USS LCT(A) 2124

# **NEPTUNE WRECKS PROJECT REPORT**

## **Part 6 – Results, Reporting and Outreach**

### **Results**

The view among many within the Branch is that we have achieved much more than we had anticipated in terms of the conclusions we were able to make about site 20004 being almost certainly the wreck of LCT(A)2428, but also the surprising interest in the other sites investigated as a part of the project.

To sum up with our conclusions on each site;

**20004 – Landing Craft.** We strongly believe this is the wreck of LCT (A) 2428 (from which the Tanks and Bulldozers were lost on 6<sup>th</sup> June 1944) for the following primary reasons;

- The presence of the same 95mm High Explosive ammunition used by Centaur Tanks.
- The width of the ‘goal post’ bulkheads was the same as that of the beam of a LCT Mk 5/LCT (A) at 32 feet 8 inches.
- There are 3 engines lying parallel.
- The propeller is 37 inches – as per LCT Mk 5/(A).
- There are 2 rudders - as per LCT Mk 5/(A).
- There are the remains of 2 anti-aircraft guns – one missing its barrel.
- The wind and tide was from the West on the morning of 6<sup>th</sup> June 1944 and so LCT (A) 2428 would have sunk to the east of the Tanks & Bulldozers site.

**20244 - Barge.** The distinctive shape of this wreck and the fact that it had no propulsion, steerage or cargo hold lead us to think that this wreck was some kind of mooring facility. Having examined the drawings for the Mulberry Harbour bridge steel pontoons and compared them to the measurements taken we believe this wreck is that of a steel pontoon float/support known as a ‘Beetle’.

**20243 – Barge/obstruction.** We did not locate this wreck during the side-scan or diving surveys.

**20009 – Barge.** The UKHO records for this barge indicate that this barge previously had a large cylinder in the hold, suitable for carrying fluids (fuel oil or water). The measurements taken at the site closely align with the dimensions of the Landing Barges that were modified in this way for Operation Neptune. The cylinder is no longer evident and this could be the result of the wire sweep conducted by the Royal Navy or perhaps salvage if the tank was made of copper (for water). The propeller and battery are both consistent with that fitted to a LB(O) or LB(W) as is the date of 1943 on the propeller.

**19117 – Landing Craft Tank.** This site was not originally intended to be surveyed as part of the project but we have made two exploratory dives to try to identify the type of LCT. The wreck lays upright and remarkably intact standing almost 6m from the seabed. Initial thoughts are that it resembles a British build Mk3 LCT. Investigations are ongoing.

**Valentine Tank – Bracklesham Bay.** This site is not believed to have been recorded by the UKHO and so a divers report will be submitted shortly. The wreck has been confirmed by the expert at the Tank Museum (Bovington) as a Valentine Tank, and likely to be a Duplex Drive (DD) variant. It is also likely that this tank was lost during exercise Fabius 3 when Canadian troops, using Valentine DD tanks rehearsed the D Day landings by ‘invading’ Bracklesham in early May 1944.

**20008 - Tanks and Bulldozers.** We had previously speculated that there were two ammunition sleds or ‘porpoises’ at the wreck site, but we now believe them to be ramp extensions from the bow door of a LCT(A). There is evidence of increased diver traffic at the site, most likely as a result of the publicity and interest generated from our work.

**Marine Life Surveys.** The SeaSearch surveys did not identify any unusual marine life in the general Solent to Selsey waters. However, marine life appears to thrive on all the wrecks, particularly those smaller barges etc that are not visited very often, though fishing is popular on many of these wrecks. Our survey forms will be collated and entered into the Marine Conservation SeaSearch database to allow future analysis of the marine environment in the area.



## **Reporting**

### **Television**

Wider reporting of our work has centred on the Tanks and Bulldozers and Landing Craft Tank story, using all forms of media. The BBC 2 Coast programme (series 4 episode 1) featured our investigation of the Tanks and Bulldozers wrecks and was well received by those who have subsequently commented on it. A clip from this episode is included in the presentations we have made (permission granted by the BBC for such events).

Project Leader Alison Mayor was also interviewed live at the BBC South Today news studio about our investigations of WW2 wrecks and in particular the hunt for LCT (A) 2428 and the discovery of the Bomb at the wreck site. Underwater video footage by Diving Officer Martin Davies was shown as part of the news item.

### **Local Radio**

Local Radio in the form of BBC Southern Counties Radio also interviewed Alison as part of a news report covering the finding of the bomb at the Landing Craft Tank site.

### **Newspapers**

The local newspapers – The News (Portsmouth) and the Observer (Chichester), both reported the story of the bomb and landing craft. Copies of newspaper reports are at Annex A.

### **Magazines/Newsletters**

Both Dive and Diver Magazines reported the results of the survey and the WW2 bomb. Britain at War magazine also covered the project with a news article. The LST & Landing Craft Association and the Nautical Archaeology Society Newsletters also featured the story. Copies of magazine/newsletter articles are also at Annex A.

### **Official Government Publications.**

The Tanks and Bulldozers/Neptune wrecks story will feature in the English Heritage Advisory Committee on Historic Wreck Sites (ACHWS) annual report 2009/10 when published in July 2010. The Ministry of Defence, Defence Estates 'Sanctuary' publication which seeks to highlight natural history, archaeological and conservation projects being carried out across the MOD's estates and assets also featured an article on the tanks and bulldozers project.

### **World Wide Web**

The project's progress has been reported in regular updates on the SSAC web site [www.southseasubaqua.org](http://www.southseasubaqua.org) and where publications / magazines have web sites too; these have also published the story. One or two forums such as WW2 talk have provided information, but also a good deal of interest in what we have been doing.

## Publicity Material

The branch has attended 2 major conferences during the past few months (NAS and DiverSE 10) and put on displays for visitors to view and speak to club members about the work e have been doing. We have purchased 2 display banners to draw people's attention to the display and also business cards for people to be able to make contact after the event. The banners (one specifically dedicated to Neptune wrecks) are vey eye-catching. Where appropriate, we also use these banners either side of the projector screen when presenting talks.



Figure 82 The Branch Neptune Wrecks display at DiverSE 10 received a lot of attention from over 300 delegates. Note the Neptune Wrecks Banner.

## **Outreach**

Outreach is more about a two way exchange of information rather than a reporting which is essentially a one-way flow. Our engagement with a wide variety of people and organisations has provided a valuable interaction where we have all benefitted.

The story of the WW2 Tanks and Bulldozers wrecks and the subsequent search for the LCT from which they were lost has continued to generate significant interest from the general public and other organisations/sections of the community.

Since completing the Tanks and Bulldozers report in October 2008 there has continued to be a significant amount of engagement by Southsea Sub-Aqua Club members with the public and other organisations and also interest from various forms of media.

As you will see from this part of the report the interest in the work we have been doing comes from a wide variety of groups and individuals and is certainly not limited to those from the diving community. This engagement with others has raised the profile of Southsea Sub-Aqua Club as a branch of the British Sub-Aqua Club and importantly brought to the attention of others the story of these wrecks and the history that lies beneath the sea – out of sight for the vast majority of people. We would like to think that this engagement promotes the best of British recreational diving and a responsible and worthwhile approach to wreck diving.

## **Talks and Presentations**

In addition to the regular briefings to club members during the course of the project there have been a number of requests to speak to other organisations at both formal and informal events as follows;

- Jan 09 – Gosport Horticultural Society. (Audience 25)
- June 09 – D Day Museum, 65<sup>th</sup> Anniversary Commemorations (Approx 10,000 visitors)
- Oct 10 Global Underwater Explorers, Portland (Audience 50)
- Nov 09 – Nautical Archaeology Society Annual Conference.(Audience 150)
- Jan 10 – Lee-on-Solent CS pensioners' alliance (Audience 70)
- Feb 10 – Royal Marine Armoured Support Group, Bovington Training Centre. (Audience 45)
- Feb 10 – English Heritage, Advisory Committee on Historic Wreck Sites Annual meeting. HMS Belfast (Audience 70)
- Mar 10 – DiverSE, BSAC south east regional conference Guildford University (Audience 320)
- May 10 – Waltham Chase Genealogy Group (Audience 20)

Future events –

- Jun 10 – Portsmouth Museum Society – D Day Museum (Estimate 75)
- Aug 10 – Gosport Discovery Centre – (Estimate 60)

A copy of one of the presentations is at Annex B, (DiverSE 10). The talks have been very well received with good audience feedback and questions etc. Often there are a number of people who speak of their own/family experiences etc afterwards. On such occasions it is clear that the talk has a personal interest to many as opposed to a general interest and it is a pleasure to hear of their experiences and memories.

In addition to the talks and presentations listed above we also hosted the Royal Navy Southern Diving Unit 2 based at Horsea Island for a talk about the work of the RN Diving and Bomb Disposal teams, their task in destroying the bomb found at the LCT wreck site and the dangers associated with explosives in particular those found at wreck sites/beaches etc.



Figure 83 - CPO Kev Amaira demonstrates the 500kg lifting bag used to move the WW2 bomb found at the LCT site.

CPO Kev Amaira RN and his team from team play an essential and valuable part in making safe explosive devices of all kinds across a large area of the UK, but also take part in operational tours in conflict areas such a Afghanistan.

We advertised this talk in the local diving community (see Flyer at Annex C) and raised over £120 for 'Help for Heroes' from a 'on the door' collection tin. Kev and his team brought many 'props' and also video footage in what was a very informative talk. One highlight was the live demonstration of the 500kg lifting equipment which had been used to raise the bomb in order to safely dispose of it 3 miles away. The talk was also attended by the Receiver of Wreck and her Deputy and also members of the Nautical Archaeology Society as well as a number of divers from other clubs.



Early in 2010 we had the pleasure of visiting the Royal Marines Armoured Support Group who were undergoing training at Bovington Camp. Hosted by their Commanding Officer Major Steve Congreve RM (a former marine biologist and diver) we spoke to the Marines about the short WW2 history of their regiment. The RMASG was disbanded in the autumn of 1944 and has only been re-established in recent years. The new RM Armoured Support Group operates in an all-terrain armoured vehicle called the 'Viking'. They have completed a number of tours in Afghanistan.



Figure 84 - A very enjoyable visit to the Royal Marines Armoured Support Group

Members of the project team have continued to have regular correspondence with museums, experts and other specialist organisations such as the D Day Museum, Receiver of Wreck, and English Heritage.

### **Awards and Recognition**

The Tanks and Bulldozers project has received recognition in the form of awards and prizes as follows;

- The BSA Jubilee Trust Peter Small Award, presented at the Diving Officer's Conference in December 2008.
- Duke of Edinburgh Prize. Southsea divers were very proud to receive Highly Commended certificates from the Duke of Edinburgh himself in recognition of the work we had done on the Tanks and Bulldozers project. We enjoyed a

wonderful trip to Buckingham Palace followed by a lovely reception and meal hosted by the Jubilee Trust. It was a truly memorable occasion for everyone involved.



Figure 85 - A wonderful trip to Buckingham Palace on Remembrance Day to meet the Duke of Edinburgh

- Nautical Archaeology Society 'Adopt A Wreck' Award. Southsea Sub-Aqua Club have adopted both the Tanks and Bulldozers and LCT(A)2428 wreck sites under this scheme which promotes individuals, groups or clubs to take a greater interest in a particular favourite wreck by regular monitoring and annual reporting. Each year an award is presented to the best 'adopt a wreck' report and Southsea were delighted to receive the award in 2009 for the Tanks and Bulldozers project.

We will be continuing our engagement with the public in the future and actively seek to promote the work we have been doing but also disseminate information we are able to discover.

Annex A – Newspaper / magazine articles.

Annex B – DiverSE 10 presentation + BBC Coast video clip

Annex C – Flyer for EOD Bomb talk 10 Dec 09





We welcome the submission of items of news. So if you have a story, information on an event, photograph or discovery to share then please write to us, or contact us on: [news@britain-at-war-magazine.com](mailto:news@britain-at-war-magazine.com)

NEWS • RESTORATIONS • DISCOVERIES • EVENTS • EXHIBITIONS FROM AROUND THE UK

## DIVERS TO SURVEY D-DAY WRECKS IN THE CHANNEL

A team of divers from Southsea Sub-Aqua Club are to try to solve a mystery of how two tanks, two bulldozers and a field gun, believed to be linked to D-Day, came to rest on the sea bed eight miles offshore in Bracklesham Bay, West Sussex.

The historic armoured vehicles and gun lie jumbled up on the sea bed, reports **Alison Mayor**, at a depth of twenty metres, but there is no known associated shipwreck nearby. The divers plan to spend five days surveying the site and will attempt to establish how the equipment came to rest on the sea bed.

Possible reasons for their presence off the South Coast are that they were lost from the deck of a Landing Craft during rehearsals for D-Day, or during the crossing on the 6th June itself.

Information gathered on an initial dive has revealed that the tanks are likely to be Centaur CS IV tanks - a limited number of which were exclusively assigned to the Royal Marines Armoured Support Group for Operation Overlord. A total of eighty Centaurs were to be used on D-Day, but only a small number actually made it across the Channel and landed on the Normandy beaches. The turret and gun of one can be seen in the picture above right.

The bulldozers are also believed to be very unusual in that they were specially armoured



Caterpillar bulldozers, one of a series of modifications to different types of war equipment known as 'Hobart's Funnies'. This type of bulldozer was used by the British Army's 79th Armoured Division. Little is known about the modifications made and there are no known surviving bulldozers of this type.

The project, which is being led by Alison Mayor and which has received a grant from the British Sub-Aqua Jubilee Trust and is

supported by Silent Planet Ltd. of Portland, has the approval of the Ministry of Defence. The survey will start on 26 July 2008.

Teams of twelve divers will be taking measurements, photographs and video of the site to record the location, orientation and condition of the military vehicles and will also conduct a survey of the marine life which has made its home on the wrecks. (Image courtesy of Martin Davies)

## SNAPSHOT ... news and events in brief

[news@britain-at-war-magazine.com](mailto:news@britain-at-war-magazine.com)

### SIR KEITH PARK MEMORIAL

Progress on the campaign for the erection of a memorial to Sir Keith Park received a boost on 2 June 2008.

Boris Johnson, the Mayor of London, stated that he would like to see a statue of Park installed on the fourth (empty) plinth in Trafalgar Square, for at least six months, in 2010 to celebrate the 70th anniversary of the Battle of Britain. His comments come as the Campaign continues to attract support across the political spectrum and the country.

The Mayor's further reiteration of his support was welcomed by the Sir Keith Park Memorial Campaign.

### QUEEN OPENS ARTILLERY BASE

The Queen, reports **Jonathan Jackson**, formally opened a new regimental home for the Royal Artillery during a visit to the Royal Artillery Barracks at Larkhill on Thursday 12 June 2008. Her Majesty was symbolically the first person to enter the newly-named barracks following the unveiling of a new entrance stone and a Royal Salute, fired by The Kings Troop Royal Horse Artillery. The guard of honour was provided by soldiers of 1st Regiment Royal Horse Artillery based in Tidworth. Following the opening ceremony, the Queen had a private meeting with the families of some of the service personnel killed in action since 2000.

### CARRIER CONTRACTS SIGNED

The contracts to build two Royal Navy aircraft carriers, the largest and most potent warships to be designed and built in the UK, have finally been agreed and signed off by the MOD and its industry partners on Thursday 3 July 2008. The contracts, worth in the region of £3 billion and which will result in the building of the two carriers that will be named H.M.S. *Queen Elizabeth* and H.M.S. *Prince of Wales*, will dramatically improve the UK's ability to project expeditionary air power. The carriers are expected to enter service in 2014 and 2016 respectively. Once they enter service they are likely to remain in the fleet for at least thirty years.

6 Thursday, August 6, 2009

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NEWS

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A diver explores the second world war tanks and bulldozers on the seabed at Bracklesham. PICTURE BY MARTIN DAVIES

# Deep secrets of the war

**A** TEAM of 12 divers will today begin a five-day project to try to find a Landing Craft Tank (LCT) which sank in 1944.

The team hopes the project in Bracklesham will solve the sea mystery and save the LCT before it is lost to the sea forever.

The LCT was used in the D-Day landings, carrying tanks and armoured bulldozers. It was part of J Force and was due to land at Juno Beach for the Canadian and British forces before it was sunk by gunfire.

"There are many second world war wrecks along the south coast and many remain unidentified," said Alison Mayor, who will be leading the diving project.

"Their story could soon be lost

■ **By LEWIS BROWN**  
lewis.brown@bognortoday.co.uk

forever to the sea. Some of these wrecks have been dived for many years, but it is only when you start looking at the story behind their sinking do you begin to appreciate their true historical significance."

Last year the divers, from Southsea Sub-Aqua Club, finally solved the mystery of how two tanks, two bulldozers and a gun came to rest on the seabed eight miles offshore in Bracklesham.

The exact location of the LCT has yet to be confirmed. Earlier in the year a relative of one of the crew who had survived the sinking contacted the Southsea Sub-Aqua

Club after hearing about the work it had been doing in connection with the incident.

The historic world war two armoured vehicles and gun lie jumbled up on the seabed at a depth of 20m, but there is no known associated shipwreck nearby. As a result of their work the divers believe they now have the evidence to prove they were lost from a LCT and not from a section of Mulberry Harbour bridge section as previously believed.

The historic war diaries for 2nd Royal Marine Armoured Support Group, which took part in the D-Day landings at Juno Beach supporting Canadian forces, confirmed that one LCT was forced to turn back halfway across the

Channel after engine trouble and reported two of their Centaur tanks as being lost at sea.

The weather was bad during the crossing and a further naval war diary entry confirms the same LCT capsized while under tow.

All 53 members of crew, Royal Marines and Canadian personnel, were rescued safely. The LCT continued to float upside down for some time and was eventually sunk by gunfire on June 6, 1944.

To find out more about Southsea Sub-Aqua Club email [secretary@southseasubaqua.org.uk](mailto:secretary@southseasubaqua.org.uk) or visit the club website [www.southseasubaqua.org.uk](http://www.southseasubaqua.org.uk) or write to Southsea Sub-Aqua Club, Fort Widley, Portsdown Hill Road, Portsmouth PO6 3LS.











## FEATURES

# Diving Into History

In 1944 as the Allies prepared for D-Day, almost 7,000 ships and vessels of all sizes gathered in ports and harbours along the south coast of England. The assembled Allied forces after being delayed by 24 hours due to poor weather, finally set sail on the evening of 5th June under the cover of darkness and in heavy seas. Unfortunately, not all of these vessels made the crossing to the Normandy coast safely.

Bulldozer B & conger eel © Allison Mayor



Some 65 years later many a keen diver has explored a wreck site eight miles south of Bracklesham, West Sussex, where two tanks and two bulldozers rest on the seabed 20 meters below the surface. As there is no shipwreck nearby, the mystery of how these vehicles came to rest here has puzzled divers for many years. One theory is that they had slipped from a Whale Bridge on one of the two Mulberry Harbours, as a section of bridge is the closest wreckage to the vehicles. However, a team of divers recently undertook an expedition to solve this mystery.

Early in 2008 planning for the expedition to survey the tanks and bulldozers site began in earnest. With the help of Silent Planet Ltd who provided the dive boat Top Gun and a grant from the British Sub-Aqua Jubilee Trust, 25 divers from Southsea Sub-Aqua Club spent five days in July mapping the site in detail and looking for clues to explain how the tanks and bulldozers had ended up on the seabed.

#### Dive Site

Even though an echo sounder was used by the team, the site was tricky to find as the tanks and bulldozers lie close together in a scour and only stand proud of the seabed by a couple of metres. The whole site is only 30m x 20m wide but once the site is found the uniqueness of the wrecks and how well preserved they are, is quickly appreciated. Over the course of the expedition numerous measurements, photographs and hours

of video were taken and some surprising discoveries came to light.

The first breakthrough came after an initial dive when the team realised that the tanks were not the most commonly used Allied Sherman tanks they had expected to find. The tanks were in fact British, with a shorter barrelled, large calibre gun that were subsequently confirmed by David Fletcher, historian and tank expert at The Tank Museum, as Centaur CS IV tanks. The team could hardly believe their luck as only 80 of these tanks had been destined for use in combat with only two others in known existence, both of which are D-Day memorials in France.

The Centaurs were used by the Royal Marines Armoured Support Group (RMASG), a specially created regiment, who provided heavy fire support during Operation Overlord. The 2nd RMASG Regiment, supporting the Canadian 1st Force J, were amongst the first to land at Juno beach using modified Mark V Landing Craft identified as Landing Craft Tank (Armoured) (LCT(A)). Over 100 feet long and carrying up to three tanks, the LCT(A)s were adapted with an extra 50 tonnes of armour around the bridge and with ramps on which to mount the tanks so they could be fired over the bows as they approached the shore. This RMASG was disbanded a few months after D-Day but has since been re-established in 2007. The new RMASG now operates Viking BV510 tracked armoured vehicles in support of 3 Commando Brigade and other UK forces in Afghanistan.

The second breakthrough was the discovery of a large kedge anchor tucked underneath one of the tanks and two four-bladed propellers. This type of anchor was used by the Landing Craft to pull themselves back off the beaches after dropping their cargo. It is believed the anchor and propellers were spares for a LCT(A), another indication that the vehicles had been lost from a ship or vessel rather than a Whale Bridge.

#### The Wreck

At the site one tank lies upside down, the other is on its right side at an angle of approx 45 degrees. Because of their armoured construction they are in excellent condition despite more than 65 years on the sea bed. The distinctive 12 inch round plate on the front of the tanks, a unique identifier for Centaurs, is clearly visible on both tanks. The bulldozers lie on their sides just three or four metres behind the tanks. One is complete with its magnificent huge blade standing almost three metres high. Sadly the blade of the other bulldozer has broken off but lies close by.

Other items found on the site kept the team perplexed for some time including what was first thought to be a field gun. Although the wreckage is similar to a gun barrel there was no evidence of a gun carriage. The team now believe that this is the barrel of a 20mm Anti Aircraft gun from a Landing Craft. Also identified were the broken up remains of a vehicle, possibly a jeep, with the engine block, axles, wheels and tyres scattered on the site. Two items thought to be 'porpoises' were also found at the site. Porpoises were special waterproof sleds designed to carry extra ammunition and be towed behind the first wave of tanks on D-Day as they could not be re-supplied immediately.

#### Diving into D-Day History

Armed with this information and with the help of David Fletcher and other experts from the Royal Marines Museum, Naval Historical Branch and Landing Craft Association, research began into the Royal Marines and Naval War Diaries and other historic papers relating to Operations Neptune and Overlord.





## FEATURES

### Diving Into History continued



Tank A © Martin Davies



Centaur CS N, Hampshire © The Tank Museum

The Whale Bridge theory was quickly discounted as it became clear that such a structure could not have supported over 100 tonnes of vehicle and equipment when installed in its final position as each section was designed to support a maximum weight of 56 tonnes. There must have been another reason behind the sinking.

Tracing back through these historic documents led to a report from the night of the 5th June 1944 that LCT(A) 2428 had failed to make it across the Channel due to engine trouble and was taken under tow by the tug *Joumy*. The additional armour and the raising of the tanks on ramps severely affected the stability of LCT(A)s and with the heavy seas resulted in a number of overloaded vessels being swamped. At 1100 on the 6th June a signal from *Joumy* reported that the landing craft had capsized and subsequently had been sunk by gunfire from the tug as it posed a hazard to other vessels. All crew and other personnel were reported safe on board. A survivor's report of the time from Able Seaman C R Hunt confirmed that the landing craft had capsized and continued to float for some time until finally being sunk by gunfire.

The discovery of the loading tables for Force J confirmed that this landing craft had

been carrying two Centaurs, two Armoured D7 Bulldozers, a jeep and ammunition. This evidence, linked with the underwater discoveries has finally answered the mystery of how this particular wreck came to be and puts an end to the speculation surrounding it. However, there are more puzzles to be solved – where is LCT(A)2428?

The team will be diving again this year as part of a project to locate the wreck of the landing craft along with the exploration of other wrecks in the area including a number of barges or dumb lighters which may have been used to support the Normandy invasion forces. The Royal Navy requisitioned over 1,000 of these vessels which were modified to provide workshops, kitchens, stores, water and many other services to the troops in the months following D-Day.

#### Reaction to the project

The project report which included advice on the robustness of the site and risks to it from fishing, dredging and visiting divers was submitted to various interested parties, including the MOD. The team have been surprised by the enormous interest from the general public, the media as well as the diving community. The expedition was

filmed for the popular BBC2 Coast programme and even the son of Able Seaman Hunt has been in touch to find out more about his late father's war history.

The project has won the British Sub-Aqua Jubilee Trust Award for the most worthwhile diving project in British waters and the Southsea Sub-Aqua Club has adopted the wreck under the Nautical Archaeological Society 'Adopt a Wreck' scheme and will continue to monitor the site in the years to come. The Southsea divers also participated in the 65th D-Day anniversary events in Portsmouth with a display and with talks to veterans and the public.

To dive this site is something different, unique because of its history. The team were amazed at what was discovered about how these wrecks came to be and researching the historical context brought the expedition to life.

#### Alison Mayor, Navy Command, Portsmouth

For more on the project see [www.southseasubaqua.org.uk](http://www.southseasubaqua.org.uk), or contact Alison by email at [alisonmayor2003@yahoo.com](mailto:alisonmayor2003@yahoo.com).

## Briefing

# CORNISH DIVERS FIND CANADIAN WRECK

A TEAM of divers has discovered missing remains from a Canadian military aeroplane that crashed in 1942. Diving in temperatures as low as  $-1.8^{\circ}\text{C}$ , the team combined historical, eyewitness and anecdotal reports to pinpoint the wreckage off Newfoundland.

The expedition was sponsored and led by Cornwall-based undersuit manufacturer Fourth Element, whose director Jim Standing was among the divers who found the engine and propeller, as was

Colin Fairhurst of Seaways Diving, also from Cornwall. They located an engine and propeller that had been missed by the original salvage – the fuselage is yet to be found.

It was the first time anyone had seen anything of the Catalina seaplane since it disappeared into the icy waters of Battle Harbour – some of the crew were rescued by locals, but three died in the crash. 'To see a diver hovering above the huge engine brought all the stories to life,' said local historian Michael Earle.

**NEWLY FOUND:** a diver views the remains of a propeller from a Canadian military seaplane off Newfoundland



# BRITON HELD OVER DEATH IN CYPRUS

By Nikki Morgan

DEATH ACCIDENT

A BRITISH man has been held in custody after the death of a diver in Cyprus. Expat Christopher Sieroslowski is under investigation for causing the death of Neophytos Demosthenous through negligence.

According to police, Mr Sieroslowski's speedboat ran over the 21-year-old Cypriot, causing a fatal blow to the head.

A Paphos court heard that the suspect had been seen speeding moments before the young diver was hit. Mr Sieroslowski, 55, denies any involvement in the incident.

Mr Demosthenous had been spearfishing with his brother in Paphos, western Cyprus, when he was struck by the propeller of a boat. He was rushed to a nearby hospital but was pronounced dead on arrival. A boat was later identified by the victim's brother as belonging to Mr Sieroslowski.

Theocharis Christodoulou, Cyprus Marine Police operations and training officer, has urged divers to take every necessary precaution to ensure their safety in Cyprus' waters.

The accident also prompted justice minister Kypros Chrysostomides to call for tougher licensing laws so that anyone using watercraft is required to possess a valid Cypriot licence or one that is internationally recognised.

Cyprus' watercraft licensing laws have been called into question before. In 2005, 16-year-old Hannah Sutton died in a jet-skiing accident when her boyfriend crashed into her. A local man was later fined £450 for renting out the jet-skis to the two teenagers.

# SOUTHSEA SAC SOLVES BRACKLESHAM BAY MYSTERY

A TEAM of divers from Southsea SAC has finally solved the mystery of how Second World War armoured vehicles and a field gun ended up 13km off the south coast. The two tanks, two bulldozers and gun lie at 20m on the sea floor in Bracklesham Bay, West Sussex; however, there is no associated wreck nearby.

A long-held theory was that the equipment was lost from a section of one of the artificial Mulberry harbours towed across the English Channel to support the D-Day landings. However, it has now been confirmed that the vehicles were lost from a landing craft tank from which they were to use their powerful Howitzer 95mm guns to take out enemy gun positions.

The team of 12 divers from Southsea SAC spent five days surveying the site to try to solve the mystery. Measurements, photographs and video of the site will be used to record the location, orientation and condition of the military vehicles.

Using the photographs, experts at the Tank Museum in Bovington were able to confirm the tanks as Centaur CS IV. Until now, only two were believed to have survived as war memorials in Normandy.

'The project has been hugely successful thanks to the hard work of Southsea SAC divers and its supporters,' said Alison Mayor, Southsea SAC member and survey organiser.

'These wrecks have been dived for many years, but it is only when you start looking at the story behind their sinking that you begin to appreciate their true historical significance.'



# Dive team confirms history of WW2 tank wrecks off Sussex

## DIVERS FROM SOUTHSEA

Sub-Aqua Club have pieced together the history of World War Two tanks and other military hardware that lies eight miles out in Sussex's Bracklesham Bay.

This summer, a 25-strong team spent five days surveying the site, where two tanks, two bulldozers and a field gun lie "jumbled up" at a depth of 20m. They ran daily out of Portsmouth aboard the charter boat *Top Gun*, which made the trip up-Channel specially for the project.

From photographs and video taken at the site by the divers, experts at the Tank Museum in Bovington have identified the tank wrecks as Centaur CS IVs, which were intended to support forces landing in Normandy on D-Day.

Some 80 of the tanks were due to be used on D-Day, but just a few made it across the Channel and, before the identification of the Bracklesham wrecks, only two were thought to have survived, as war memorials in Normandy.

The bulldozers were identified as Caterpillars, uniquely adapted with thick armour. Such units were taken across to Normandy so that obstacles could be cleared from the beaches by the British Army's 79th Armoured Division and Royal Engineers.

## FURTHER RESEARCH BY TEAM-

member Alison Mayor then unearthed key records which are said to indicate almost beyond doubt that the wrecked machines were part of the D-Day effort.

Diary entries of the 2nd Royal Marines Armoured Support Group, which took part in the D-Day landings at Juno Beach in support of Canadian forces, record that two Centaurs were lost from a Landing Craft Tank (LCT) that turned back from the Channel



crossing after suffering engine trouble. A further Naval War Diary records that, in bad weather, the LCT later sank after taking on too much water while under tow, its crew and marines being taken off safely.

Some have believed that the wrecks were from a section of Mulberry Harbour bridge. But the work by Southsea – the BSAC branch that found the Solent's *Mary Rose* wreck – appears to have settled the matter.

Additional items found at the site were a large keel anchor tucked beneath one tank, two ammunition sleds, two propellers and ammunition.

The divers enjoyed quiet weather, although underwater visibility was reduced to 3-5m.

Team-member and photographer Martin Davies, who, along with Mayor holds a Nautical Archaeology Society Part I qualification, told *DIVER*: "We did two dives a day, with 12 divers down each time."

"The site was dived about four years ago, but not a lot was known about it. We set up a measuring grid and carried out a baseline survey to produce a basic map of the site."

Davies said that the wrecks were "impressive" and still clearly shaped,

with "low-turf" coverage of marine life but, surprisingly, no snagged fishing nets. "Obviously the tanks looked heavy, and their turrets, guns and tracks were plain to see," he said.

"But the two armoured Caterpillars were amazing too. One still had its plough, while the other's had been ripped off at some point."

"The ploughs apparently weighed five tons apiece, and the bulldozers' armour plating is 2in thick!"

## THE PROJECT HAS THE APPROVAL

of the Ministry of Defence and, as *DIVER* went to press, Mayor was due to submit an end-of-summer report to MoD officials. The dives have formed part of Mayor's course work for an NAS Part II qualification, and the club plans to return to the site to carry out more detailed survey work.

This summer's project received a grant from the British Sub-Aqua Jubilee Trust, and was supported additionally by Silent Planet Ltd, of Portland.

Individuals with information or comments about D-Day activities in the Bracklesham Bay area are invited to make contact. Club website, [www.southseasubaqua.org.uk](http://www.southseasubaqua.org.uk)



MARTIN DAVIES

Pictured: Caterpillar bulldozer...

... and Centaur tank.



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# Sussex wreck 'must be' D-day landing craft

**A** BRITISH DIVING CLUB HAS investigated wreckage off Selsey, West Sussex and concluded that it is "almost certainly" that of a World War Two landing craft.

Divers from the British Sub Aqua Club's Southsea branch believe that the wreck is a 35m Landing Craft Tank (LCT) that sank while taking tanks and bulldozers to Juno Beach in northern France for the D-Day landings.

Diving over the second week of August, they noted features that, according to team-leader Alison Mayor, "provided much evidence" that the wreck is that of an LCT sunk on 6 June, 1944, four miles south of Selsey Bill.



Team-leader Alison Mayor.

The dives were a continuation of a project begun last year when the Southsea divers surveyed a known site where two tanks, two bulldozers and a field-gun lie in a jumbled heap at 20m, eight miles out in Bracklesham Bay (News, October 2008).

One theory held that the vehicles had fallen from a section of Mulberry Harbour being towed across the Channel. But Southsea's view was that they had fallen from a LCT recorded as sunk in the area.

It was noted by war records first to have capsized after suffering engine failure and, presumably, falling broadside on to lumpy seas. Its listed cargo of two Centaur tanks and other vehicles had fallen out.

The LCT's crew were taken off safely. It was taken in tow but later sank, some way from where it had capsized and lost its cargo.

This was consistent with the tank and bulldozer wrecks found on their own last year – but where was the LCT? No such wreckage had ever been confirmed in the Bracklesham area.

This summer the divers were, therefore, out to identify any wreck site that might be that of the landing craft. They noted several known sites of uncertain identity, and found that one seemed to fit the bill.

Little remained of the wreck's main structure except a girdered box section. This tallied with LCT design, in



Metre-long unexploded bomb.

which the hull was built in three parts connected by such sections. The section indicated that the hull had settled upside-down, as expected of a craft that sank after capsizing.

One of the vessel's twin rudders was found, and proved the correct size and shape for the LCT.

Three engines were observed, consistent with the vessel's drivetrain layout. One of the original three propellers remained, and its design, size and steel construction were right for the LCT. It was also identical to spare props found last year at the tanks site.

Another firm link between the sites came with the discovery of two 20mm anti-aircraft gun assemblies, as mounted on D-Day LCTs.



This girdered box section provided the first clue.

One was complete, while the other was turret-only. Sure enough, a 20mm anti-aircraft gun barrel was found last year at the tanks site.

The divers also located some 95mm high-explosive ammunition at the new site, as used by the WW2 Centaur tanks.

The absence of vehicle wreckage at the new site also tallied with the record of a capsized LCT sunk some time after the loss of its main cargo.

Finally, the divers even calculated where the LCT might be expected to lie in relation to the tanks site.

## DOWN THE GLUG HOLE

**SO THIS IS HOW WE'LL END UP** if we don't do something about climate change. An evening watching back-episodes of the BBC's *Oceans* will take on a whole new meaning!

The image of somewhat damp family life was created by professional underwater photographer and *DIVER* contributor Zac Macaulay at Sea Life London Aquarium, for an advertising campaign to be launched during December's UN Climate Change Conference in Copenhagen, Denmark.

It is hoped that the conference will lead to improvements on agreements set under the 1997 Kyoto treaty.

Macaulay worked with Oxfam and PR agency Beatwax to create the image, the message of which to politicians attending the summit is: "Act now, if we are to avoid catastrophic climate change."

Oxfam is a member of the TckTckTck campaign, which it describes as "an online and offline mobilisation bringing together an unprecedented alliance of non-governmental organizations including WWF and Greenpeace, trade unions, faith groups and individuals to call for a new international climate change treaty".







based on the record of the tow, tidal predictions for 6 June, 1944 and wind conditions as logged.

They judged that the newly surveyed site's position, three miles east of the tanks site, was what might reasonably be expected.

Despite having no firm ID such as a builder's plate, the divers concluded that the material had "almost certainly proven the wreck site to be that of LCT(A) 2428".

While working at the LCT site, the divers also found an unexploded bomb, more than a metre long.

This was not necessarily linked with the LCT, they thought, but possibly a German aerial bomb that had happened to sink onto the wreck.

The find was reported to Royal Navy bomb disposal experts who, as DIVER went to press, still had to

survey it with a view to possible removal and detonation.

The team also investigated two other wrecks in the area. The barges, called dumb lighters, were used to transport assorted D-Day supplies.

At each site teams of 12 divers took measurements, photos and video footage. Some divers also surveyed attendant marine life.

A grant from the British Sub Aqua Jubilee Trust covered both the 2008 and '09 operations. It was supported by Portland's Silent Planet dive centre which, as last year, provided its boat Top Gun for the surveys.

As DIVER went to press, Southsea SAC was completing its project report.

The club would appreciate any information about D-Day activities in the Bracklesham Bay area. Email Alison Mayor at [secretary@southsea-subaqua.org.uk](mailto:secretary@southsea-subaqua.org.uk) ■

## Missing Red Sea divers reach shore

FOUR RUSSIAN DIVERS managed to reach shore, unaided, a full day after going missing in the southern Egyptian Red Sea.

According to Egypt's Chamber of Diving and Watersports, the divers were holidaying with 19 other Russians aboard the charter-boat Bohemia.

They entered the sea at Little Brother in a group of six on 17 August and were reported missing not long after mid-day.

A full-scale air and sea search was launched by Egypt's military SAR division, and other vessels in the area were informed.

Searches were suspended at dusk

and resumed the following morning.

At about 2.30pm the next day, it was reported that one of the divers, Vitali Vanov, had reached shore 25 miles south of El Quseir, after an apparent 60-mile drift and swim.

He told officials that he had remained with the others before deciding to swim for the shore.

Boats were launched from El Quseir and Port Ghalib to search for the other divers, north and south of Vanov's beaching point.

At about 6.30pm, they too were reported to have reached shore some three miles nearer to El Quseir than Vanov, having decided also to swim for land. ■

## THE BIG QUESTION

### Dumps beat hoses

We totally confused the quickest readers to respond to last month's question, by asking: "Do you use the corrugated hose or the dump-valves when dumping air from a BC?", and then expecting you to answer "yes" or "no". The problem was sorted out fairly quickly, but apologies to the early birds – we did take your comments into account when tallying up the scores where we could.

And the result is close – 54% lean towards the dump valve, and 46% the corrugated hose. We have been banging on for ages about the fact that raising the corrugated hose to dump air lets water into your BC so that it requires draining and rinsing later. Instructors still seem to find it convenient to teach new divers this method, even though they often use the other themselves. Hose fans say their approach allows them to dump in a more controlled fashion. This debate still has legs!

Every month we ask you to comment on a controversial issue at Divernet.com, and pick a name at random to win a Luxfer 3-litre compact emergency pony cylinder worth £109, courtesy of Sea & Sea. Hugh McNally of Braintree, Essex, is this month's lucky winner.

### HERE ARE SOME OF YOUR COMMENTS:

"I use my shoulder valve, as it is much quicker and easier, but I never use this when diving with students." William McGuire

"Corrugated hose gives more control of exhaust air." Stuart Graham

"Corrugated hose on descent to be safe, as I will have the air inflator in my hand ready to correct buoyancy." Dave Harrison

"I only use the hose when I can't find the dump valve, usually when I first get in." Paul Darling

"Corrugated hoses on BCs are a pointless anachronism, and encourage water ingress. I far prefer dump valves that release air irrespective of body position." Mike Baker

"Dump valves. I never get water in my BC bladder, and can still taste the Milton I last used to rinse it out over five years ago!" Ken Ruiz

"My Mares Airtrim uses the dump valves automatically." Harold Ickenroth

"My BC has both, so I use both." Glenys Graham

"As a guide and instructor, using the corrugated hose demonstrates to the group what I am doing and what they need to do." Jules Turner

"I raise the hose as a signal to my buddy that I am about to descend – and then use the dump valve!" Paul Tysoe

"Dump valves when diving with usual buddies, hose when taking in a new trainee!" Debbie Heaton

"Hose attached to D-ring on BC via bolt snap and bungee cord makes for one-stop location for inflation and deflation." Eric Toft

"The dump valves – why fill the BC with water and give yourself another job later?" Frederick John Gray

"Buddy jackets tell you to use the dump valves in the instructions. Doing this I never get water in my jacket." Chris Heywood

"Corrugated hoses don't work in a horizontal or head-down position." Dave Horton

"You can do it quickly with the dump valve without the extra step of raising the arm." Paul Greenfield

"In an emergency the corrugated hose is easier to find." Louise Walter

"Will use hose at times. It makes no difference to the amount of water in the BC at the end of the dive." Neil Hodges

"Corrugated hose is not my preferred way, but it was how I was taught and has become a habit." Stephen Garfitt

"Dump valve every time. Corrugated hoses are so last century." Simon

### THIS MONTH'S BIG QUESTION:

Have baggage limits made you more likely to rent dive-gear when flying abroad?

Vote yes or no, and feel free to comment

You too could win a pony! For more information about Luxfer cylinders, visit Sea & Sea's website [www.dive-team.com](http://www.dive-team.com)

**SEA & SEA**  
CORRUATED HOSE DUMP VALVE

**Luxfer**  
Dive Cylinders



Front Cover: Dame Vera Lynn and S/M Ted Archer at the Christmas Party on 4th December 2008 at St. James Palace, organised by the Not Forgotten Association.  
 Above: Lieutenant Stephen Greyst, Mr Harold Cooper Jnr, and Petty Officer Jane Salisbury with the Harold Cooper Cup. See article on Page 6.  
 Left: S/Ms Peter Dwyer and RM Douglas Harvey, Arranmore 2004  
 Below: The Association Plaque at Alrewas (Photo by S/M R Allcock)





Now for Christmas dinner in the Scarisbrick Hotel (Southport). It went down well. Our Chairman from the main committee, Roy Sanderson and his good lady Jean, were most welcomed as was also Harry Cutler the Parade Marshal and his good lady Ann who is the National Standard Bearer. I thought this time around it was very low key. After saying that both events did very well indeed. Let us now hope that the North West can still carry on doing what it has been doing.

#### **Southern**

At our December meeting some 48 shipmates and friends enjoyed a festive lunch organised as usual by S/M Roy and Glen at the Royal Maritime Club.

In January we learned of the death of Mr Edward De Rothschild, (known to us as Mr Eddy). He will be missed by all shipmates who, in the past, have enjoyed his hospitality at Exbury. With February, came the bad weather, but even so, 19 S/Mates turned up at the R.M.C. for our meeting and enjoyed a couple of hours conviviality and of course a good reasonably priced lunch.

S/M A.J. Banger.

#### **Rep: S/M Roy Ellis**

#### **South East Central**

Spring is in the air – so we hope, all thawed out after the past months - shades of "Russian convoys" to which we were not accustomed. With no creditable meetings at Dagenham for our "Eastern" S/M's, I hear they are greeted by our Essex colleges, so well done.

Meetings at the Red Lion in Hatfield are also depleted – a sign of the times as somewhat appears nationwide. So, Hatfield, Thursday 19th of March for a Jug or tot. Best wishes to all.

#### **Rep: S/M Bert Carry**

#### **South West Central**

By the time you read this I hope that all that awful weather which we used to enjoy is behind us and that we can look forward better temperatures. Due to several of our members suffering from a 'lurgy' that appeared to be going around and travelling it was anticipated, would be hazardous for those who had to get to our 'New Year Buffet Lunch' booked for the 9th January at our monthly venue the R.A.F.A. Club Swindon, unfortunately this event had to be cancelled. The usual members, relatives, associates from Wiltshire Normandy Veterans Association, and ex 'Jenny Wrens' were all very disappointed but the intention is to hold a belated 'Spring Buffet Lunch' in its place. Our regional Treasurer S/M Gordon Turner welcomed home his wife Jennie who had spent many weeks in hospital at Swindon, we all hope that they will manage their daily life and feel happier as there is no place like home. Several of our regional members have booked to attend the reunion at Sand Bay, Weston-s-Mare and we are looking forward to meeting up again with friends that we have met over the years at various venues. Best Wishes are extended to all regions and members from SW Central for 2009.

#### **Thames Valley**

Hoping all you Shipmates had a good Christmas and New Year. Now we have summer on its way to cheer us all up.

#### **Rep: Idris Pictou**

The passing of S/M Fred Moseley D.S.M. was a very sad occasion, after four years in Penhob House, Gillingham, he finally crossed the bar.

He had a great send off at Hanworth Crematorium with six standard bearers from the R.N. Club, Hanworth British Legion and Fleet Air Arm.

Fred's wife Jessy has been a brick, all through his illness, now we wish her well. We are still getting along to Hillingdon R.N. Club, it's a hop skip and jump when we all make it.

Still there's always a smile, we are a good bunch. "If I may say so". We still have our tot of passers, every meeting, and of course our fish and chips.

Hope to see you all at Sand Bay.

### *From The Archives* S/M Tony Chapman

#### **THE SEARCH FOR THE M15 HMLCT(A) 2428.**

As this is written during late January, the search to discover what remains of the M15 HMLCT(A) 2428 of the Normandy 105th LCT(A)(HE) Flotilla continues.

The search being undertaken by Alison Mayor and her colleagues of the Southsea Sub-Aqua Club ([www.southseasubaqua.org.uk](http://www.southseasubaqua.org.uk)).

Some amongst you may recall my previous message concerning this search.

The HMLCT(A) 2428 broke down at 2140 hours on the evening of June 5th and anchored near Nab Tower. She was later taken in tow by HM Tug Janus but later capsized spilling her cargo of Centaur tanks and armoured bulldozers into the sea. In order to remove her as a potential shipping hazard Janus fired on the 2428 until she sank, this taking place at 1100 hours on the morning of June 6th at a location which currently remains unknown. All those being present with her being recovered safely.

There is a candidate for the wreck of the 2428 but, as this is written, it cannot be confirmed until a detailed underwater survey is carried out by Alison and her fellow divers this summer.

The records show the name of crew member Able Seaman Charles R. Hunt being interviewed at Westcliffe following 2428's loss. To the surprise of both myself and Alison I was this week contacted by his son who supplied us with photographs of his now late father.

If any amongst this membership are in the vicinity of the D-Day Museum in Portsmouth over the period June 6th/7th there will be a display on view in the museum detailing what has been discovered thus far during the search for HMLCT(A) 2428.

Alison Mayor of the Southsea Sub-Aqua Club will be in attendance and would welcome the opportunity to speak to any and all who align themselves with this association.

#### **Lt. Commander Maxwell O. W. Miller RN.**

Within recent weeks I have raised on 'Combined Operations' website for which I write the recollections of the above named squadron officer, his writings supplied to me by his son Robin Miller.

On the morning of D-Day Maxwell Miller had command of 'I' Squadron Landing Craft which comprised 251 and 263 LCI(L) Flotillas and the 40th LCT out of Newhaven, with the 42nd and 48th LCT out of Shoreham. With them went the US Navy's Group 4 LCI(L) of

# Nautical Archaeology



Nautical  
Archaeology  
Society

Winter 2008

## INSIDE

BRITISH WHALER FOUND OFF HAWAII 3

D-DAY TANKS RIDDLE SOLVED 7

NAS MEMBERS TACKLE HULKS 6 & 13



## NAS Regions

taking photographs.

Over two days, I took lots of measurements, drew a plan of the front half of the vessel, a section of the bow which has a distinctive profile and took plenty of photographs of the vessel's features. We could not access the inside of the stern section as the mud was considerably deeper there and it was deemed too risky, but I was able to work along the side of the vessel to investigate the stern and gain an overall perspective of the vessel.

After this, I moved on to what is known locally as the "Skeleton Wreck" which lies towards the mouth of Forton Lake, again on the southern side. Carol and I were asked to record the bow section of this vessel, which was challenging being canted over to starboard, with some of the port ribs curving up over the baseline. This made the plane drawing difficult to visualise. However, with inventive measuring techniques, we managed to draw a convincing plan. We looked at surveying the stern of the vessel, but as this sticks out into the centre of the lake and the mud is deep it would have been too risky to establish a baseline.

One final survey was conducted on the remains of a ship's lifeboat on the northern shore. Little remains, but a metal keel is visible and some of the hull and the hooks at each end of the boat which would have linked it up to the falls on the ship. Our final task of the project was the back-breaking duty of backfilling the holes. It was sad to be covering over something that we had worked so hard to uncover, but essential both to protect the remains and to return the site to near original condition.



### WEBSITES: ARCHAEOLOGY IN THE NEWS

Archaeology News Email Subscription:

Explorator on the web at: <http://www.astrum-media.com/rogueclassicism/categories/explorator>

SALON-IFA: from the Society of Antiquaries and the Institute of Field Archaeologists

Write to [boswell@diol-house.co.uk](mailto:boswell@diol-house.co.uk) to subscribe

The Norseman Wreck: <http://www.norsemanwreck.co.uk>

Unesco Convention website: <http://www.unesco.org/culture/en/underwater/convention>

Britarch archaeology discussion list: [Britarch@jiscmail.ac.uk](mailto:Britarch@jiscmail.ac.uk)

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## SOUTHSEA SUB-AQUA CLUB DIVERS SOLVE D-DAY TANKS MYSTERY

Alison Mayor

For a NAS Part 2 project, I led a team of 25 divers from Southsea Sub-Aqua Club for a five-day survey of a local dive site. My aim was to map the site and try to solve the mystery of how two tanks, two bulldozers and a field gun came to rest on the sea bed eight miles offshore in Bracklesham Bay, West Sussex.

The historic WW2 armoured vehicles and gun lie jumbled up on the sea bed at a depth of 20m but there is no known associated shipwreck nearby. As a result of their work the divers believe they now have the evidence to prove that they were lost from a Landing Craft Tank (LCT) and not from a section of Mulberry Harbour Bridge as previously believed.



Photo courtesy of the Tank Museum, Bovington.

Underwater photographs and video of the tanks have allowed experts at the Tank Museum, Bovington, to confirm the tanks as Centaur CS IV – the type used exclusively by the Royal Marines Armoured Support Group for Operation 'Overlord'. Their purpose was to arrive first at 'H Hour' on 'D-Day' and use their powerful Howitzer 95mm guns to take out enemy gun positions. Their LCT was specially adapted with ramps so that they could fire from the craft as it approached the Normandy beaches. A total of 80 Centaurs were to be used on D-Day but only a small number actually made it across the Channel and until now only two were believed to have survived as war memorials in Normandy. One Centaur tank stands as a war memorial at the famous Pegasus Bridge in Normandy. The bulldozers are also believed to be very unusual, in that they were specially armoured Caterpillar bulldozers, one of a series of modifications to different types of war equipment known as Hobart's "Funnies". This type of armoured bulldozer was used by the British Army 79<sup>th</sup> Armoured Division and Royal Engineers to clear obstacles from the beaches. Little is known about the modifications made and there are no known surviving bulldozers of this type.

The survey revealed a number of other surprising discoveries - a large 'Kedge' anchor, tucked just beneath a tank, two ammunition sleds, two propellers and ammunition were amongst the many additional items found at the site. These items and much research into the Royal Marines War Diaries have led to the mystery finally being solved.

The historic War Diaries for 2<sup>nd</sup> RM Armoured Support

2008.4 • 7

Group, who took part in the D-Day landings at Juno Beach supporting Canadian forces, confirmed that one LCT was forced to turn back half way across the Channel after engine trouble and reported 2 Centaurs as being lost at sea. The weather was very bad during the crossing and a further Naval War Diary entry confirms that the same LCT capsized whilst under tow. All crew and RM personnel were rescued.



Photo courtesy of the Tank Museum, Bovington.

The diving project was approved by the Ministry of Defence and my full report is now available from the NAS office. A team of 12 divers took detailed measurements, photographs and video of the site to record the location, orientation and condition of the military vehicles. Some divers also conducted a survey of the marine life which has made its home on the wrecks.



The Southsea Sub-Aqua team. Photo: Martin Davies.

The project received a grant from the British Sub-Aqua Jubilee Trust and is supported by Silent Planet Ltd, Portland. The Tank Museum has provided assistance in the identification of the wrecks. If you have any information or comments about D-Day activities in the Bracklesham Bay area, especially in connection to the RM ASG or Landing Craft Tanks or to find out more about Southsea Sub-Aqua Club visit the club web site [www.southseasubaqua.org.uk](http://www.southseasubaqua.org.uk), email [secretary@southseasubaqua.org.uk](mailto:secretary@southseasubaqua.org.uk) or write to Southsea Sub-Aqua Club, Fort Widley, Portsdown Hill Road, Portsmouth PO6 3LS.

## FOUND AT LAST: THE V-81, A SCAPA FLOW WRECK IN CAITHNESS

Jon Henderson

As part of the wider *River of Stone* project the Underwater Archaeology Research Centre (UARC) and the Caithness Dive Club dived some of the shipwrecks listed in the Scottish Sites and Monuments Record (SMR). Caithness, the most northerly county in mainland Scotland, is well known for its rich terrestrial record but very little is known of its shipwrecks. You may be surprised to learn, for example, that one of the German High Seas Fleet that fought at the Battle of Jutland is thought to lie in Caithness waters. This ship, the V-81 Destroyer, is one of 56 maritime sites listed in the SMR for Caithness. The maritime component of the Scottish SMR is based on lifeboat records and eye witness accounts. As a result many of the sites listed in the SMR are unverified – with the only reliable way to confirm the existence of a given site being to dive it.

The SMR listing for the V-81 states that the ship was interned and scuttled in Scapa Flow in 1919 and subsequently raised for salvage only to sink while on tow to Rosyth, possibly in September 1937 and apparently in Sinclair's Bay. This record contradicts that of the local Scrabster Lifeboat register which states that the V-81 ran aground in fog some years earlier in 1921 at Freswick Bay (to the north of Sinclair's Bay) while being towed south from Scapa Flow. The two records provide two different dates and two different general locations for the sinking of the V-81 and no co-ordinates for its position are provided.

A wreck that could be the V-81 was first located by the Caithness Sub-Aqua Club in 2006. Divers tried to locate diagnostic artefacts that could identify the wreck. The most convincing diagnostic evidence is the surviving turbine. It was still a relatively new technological development in 1916 and many of the destroyers in the German Fleet were still in the process of changing from steam boilers. Parts of the gear box also survive which appear to be consistent with that of a V-class destroyer. Other smaller finds included brass fittings some of which had become concreted into the rock of the seabed. These components were often badly damaged, suggesting a violent history underwater.

Desk-based work carried out by the team in the Wick Archives shed further light on the site. A significant find was a handwritten police report found in the Caithness Constabulary Shore Occurrence Book which described the wrecking of a German destroyer at precisely the same location as the wreck site found by the Caithness Dive Club.

With a twist that not even the archaeologists could have predicted, it seems that the ship was finally wrecked in the early hours of one unlucky Friday the 13<sup>th</sup> in 1920 – one year earlier than the Scrabster Lifeboat Register suggested and 17 years earlier than the year recorded in the SMR. In the absence of a brass fitting or serial number stamped 'V-81' (which was common practice at the time) we can be reasonably confident that the wreck site of the V-81 has been found.

This is an edited version of an article reprinted from *Archaeology Scotland* [www.scottisharchaeology.org.uk](http://www.scottisharchaeology.org.uk).



MARCH 2009



# TANK

THE ROYAL TANK REGIMENT JOURNAL

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## TANKS AND DOZERS

by Alison Mayor

### Introduction

Divers from Southsea Sub-Aqua Club recently solved the mystery of how WW2 tanks, armoured bulldozers and a gun came to rest 20m deep, 8 miles off the West Sussex coast. For many years it had been believed that because of the lack of a ship wreck nearby, that they had slipped from a section of Mulberry Harbour 'Whale' bridge. The Whale Bridge is the closest WW2 wreckage to the tanks, but now the Southsea team have finally pieced together the true story.

The major breakthrough came after an initial dive when the dive team realised that the tanks were not the most commonly used Sherman tanks that they had expected to find. These were British tanks, with a shorter barrelled, large calibre gun that were subsequently confirmed by the expert at Bovington Tank Museum as Centaur CS IV tanks. The Southsea divers could hardly believe their luck as it became apparent that only 80 of these war machines had been destined for use in combat. They were given to a specially created unit of the Royal Marines - the 'Armoured Support Group'. Only 2 others of these tanks are known, both are D Day memorials in France.

After receiving approval from the MOD, Southsea club members began planning the full survey in earnest. With the kind help of Silent Planet Ltd who provided the dive boat 'Top Gun' and a grant from the BSA Jubilee Trust, 25 divers were able to spend 5 days in July mapping the site in detail and looking for clues that may explain the mystery of how the tanks sank. Numerous measurements, photographs and hours of video were taken and some surprising discoveries came to light, many of which have gone some way to solving the puzzle of how the war machines got there.

### The Dive Site

The site is tricky to find as the tanks and bulldozers lie close together in a scour and only stand proud of the seabed by a couple of metres, so don't appear much above the general sea bed level on an echo sounder. The whole site is only 30m x 20m wide. However, once you find the site and begin your dive you will quickly appreciate the uniqueness of the wrecks and how well preserved they are.

### 2 x Centaur CS IV Tanks. Fact File

Fitted with a 95mm Howitzer Gun (HE ammunition) and 1x BESA machine gun 28 tons - max speed 27 mph 5 crew 80 given to the RM Armoured Support Group for 'Overlord'. Centaurs were mounted on ramps on landing craft to allow their guns to fire over the bow at enemy gun positions. Only 28 made it to the Normandy beaches and inland. 2 are surviving in France.

At the site one tank lies upside down, the other is on its right side at an angle of approx 45 degrees. Because of their armoured construction they are in excellent condition despite more than 64 years on the sea bed. Some track is missing on one tank but otherwise they are intact. The distinctive 12 inch round plate on the front of the tanks, a unique identification point for Centaurs, is clearly visible on both tanks. At the back of the tanks look for the tow bars which were used to pull the Porpoises.

### TANKS AND DOZERS

### 2 x Armoured D7 Bulldozers Fact File

Caterpillar D7 bulldozers that were modified with armour in England. Known as one of 'Hobart's Funnies', the specialist equipment was designed to clear the beaches of obstacles to allow landing craft, troops and equipment to cross the beach. No known details of the modifications or how many were modified. No others are known to have survived.

Approx 23 tons. 2 crew

The dozers are laying on their sides just 3 or 4 metres behind the tanks. One is complete with its magnificent 5 ton plough standing almost 3m high. Sadly the plough of the other has broken off but lies close by. These powerful machines have a winch on the back and huge hydraulic rams which would have easily shifted any obstacle in its path. The driver's cab and the whole of the body of the bulldozer were covered in extra armour to protect against enemy fire.

### 'Field' Gun

This kept the team perplexed for some time. A length of wreckage similar to a gun barrel was found near one of the bulldozers but there was no evidence of a gun carriage. The team now believe this is the barrel of the 20mm Anti Aircraft gun from a Landing Craft.

### Car/Jeep

The team identified the remains of a vehicle, well broken up and laying to the front and side of one of the tanks. The engine block, axles, wheels/tyres and other parts are scattered on the site.

### Additional Items found on the site

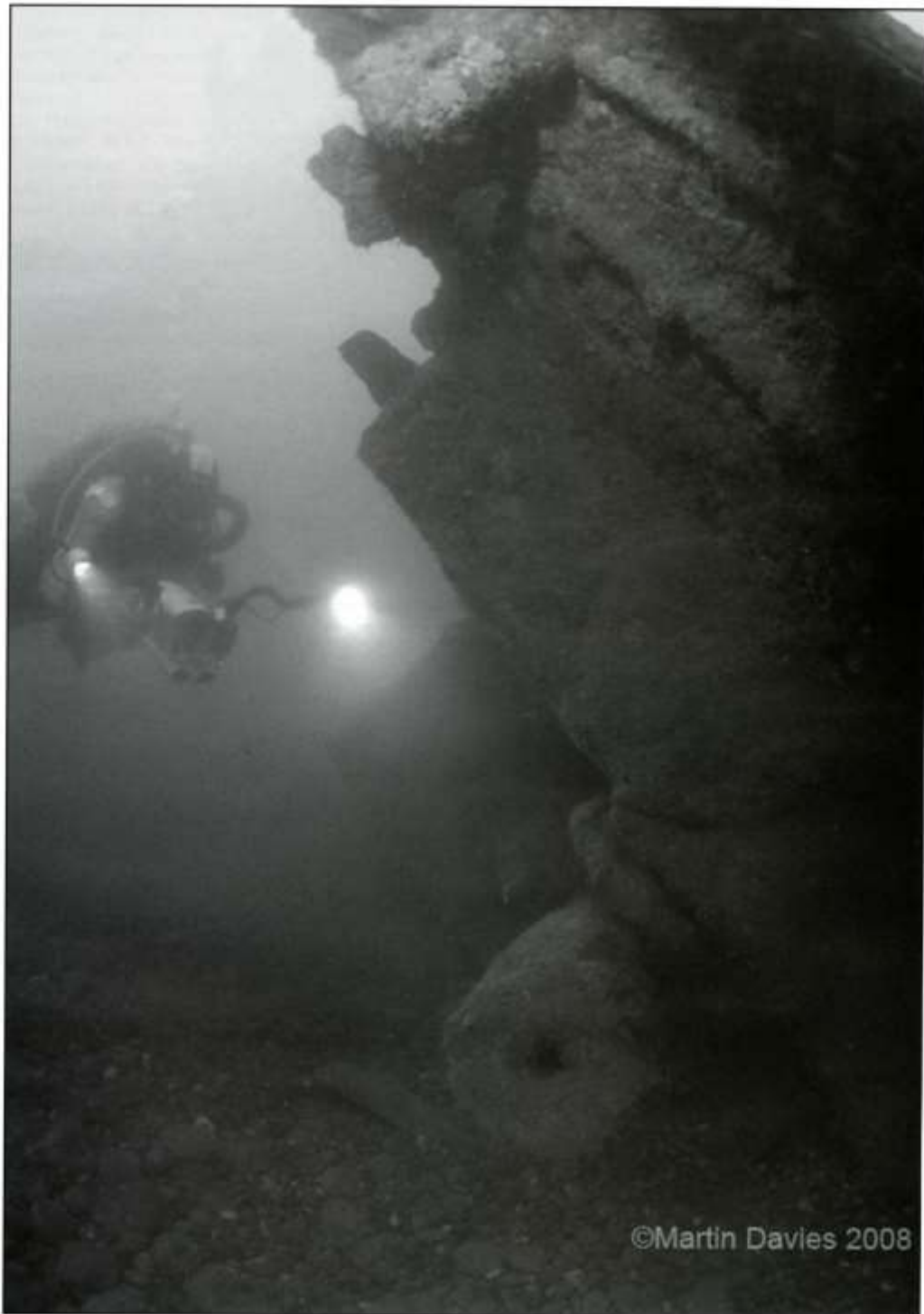
Anchor and 2 propellers. The discovery of a large 'Kedge' anchor tucked just underneath one of the tanks, and four bladed propellers were other significant clues to solving the mystery. Kedge anchors were used by Landing Craft to pull themselves back off the beaches after dropping their cargo. It is believed that the anchor and props were spares from a Landing Craft.

Porpoises. The Centaurs were to be the first to land at 'H-Hour' on 'D-Day' and so could not be re-supplied immediately. Special waterproof sleds were designed to be towed behind the tanks to carry the extra ammunition they needed as they made their way inland. There are 2 Porpoises on the site, one close to the plough and the other near the rear of the bulldozers.

Ammunition. Care should be taken on the site. The Centaurs would have been supplied with 95mm High Explosive ammunition and if found on the site could prove to be unstable.

### Diving into D-Day History

Armed with all this information and with the help of experts at the Tank Museum, Royal Marines Museum, Naval Historical Branch and Landing Craft Association, research began into the Royal Marines and Naval War Diaries and other historic papers related to Operations 'Overlord' and 'Neptune'. These Top Secret files are now available to the public from the National Archive and can be viewed on request.



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TANKS AND DOZERS





TANKS AND DOZERS



#### Operation 'Overlord' and 'Neptune'- Fact File

'Overlord' was the code name for the Allied invasion of Northern Europe and liberation of France.

'Neptune' was the codename for the naval assault phase of Overlord.

On D-Day, the Allies landed around 156,000 troops in Normandy, 73,000 Americans mainly at Utah Beach and Omaha Beach. The British and Canadians landed 83,115 troops (61,715 of them British) including 24,970 on Gold Beach, 21,400 on Juno Beach, and 28,845 on Sword Beach. 11,590 aircraft dropped 10,000 tons of bombs. On D-Day, Allied aircraft flew 14,674 sorties.

More than 6,900 vessels from 8 navies including 4,100 Landing ships and craft took part in Neptune.

By the end of 11 June (D + 5), 326,547 troops, 54,186 vehicles and 104,428 tons of supplies had been landed on the Normandy beaches.

2 large artificial harbours (Mulberry), each the size of Dover Harbour, were towed across the Channel and assembled on the French Coast within days.

It was quickly established that the Whale Bridge could not have supported over 100 tons of equipment. When installed in its final position each section was only designed to support a maximum weight of 56 Tons. This theory was therefore discounted at an early stage.

One entry in the 2nd RM Armoured Support Group War Diaries spoke of how the regiment had loaded onto their Landing Craft Tanks (LCTs) at Gosport, on 2nd June 1944 and proudly adds... "an event partly witnessed by the Prime Minister and other visitors". These Royal Marines and their flotilla of Landing Craft were to be part of "J Force" the predominantly Canadian assault force whose responsibility in the invasion was at "Juno" Beach. Once loaded on their craft the troops spent several days at sea waiting for the final orders to commence Operation Overlord. The poor weather (and we know how bad a British summer can be!) led to a 24 hour postponement from the original plan of 5th June 1944. The order was finally given and the ships set sail on the evening of 5th June.

Tracing back through these fascinating documents leads to an entry reporting that on the night of 5th June 1944 one LCT(A) had failed to make it across the Channel due to engine trouble and it had subsequently capsized whilst under tow. All crew and other personnel were reported saved and the craft was later sunk by RN gunfire to stop it becoming a hazard to shipping. The discovery of the loading tables for "J" Force confirmed the LCT(A) in question had been carrying 2 Centaurs, 2 Armoured D7 Bulldozers, a 5Cwt Car (4x4) and ammunition. A total of 12 Landing Craft crew plus another 39 Royal Marines and Canadian Army personnel would have been aboard the LCT.

A total of 26 LCT(A)s were adapted with the addition of 50 tons of armour around the bridge and ramps fitted their decks so that the Centaurs could fire their powerful guns over the bow. The additional armour and arising of the tanks on the ramps severely affected the stability of the craft and heavy seas resulted in a number of overloaded landing craft being swamped.

The project was led by Alison Mayor, who wanted to survey the site as a part of her Nautical Archaeological Society Part 2 and BSAC Advanced Diver qualifications though many divers from Southsea SAC also gained valuable experience by taking part. A number of reports will be produced as a result of the project including one for the MOD. The team has also been surprised by enormous interest from the general public as well as the diving community. A film crew from the BBC 2 'Coast' programme accompanied the dive team on the first day of the survey and the project is due to feature in the next series. Alison was delighted with the public response and the support received from so many in managing the project, she commented:

"This project has been a fantastic success. There is something about diving on military equipment like this, we dive on ship wrecks all the time but this is very different - the tanks and bulldozers are out of context without a shipwreck around. They are awesome machines, resting peacefully on the seabed and surrounded by shoals of fish.

It's a great site to dive if you are looking for something a little different and is even more enjoyable once you dive deeper into its history. Finding out about the events leading up to and during Overlord has brought the whole project to life."

#### Tanks and Bulldozers Dive Site Fact File

Position 50 38 32N: 00 51 37W. 8 Miles due South of Bracklesham.

Dive Sussex - A Diver Guide No 40 Depth 20m

Slack Water site 90 mins before High Water Portsmouth and 45 mins before Low Water Portsmouth.

Local skipper:

Simon Bradburn SC Charters, Birdham, W Sussex.

Website: [www.southerncoastcharters.com](http://www.southerncoastcharters.com)

Email: [simonbradburn@hotmail.com](mailto:simonbradburn@hotmail.com)

Mobile: 07932 162721

Getting there:

From the A27 at Chichester take the A286 and B2198 to Bracklesham Bay. There is a car park and slip way for launching from the beach (4x4 essential).

**Top Page Left: The A27 Centaur Mk IV mounted the 95mm howitzer and was used as a close support tank by the Royal Marines in the 1944 D day invasion.**  
(Tank Museum)

**Our sincere thanks go to the Southsea Sub-Aqua Club for their fascinating article. Ed**

**Bottom Page Left: "At the back of the tanks look for the tow bars which pulled the Porpoises."**  
(Martin Davies)

TANKS AND DOZERS

**NEWS****AROUND THE AREA****Diving club scoops award**

A DIVING club has won a prestigious award for 'adopting' a wreck. Southsea Sub-Aqua Club members have spent a year exploring a wreck site known as 'tanks and bulldozers', which lies eight miles south of Bracklesham Bay, West Sussex.

They found two tanks, two bulldozers and a field gun lying at 20m and discovered that the vehicles had fallen off a Landing Craft Tank during the D Day operations in June 1944. Their finds won them this year's 'adopt-a-wreck' award from the Nautical Archeological Society.



Divers accept award

A large, detailed underwater photograph serves as the background for the page. It shows a large, dark-colored crab, possibly a coconut crab, resting on a rock heavily covered in bright green algae or seaweed. The water is a murky green, and a bright light source, likely a diver's torch, is visible in the upper left, creating a strong glare. In the top right corner, there is a small red logo that says 'GB DIVER' and a small map of the British Isles.

# THE MYSTERY OF THE SLEEPING CENTAURS

It is one of the South Coast's strangest dives – a set of armed tanks and bulldozers sitting peacefully at 20m, but how did they get there? **Alison Mayor** tells how Southsea Sub-Aqua Club finally pieced together the full story of the enigmatic wreckage. Photographs by **Martin Davies**

**ARMoured PROTECTION:** the mighty Centaur tank now provides a sanctuary for marine life such as this large edible crab

[www.divemagazine.co.uk](http://www.divemagazine.co.uk) 73





AS WE descended down the line, the outline of a huge bulldozer appeared before us. Nearby, lying on its side, an enormous plough stood 3m proud of the sea bed. A few metres ahead, a curtain of shoaling fish parted to reveal two tanks, still recognisable and in remarkably good condition. Ammunition was scattered all around in the jumble of the debris field, a testament to the confusion that led to these wartime artefacts finding their way to the sea bed.

We were trying to establish exactly how the tanks and bulldozers came to be at the bottom of the Channel, eight miles south of Bracklesham, apparently without any sign of the vessel that had been carrying them. For years, it was assumed that they had slipped from a section of Mulberry Harbour, the closest Second World War wreckage to the tanks (Mulberry Harbours were a type of temporary harbour developed to offload

cargo on the beaches during the Allied invasion of Normandy). We wanted to test this assumption and find out more about the machines.

With the blessing of the Ministry of Defence, members of Southsea SAC began planning a full survey in earnest. Silent Planet kindly provided their dive boat Top Gun, and with the help of a grant from the BSAC Jubilee Trust, 25 divers were able to spend five days mapping the site in detail, looking for clues that may explain the mystery of how the tanks sank.

On our initial dive, we established that the tanks were not the commonly used Shermans we had expected to find. They were definitely British, but with a shorter-barrelled, large-calibre gun. Experts at the Bovington Tank Museum subsequently identified them as Centaur CS IV tanks – only 80 of these vehicles had been



**MEASURING UP:** Southsea Divers took many measurements which helped to confirm the tank's identity (this photograph); the dive team receives a briefing (left)

produced for use in combat. They were given to the Armed Support Group, a unit of the Royal Marines. Only two examples of these tanks are known to exist today – both stand as D-Day memorials in France.

The site itself is tricky to find, as the wreckage lies close together in a scour and only stand proud of the sea bed by a few metres, so the wreckage doesn't appear much above the general sea bed level on an echo sounder. The whole site is only 30m by 20m wide. However, once you find the site and begin your dive, you quickly appreciate the unique nature of the wrecks and how well preserved they are. Southsea members dive on shipwrecks all the time but these wrecks are very different, as the tanks and bulldozers are completely out of context without a shipwreck in the vicinity.

One tank lies upside down, while the other sits on its right side at a 45-degree angle. Thanks to their armoured construction, they are in excellent condition despite 64 years on the sea bed. Some track is missing on one tank, but they are



**RESTING PLACE:** Second World War Royal Marines prepare their tanks (left); the tanks' final resting place in Bracklesham Bay (below)







otherwise intact. Both tanks have a distinctive 30cm round plate on their front sides – a unique feature that identifies them conclusively as Centaurs. At the back of the tanks there are tow bars for pulling the porpoises – waterproof sleds designed to be dragged behind the tanks to carry the extra ammunition they needed for their missions.

The two armoured bulldozers lie on their sides about 4m behind the tanks. They were intended for use on the landing beaches, to smash through German obstructions and push aside crippled tanks. One is completely intact, its five-ton plough standing 3m high. The plough of the other has broken off the second bulldozer, but lies nearby. These powerful machines had a winch on the back and huge hydraulic rams, which could have easily shifted practically any obstacle in its path. The driver's cab and the whole of the body of the bulldozer were covered in thick armour to protect against enemy fire.

The discovery of some sort of field gun had us perplexed for some time. A length of wreckage similar to a gun barrel was found near one of the bulldozers, but there was no evidence of a gun carriage. The team now believe this is the barrel of the 20mm anti-aircraft gun from a landing craft.

Each time we dived on the site, we discovered new artefacts: anchors, propellers, ammunition and other items all providing key elements of the puzzle. Once you start to delve into the story behind the sinking, you get a sense of the traumatic events that must have taken place. It's a dive that has all the vital ingredients for



**PURE POWER:** the massive blade of the armoured bulldozer points up (this photograph), the bulldozer would have made easy work of clearing the Normandy beaches (below)



most Brits: unique war machines, a sense of mystery and the bonus of marine life. On so many wreck dives it's just a question of getting down there and then heading to the bow or the stern, but this is more complex.

Armed with the information from our survey and the advice of various experts, we began researching the Royal Marines' history, using naval war diaries and other

historic papers related to Operations Overlord and Neptune. These files are now available to the public from the National Archive and can be viewed on request.

We quickly established that the Mulberry Harbour's floating pier could not have supported more than 100 tons of equipment. When installed in its final position each section was only designed to





**FRIEND OR FOE:** a curious conger eel emerges from his Caterpillar (bulldozer) home

**CONCRETE BUSTERS:** a 95mm high explosive shell, intended to announce the arrival of the Allies with a bang



support a maximum weight of 56 tons, but the wreckage we had found would have weighed far more. So if they didn't fall from a Mulberry Harbour, how did they get there?

An entry in the 2nd RM Armoured Support Group War Diaries related that the regiment had boarded their landing craft tanks at Gosport, on 2 June 1944, proudly adding... 'an event partly witnessed by the Prime Minister and other visitors'. These Royal Marines and their flotilla of landing craft were to be part of J-Force, the predominantly Canadian assault force that took part in the landing at Juno Beach. The troops spent several days at sea waiting for the final orders to commence Operation Overlord. The poor weather led to a 24-hour postponement from the original plan, but the order was finally given and the ships set sail on the evening of 5 June 1944.

Reading through these fascinating documents, we found an entry reporting that on the night of 5 June 1944, one of the landing craft tanks had failed to make it across the Channel due to engine trouble, and had subsequently capsized while under tow. All crew and other personnel were saved and the craft was later sunk by RN gunfire to prevent it becoming a hazard to shipping. The J-Force records confirmed the landing craft in question had been carrying two Centaurs, two armoured D7 bulldozers, an armoured car and ammunition. There would have been 12 landing craft crew and another 39 Royal Marines and Canadian Army soldiers on board the landing craft.

There were 26 landing craft just like this one – each of them fortified with 50 tons of armour around the bridge, and with ramps fitted to their decks so that the Centaurs could fire their guns over the bow. The additional armour and positioning of the tanks severely affected the stability of the craft and heavy seas resulted in a number of overloaded landing craft being swamped.

In this case, we could surmise that the landing craft would have capsized quickly; the chains securing the tanks would have provided little resistance in preventing the 28-ton tanks from plummeting to the bottom of the Channel. The 50 or so people on board would have been pitched into the sea, though from what we now know, none of them died. For their many comrades heading to the beaches of Normandy, the day would tell a very different story.

Diving on Second World War armoured vehicles does seem a little odd at first – especially without an actual shipwreck nearby – but you soon begin to appreciate the sheer presence of the tanks and 'dozers. They are awesome machines, resting on the sea bed and surrounded by shoals of fish. This site is a true time capsule, and it has allowed us to piece together a forgotten episode in history. If you are looking for something different, whatever your diving grade, this site will have something for you. Southsea members have enjoyed the experience of the project and are pleased to have been able to finally tell the true story of the sleeping Centaurs. ■

#### NEED TO KNOW

- **Position:** 50° 38' 32"N, 00° 51' 37"W. Eight miles due south of Bracklesham.
- **Further reading:** *Dive Sussex – A Diver Guide No 40*
- **Depth:** 20m
- **Tides:** slack-water site 90 minutes before high-water Portsmouth and 45 minutes before low-water Portsmouth.
- **Local skipper:** SC Charters: [www.southerncoastcharters.com](http://www.southerncoastcharters.com); email: [simonbradburn@hotmail.com](mailto:simonbradburn@hotmail.com); tel: 07932 162721
- **Getting there:** from the A27 at Chichester, take the A286 and B2198 to Bracklesham Bay. There is a car park and slipway for launching from the beach (4x4 essential).

## **SOUTHSEA SUB-AQUA CLUB**

### **PRESS RELEASE**

**ISSUED: 13 AUGUST 2009**

**FOR RELEASE: IMMEDIATE**

### **DIVERS FIND WW2 BOMB**

A team of divers from Southsea Sub-Aqua Club were surveying the wreck of a local dive site when they found a large WW2 unexploded bomb.

Surprised divers found the bomb on the site of a Landing Craft Tank (LCT) which was thought to have sunk on 6 June 1944 after it had capsized in bad weather. The wreck now lies 20m below the surface 4 miles south of Selsey Bill, West Sussex.

The divers have reported the find to the RN bomb disposal team who intend to carry out a full investigation. It measures 4 feet long and 12 inches in diameter at the base. The bomb is possibly a German arial bomb from WW2.

The underwater survey has provided much evidence to support the belief that the wreck is LCT(A)2428 which sank on 6<sup>th</sup> June 1944 near Selsey Bill. It had been carrying Tanks and Armoured Bulldozers as part of J force and was due to land at Juno Beach as a part of the Canadian/British forces.

Last year the divers from Southsea Sub-Aqua Club finally solved the mystery of how 2 tanks, 2 bulldozers and a gun came to rest on the sea bed 8 miles offshore in Bracklesham Bay, West Sussex. The historic WW2 armoured vehicles and gun lie jumbled up on the sea bed at a depth of 20m but there is no shipwreck nearby. Previously Secret WW2 war diaries confirmed that the tanks were lost when a Landing Craft Tank (LCT) capsized but that the LCT had continued to float for some time before it was eventually sunk by gunfire. The divers found the same 95mm High Explosive ammunition at the Landing Craft dive site as that used by the Centaur tanks at the Tanks and Bulldozers site. This evidence along with other data collected from the site has almost certainly proven the wreck site to be that of LCT(A) 2428.

The historic War Diaries for 2<sup>nd</sup> Royal Marine Armoured Support Group, who took part in the D Day landings at Juno Beach supporting Canadian forces, confirmed that one LCT was forced to turn back half way across the Channel after engine trouble and reported 2 of their Centaur tanks as being lost at sea. The weather was very bad during the crossing and a further Naval War Diary entry confirms that the same LCT capsized whilst under tow. All 53 members of crew, Royal Marines and Canadian personnel were rescued safely. The LCT continued to float upside down for some time and was eventually sunk by gunfire.

Earlier this year a relative of one of the crew who had survived the incident had contacted the Southsea Sub-Aqua Club after hearing about the work it had been



# **NEPTUNE WRECKS PROJECT REPORT**

## **PART 7 - NEPTUNE WRECKS & THE FUTURE**

### **Tanks, Bulldozers and LCT(A) 2428**

As a direct result of our work the historic importance of the Tanks, Bulldozers and Landing Craft Tank wreck sites has been formally acknowledged by English Heritage.

English Heritage (EH) has commissioned a project (See Annex A) to examine whether the Tanks and Bulldozers and LCT(A)2428 wreck sites can be recorded and protected under Legislation. EH recognise that, although relative to part of recent history these are unique wrecks and although relatively robust sites, they should receive a degree of protection under Law. Whilst these wrecks could be protected under the Protection of Wrecks Act 1973 the sites would not benefit from the Licensing process and resultant restricted access that accompanies the implementation of the Legislation.

Therefore, as a test case, EH intend to undertake a detailed survey and historical research of the sites in order to assess whether they meet the criteria for designation as 'Ancient Monuments' Legislation. If successful, this would be the first time this legislation will have been used to protect fully submerged wrecks in England. Under Scottish law the equivalent legislation has been used to designate the Scapa Flow wrecks.

The wrecks (comprising both the Landing Craft and former cargo) are considered by EH eligible under The Ancient Monuments and Archaeological Areas Act 1979 (as amended) which refers to;

***“any site comprising, or comprising the remains of, any vehicle, vessel, aircraft or other movable structure or part thereof, situated in, on or under the sea bed within the seaward limits of UK territorial waters adjacent to England.”***

This form of protection has the benefit of allowing unrestricted access to visiting divers on a 'look don't touch/take' basis but may offer protection from fishing activities.

As set out in the attached EH Project Design document (Annex A), the survey element of the work is currently out to tender and once a contractor has been selected we will be working closely with them and the Project Manager to complete the work. In addition to the project report it is intended to produce a journal article and also a pod cast.

This is an exciting development for all at Southsea Sub-Aqua Club and testament to what individuals and clubs, supported by diving organisations and subject matter experts can achieve. What began as a simple survey exercise to develop archaeological and diving skills has resulted in Governmental recognition of the



historic importance of these wreck sites and the story of their sinking has been revealed capturing the attention of the wider community.

Only two other Centaur tanks of the 80 assigned for combat during Operation OVERLORD remain today. Both of these Centaurs are war memorials in France including one at the famous Pegasus Bridge. We have been unable to establish how many D7 Armoured Bulldozers were produced, but we believe only one other remains today, in the hands of a private collector.

Of the estimated 48 LCT(A)s modified specifically for their role in the first wave of the assault, none remain as floating vessels and only one other (LCT(A)2454) is recorded in the National Monuments register as a wreck site. LCT(A) 2454 is well broken up and lies, partly buried and in shallow water off Chesil Beach, Dorset.



Figure 86 - LCT(A) 2454 wrecked at Chesil Beach 13 Oct 1944

### **Southsea Sub-Aqua Club's Project NEPTUNE Wrecks**

Southsea Sub-Aqua Club have adopted the wrecks of LCT(A) 2428 and the tanks and Bulldozers and will continue to research and monitor the sites in the years to come. In addition the work will continue into the other wreck sites that we have investigated as part of the wider Neptune Wrecks project and we intend to investigate more wreck sites in the Portsmouth to Selsey area which may have a connection to Operation NEPTUNE.

There are a large number of wrecks which potentially fit into these criteria, many seldom dived and therefore identity and exact location may be unknown. These wrecks could include;

Mulberry Harbour units, including Whale Bridges, pontoons, bombardons etc

Barges and dumb lighters

Landing craft of various types,

Royal Naval and Allied Navies Ships, submarines and vessels

Supply ships

Military Vehicles (such as tanks/trucks etc)

The intention would be to attempt to identify the nature of the wreck and record its position and condition for future reference. This is potentially a much larger project and will undoubtedly take a number of years to complete (perhaps 7 to 10 years) and will require extensive planning and resources from within the Club. Encouragingly, the level of interest and support from within the branch and also from others is high. We will be developing a longer term project plan in the coming months which will endeavour to begin this work in 2011.

Members of Southsea Sub-Aqua Club have thoroughly enjoyed on this project by working with a common goal and all are rightly proud of their achievements. The Club has benefitted from the bringing together of club members in this way and from the interest and support of others. In the wider community, the work we have conducted has generated public interest and rightly brings to the attention the historic value of these sites, but also the human aspects of the story.

Enclosure

Annex A - English Heritage Project Design dated 26 Feb 10

**LCT(A) 2428:  
AN ASSESSMENT FOR SCHEDULING IN THE MARINE ZONE**

**Project Design**

<b>DOCUMENT CONTROL</b>	
Author(s)	Mark Dunkley
Derivation	Reform of Heritage Protection in England
Original Date	06 October 2009
Reviser(s)	Mark Dunkley
Date of last revision	26 February 2010
Date Printed	-
Version	03
Status	FINAL
Summary of changes	Updated following comments from HEEP circulation
Circulation	EH HPD, HPRT & Strategy Teams EH MNSG
Required Action	Nil
Filename/location	
Approval (signature)	

**LCT(A) 2428:  
AN ASSESSMENT FOR SCHEDULING IN THE MARINE ZONE**

**draft Project Design**

**SECTION 1 – DESCRIPTION OF THE PROJECT**

**1. PROJECT NAME**

LCT(A) 2428: An Assessment for Scheduling in the Marine Zone

**2. SUMMARY DESCRIPTION**

- 2.1 In 2008, Southsea Sub-Aqua Club (SSAC) led by Alison Mayor investigated the remains of Second World War Centaur CS IV tanks, armoured Caterpillar bulldozers, a jeep and evidence of a military vessels' fixtures, fittings and armament about 10km south-west of Selsey Bill, West Sussex. The Clubs' interest and investigation led them to also locate, in 2009, a probable Landing Craft (Tank) some 6km east of the equipment assemblage.
- 2.2 Southsea Sub-Aqua Club has concluded that the Landing Craft off Selsey is very likely to be LCT(A) 2428 and that the vehicle and equipment assemblage comprises its cargo which was lost when it capsized in June 1944. SSAC are keen to explore the special interest of both sites.
- 2.3 This three-stage project comprises a strategic assessment of the Landing Craft, vehicles and associated equipment and historical documentation to i) enable case-study assessment of the site for designation as an Ancient Monument, ii) understand its management patterns to determine how these can be influenced to ensure that the sites' interest is maintained for both present and future generations, iii) identify opportunities for local 'ownership' and involvement. The project will also serve as a pilot study for assessing fully-submerged sites for scheduling.
- 2.4 This work complements Heritage Protection Reform by informing management-based designation frameworks.

**3. BACKGROUND**

**3.1 LCT(A) 2428**

- 3.1.1 Delivered to the UK under the Lend-Lease programme for service in the Mediterranean, LCT 2428 received armour plating in early 1944 and was redesignated LCT(A) 2428 (see Annex 1 for technical specifications).
- 3.1.2 For the allied invasion of Normandy in June 1944, LCT(A) 2428 was assigned as 'Leader' of the 105<sup>th</sup> Flotilla of Assault Group J1 Support Squadron, assigned to Juno Beach in support of the 7<sup>th</sup> Infantry of the 3<sup>rd</sup> Canadian Division at Courseulles.<sup>4</sup>
- 3.1.3 Centaur CS IV tanks were built at the Horwich Locomotive Works, Greater Manchester, and were used exclusively by the Royal Marines Armoured

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<sup>4</sup> Source: <http://www.navsourc.org/archives/10/18/180428.htm>



Support Group while the Caterpillar bulldozers were used by the British Army 79<sup>th</sup> Armoured Division and Royal Engineers.

- 3.1.4 LCT(A) 2428 was a Mark V Landing Craft Tank (see Annex 2) converted to go into the beach at H-Hour with firepower support from two tanks. Erwin Kauffmann, the Officer-in-Charge of LCT(A) 2124 at Omaha Beach, observed that a wooden ramp of heavy timbers was built [on his craft] so that the two tanks could fire abreast into the beach over the vessels' bow ramp. A third tank was fitted with a bulldozer blade to knock down masonry such as anti-tank walls. As such, 'the three tanks plus the armor [sic] added made for very little freeboard while crossing the Channel.'<sup>5</sup>
- 3.1.5 On the evening of the 5<sup>th</sup> June 1944, LCT(A) 2428 experienced engine trouble on passage to Normandy. She was taken in tow by the rescue tug HMS *Jaunty* but capsized and lost her cargo.<sup>6</sup> LCT(A) 2428 appears to have been subsequently fired upon by the *Jaunty* until she sank, presumably so as not to pose a floating hazard to the remaining invasion fleet and other Naval operations.
- 3.1.6 The sites lie approximately 10km south-south-west of Selsey Bill, West Sussex at a general depth of 20m below chart datum on a sandy gravel seabed. Both sites lie inshore of the 6nm fishing limit.
- 3.1.7 The Landing Craft is recorded in the National Monuments Record as SZ 88 SE 3 (UID 911186) and the vehicle assemblage as SZ 88 SW 3 (UID 911191).<sup>7</sup>
- 3.1.8 The Landing Craft is recorded by the UKHO as 20004 and the vehicle assemblage as 20008 (although Alison Mayor notes that the original marks are not entirely accurate).

## **3.2 Recent Investigations**

- 3.2.1 In 2008, Southsea Sub-Aqua Club (SSAC) led by Alison Mayor investigated the remains of two tanks, two armoured bulldozers, a jeep and evidence of a military vessels' fixtures, fittings and armament (including High Explosive 95mm ammunition) about 10km south-west of Selsey Bill, West Sussex (Mayor 2008). In assessing the condition of the vehicle assemblage, Alison Mayor concluded that:

'Whilst their strong construction has enabled these armoured fighting vehicles to remain relatively well preserved after almost 65 years on the sea bed there is probable evidence that interference by divers and fishing activities has resulted in damage to the vehicles. The loss of the Bulldozer B plough and the tracks of Tank A being the most serious damage to the wrecks.

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<sup>5</sup> Source: [http://ww2lct.org/history/stories/lct\\_a.htm](http://ww2lct.org/history/stories/lct_a.htm)

<sup>6</sup> PRO CAB 66/51/5: War Cabinet Weekly Resume No. 249, 8<sup>th</sup> June 1944, Appendix V.

<sup>7</sup> There is some confusion within the NMR record for LCT(A) 2428 in that the site is recorded as a steam vessel.

Care needs to be taken in the way boats anchor at the site, to either fish or dive. My opinion is that the majority of damage to the vehicles has been as a result of boats attempting to secure to the site for diving or fishing purposes' (Mayor 2008).

- 3.2.2 The continued interest and investigations of SSAC led them to also locate a probable associated Landing Craft (Tank) some 6km east of the vehicle assemblage in 2009 (Alison Mayor, *pers. comm.*). Geophysical data of the Landing Craft was obtained as part of the recent MEPF / ALSF South Coast REC survey (BGS, forthcoming).
- 3.2.3 Southsea Sub-Aqua Club has concluded that the Landing Craft off Selsey is almost certainly LCT(A) 2428 and that the vehicle assemblage comprises its former cargo lost in 1944.
- 3.2.4 The vehicle assemblage has been adopted by SSAC under the Nautical Archaeology Society's (NAS) Adopt-a-Wreck scheme and it is noteworthy that the Club won the NAS Adopt-a-Wreck award for 2009.<sup>8</sup>

### **3.3 Designation Approaches**

- 3.3.1 Although Section 1 of the Protection of Wrecks Act 1973 allows for the designation of vessels and their contents, or former contents, on account of their artistic, historical or archaeological importance, this is not being pursued as restrictions on access to the site are not deemed necessary.
- 3.3.2 The Ancient Monuments and Archaeological Areas Act 1979 (as amended) refers to any site comprising, or comprising the remains of, any vehicle, vessel, aircraft or other movable structure or part thereof, situated in, on or under the sea bed within the seaward limits of UK territorial waters adjacent to England. The site (comprising both the Landing Craft and former cargo) is therefore eligible for scheduling.
- 3.3.3 Contact has been made with the Ministry of Defence in relation to designation of the site under the terms of the Protection of Military Remains Act 1986; a reply is awaited.
- 3.3.4 Although there are 63 Landing Craft recorded in the National Monuments Record, only one of these, LCT(A) 2454, is recorded as an armoured Landing Craft. Nine crew were lost when LCT(A) 2454 got into difficulties off Chesil Beach, Dorset, in October 1944.

## **4. RESEARCH AIMS & OBJECTIVES**

### **4.1 Project Aim**

- 4.1.1 The Aim of the project is to pilot a new approach to, and understanding of, designation in the marine zone by enabling a full assessment of LCT(A) 2428, and its former cargo, for designation under the Ancient Monuments & Archaeological Areas Act 1979.

### **4.2 Project Objectives**

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<sup>8</sup> Introduced in 2000 by the Nautical Archaeology Society to increase awareness of underwater archaeological sites, the adopt-a-wreck scheme received funding from the HLF.

#### 4.2.1 The Objectives of the project are to:

##### Stage 1

1. Assist SSAC in collating data, archive preparation and undertake additional historical research and compare information with LCT(A) 2454;
2. Engage MoD and Museum of the Royal Navy;
3. Contact Cultural Attaché, Canadian Embassy;
4. Liaise and identify overlaps with the Advisory Committee on National Historic Ships in relation to LCTs forming the National Historic Fleet Core Collection;
5. Liaise with the Tank Museum, Bovington, Royal Marines Museum, Portsmouth, LST and Landing Craft Association & D-Day Museum Portsmouth.
6. Audit nationally recorded submerged Overlord/Neptune remains.

##### Stage 2

7. Commission independent full assessment of the Landing Craft and vehicle assemblage sites;

##### Stage 3

8. Assess the Landing Craft and vehicle assemblage against the scheduling criteria;
9. Identify opportunities for local 'ownership' and further involvement.
10. Recommendations to contribute to the understanding of scheduling in inshore waters.
11. Consider potential for peer-reviewed journal article.

#### **5. Business Case**

- 5.1 As the Heritage Protection Bill is not included in the Government's draft legislative programme for 2009/10, the focus of Heritage Protection Reform has shifted towards designation activities that have greater management-based outcomes.
- 5.2 While English Heritage's Corporate Strategy (*Making the Past Part of Our Future*, 2005) continues to provide the framework to address the most urgent needs of the historic environment, greater emphasis is likely to be placed on increased understanding and the articulation of values driven by responses to threat (derived from 'Heritage at Risk' which provides a prioritised framework for decision making).
- 5.4 Consideration is also being given towards the development of a national Heritage Protection Plan; effectively a research strategy for the protection of England's historic environment. One way of supporting this is to undertake strategic research projects designed to inform methodologies to assist designation decision-making.
- 5.5 The Marine and Coastal Access Act 2009 (the 'Act') will provide some measure of protection for heritage assets. Although the Landing Craft and vehicle sites do not fall within an area of environmental designation,

assessment of their heritage value within fisheries management will assist in the delivery of elements of the Act.

## **6. PROJECT SCOPE**

- 6.1 The project will address the heritage and ecological values of a Landing Craft and vehicle assemblage lying within the Inshore Fisheries zone as well as identifying the site's special interest.
- 6.2 Stages 1 and 3 of the project will be carried out in-house with the expert assistance of Alison Mayor. Stage 2 will be undertaken by an external specialist contractor.
- 6.3 The project will not seek to research or fully document events at Juno Beach on D-Day but will make reference to the Normandy landings as required. Similarly, assessment of the role of LCT(A)s during Operations Neptune and Overlord will be strictly confined to their relevance to inform designation decisions.

## **7. INTERFACES**

### **7.1 English Heritage Programmes**

- 7.1.1 The proposed project has links with the following preceding and concurrent English Heritage projects, programmes and guidance in support of the following:

- Heritage Protection Reform;
- National Heritage Protection Plan;
- *Conservation Principles: Policies and guidance for the sustainable management of the historic environment*, and;
- Heritage at Risk
- *Modern Military Matters* Research Framework (Schofield 2004)
  - A1 (D-Day preparations and support)
  - B3 (Submerged archaeology)
  - C2 (Stability and conservation)
  - C4 (Social commemoration)
  - D (Methodologies) & E (Management principles and frameworks)

- 7.1.2 The project will also assist in the strategic implementation of elements of the Marine and Coastal Access Act 2009.

### **7.2 Internal EH**

- 7.2.1 The proposed project has links with the following internal teams and groups:
  - Designation Team (South) (P&D);
  - Maritime Archaeology Team (R&S);
  - Head of Military Programmes and MNSG (R&S)



7.2.2 Internal communication & liaison will be maintained by the project Communications Officer.

### **7.3 National Historic Ships**

7.3.1 During the project, liaison will be maintained with the Advisory Committee on National Historic Ships (ACNHS) in relation to LCTs forming the National Historic Fleet Core Collection. Only one LCT is recorded by ACNHS; the *Landfall* (formerly LCT 7074).

### **7.4 Special Interest & Summary Assessment of Public Interest**

7.4.1 Designed exclusively for military purposes, LCTs (defined in the NMR maritime craft type thesaurus as a *large inshore craft with a retractable loading ramp in the bow. Used to carry tanks ashore for a beach landing or as a tank ferry*) evolved from Churchill's suggestion for a boat capable of carrying tanks. Designs in 1940 produced the first Tank Landing Craft, designated LCT(1). The LCT was later produced in several configurations; the two US ones being the Mark V and VI.

7.4.2 LCT(A)s also relate to the wider Defence of Britain, receiving considerable interest at both popular and professional levels within the larger context of twentieth-century defence. It is noteworthy that 2014 will be the 70<sup>th</sup> anniversary of the Normandy Landings; first-hand accounts of these operations are now passing from memory into history.

7.4.3 Public interest in Landing Craft and armoured fighting vehicles exists on three broad levels;

- 1) Popularity and family interest of recent (WW2) military history;
- 2) Museum Exhibits (e.g. RM Museum, Portsmouth), and;
- 3) Recreational Dive sites (see, for example, [nasportsmouth.org.uk/projects](http://nasportsmouth.org.uk/projects)).

in addition

- 4) They provide evidence of past Military endeavours;
- 5) They provide historical Connections to past people, events and aspects of life, and;
- 6) They provide communal Associations through collective memory.

## **8. COMMUNICATIONS**

8.1 Rachel McMillan will be the project's Communications Officer and the project team will hold internal discussions and meetings regarding the project as and when required.

8.2 The principal structure for routine communication (including Highlight Reports) will be the project review mechanisms described in the following section.

## **9. PROJECT REVIEW**

9.1 The project will be assessed against the following Review Points:

- R1) Completion of Stage 1 (~May 2010)
- R2) Completion of Stage 2 (~June/July 2010)
- R3) End of Project; Completion of Stage 3 (~August/September 2010)

## **10. HEALTH & SAFETY**

### **10.1 Workplace Safety**

- 10.1.1 Section 6 of English Heritage's Health & Safety Manual relates to workplace safety. The following Safety Instructions are relevant to this project:

- 6.1 Office health and safety

- 6.3 Lone site visits and field work

- 6.5 Homeworking (see also HR Manual)

- 6.6 Driving at work

### **10.2 Field Assessment**

- 10.2.1 Appointment of a suitably qualified diving contractor will be required, following competitive tender, for the field assessment element of the project (Stage 2). The appointment will be made in accordance with the Diving at Work Regulations 1997 and the investigation will be subject to a detailed Written Scheme of Investigation.

## SECTION 2 – RESOURCES & PROGRAMMING

### 11. PROJECT TEAM STRUCTURE

11.1 The proposed project team is as follows:

Project Executive	Paul Jeffery
Project Manager	Lucy Oldnall
External Expert	Alison Mayor, SSAC
External Expert	Diving Contractor, tbc
Internal Expert	Emily Gee
Internal Expert	Mark Dunkley
Internal Expert	Gareth Wilson
Communications	Rachel McMillan
Project Assurance	Mark Dunkley
Project Support	P&D & C&P Teams as required

### 12. METHODS STATEMENT

#### 12.1 Stage 1

12.1.1 Mark Dunkley will liaise closely with Alison Mayor in order to produce an indexed project archive of SSAC investigations to date, in accordance with the Archaeological Archives Forum *Guide to Best Practice in Creation, Compilation, Transfer and Deposition of Archaeological Archives* (Brown 2007).

12.1.2 Mark Dunkley will assist Alison Mayor in identifying source material at both the Imperial War Museum (photographic collection) and at the National Archives, Kew.

12.1.3 Mark Dunkley will contact and liaise with those organisations and individuals identified in Section 4.2.1, para. 2-5 above to gauge interest in the project and to assist in determining values attributed to the sites.

12.1.3 Mark Dunkley will liaise with NMR Heritage Data Teams and audit the national extent of known Overlord/Neptune remains.

#### 12.2 Stage 2

12.2.1 A full assessment of the sites will be externally commissioned and will utilise the services of an HSE-registered Diving Contractor with appropriate archaeological expertise.

12.2.2 Subject to a detailed Brief, the Archaeological Diving Contractor will:

- Liaise with Alison Mayor, SSAC
- Record seabed dispositions of the landing Craft and all major vehicles and features
- Confirm position/extent/form
- Seek information from RoW regarding previous recoveries
- Provide project support to SSAC for future monitoring
- Contact D-Day Museum, Portsmouth
- Undertake Oral History project with SSAC & explore opportunities for podcast

- Undertake biological survey & liaise with local Sea Fisheries Committee and identify fishing patterns
- Identify the sites' management patterns
- Provide direct project support to SSAC, as detailed in the Brief

### 12.3 Stage 3

12.3.1 Assessment of the Landing Craft and cargo assemblage against the scheduling criteria. This will be undertaken by a Heritage Protection Advisor, as appointed by Emily Gee, in collaboration with;

- P&D HPD South Team
- P&D Head of Designation
- C&P Head of Maritime Archaeology
- C&P Head of Military Programmes
- EH Military & Naval Strategy Group
- SSAC

12.3.2 Opportunities for local 'ownership' and further involvement will be identified during the course of the project and implemented during this Stage.

## 13. STAGES, PRODUCTS AND TASKS

13.1 The project comprises three executive stages split into several tasks. The overall structure of stages and tasks is set out in the following table:

Stage	Task	Product
1. Audit	<ul style="list-style-type: none"> <li>• Archive preparation</li> <li>• Research</li> <li>• Liaison</li> </ul>	<ul style="list-style-type: none"> <li>• Coherent research archive</li> <li>• Mapped interest, liaison and values for inclusion in project report</li> </ul>
2. Field Assessment	<ul style="list-style-type: none"> <li>• Identification of position/form/extent</li> <li>• Oral History Project</li> <li>• Biological Survey</li> <li>• Support SSAC</li> </ul>	<ul style="list-style-type: none"> <li>• Text and illustrations, supported by GIS layers, for inclusion in project report</li> </ul>
3. Management	<ul style="list-style-type: none"> <li>• Scheduling Assessment</li> <li>• Identification of future opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Text for inclusion in project report</li> </ul>

### 13.2 Products

13.2.1 The project products will include:

- Illustrated hard-copy final report and a digital copy as a (low-resolution).pdf, for public dissemination;
- Digital spatial data-set for delivery to the National Monuments Record;
- Presentation of the project at appropriate fora as directed by English Heritage;
- Oral History archive;
- Submission to OASIS.



### 13.3 Task List

Task	Owner
1 – Archive preparation	SSAC & Mark Dunkley
2 – Engage MoD	Mark Dunkley
3 – Contact Canadian Embassy	Mark Dunkley
4 – Liaise with ACNHS	Mark Dunkley
5 – Museum Liaison	SSAC & Mark Dunkley
6 – National Audit	Mark Dunkley
7 – Field Assessment	External Contractor
8 – Scheduling Assessment	Emily Gee
9 – Local Ownership	SSAC, Mark Dunkley & Gareth Wilson
10 – Recommendations	Paul Jeffery & Mark Dunkley
11 – Journal Article	Lucy Oldnall & Mark Dunkley

### 14. RISK LOG

14.1 The project will be initiated by English Heritage and will be managed in accordance with the *Management of Research Projects in the Historic Environment* (2006) and IFA Codes, Standards and Guidance.

14.2 There are two principal risks to the project:

1. Audit and Assessments more complex than anticipated. The impact is that progress of the project is slowed, but the likelihood of occurrence is low to medium. This risk will be mitigated by close management of the project and accommodated within the overall timescale.

2. Failure to complete field assessment. The impact is that progress of the project is slowed, principally by unfavourable weather. The likelihood of occurrence is medium to high. This risk will be mitigated by undertaking operations during periods of settled weather and by close management of the project. A project variation may be considered.

### 15. BUDGET

15.1 No budget has been earmarked for Stages 1 & 3 as these will be accommodated within individual forward job plans.

15.2 Expenses incurred by SSAC during the project will be met by EH T&S direct.

15.3 Stage 2 utilises the services of an external expert contractor and will be funded through English Heritage's Historic Environment Enabling Programme (HEEP). It is estimated that the field assessment will comprise 4-days with a further 5-days report preparation. The terms and conditions that will apply to the field assessment will be those used for the Historic Environment Enabling Programme (HEEP).

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**English Heritage**  
**26 February 2010**

## Annex 1: Technical Specifications of LCT(A) 2428

**Displacement** 286 short tons

**Length** 114' 2" (ovl.)

**Beam** 32' 8"

**Draft** 3'

**Speed** 10 kts.

**Range** 700 nautical miles at 7 kts.

**Complement** 13

**Cargo Capacity** 150 short tons

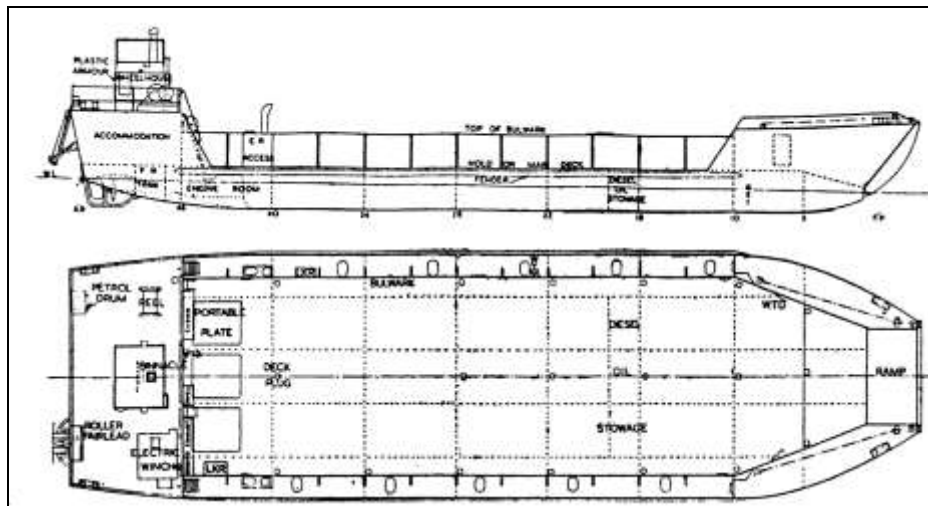
**Armament** 1 single 20mm AA gun mount, 2 .50 cal. machine guns

**Armor** 2 1/2" wheelhouse, 2" gun shield

**Propulsion** 3 Grey Marine Diesels, 3 propellers, Shaft horsepower 675 per shaft

(Source: <http://www.navsource.org/archives/10/18/180428.htm>)

## Annex 2: Mk V LCT



(Source: R J C Thomas, English Heritage)