TANKS & BULLDOZERS PROJECT

SUMMARY

By Alison Mayor

The Southsea Sub-Aqua Club Tanks & Bulldozers survey project has far exceeded the aims of the project in many respects. What started off as an ambitious Branch and personal challenge has struck a chord with many in the diving community and beyond, bringing the activities of the Branch and the mystery that surrounded the site into the public domain. With the support of many, the mystery of how 2 tanks, 2 bulldozers and a gun came to rest 8 miles south of Bracklesham, West Sussex has at last been solved.

Background

The 'Dive Sussex' guide book, provides details of the site but the lack of an associated shipwreck had lead to the theory that the war machines had been lost after slipping from a section of Mulberry Harbour 'Whale' bridge. This theory was discounted when it became apparent that the bridge section could not have supported the combined weight of the equipment but now we have found documentary evidence that they were lost from a Landing Craft Tank (LCT) in June 1944.

Project Plan

The Tanks and Bulldozers project received early support from a number of key contributors without whom it would not have been possible to complete the project in the timescales. The BSA Jubilee Trust awarded a grant to help fund the project and Silent Planet Ltd, Portland offered to bring their dive boat Top Gun to Portsmouth to take part in the survey. Valuable advice from the NAS team helped in the development of a survey plan and expert advice was freely given by the Tank Museum, Naval Historical Branch, Landing Craft Association, RM Museum and Caterpillar Inc. Project briefings and updates were issued regularly given to the whole Branch and press releases issued as appropriate to the media. Good communications and briefings were the key to the successful running of the project

Survey Dive Programme

An initial dive took place on 5th June 2008 followed by the full survey during the 5 days of 26 to 30 July. A total of 97 individual dives involving 25 different divers were completed without incident by divers of all grades/experience. We were fortunate to have excellent weather during the

survey and only 1 dive was cancelled due to strong wind. The vast majority of the team have had no previous involvement in a survey project, and indeed this was the first time I had taken on the management of a survey project.

After the initial dive in June, the tanks were thought to be Centaur CS IV tanks, used exclusively by the Royal Marines (RM) for Operation Overlord. This possible identification was a major breakthrough for the team as only 80 of these tanks were supplied to the RM Armoured Support Group and research began into historical records for the Regiment. The presence of a large 'Kedge' anchor, tucked just underneath on of the tanks was a significant clue to the involvement of a ship in the incident. This early dive was vital to the subsequent survey programme, giving a good indication of the general site layout which would greatly assist the more detailed survey planning.

The majority of divers who took part had not undertaken any form of NAS training or had experience in surveying wrecks. However we were successful in data gathering which allowed us to create a site map, record the position and orientation of the main wreck items and record a number of other artefacts at the site which made a significant contribution to the overall project success. Photographs and video footage of the wrecks/debris field and also a SeaSearch marine life survey provide a good record of the condition of the wrecks and the artificial reef environment that has developed around them.

Historical Investigations.

The identification of the Centaur tanks was the biggest single factor which allowed the full history behind their sinking to be unravelled. Only 80 of the Centaur CS IV tanks were assigned for combat with the Royal Marines for Operation Overlord (D-Day) and so it was easier to trace the landing craft involved during Operation Neptune. By detailed research into RM and Royal Navy war diaries and other records and with much assistance from museums and enthusiasts, we were able to establish the link to a Landing Craft Tank (LCT) which broke down during the Channel crossing to Normandy on the eve of D Day as a part of the British & Canadian "J Force" headed for Juno beach. The LCT did not sink straight away and was later sunk by gunfire to protect shipping in the area. The LCT was confirmed as carrying 2 Centaur tanks and 2 bulldozers in the loading tables. We also obtained a copy of an interview report by a survivor of the capsized LCT.

Outcomes

There have been a number of successes as a result of the project activities;

- After many years the tanks and bulldozers have been identified and the site recorded.
- The historical importance of the site has been established including the events that lead to their sinking.
- The profile of local club diving has been raised within the diving community and general public at local and national levels via TV, radio,

newspaper and magazine coverage. There has also been widespread coverage/debate on the internet.

Above all, every one in the Branch enjoyed the challenge of the survey and being able to make a contribution in one way or another. Interest and support from within the club has been matched by those of others and by working together we has far exceeded the expectations of many. The project is a demonstration of what can be achieved by a local Branch, without travelling to the far flung corners of the UK, and by ordinary divers without highly technical skills diving at the extremes of recreational diving. The strength of this project has been the fact that half of the club diving membership was able to take part, and make individual contributions to a worthwhile and fascinating project. The Club has worked constructively with other organisations to promote the very best aspects of British diving in a club environment.

The Future

Southsea SAC members are keen to develop a number of opportunities which have been created as a result of the Tanks and Bulldozers project. In particular, further investigations to try to locate the wreck of the LCT and also to work with a number of museums (Tank Museum, D Day Museum and RM Museum) to have displays/exhibits which coincide with the 65th Anniversary of D Day in 2009.

Our sincere thanks go to all who gave their valuable time and support to the project and in particular.

The BSA Jubilee Trust,
Dave and Liisa Wallace, Silent Planet Ltd, Portland,
The Nautical Archaeological Society
The Tank Museum
The Naval Historical Branch
The Landing Craft Association
The Royal Marines Museum
The Royal Engineers Museum
The Hydrographic Office
The 2 Johnnies
Danny Lovell
SC Charters Ltd

Alison Mayor
Southsea Sub-Aqua Club
September 2008.

TANKS & BULLDOZERS PROJECT

PART 1 – DIVING ACTIVITIES

"GET YOUR TANKS ON!"

Introduction

The Southsea Sub-Aqua Club Tanks and Bulldozers survey project took place this summer (2008), and has far exceeded the aims of the project in many respects. What started off as an ambitious Branch project has struck a chord with many in the diving community and beyond, bringing the diving activities of the Branch and the mystery that surrounded the dive site into the public domain. With the support of many the mystery of how 2 tanks, 2 bulldozers and a gun came to rest 8 miles south of Bracklesham, West Sussex has at last been solved.

This report records the activities undertaken by members of Southsea Sub-Aqua Club and the results of its archaeological and historical investigations and comprises 4 parts;

1) the diving activities, including briefing materials etc.,
2) the survey data and results,
3) the historical research and conclusions relating to the events surrounding the sinking etc., and,
4) the interaction with the media and subsequent reaction from the general public and others.

Also accompanying the report is a dvd with copies of the ITV Meridian News clip and a short film of the project with underwater footage.

Background

The 'Dive Sussex' guide book[1] (site no 39), provides details of the site but the lack of an associated shipwreck has lead to the theory that the war machines had been lost after slipping from a section of Mulberry Harbour 'Whale' bridge (site no 40). This theory was discounted early on, when it became apparent that the bridge section could not have supported the combined weight of the equipment. A total of 5 possible theories were considered but we now, as a result of the survey and historical research of historical papers have all the documentation to provide evidence that they were lost from a Landing Craft Tank (LCT).

To my knowledge, the Branch had only dived the site once before, in April 2004. A few members remember the dive as being one of very low visibility, darkness and of having difficulty finding the wrecks. At the time some Branch members had considered returning to the site to lay a trail between the wreck items but for various reasons, including the skipper moving away, we did not dive the site again until this year.

[1] Dive Sussex – A Divers Guide by Kendall McDonald

Project Plan

The tanks and bulldozers project received early support from a number of key contributors without whom it would not have been possible to complete the project in the timescales. Dave and Liisa Wallace, of Silent Planet Ltd, Portland offered to bring their dive boat Top Gun to Portsmouth to take part in the survey. Working with Dave and Liisa and researching the tides and charts an outline dive programme was produced which would make use of one of the best neap tides of the year.

Figure 1. Researching charts and other documents to plan the dive. Image Martin Davies.

Valuable advice from the NAS team helped in the development of a survey plan which together with a detailed project plan was submitted to the BSA Jubilee Trust in March 2008 to in support of a grant request to help fund the project. The Jubilee Trust application was supported by a number of documents such as diving programme, risk assessments, list of participants and financial budget etc. We were successful in the grant application and a grant was awarded at the end of May 2008.

Project briefings and updates were issued regularly given to the whole Branch and press releases issued as appropriate to the media and press contacts. A display board was set up at the club house and details of the project were put on the web site www.southseasubaqua.org.uk which was updated regularly.

A full briefing was given to all Branch members and participants on the 24th July at the Club House to confirm all aspects of the diving programme, survey techniques, health and safety issues and what the divers may expect to see. A copy of the presentation is at Annex A.

Training

14 members have completed the theory sessions for the Wreck Appreciation SDC although the practical/wet element has not yet been completed due to bad weather and availability of instructors. Sports Diver Nitrox workshops have also been put on over the spring/summer period to enable more club members to benefit in the use of Nitrox for the survey and other diving.

Figure 2. BSAC Wreck Appreciation Course (SDC). Southsea SAC divers practice survey techniques with guidance from Sarah Ward of NAS. Image Martin Davies.

Dive Programme

An initial reconnaissance dive took place on 5th June 2008 followed by the full survey during the 5 days of 26 to 30 July. A list of all of the team members and their rolesin the project is at Annex B. We were particularly fortunate to have some excellent weather during the survey and only 1 dive was cancelled due to strong wind. The vast majority of the team have had no previous involvement in a survey project, and indeed this was the first time I had taken on the management of a survey project. Good communications and briefing were keys to the successful running of the project and this was evident when we discovered that boat leave times needed to be brought forward for low water dives as slack water was earlier than we had envisaged.

Health and Safety was a primary consideration throughout the diving activities and a full risk assessment was prepared and maintained throughout the project. The major risks were brought to the attention of all divers and measures actively taken to mitigate the risks where possible. For example a tagging system was set up to ensure all divers were accounted for on return to the boat. The two other main risks were running out of air and separation due to poor visibility and the need to plan dives carefully and follow separation procedures were stressed to all divers. The

use of nitrox rather than air for dives of this nature was able to give the majority of divers an additional safety margin and also safely extend their bottom time.

Training in the form of practice with tape measures in the swimming pool and BSAC Wreck Appreciation course have provided Branch members with a very basic understanding of the skills required. This was also an opportunity for me to finish my Advanced Diver qualification in the form of an assessed expedition by Advanced Instructor Dave Robbins.

Tasks were allocated to buddy pairs based on the ability/experience/equipment as normal but also the complexity of the task to be undertaken. All divers were confirmed as fit and well with current medical declarations etc.

Figure 3. Leaving Langstone harbour for Dive 2. The BBC film crew are in the RIB. Image Martin Davies.

A film crew from the BBC 'Coast' Programme accompanied us on the first day and had specifically requested an additional boat in order to film the dive boat Top Gun setting off from harbour and at sea. Thankfully a friend of the Branch was able to provide the use of his rib for filming purposes. The filming went very well, as did the open water transfer of cameraman and director onto Top Gun as thankfully the sea was very calm. The following day ITV Meridian News presenter Rachael Healey and cameraman also came out with us to report on the survey.

Initial Dive - 5 June 2008

8 divers from Southsea SAC dived on the site and were able to take note of a number of key features. This early dive was vital to the subsequent survey programme, giving a good indication of the general site layout which would greatly assist the more detailed survey planning. The wreck items were much closer

together than was originally thought. Although the visibility was severely affected by plankton bloom it was still possible to explore the majority of the site and produce a rough site plan as a result which would be used to prepare for the full survey in July.

After this initial dive, the tanks were quickly identified as Centaur CS IV tanks, used exclusively by the Royal Marines (RM) for Operation Overlord. This was a major breakthrough for the team as only 80 of these tanks were supplied to the RM Armoured Support Group and research then began into historical records for the Regiment. The presence of a large 'Kedge' anchor, tucked just underneath on of the tanks was a significant clue to the involvement of a ship in the incident.

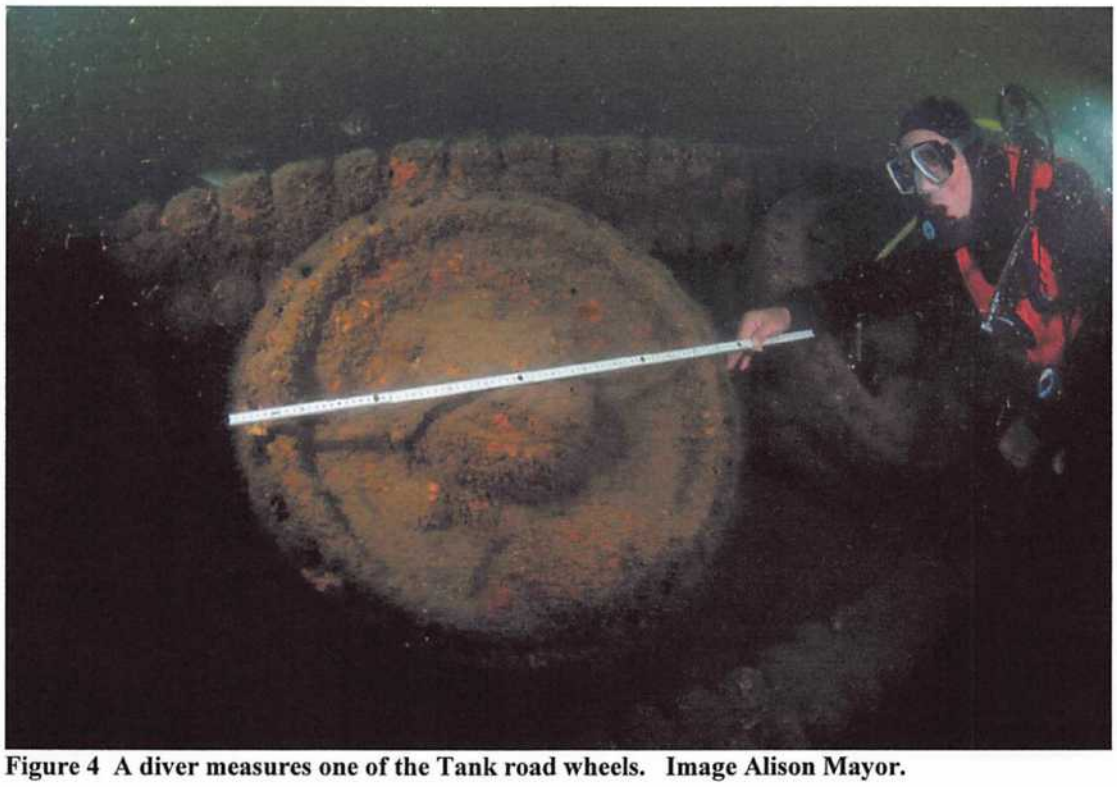


Figure 4 A diver measures one of the Tank road wheels. Image Alison Mayor.

Survey Dives 26-30 July 2008

Details of the survey activities undertaken on each dive are in Part 2. We attempted to dive on both slack water tides wherever possible, returning to Langstone Harbour between dives. A permanent buoy was attached to Bulldozer A for the duration of the survey and this was used for the decent to the site. Each buddy pair deployed DSMBs to ascend from the wreck site or returned up the permanent line the end of their dive.

The weather was excellent with a settled period of high pressure over the South Coast. The sun was strong and warm temperatures made it essential to keep hydrated and wear sun protection when out of the water. The sea temperature was 18C.

Divers were briefed ahead of every dive, and with 25 different divers taking part across 5 days of diving it was a vital task to explain to each diver what had been achieved and what their specific task was to complete during the dive. Divers who

were new to the site needed to be briefed on what they would see and how the site was laid out and marked. It was also essential to ensure divers were aware of hazards and boat safety generally and so the Skippers also briefed divers in respect of the safety procedures/equipment onboard Top Gun before the boat left the pontoon.

Each buddy pair was given the equipment required for the task they were required to undertake. Diver slates and pencils were prepared with a copy of the initial site plan on one side and second sheet of underwater paper on the other. Divers noted down the measurements they were required to take. A perimeter search was also undertaken using a 10m length of rope, weighted at each end and marked at every metre. Items of interest we noted down in the debris field which surrounded the wrecks.

Figure 5 - It was essential to wear sun protection. Image Martin Davies.
Figure 6 – Descending the line. The visibility averaged 5m. Image Martin Davies.

Visibility was good for the area - unless the sediment was disturbed by diver activity. The site was light too which meant that generally torches were not required unless for photography/videography.

Maximum depth was recorded as 23.6m on a High Water dive but average Low Water depth was 20m.

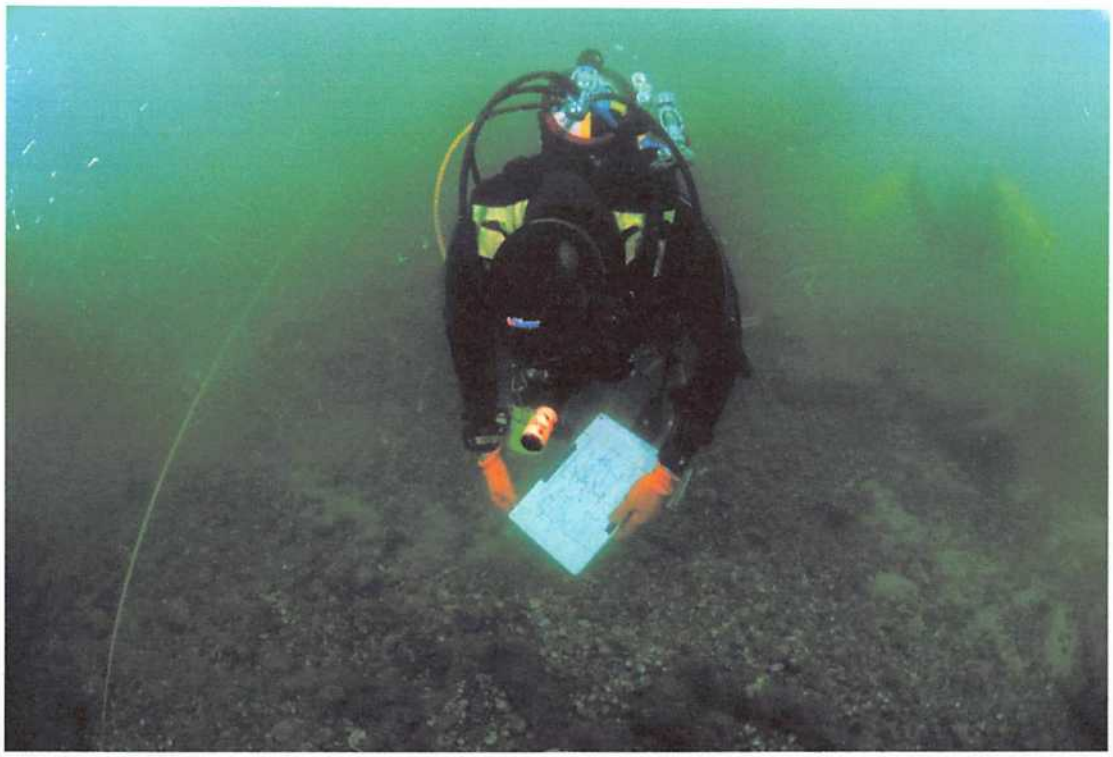


Figure 7. Diver working on the site. Image Martin Davies.

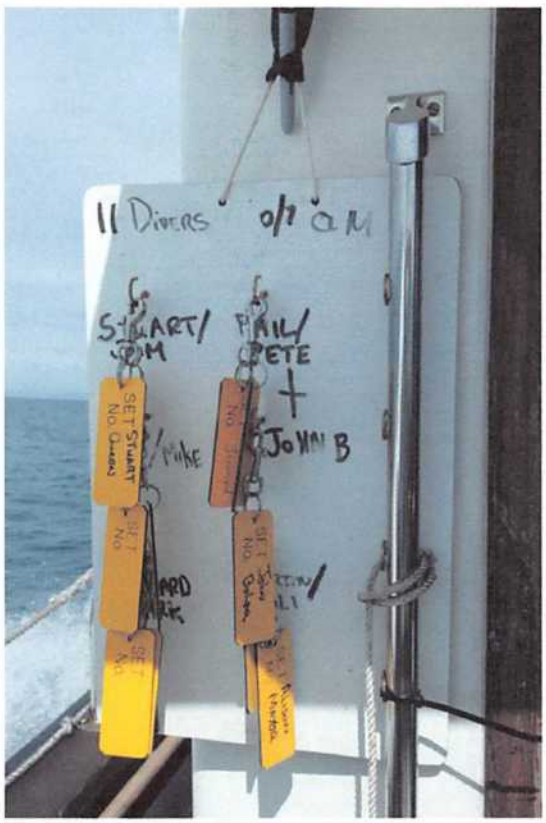


Figure 8 & Figure 9 Diver tag system to record divers in/out of the water and a survey board. Images Martin Davies.

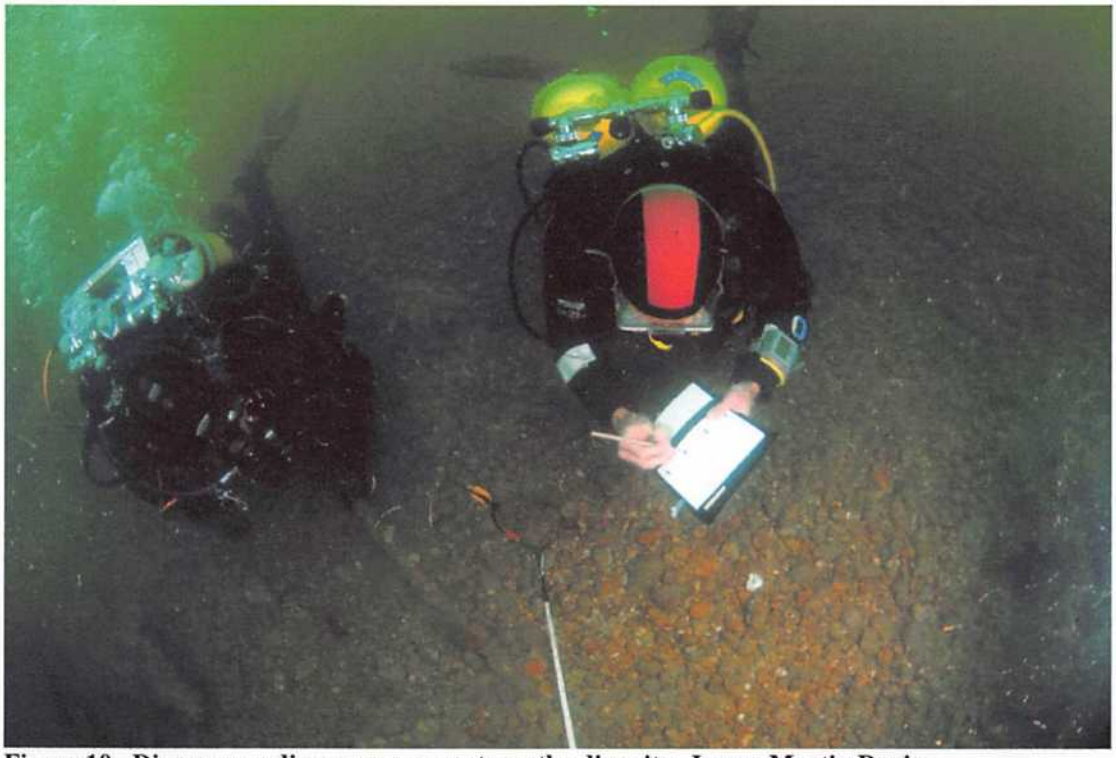


Figure 10. Divers recording measurements on the dive site. Image Martin Davies

All dives were completed to plan and without incident. The appointed Dive Manager logged the divers individual times/depths etc after each dive and these records have been retained by the Branch. Poor visibility was an issue, particularly on high water dives and divers soon learnt to adjust their finning and buoyancy techniques accordingly. A tag system was used to ensure that all divers were accounted for.

Photographic and video filming of the wrecks and survey have also been of great importance to the project and hopefully the results will help people to appreciate the site and how Southsea Divers went about the survey. Skipper Dave Wallace kindly loaned Southsea Diving Officer and underwater photographer Martin Davies his HD video camera so that he could film underwater footage for the survey project and also for the BBC who will use this footage in the Coast programme. The BBC filmed onboard Top Gun and also brought a 'pole cam' to film divers just below the surface.

In turn, I would like to thank Martin who gave me the opportunity to use his underwater camera to take photographs of the wrecks and diving activities throughout the survey.

The images and footage taken and WW2 images supplied by the Tank Museum and others, have all contributed to the report in terms of a record of the wrecks and their part in WW2 but also the activities of the Branch in undertaking the Tanks and Bulldozers project.

Figure 11. Divers pose for a final group shot at the end of the survey (tank B). Image Martin Davies.

Statistics

A total of 9 dives were made on the site on 6 days. 97 individual dives involving 25 different divers were completed without incident. Because of the relatively shallow depth (20m) qualified divers at all levels could take part in the project – divers from Ocean Diver to Advanced Diver took part.

Summary

The detailed planning and briefing of the diving team and other relevant parties was key to the success of the project. The added complications of film crews onboard during the survey were successfully catered for and the divers enjoyed having them along. There were almost 100 dives successfully completed on the site during which almost 1000 images and hours of video were taken. The diving teams and buddy pairs worked hard in sometimes poor conditions to take many measurements, often undertaking tasks that they had not experienced before. The determination to do their best and complete their tasks was very evident as was the willingness to assist wherever possible.

The contribution made by Skippers Dave and Liisa Wallace during the diving programme cannot be understated. Their time, patience and experienced boat handling as well as their whole hearted support for the project is much appreciated.

Figure 12 Skippers Dave and Liisa Wallace with divers from Southsea Sub0Aqua Club. Image Martin Davies.

Everyone enjoyed the experience of the project and spirits were high throughout the diving programme, despite some early starts and late finishes. The divers soon settled into their tasks and by the end of the week we were all filled with a real sense of achievement.

Consideration is now being given to further diving associated with this site, including the possibility of finding the Landing Craft as a part of next year's diving programme.

Alison Mayor
Southsea Sub-Aqua Club
September 2008

ANNEX A – Pre-Survey Presentation
ANNEX B – The Team

Tanks & Bulldozers

Project Brief July 2008

Aim of the survey

- We are looking to produce a site map which identifies & records the position/orientation of artefacts at the dive site.
- Known Items
- 2 Centaur CS IV Tanks
- 2 Armoured Bulldozers
- 1 Ammunition sled – “Porpoise”
- 1 Field gun + Ammunition
- Note: No items to be removed from the site

Survey Dates & Times

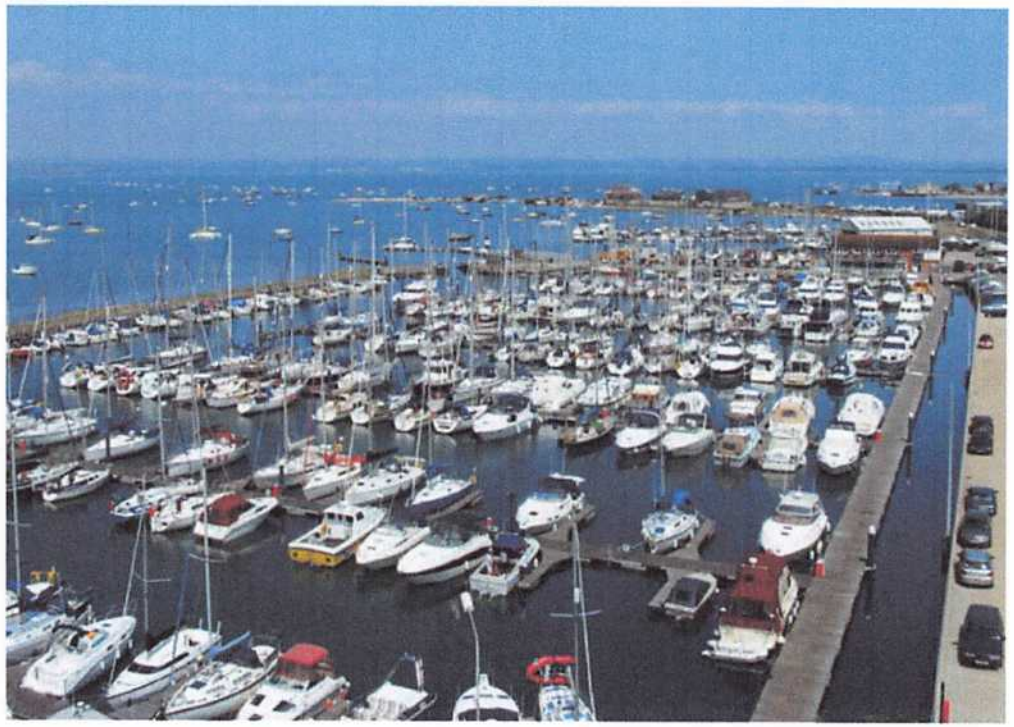
	AM		PM	
Date	Boat Leave Time	Dive Time	Boat Leave Time	Dive Time
Sat 26th July 08	09.00	10.26 - LW	15.30	16.54 - HW
Sun 27th July 08	10.15	11.38 - LW	16.30	18.00 - HW
Mon 28th July 08	11.30	12.55 - LW		
Tues 29th July 08	06.45	08.06 - HW	12.30	14.06 - LW
Wed 30th July 08	08.00	09.18 – HW	13.45	15.07 - LW

Top Gun

- 10m Hard boat with lift & toilet
- 12 Divers + 2 Crew
- Skippered by Dave & Liisa Wallace
- Cruising at 20knots

Boarding & Loading Top Gun

- On Saturday from Southsea Marina
- Other days probably from the Ferry Pontoon as normal
- Allow **AT LEAST** 30 min before boat leaves
- Bring food and drink
- We will return to Langstone Harbour between dives.



Diving Safety

- Medically fit to dive
- Equipment serviced, working + suitable for the task
- Plan your dive and have it written on a slate with any deco stops
- Air & Gas – make sure that you have enough (rule of thirds)
- I would suggest leaving stages at home for this type of diving
- Using 32% will give you a 56minute No Stop Dive
- Monitor your air regularly
- Risk register – be aware of the risks
- Visibility – fining techniques
- Buoyancy control – be precise
- **DO YOUR BUDDY CHECKS**

Typical Dive plan

Dive 1 Air – Assuming 25 SL/min

CTC = A					
	Depth	Time	9m Stops	6m Stops	Surface
Planned	21	32	None	None	E
Just Longer	21	37	None	None	F
Just	24	32	None	1min	G
Worst Case	24	37	None	1 min	G

Dive 2 Air

CTC = B					
	Depth	Time	9m Stops	6m Stops	Surface
Planned	21	35	None	1 min	G
Just Longer	21	42	None	3 min	G
Just	24	43	1 min	12min	G
Worst Case	24	43	1 min	12 min	G

Enriched Air Dive Plan

Dive 1 Nitrox 32

CTC = A					
	Depth	Time	9m Stops	6m Stops	Surface
Planned	21	56	None	None	F
Just Longer	21	77	None	1 min	F
Just	24	43	None	None	F
Worst Case	24	59	None	1 min	G

Dive 2 Nitrox 32

CTC = B					
	Depth	Time	9m Stops	6m Stops	Surface
Planned	21	36	None	None	F
Just Longer	21	54	None	1 min	G
Just Deeper	24	41	None	1 min	G
Worst Case	24	57	None	6 min	G

Air consumption

- **Dive Plan 32 mins at 20m = 3 bar Absolute**

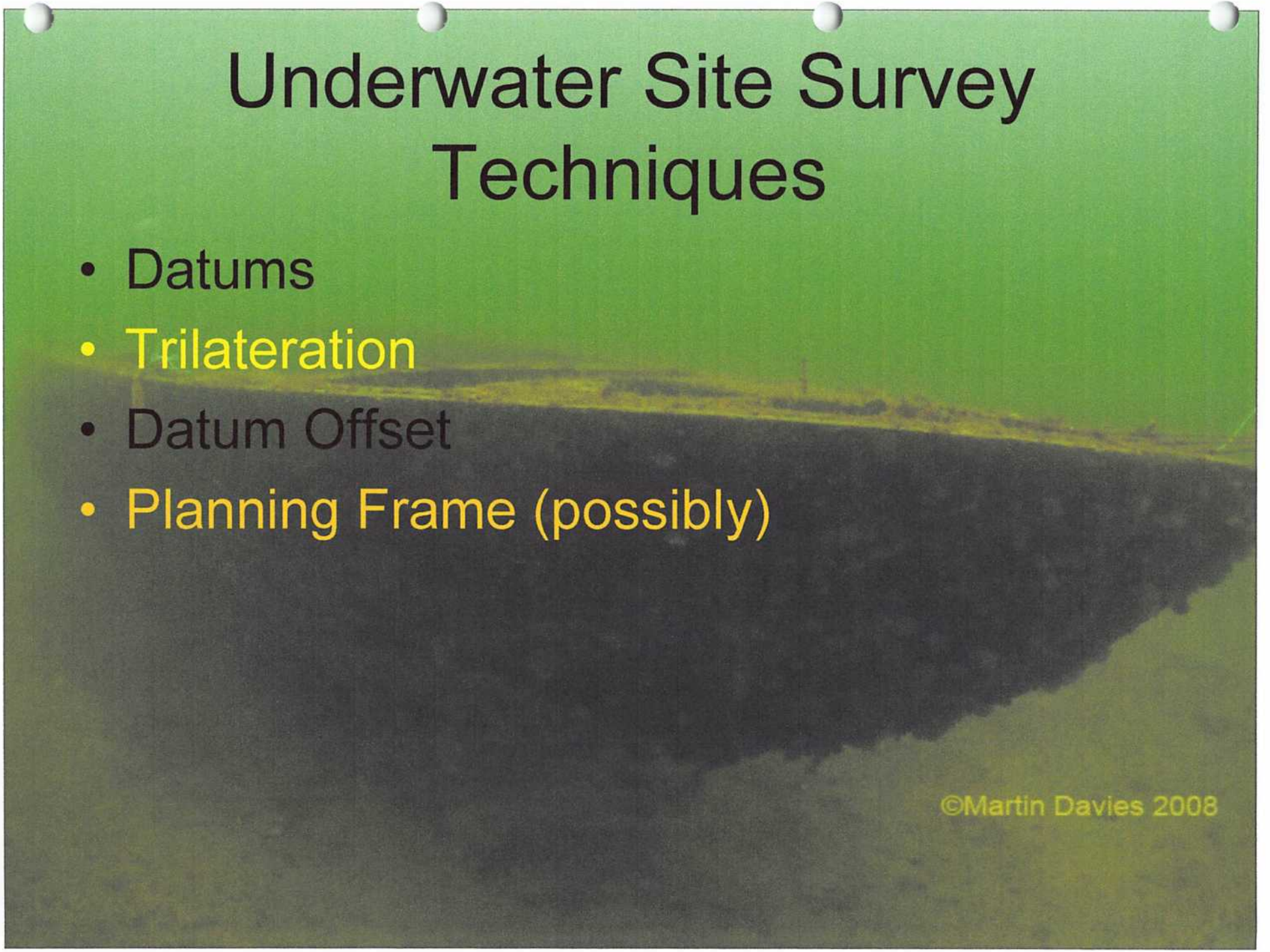
- 15L x 232 bar = 3480L free air
- 80 bar reserve = 1200L reserve
- 2784 – 1200L = 2280 available air
- 3bar x 25 SLM x 32 mins = 2400L
- Leaving -120L into reserve, 1080 reserve left

How will we conduct the survey?

Various techniques can be used……

Underwater Site Survey Techniques

- Datums
- Trilateration
- Datum Offset
- Planning Frame (possibly)

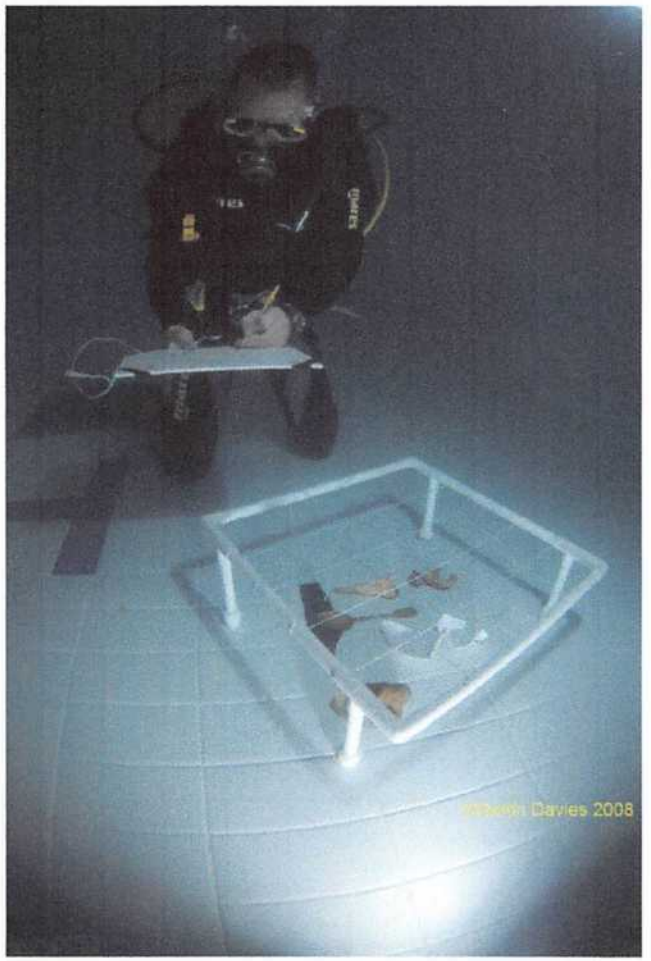


Archaeological Survey Techniques
Datum offsets

Datum offset is about making measurements at 90° from a base line

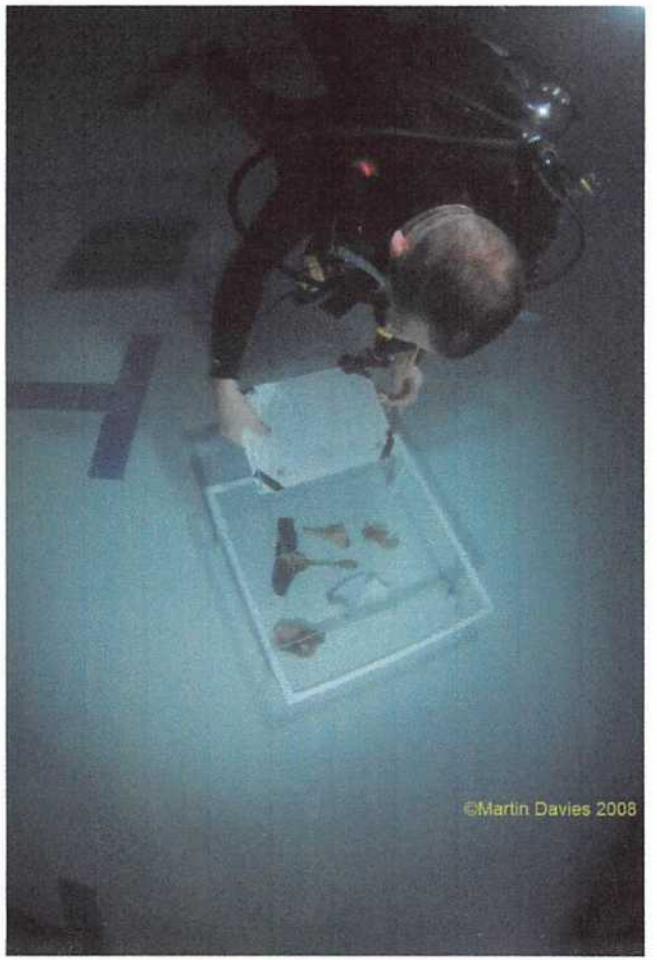
Planning Frame

The planning frame is used to record artefacts in detail in their exact position



Recording artefacts

To make accurate detailed recording the diver should be positioned directly above the frame and requires precision buoyancy control



Trilateration

Is about making angular measurements from a control point

Trilateration

Measuring from a control point to an artefact or another control point

Attaching Control Points (CP)

Measuring from Control Points

Measuring the artefacts
Remember your FINS!

Overall Survey Plan

- Day 1 – Mark out the site+ Permanent buoys
- Day 2 – 3 Site Measurements
- Day 4 – Perimeter search & Wreck measurements
- Day 5 – SeaSearch + Final measurements + site clear up

Marking out the site

- Base Points – Boundary of the site – useful for measuring outer items
- Control Points – positioned at points which will allow meaningful measurements to be taken, both at lowest & highest levels
- Depth of CP – Use Depth gauge – on sane dive (state of tide)

Measuring Site

For overall site Between Base Points & CPs

Between CP's (base level)

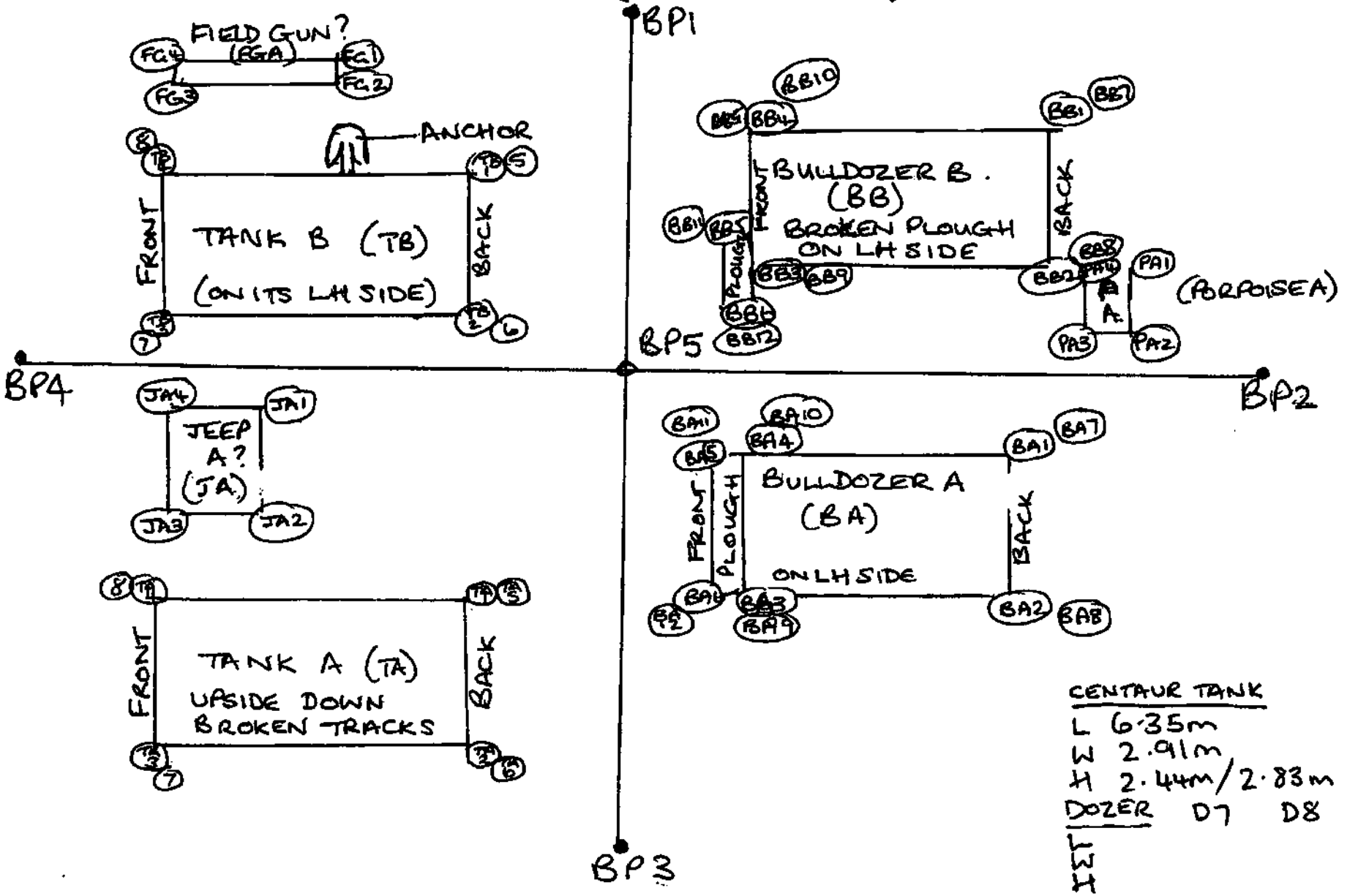
For each item Between CP's

Specific points of interest

3 or more measurements from each CP will give a strong confidence in each measurement

TANKS AND BULLDOZERS - INITIAL SITE PLAN

(NOT TO SCALE)



CENTAUR TANK

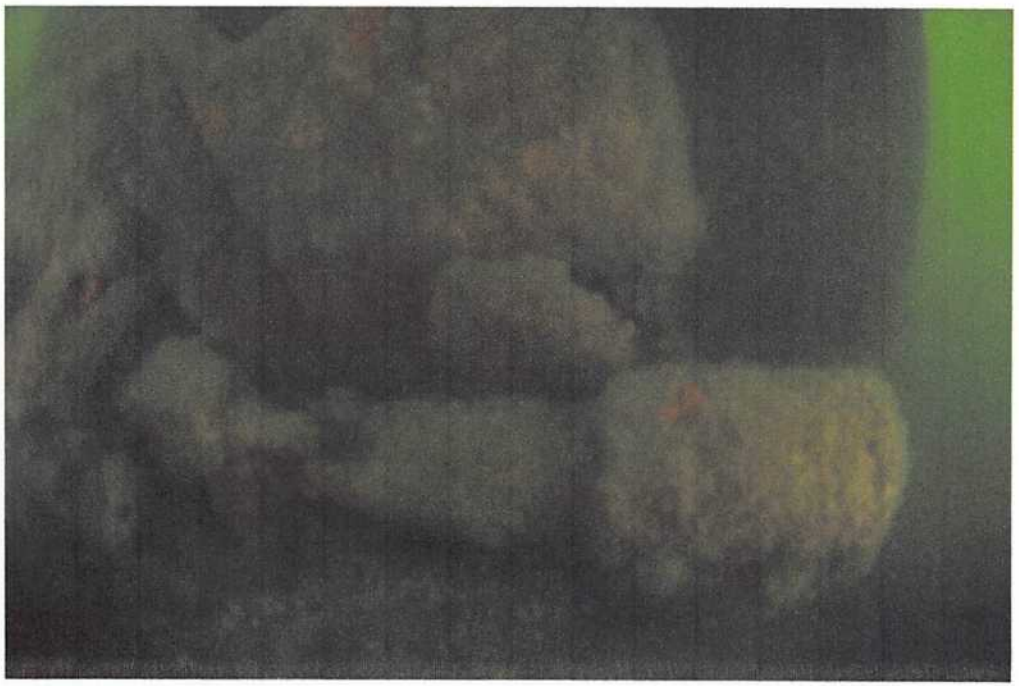
L 6·35m
W 2.91m
H 2·44m / 2·83m

DOZER	D7	D8
L		
W		
H		

Centaur CS IV Tank

Fact File

- 114 produced
- 80 given to the RMAS Group for D Day
- Were mounted on ramps & fired over bow of landing craft to provide Close Support
- 28 made it to the beach
- 2 are surviving in France
- Fitted with a 95mm Howitzer Gun (51 rounds of ammunition)
- 1x BESA machine gun
- 28 tons – 27 mph
- 5 crew



Caterpillar Armoured Bulldozer

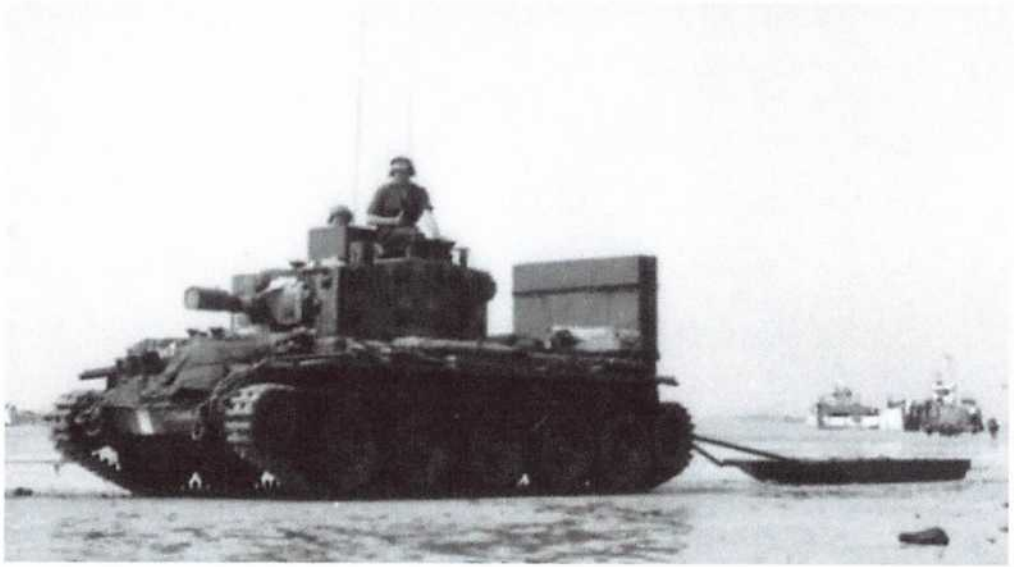
Fact File

- Caterpillar D7 or D8, but were modified with armour in England
- Know as “Hobarts Funnies”
- No known details of the modifications
- Only surviving ones known
- 23 to 34 Tons each

Porpoise – Ammunition sled

Fact File

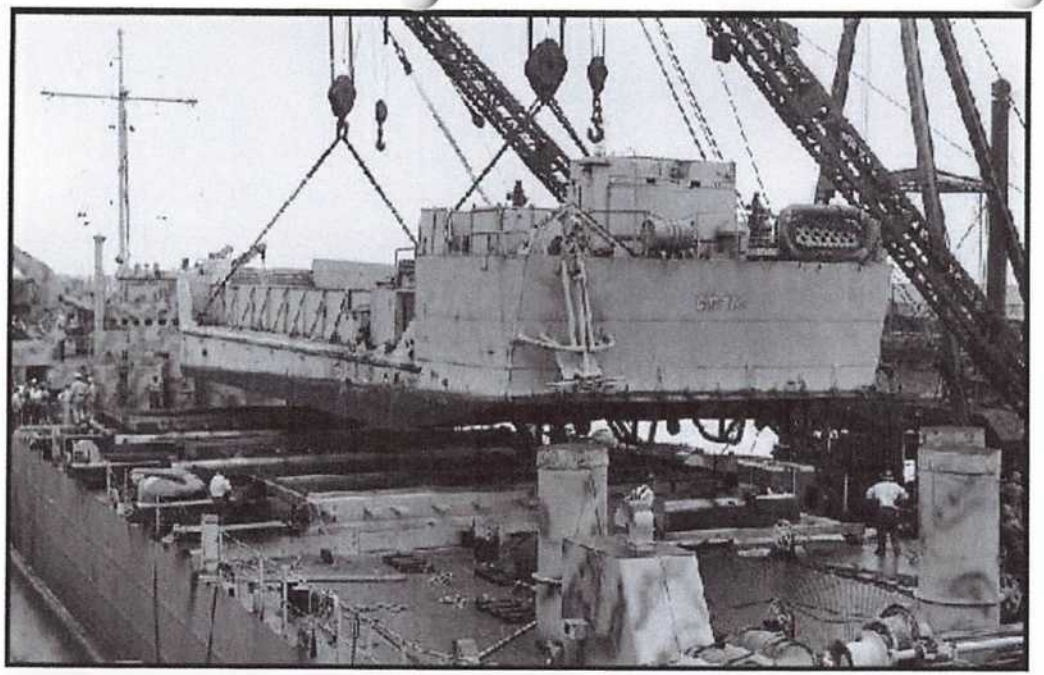
- Towed behind tank carrying ammunition (waterproofed)
- One found near bulldozer
- Anticipate finding one more
- Likely to have ammunition nearby



Anchor

Fact File

- Found almost underneath tank
- Most likely from a landing craft
- Weight & Size unknown



Willy's Jeep

Fact File

- Little remains
- Engine block
- Axels & wheels & Tyres
- **Willys is pronounced as ' willis - not ' willies' !**

Field Gun

Fact File

•Position unknown?

TANKS AND BULLDOZERS

PART 1 - ANNEX B

THE TEAM

NAME	BSAC NO	BSAC GRADE	PROJECT ROLE
Alison Mayor	A742727	D/L	Project Leader, Diver/surveyor, Report writer, Press/Media,
Martin Davies	A182103	A/D	Diving Officer, Videographer, photographer
Jim Fuller	A723932	A/D	Diver, Club Secretary
Dave Purvis	A347426	A/D OWI	Diver, Training Officer
Pete Dolphin	A345678	A/D OWI	Diver, site plan drawing
Pete Silvester	A667438	A/D	Diver/surveyor, RIB driver
Jo Wheeler	A779042	SP	Diver/Surveyor
Jeff Price	A789821	O/D	Diver/Surveyor
Stuart Queen	A790366	D/L	Diver/Surveyor, Search & Recovery diver
Mark Hobbs	A789822	SP	Diver/Surveyor
Mike Adams	A770335	SP	Diver/Surveyor
Dave Gilbert	A278851	D/L	Diver/Surveyor
John Bohea	A120617	A/D	Diver/Surveyor
Jim Smith	A779040	SP	Diver/Surveyor
Wayne Taylor	A777911	SP	Diver/Surveyor
Richard Hobson	A130920	D/L	Diver/Surveyor, Photographer
Phil Jackson	A706282	SP	Diver/Surveyor
Neil Jeffrey	A754331	SP	Diver/Surveyor
Jim Yates	A754330	SP	Diver/Surveyor
Derek Bower	A705417	D/L	Diver/Surveyor
David Banks	A652966	SP	Diver/Surveyor
Toni Bates	A756927	D/L OWI	Diver/Surveyor
Dave Robbins	A347426	A/D AOWI	Diver/Surveyor, overseeing A/D exped
Mark Beatty-Edwards	Not Known	A/D	NAS observer, Diver/Surveyor
Dave Wallace	A667438	A/D	Skipper Top Gun, Diver/Surveyor, First Aid
Liisa Wallace	Not known	A/D	Skipper Top Gun, First Aid.
Andy Williams	A13878	A/D	RIB skipper/ diver

TANKS AND BULLDOZERS PROJECT

PART 2

SURVEY REPORT

"SO JUST HOW DID WE MEASURE UP?"

Introduction

This part of the report sets out the findings of a survey project carried out during the summer of 2008 in which a team of divers from Southsea Sub-Aqua Club (SSAC) examined a site known as 'Tanks and Bulldozers' in Bracklesham Bay, West Sussex. The site has been known about for many years but until now has not been investigated or recorded. Two tanks, two bulldozers and a field gun are reported at the site but there is no associated ship wreck nearby. The armoured military war machines are believed to be from WW2 – possibly associated with Operation Overlord – the invasion of the Normandy coast and the liberation of France. The closest related wreckage is of Mulberry Harbour bridge section (1/2 mile away) and it has long been believed that the tanks had slipped from this bridge which later sank.[1]

Aims of the Project/Survey

The overall aims of the Project are to establish a site plan and if possible, to provide a reasoned conclusion as to where the military vehicles came from and how they ended up almost 20m below the surface. In addition I wished to complete the project as a part of my NAS Part 2 and BSAC Advanced Diver qualifications.

The survey site, 8 miles south of Bracklesham and at a depth of 20m is difficult to find as the wrecks lay in a scour and do not appear as significant objects above the general sea bed level. The site is known by the Hydrographic Office (HO), the Ministry of Defence (MOD), and the Receiver of Wreck (RoW), all of which were approached and confirmed they were content for the survey to go ahead as they knew little of the site. Copies of the full project report will be sent to them and a Diver's report will be sent to the HO. At this point we did not know whether the wrecks were British, American or Canadian.

The site itself is approximately 30m by 25m the HO position is given as: 50 38' .552N : 000 51' .605W (See chart extract at Annex A). The general sea bed is grey clay covered by a layer of shingle and limpet shells. The site lies with the tanks ahead of the bulldozers pointing roughly at an angle of 330 deg. The Admiralty Tidal Atlas and advice from the Skipper is to dive the

[1] Dive Sussex – A Divers Guide by Kendall McDonald – Site No 40.

site 90 minutes before High Water Portsmouth and 45 minutes before Low Water Portsmouth. We discovered that the best time being the latter and on a neap tide when visibility tended to be better (but not always) and that slack water for Low tides was slightly earlier than expected.

Survey and Dive Planning

Support from Southsea Sub-Aqua Club members was essential to the success of the project and in the SSAC committee were fully behind the project from the start. We were also extremely fortunate to have the support of Silent Planet Ltd (Dave and Liisa Wallace), who kindly offered to bring their dive boat 'Top Gun' from Portland to help with the survey. Dates were agreed for the end of July – an excellent neap tide. The dive boat would be based at Southsea Marina and would pick up divers each day at the Hayling ferry pontoon. Journey time to the dive site was approx 45 minutes.

A grant application was submitted on 17th March to the British Sub-Aqua Jubilee Trust to cover the estimated costs of the survey. As a part of the application a full project plan, including dive programmes, risk assessments, financial estimates were required to be prepared. As a result the project was awarded a full grant at the end of May 08.

The first priority was to establish an accurate position for the site. In May I was kindly offered the opportunity to conduct a magnetometer survey of the site. Although sea conditions were not ideal for a full and systematic survey the magnetometer was successful in identifying a number of 'Hits' where there were significant readings obtained. A magnetometer is towed behind a boat under the surface and is able to detect the presence of metal objects by monitoring the Earth's magnetic field and looking for disturbances.

I plotted these positions onto graph paper which, whist not entirely representative of actual charted positions, was a good indication of the position of these measurements in relation to one another and other marks thought to be of the tanks and bulldozers site. The plotted 'marks' are at Annex B and also include the GPS positions recorded on the initial dive.

Initial Dive

An initial exploratory dive by 8 SSAC divers on 8th June was extremely valuable as an aid to planning the finer details of the full survey. Using the RIB Storm Force 8 (SC Charters) and leaving from Bracklesham we were able to conduct this dive in the late afternoon. The marks we had been given were not correct and we managed to find the site with the aid of Selsey BSAC who had lost their anchor on the site a few days earlier and had come to retrieve it. As a result we were able to get more accurate marks 50.38.540N : 000 51.586W. Only 3 SSAC members (including myself) had only dived on the site on one previous occasion to my knowledge some 4 years earlier and

in very poor visibility and navigation around the site proved impossible. However on this occasion, despite a heavy plankton bloom, we were able to produce an outline plan to be used for the main survey. What was clear was that the wrecks were much closer together than had been thought (approximately 5m apart) and this would make the survey much more manageable.

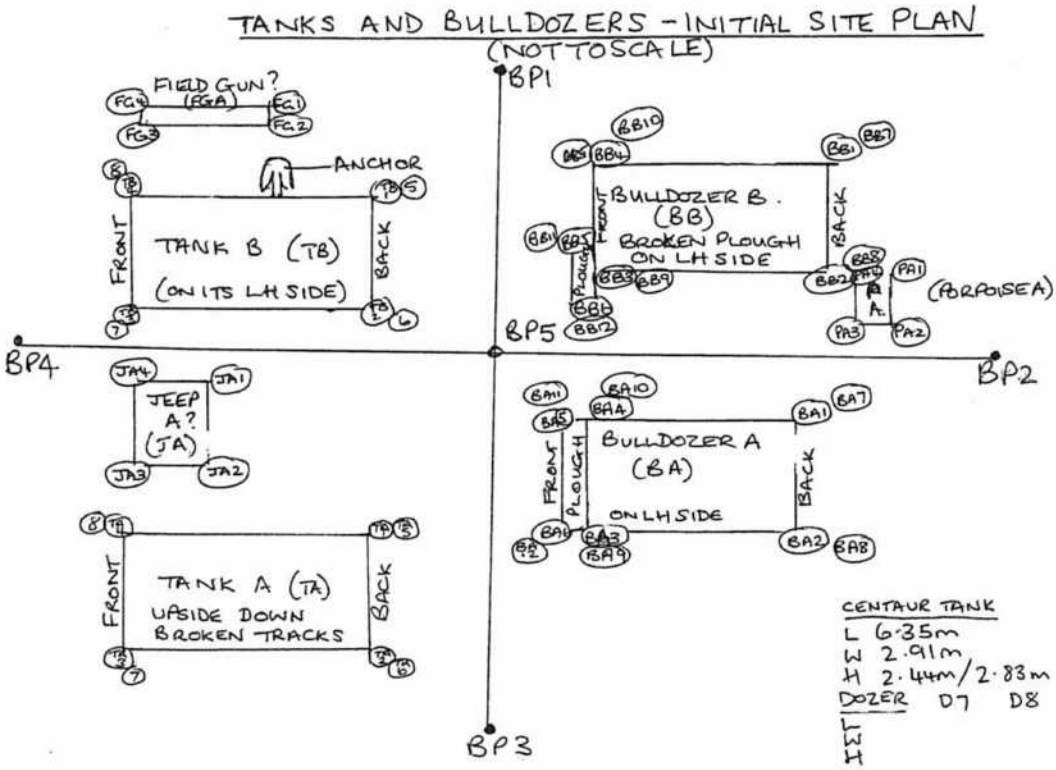


Figure 1 Initial site plan for tanks & bulldozers produced after 1st dive (June 08). Illustration by Alison Mayor

The other major benefit from the initial dive was that we were able to identify the tanks with the help of Historian David Fletcher at the Tank Museum, Bovington. They were not the Sherman tanks that were widely used by the Allies and that we had expected to find. The likelihood was that they were British Centaur CS IV tanks though the key identifying point (a round plate on the front of the tanks) was not visible on the photographs. Still this was a major breakthrough in terms of researching the events that lead to their sinking as only 80 were assigned to the Royal Marines for combat in WW2 as a part of Operation Overlord. One unexpected find on this dive was a large anchor, tucked just beneath one of the tanks. This would also prove to be a significant clue to the mystery of how the tanks and bulldozers came to rest on the sea bed.

After viewing the site I was able to consider the best way to approach the survey and which techniques would be most suited to a site like this. As the site was relatively contained in a 30m x 25m area it was decided that 4 or 5

Base Points would be set out, which would dissect the site by 2 lines at right angles to each other. The corners of each main wreck item would then be measured to these Base Points at sea bed level providing a opportunity for tri-lateration techniques to be used in order to provide a basic site plan of the wrecks and how they are orientated. A copy of the final briefing presentation given to all divers a couple of days before the survey started is at Part 1 (Annex A) to this report.

A total 25 members from SSAC had volunteered to take part in the survey and a programme which allowed all divers to complete at least one dive over the 5 days of scheduled diving was put together. In order to accommodate the BBC 'Coast' and ITV Meridian News film crews the availability of spaces on the first 2 days was reduced by 2, however for the majority of dives a full boat load was planned. A total of 9 dives were planned during the period 26th to 30 July 08, taking the opportunity to dive both High and Low water slack periods wherever possible.

Details of each of the activities to be conducted during each dive were prepared (See Annex C) and all divers received regular briefings ahead of the survey and during the survey itself. Few divers had any experience in taking part in a survey project and a pool session was arranged as an opportunity to get used to the techniques that would be required underwater. A variety of equipment was gathered for use in the survey, poles for use as Base Points, lines and labels, slates and tape measures were provided to divers, and many brought useful items such as extra clips and ropes.

The Survey

The weather was superb for the majority of the diving programme with only one of the 9 dives planned being 'blown out'. The majority of tasks were completed in this time and in addition to the measurements of the main items of wreckage a number of additional artefacts were found at the site. Poor visibility was often an issue as there is a fair amount of sediment on the sea bed which is easily disturbed. Low water dives tended to be better visibility than high water, although we suspected poor visibility on the last low water dive was due to dredging activities. The survey team returned to Langstone Harbour between dives.

One of the first issues identified was that slack water times were a little earlier than expected, and this meant that the boat leave times had to be adjusted by up to half an hour.

Day 1 - Dive 1

On the first dive all the Base Points were established and lines between each main wreck item to aid navigation were put in place. Measuring tapes were left in position between Base Points to aid the survey and lines were also

established and marked between the main survey items of wreckage. Video and photographs were taken of the site. A permanent buoy was secured to Bulldozer A which helped with subsequent site location. Photographs and video were taken.

Day 1 - Dive 2

Marking out the site continued with Control Points being attached to the main wrecks. However the first major problem was identified when Base Point 2 was found to have broken after being snapped off by the tidal current and seaweed/algae putting pressure on the pole. Work would be needed on Dive 3 to quickly re-establish the Base Point on the next dive. A propeller was found on the site and what appeared to be towing bars at the rear of each tank which would have been used to tow the porpoises. The BBC 'Coast' film crew joined us for this trip and the survey will hopefully feature in the next series. Underwater footage was made by SSAC Diving Officer and photographer Martin Davies. By the end of this dive the marking of the site and control points had been completed (with the exception of Base Point 2). Marking of Control Points was not always easy and because of the position and orientation of the wrecks and the nature of their construction it was not always easy to find good locations or means of securing the labels.

Day 2 - Dive 1

The priority for this dive was to re-establish BP 2 and to begin the measurement at sea bed level of the main artefacts. Base Point 2 was re-established during this dive but we now believe it was not at the 90 degree angle required. That said it was still possible to create a site plan as all the measurements were taken to the same place. During this dive trip we took more video and photographs and we were accompanied by Meridian TV News who broadcast the first of 2 reports that evening. Control Points are the upper corners of each item were established to give an indication of the size of each wreck. There was some confusion as to the whereabouts of the 'Field Gun' and debris on the dive site was probably incorrectly assumed to be the field gun. There was no gun carriage evident to support the field gun.

Day 2 – Dive 2

Measurements continued between Base Points and main Control Points. Other items were also marked, such as porpoises and the jeep. The jeep is well broken up with engine and axle parts dispersed over a wide area. A second propeller was located on the site close to Tank A. Over 50 High Explosive 95mm ammunitions shells were counted, primarily around the front of the 2 tanks. These were reported to the Tank Museum who advised caution as these shells contain amatol – a mixture of TNT and nitro-glycerine.

Day 3 – Dive 1

On the outward journey to the dive site we were fortunate to observe a Northern Bottlenose Whale who sadly beached itself on Hayling Island a few days later. More detailed measurements continued and a perimeter search of the site began. The 2nd ammunition sled ("porpoise") was also located near Bulldozer A.

Day 4 - Dive 1

The windy weather conditions made for a challenging dive and the subsequent dive planned for later that day was cancelled due to F6 winds. Measurements continued this time to upper and lower Control Points on each main item of wreckage to record the size/height/width of them. Additional items discovered on the site such as the 'kedge' anchor, 2 propellers, ammunition 'Porpoises' and ammunition were recorded. We also took more video and photographs and conducted a SeaSearch survey to record marine life observed on the wreck site.

Day 5 – Dive 1

This was an opportunity to finish any measurements and also the perimeter search. We also identified what we believed to be the 'field' gun barrel, though the exact length could not be measured accurately as it disappeared into the sea bed. There were a number of items identified during the perimeter search such as a pack of 303 bullets, a stick of explosive, and various smaller items of wreckage/debris.

Day 5 – Dive 2

Clear the site by removal of all line and labels etc.

<u>The Survey Results and Site Plan</u>.

All the measurements taken were plotted onto a large sheet of paper to create a site plan. Whilst there were some anomalies in the measurements, the general site layout could be determined data from the and there is a reasonable degree of confidence in the results.

Each item of wreck was named, Tank A, Tank B, Bulldozer A, etc. and Control Points (CPs) were attached where possible at the outer extremities of each wreck item. The lower CPs were numbered in a clockwise direction, TA1, TA2 and so on. The upper corners of the wrecks were similarly marked. Due to the shape of the Bulldozers and their large ploughs additional CPs were established on the plough corners.

The remains of the jeep were very scattered on the site and this may distort the value of the measurements. Also, what was originally thought to be part of a field gun is not now thought to be the case. What is thought to be a gun barrel is located elsewhere and it is likely that the original CPs were attached to other debris, possibly that of ramps installed on a Landing Craft. For this reason only limited information about these items has been included on the site plan.

Measurements were taken to the known Base Points (BP) and also between CPs. Depths were also recorded with the maximum depth recorded as 23.1m on Bulldozer A and a minimum of 20.6m Bulldozer A, both on Dive 4.

The Site Plans, together with a list of the measurements recorded is at Annex D along with copies of the 'primary data' sheets (NAS copy only).

Unfortunately a number of measurements are either missing or appear incorrect, particularly in relation to Bulldozer A. The loss of BP2 after the first dive was also a issue as it was not repositioned at right angles to the other Base Points. There was also an issue with current and visibility over sometimes relatively long distances which may account for some anomalies in the measurements recorded.

The site plan is a 2 dimensional representation of the position of the lower Control Points in relation to the Base Points. Measurements were taken between various CPs including those upper CPs which could be used to provide a limited 3 dimensional representation but my confidence in these measurements as a whole is not high enough to attempt to plot them and I think it would add little value at this stage.

RECORD OF ITEMS FOUND

Tank A

Figure 2 Tank A – Centaur CS IV. Almost upside down – view looking at the front of the tank. Image Martin Davies

This tank lies almost upside down at an angle of approximately 45 degrees with its right hand side towards the sea bed. The tank is facing NNW at an angle of approx 330 degrees. Much of the tank track has fallen off and lies in the surrounding debris field. The gun and other identifying features are visible. There is a gap to the rear of the turret which you can see through to the other site. Some of the plates from the underside of the tank are rusted away but in the main the body of the tank is in good condition.

Other items recorded in the immediate vicinity are;

- Axles and other parts from a vehicle
- 95mm Ammunition
- propeller

Tank B

Figure 3 – Tank B - Centaur CS IV. View if of the front/left hand side of the tank. Image Alison Mayor

This tank lies more or less parallel to Tank A laying on its right hand side (as is Bulldozer B behind it) and is more upright and in much better condition. The turret, 95mm gun and machine gun and other key identifying features of a Centaur are clearly visible. There is an open hatch where you can observe some of the internal equipment.

Other items recorded in the immediate vicinity are;

- Large 'kedge' anchor
- 95mm ammunition
- Tow bar assembly
- Propeller
- Lengths of metal struts/structure (possibly parts of ramp for tanks)

Bulldozer A

Figure 4 – Bulldozer A. Laying on its left hand side. view is of the top/right hand side of the bulldozer. Image Martin Davies

Confirmed as a Caterpillar Armoured D7 Bulldozer, based on a standard D7 these machines were modified to fit additional armour by Jack Olding Ltd of Hatfield.

This bulldozer is positioned to the rear of Tank A and lies on its left hand side. The bulldozer is very intact with its large plough still attached. The engine cover is open and it is also possible to look into the drivers cab. There is a large winch assembly to the rear.

Other items recorded in the immediate vicinity are;

– 'Porpoise' ammunition sled by the Plough.

Bulldozer B

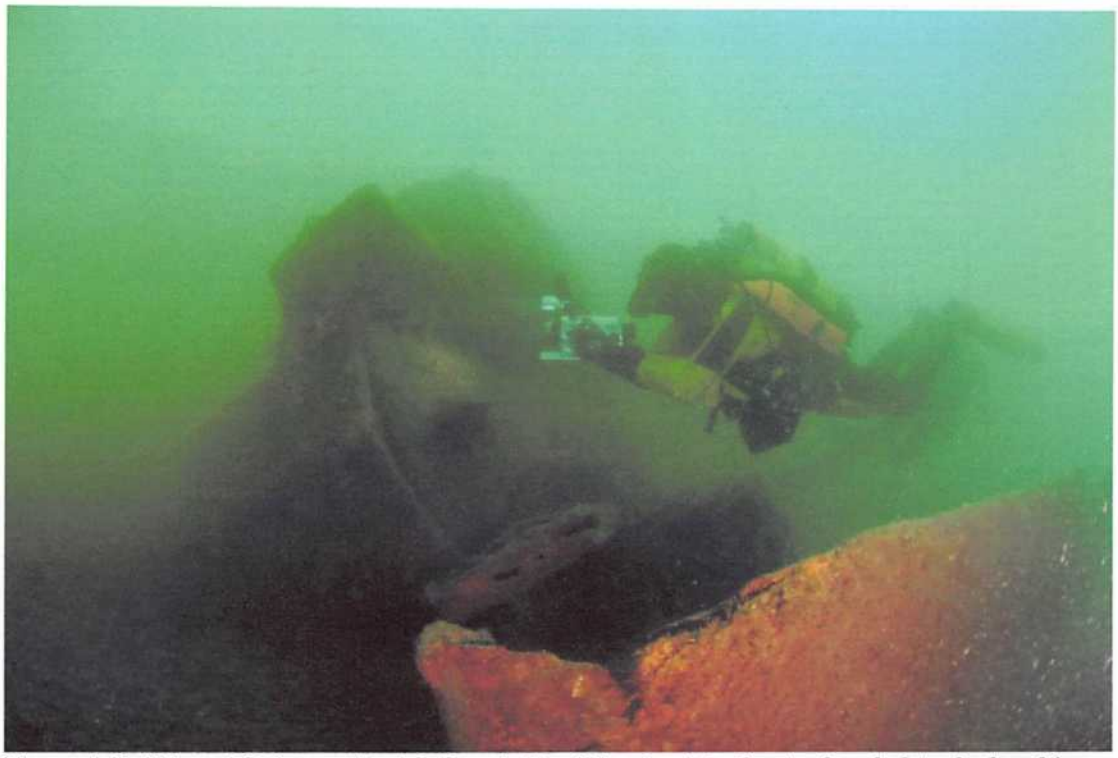


Figure 5 Bulldozer B lying on its right hand side. View is of the front, plough detached and in foreground. Image Alison Mayor

Confirmed as another Caterpillar Armoured D7 Bulldozer, Bulldozer B lies parallel to Bulldozer A and to the rear of Tank B. The plough has become detached from the bulldozer, an event believed to have happened in recent years. The main body of the bulldozer is in good condition.

Other items recorded in the immediate vicinity are;

- Smaller 303 ammunition
- Stick of explosive.
- Gun barrel? (Possibly 20mm anti-aircraft gun from landing craft)

Other Items of interest found at the site

Ammunition.

Figure 6. 95mm High Explosive Ammunition. View is from the front of Tank A. Image Martin Davies

Over 50 rounds of 95mm High Explosive ammunition was seen, mainly in the area to the front of the Centaur Tanks. A mixture of nitro glycerine and TNT these shells were intended to destroy enemy gun positions. Their condition/stability is not know and so was treated with the greatest respect.

Figure 7 Small arms ammunition found near Bulldozer B. Image Martin Davies

Ammunition Sled 'Porpoise'

Figure 8 Porpoise A – located to the rear of Bulldozer B. Image Martin Davies.

These waterproofed ammunition sleds would have been loaded with 95mm ammunition intended to supply the tank once it moved inland after the invasion. There was no sign of the ammunition in this area.

Propellers

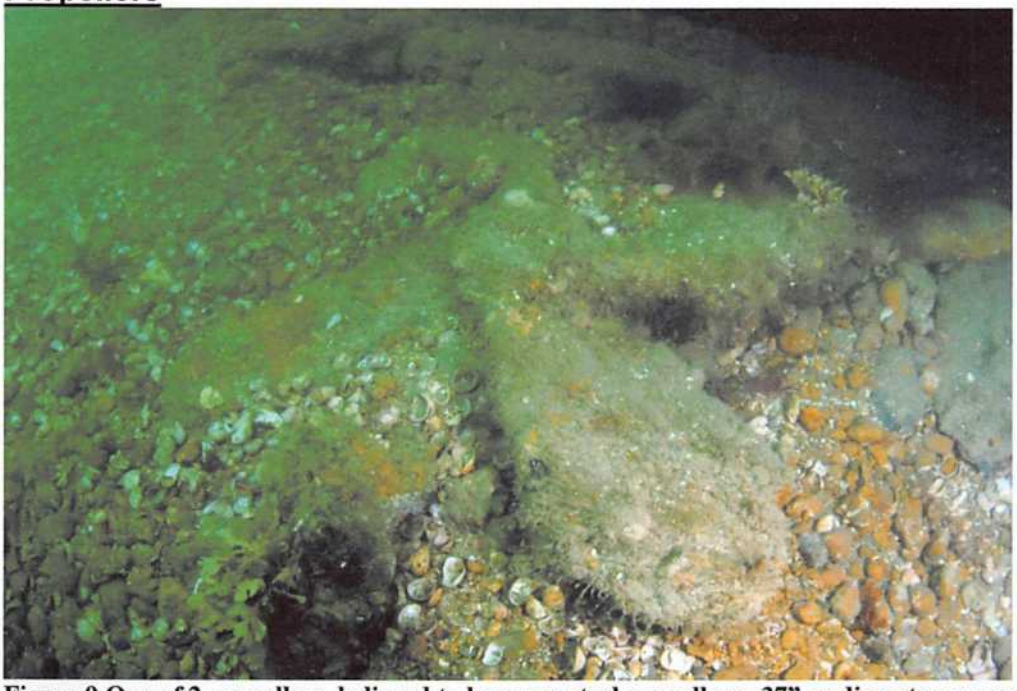


Figure 9 One of 2 propellers, believed to be spare steel propellers. 37" as diameter as used by Mark 5 Landing Craft Tanks. Image Martin Davies.

Kedge Anchor

Figure 10. A Kedge Anchor tucked under Tank B just behind the turret. Image Martin Davies

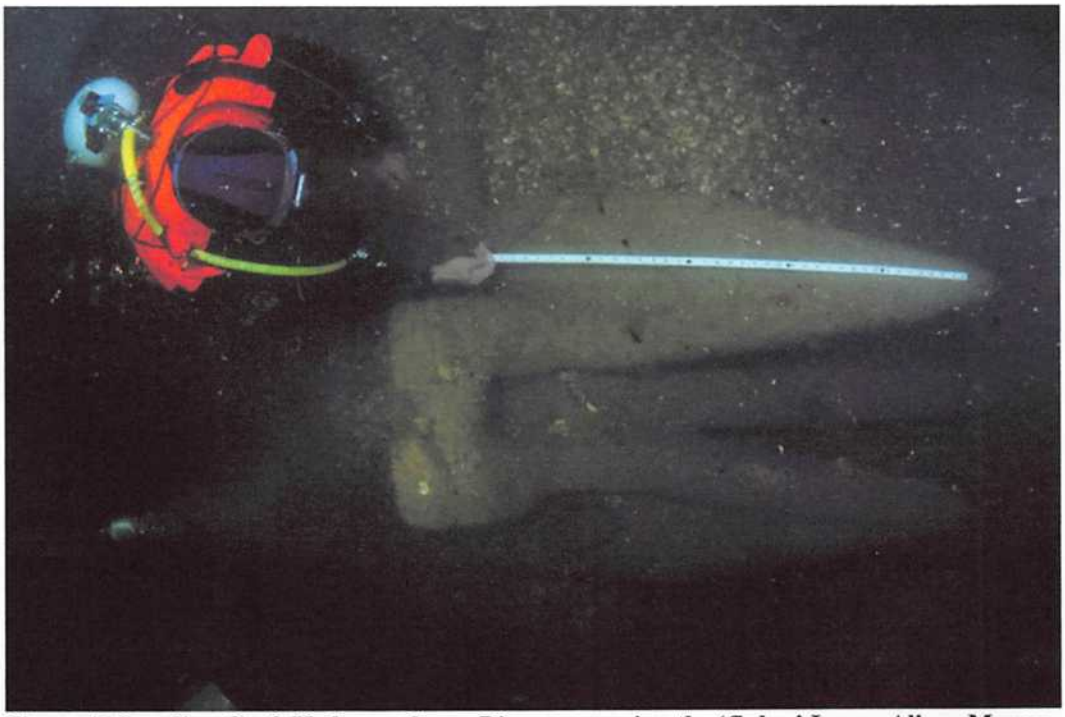


Figure 11 Landing Craft Kedge anchor . Diver measuring the 'flukes' Image Alison Mayor

Kedge anchors were used by Landing Craft to withdraw from the beach after unloading. This is believed to be a spare anchor lost during the capsizing.

Vehicle/ 5Cwt Car (4x4)

Figure 12 Vehicle engine – in front of Tank A. Image Martin Davies

Figure 13 Vehicle Wheel – in front of Tank A. Image Martin Davies.

The car/Jeep is very broken and lies in various sections in the vicinity of Tank A. The battery, wheels, gearbox and tyres are scattered around with the 95mm ammunition.

GUN

Figure 14 Gun barrel? Image Martin Davies.

This is believed to be the 'field gun' that has been recorded at the site. However there is no evidence of a gun carriage and so this may be the barrel of a 20mm anti-aircraft lost from the Landing Craft Tank at the time of the capsize. Further investigation is required to confirm one way or another. There were 2 anti aircraft guns on a LCT Mk 5.

SeaSearch Survey

In order to gain a full appreciation of the site a limited SeaSearch survey was carried out. The wrecks rest in a small hollow/scour and the surrounding area is believed to be relatively featureless with a grey clay/shingle/broken shells seabed. Over the majority of the wreckage there is a growth of short animal turf of sponges, hydroids, sea squirts and bryozoans. This environment and the various types of habitat that the wrecks provide, in terms of shelter and feeding opportunities, appears to have allowed this site to develop into a healthy level and good variety of marine life.

Being 8 miles offshore the site is not dived or fished frequently and as a result it is rich in marine life, though mostly typical of the Hampshire/Sussex area.

There was evidence of potting with a disused pot wedged under Tank A and also some fishing weights in the area, but the maturity of some of the

crustaceans and fish would indicate that a healthy population exists on the site. A large shoal of bib/pouting hang around the site. Cuttlefish and a Bloody Henry starfish were some of the more unusual species found.

The marine life did not appear to be disturbed by the presence of divers on the site over a number of days.

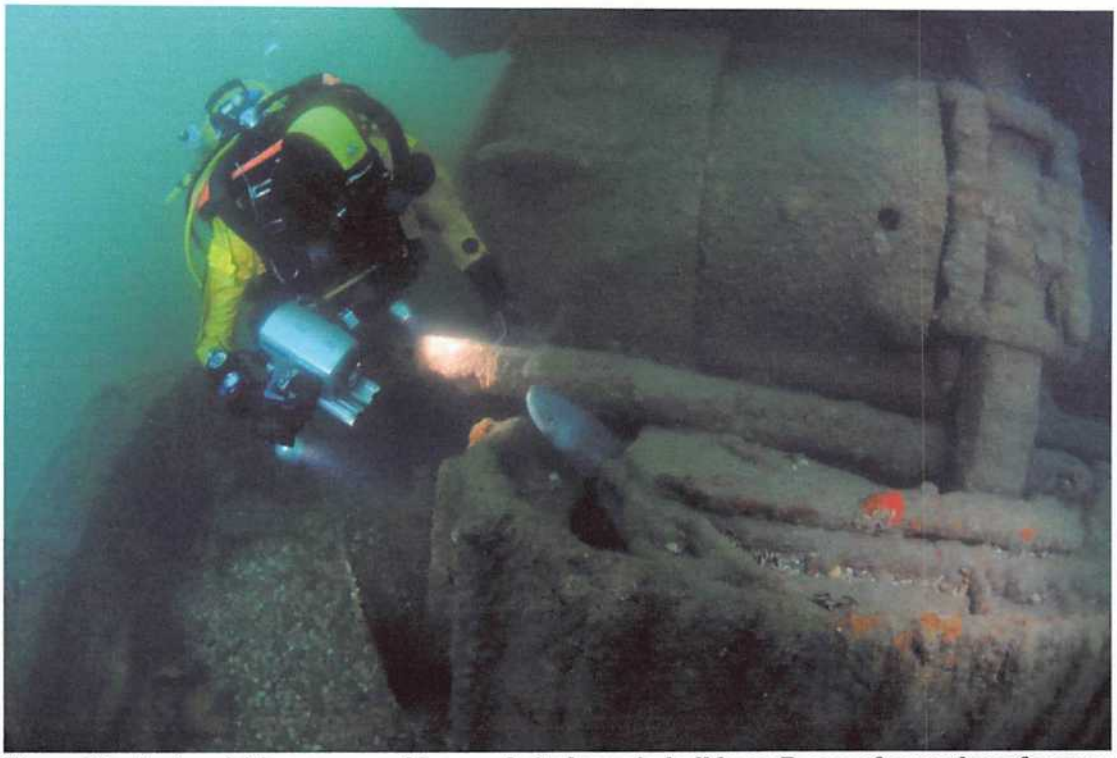


Figure 15. An inquisitive conger eel has made its home in bulldozer B, one of a number of conger eels at the site. Image Alison Mayor.

A copy of one of the survey reports and various images of marine life observed is at Annex E along with further images of marine life taken at the site.

CONCLUSIONS AND SUMMARY

The survey exercise has documented much detail about the site and the artefacts and wreckage found. A basic site plan has been produced and the condition of a number of artefacts has been recorded by photographs and video footage. All of this information has assisted in the formal identification of the war equipments and in conjunction with the historic documents has allowed the events that lead to the sinking to be established.

Given that the project was not a professional underwater archaeological survey the results are still very commendable in my view. The planning and organisation involved with 5 consecutive day's survey diving (8 dives in total) was very complex and time consuming. 25 divers of various grades and levels of experience took part and all remained enthusiastic throughout.

The main problems associated with missing measurements and BP2 being lost after the first dive, are minor in comparison and overall results. I believe the project has been successful in its achievements.

In hindsight these issues could have been addressed at the time perhaps to some degree, if we had been able to manage the data collection each day and review it for quality and accuracy. The physical and logistical efforts involved with the extensive diving programme left little time for analysis of the data between dives. It would have been much better to have asked someone to specifically take on the task, and preferably someone with knowledge of the techniques involved in underwater survey. Unfortunately this resource was not available to us at the time.

There is still much to explore and record at the site and I am sure that much more can be discovered that will add to this initial survey, especially if undertaken by divers with more training in the skills required. However for the purposes of this project, we have far exceeded the expectations of many and, in combination with the historical research, we have been able to resolve the mystery surrounding the sinking.

We would like to do lots more additional work on the site as we have really only scratched the surface on this first survey. A detailed recording of the position of ammunition, research into the 4x4 vehicle and the gun barrel all warrant further work to identify them. To this end I will be suggesting to the Branch members at our AGM that we apply to 'Adopt' the site under the NAS 'Adopt a Wreck' scheme.

We will also be conducting further research into the possible location of Landing Craft Tank 2428 which floated for sometime after the capsize and was later sunk by gunfire from the Tug 'Jaunty'. There are at least 3 possible sites that we wish to explore in the coming year.

The issue of the full report to the Ministry of Defence, BSA Jubilee Trust, NAS and other interested parties such as the various museums, Receiver of Wreck and Hydrographic Office etc. will allow others to read about our findings and also appreciate the site and its position in history.

Alison Mayor
Southsea Sub-Aqua Club
September 2008

Annex A Admiralty Chart
Annex B Magnetometer survey
Annex C Daily Activities Programme
Annex D Site Plans and Primary Data
Annex E SeaSearch Survey report

TANKS & BULLDOZERS

PART 2 – ANNEX A

SITE POSITION – ADMIRALTY CHART

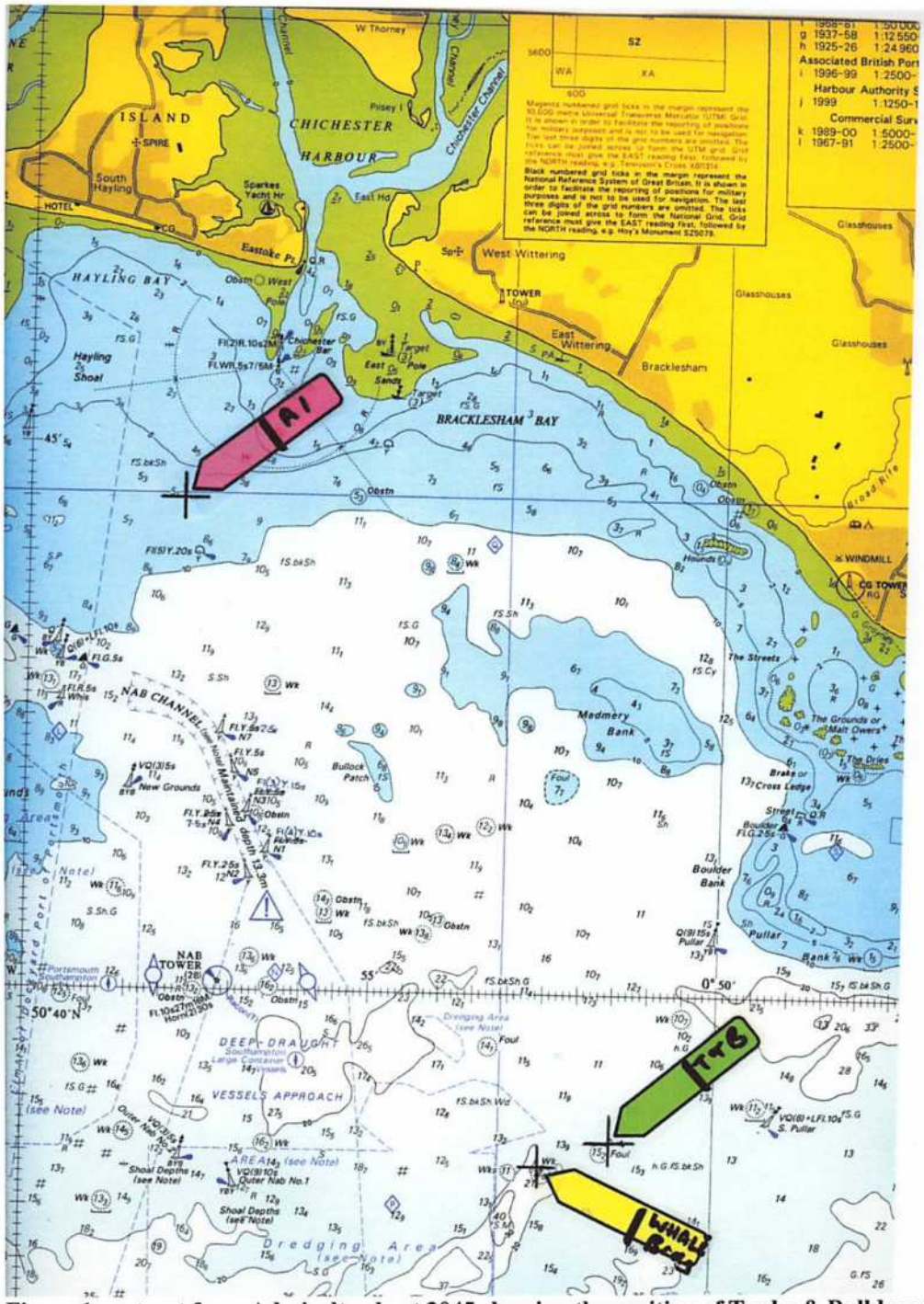


Figure 1. extract from Admiralty chart 2045 showing the position of Tanks & Bulldozers site and the Whale Bridge and also another SSAC related site HM Submarine A1 for which Diving Officer Martin Davies is Licensee.

TANKS & BULLDOZERS

PART 2 – ANNEX B

MAGNETOMETER SURVEY

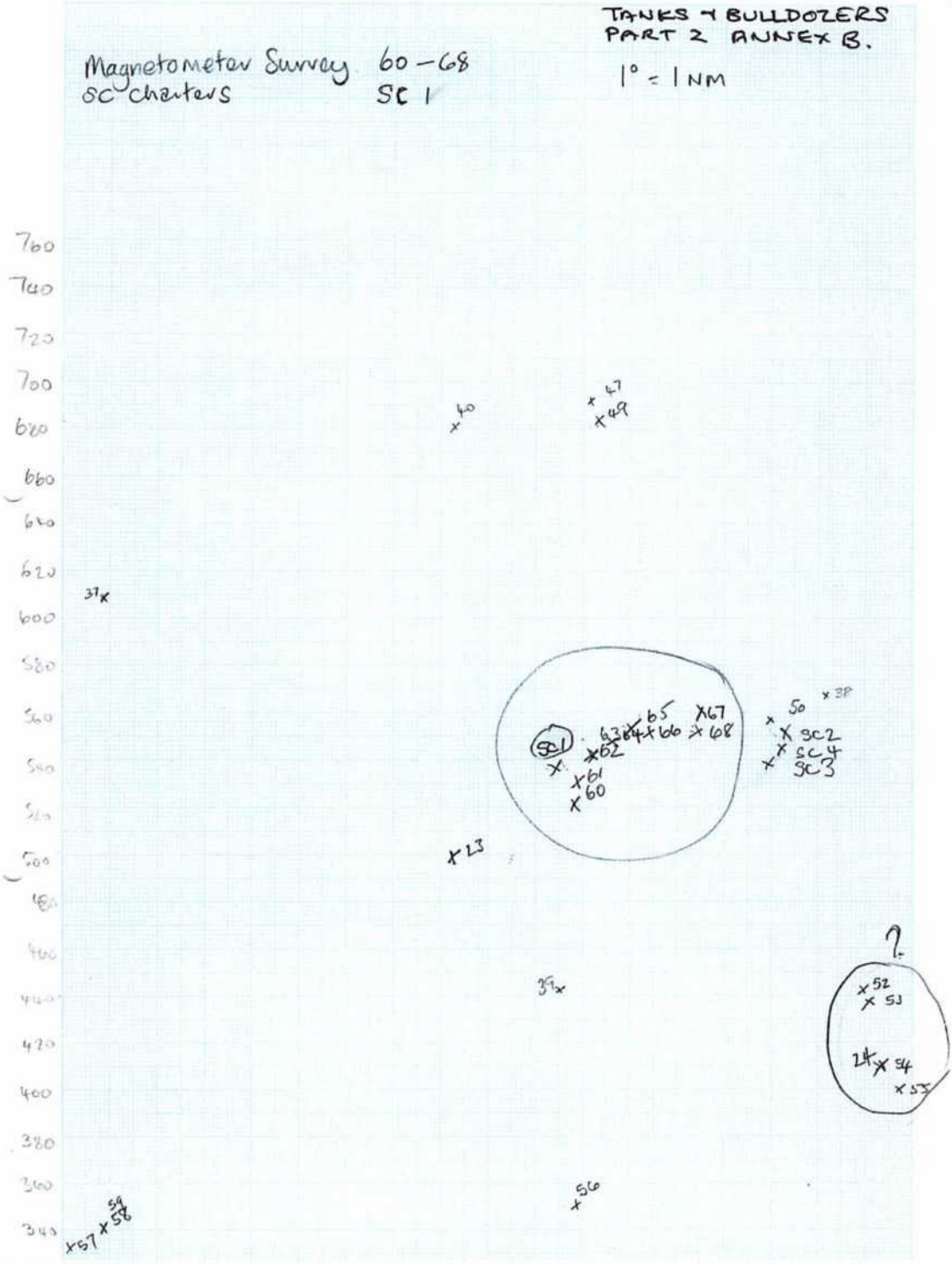


Figure 1 Plots showing the results of readings taken during the magnetometer survey plus additional marks taken as a result of the first dive in June 08..

TANKS AND BULLDOZERS

PART 2 – ANNEX C

SURVEY PLAN

DAY 1 – 26 JUL 08

DIVE 1

- Establish permanent mooring – **Skipper Dave** who will then advise divers where the mooring is secured.

- Establish site perimeter by installing Base Points (BP) **(Dive teams 1 and 2).** 4 x perimeter BP + 1 central.

- Lines to be set up between known major survey items **(Dive Team 3 and 4)**

Tank A to Tank B	(TA to TB)
Tank A to Bulldozer A	(TA to BA)
Bulldozer A to Bulldozer B	(BA to BB)
Bulldozer B to Tank B	(BB to TB)
Tank A to Jeep A	(TA to JA)
Bulldozer B to Porpoise A	(BB to PA)
Tank B to Field Gun A	(TB to FGA)

- Mark each main item with buoy for surface GPS marking **(Dive Team 5)**

- Identify North and direction/bearing of major items **(Dive Team 5)**

- Initial Video and Photography **(Dive Team 6)**

DAY 1 – 26 JUL 08

DIVE 2

- Complete any tasks from Dive 1 **(Dive Team 5)**

- Fix Control Points (CP) to upper and lower corners of each item.

Tank A (TA)	– **(Dive Team 1)**
Jeep A (JA)	– **(Dive Team 1)**
Tank B (TB)	– **(Dive Team 2)**
Anchor A (AA)	**- (Dive Team 2)**
Gun A (GA)	– **(Dive Team 2)**
Bulldozer A (BA)	– Include Plough (8 CPs) **(Dive Team 3)**
Bulldozer B (BB)	– Include Plough (8 CPs) **(Dive Team 4)**
Porpoise A (A)	– 4 corners only **(Dive Team 4)**

- Video and photography **(Dive Team 5)**

DAY 2 – 27 JUL 08

DIVE 3

- Begin site measurements Base Points to Lower CP- sea bed level.

TANK A	TANK B	DOZER A	DOZER B
TA1 – BP5	TB1 – BP1	BA1 – BP2	BB4 – BP1
TA1 – BP3	TB1 – BP5	BA1 – BP5	BB4 – BB1
TA1 – BP4	TB1 – TB2	BA1 – BA3	BB4 – BB3
TA2 – BP5	TB2 – BP1	BA2 – BP3	BB2 – BP2
TA2 – BP3	TB2 – BP5	BA2 – BP2	BB2 - BB3
TA2 – TA1	TB2 – BP4	BA2 - BA3	BB2 – BB3
TA3 – TA2	TB3 – BP4	BA3 – BP 2	BB1 – BB2
TA3 – BP3	TB3 – BP5	BA3 – BA3	BB1 – BP2
TA3 – BP4	TB3 – TB4	BA3 – BP3	BB1 – BP1
TA4 – BP5	TB4 – BP1	BA4 – BP3	BB3 – BA1
TA4 – TB3	TB4 – BP4	BA4 – TA1	BB3 - BA4
TA4 – BP4	TB4 - TB4	BA4 – BA4	BB3 – TB2
		PLOUGH	PLOUGH
		BA5 – BP3	BB5 – BP1
		BA5 – BP5	BB5 – BP5
		BA5 – BP4	BB5 – BB6
		BA6 – BP5	BB6 – BP5
		BA6 – BP4	BB6 – BP1
		BA6 – BP3	BB6 – BB4
Dive Team 1	**Dive Team 2**	**Dive Team 3**	**Dive Team 4**

DAY 2 – 27 JUL 08

DIVE 4

- Tasks not completed on Dive 3 **(Dive Team 1 & 2)**
- Measure min and max depth of each item using depth gauge**. (Dive Team 3)**
- Photography and video **(Dive Team 4)**

DAY 3 – 28 JUL 08

DIVE 5

- Measure dimensions of main Items between CPs

TANK A	TANK B	DOZER A	DOZER B
TA1 – TA5	TB1 – TB5	BA1 – BA	BB1 – BB
TA1 – TA6	TB1 – TB6	BA1 – BA	BB1 – BB
TA1 – TA8	TB1 – TB8	BA1 – BA	BB1 – BB
TA2 – TA6	TB2 – TB6	BA2 – BA	BB2 – BB
TA2 – TA5	TB2 – TB5	BA2 – BA	BB2 – BB
TA2 – TA7	TB2 – TB7	BA2 – BA	BB2 – BB
TA3 – TA6	TB3 – TB6	BA3 – BA	BB3 – BB
TA3 – TA7	TB3 – TB7	BA3 – BA	BB3 – BB
TA3 – TA8	TB3 – TB8	BA3 – BA	BB3 – BB
TA4 – TA7	TB4 – TB7	BA4 – BA	BB4 – BB
TA4 – TA8	TB4 – TB8	BA4 – BA	BB4 – BB
TA4 – TA5	TB4 – TB5	BA4 – BA	BB4 – BB
		PLOUGH	PLOUGH
		BA5 -	BB5 -
		BA5-	BB5 -
		BA5 -	BB5 -
		BA6 -	BB6 -
		BA6 -	BB6 -
		BA6 -	BB6 -
(Dive Team 1)	**(Dive Team 2)**	**(Dive Team 3)**	**(Dive Team 4)**

DAY 4 – 29 JUL 08

DIVE 6

- Measure smaller Items and their position in relation to Base Points and Main Tanks/Bulldozers. Sketch/photograph

Porpoise A **(Dive Team 1)**

Anchor A **(Dive Team 2)**

Jeep A **(Dive Team 3)**

Field Gun A **(Dive Team 4)**

Other? **(Dive Team 5)**

- Perimeter Search **(Dive Team 6)**

DAY 4 – 29 JUL 08

DIVE 7

- Careful examination of each main item. Record size/position of points of interest which aid identification. Photograph/video/sketch.

Tank A – **Dive Team 1**
Tank B – **Dive Team 2**
Dozer A – **Dive Team 3**
Dozer B- **Dive Team 4**

- Perimeter search - **Dive Team 5**

- Miscellaneous tasks - **Dive Team 6**

DAY 5 – 29 JUL 08

DIVE 8

- Careful examination of each main item. Record size/position of points of interest which aid identification including SeaSearch survey of marine life present. Photograph/video/sketch.

Tank A – **Dive Team 1**
Tank B – **Dive Team 2**
Dozer A – **Dive Team 3**
Dozer B- **Dive Team 4**

- Miscellaneous tasks - **Dive Teams 5 and 6**

DAY 5 – 29 JUL 08

DIVE 9

- Clear site of markers/CP and lines

Tank A – **Dive Team 1**
Tank B – **Dive Team 2**
Dozer A – **Dive Team 3**
Dozer B- **Dive Team 4**

- Remove Base Points and Lines, Remove permanent mooring etc - **Dive Teams 5 and 6**

TANKS & BULLDOZERS

PART 2 – ANNEX D

SITE PLAN

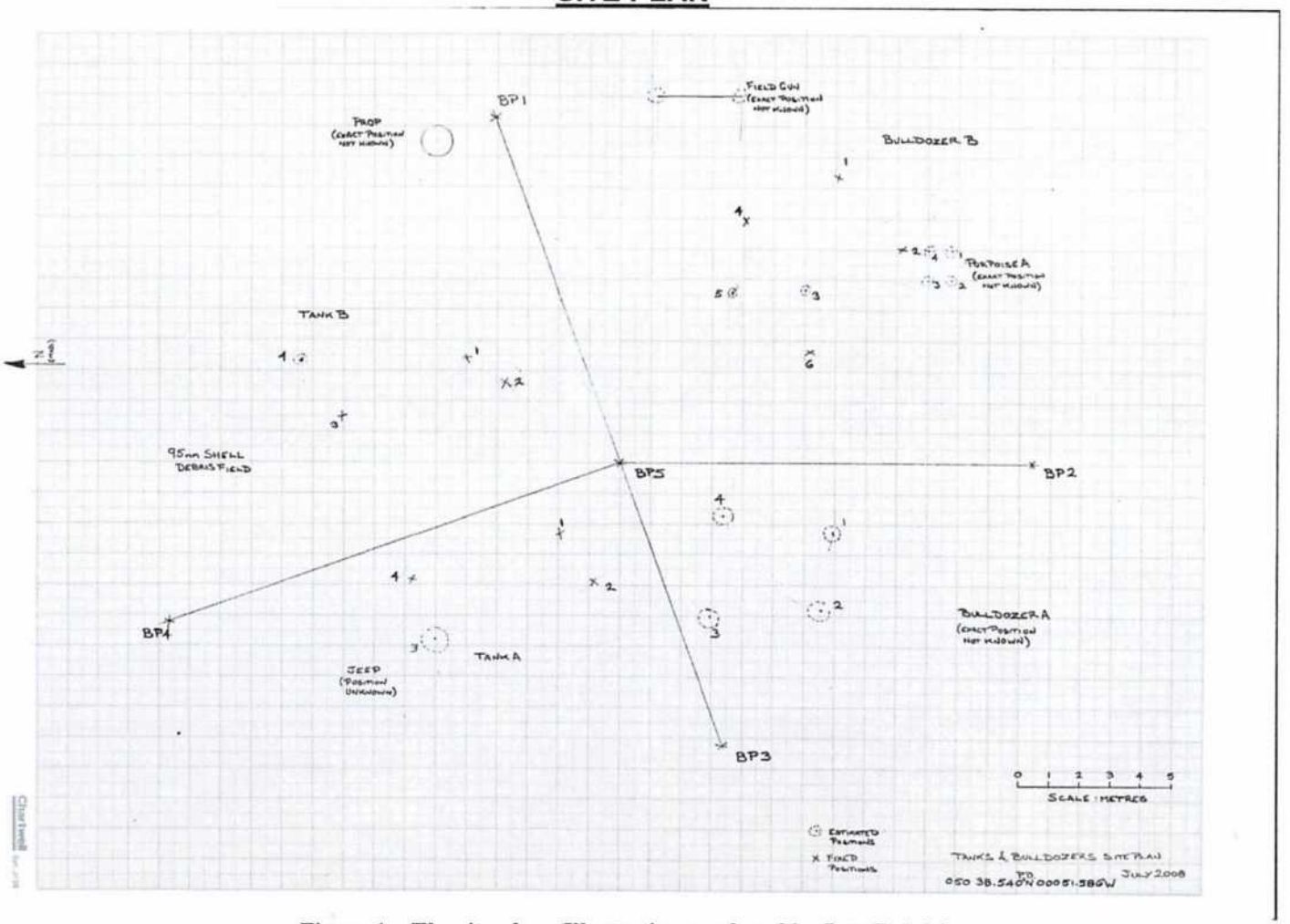


Figure 1. The site plan. Illustration produced by Pete Dolphin.

TANKS AND BULLDOZERS PROJECT

PART 2 - ANNEX E

SEASEARCH SURVEY REPORT

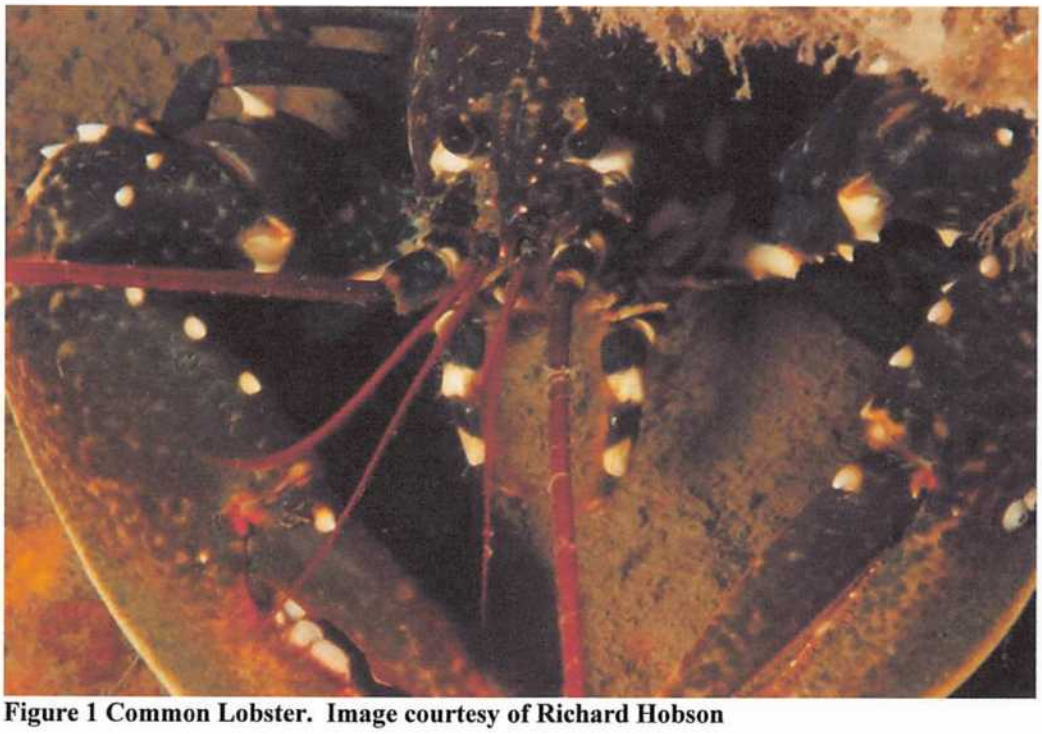


Figure 1 Common Lobster. Image courtesy of Richard Hobson

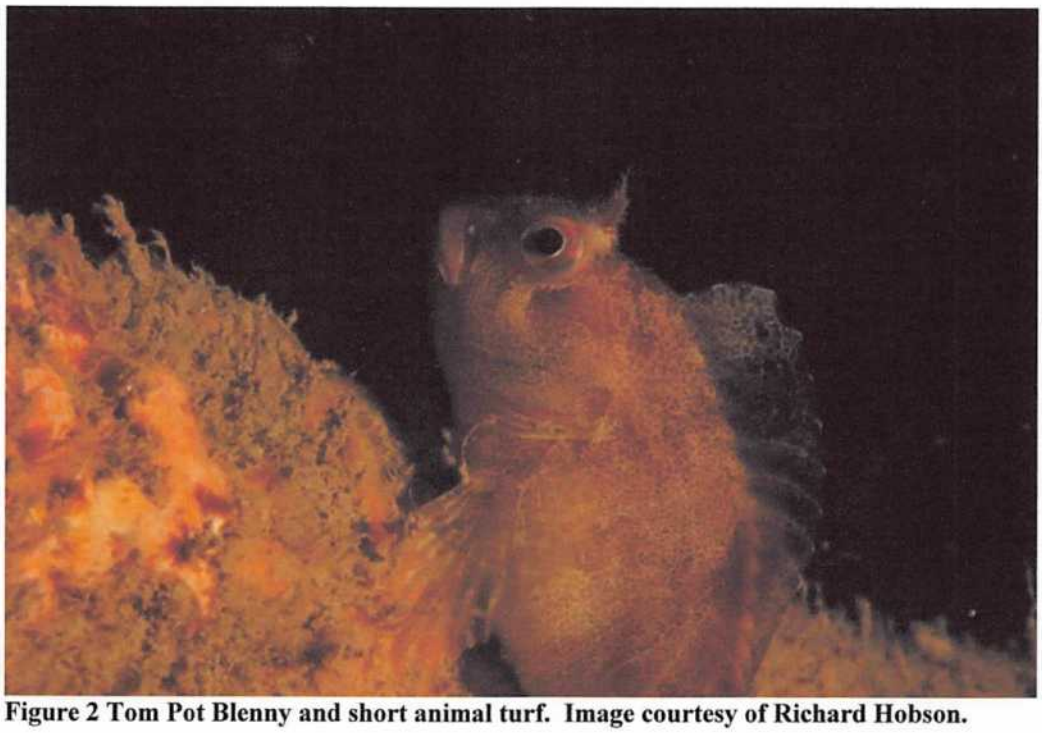


Figure 2 Tom Pot Blenny and short animal turf. Image courtesy of Richard Hobson.

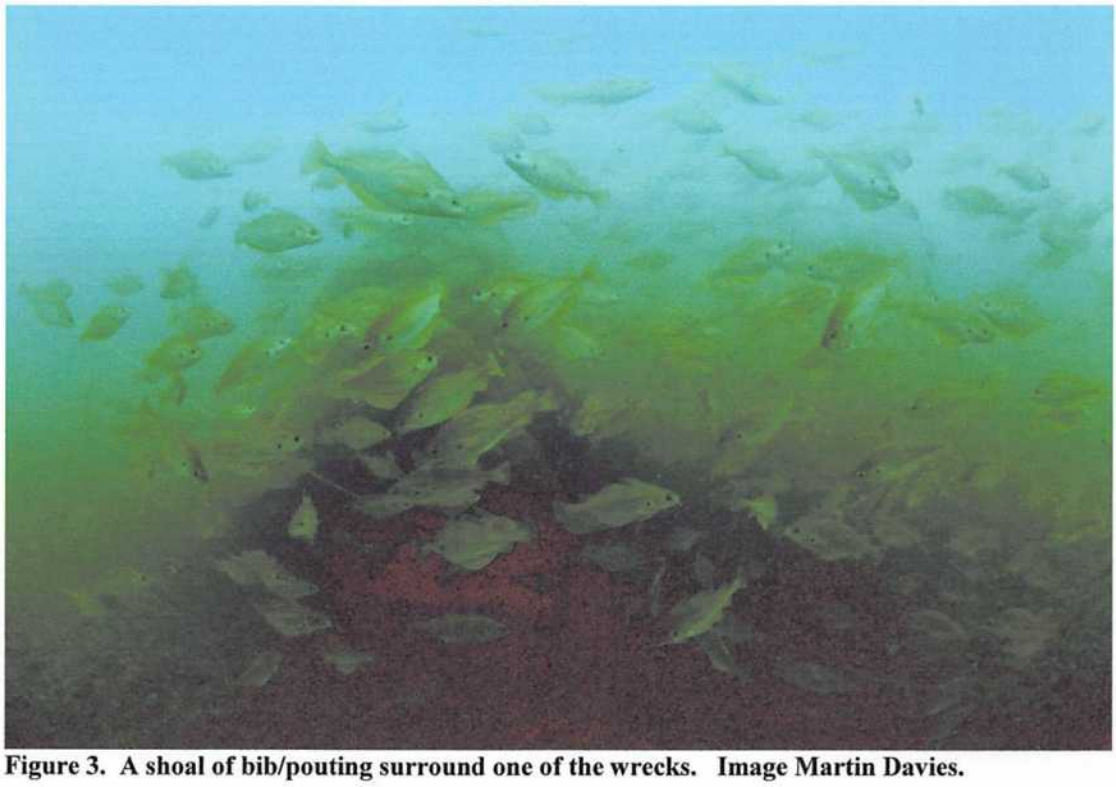


Figure 3. A shoal of bib/pouting surround one of the wrecks. Image Martin Davies.

Figure 4. A large edible crab tucked away at the top of Tank B. Image Martin Davies.

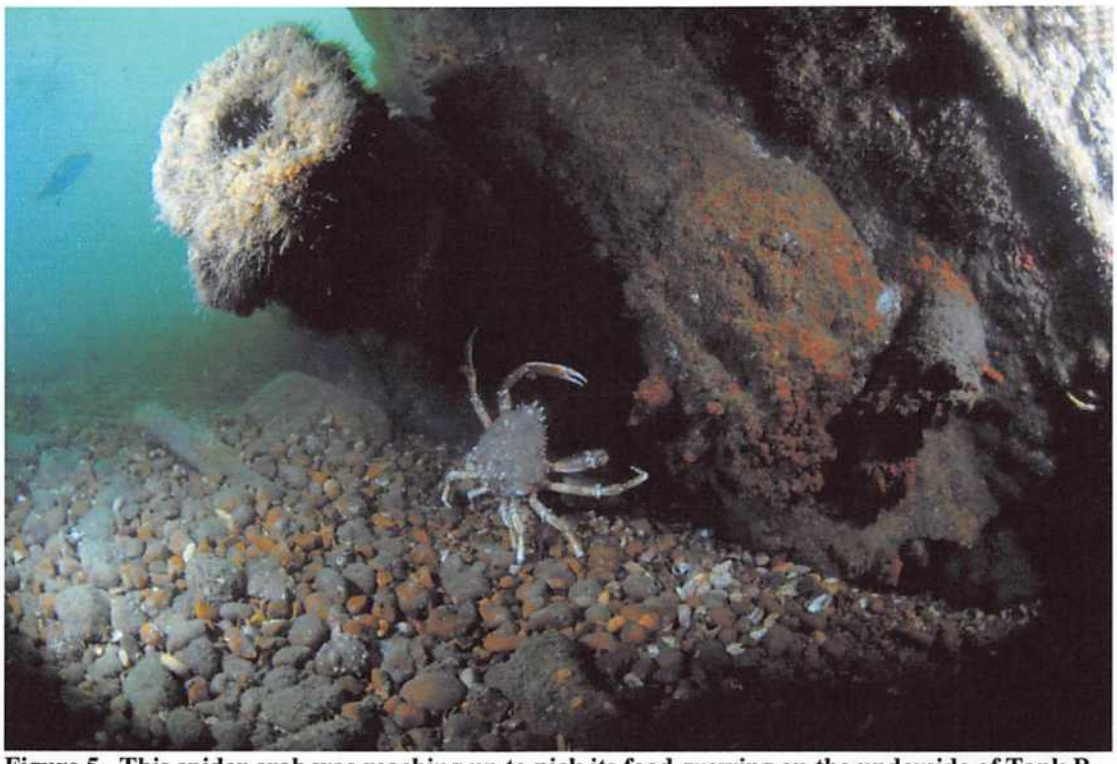


Figure 5. This spider crab was reaching up to pick its food growing on the underside of Tank B. Image Martin Davies.

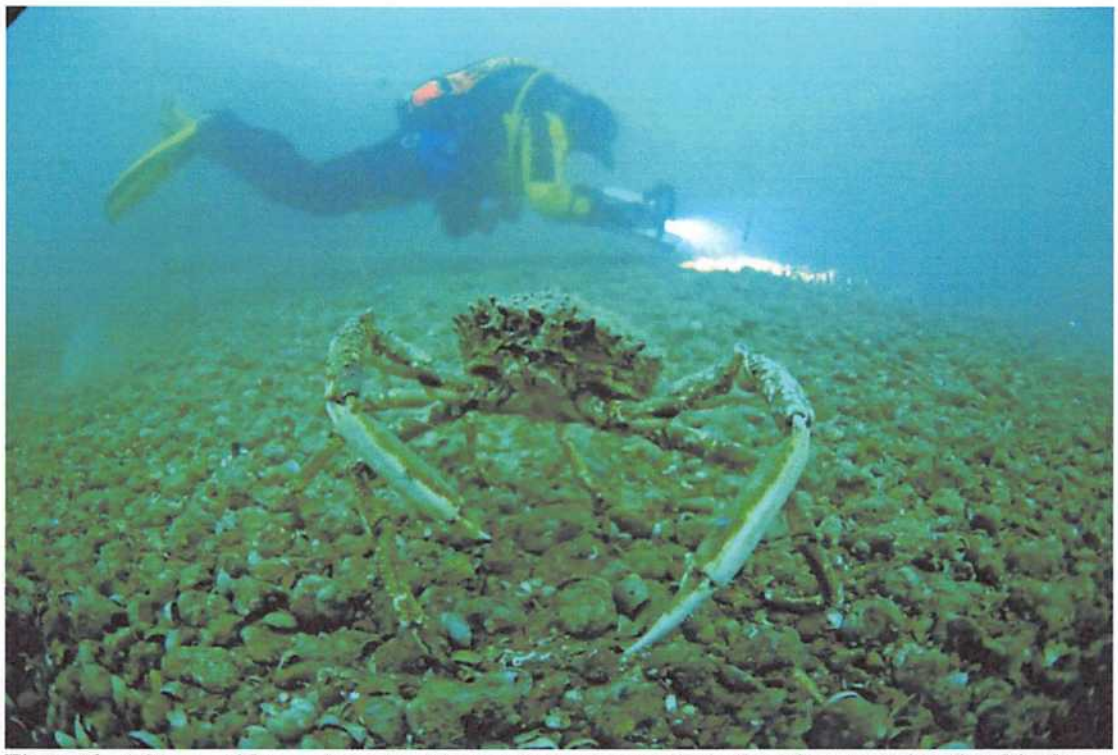


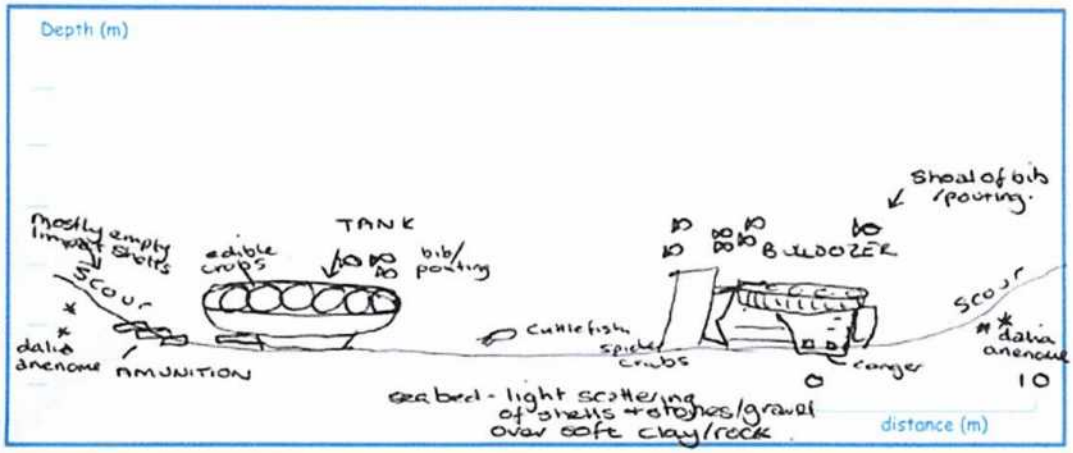
Figure 6. A large spider crab makes his way from one wreck to the other, crossing the shingle and broken shell sea bed that is typical of the site. Image Alison Mayor

Southsea Sub Aqua Club

diving the south coast and beyond

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?

high proportion of edible crabs and other crustacean compared to other sites dived in the area. Good size. Bloody Henry starfish

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

over 50 rounds of High Explosive ammunition.

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	A.O.C or P
Hornwrack	O
Dalia Anenome	O
fan worm	R
Large Hermit Crab	R
velvet swimming crab.	O
Edible crab.	O
common lobster	R
slipper limpet	C
common cuttlefish	R
bloody Henry starfish	R
conger eel	O
Ballan Wrasse	O
Goldsunny	O
tompot blenny	C
Leopard spotted Goby	O
pink encrusting algae	C
orange sponge	O
top not	R

Figure 7 Extract from the Marine Conservation Society 'SeaSearch' form completed as a part of the survey

TANKS AND BULLDOZERS PROJECT

PART 3

"DIVING INTO HISTORY"

Introduction

The mystery of the tanks and bulldozers dive site[1] had long puzzled members of Southsea Sub-Aqua Club (SSAC). These war vehicles are out of context in there environment and the questions about how they had met their watery end without a shipwreck just added to the questions. All that was know was that they were believed to be of World War 2 era and that a section of Mulberry Harbour road ('Whale') bridge was the nearest wreckage that was also associated with WW2.

For many years people had assumed a connection between the two wreck sites, and it was widely believed and reported that the tanks and bulldozers had fallen from the 'Whale' bridge[2], but for me it seemed an unlikely that such valuable cargo in terms of the war effort would have been transported in such a way. After initiating the SSAC Tanks and Bulldozers project In March 2008, I and others began researching the historical background of WW2 activities along the South Coast.

As a result we began to consider the possible theories which may have lead to the sinking of the tanks and bulldozers. There was a strong possibility that these vehicles would have been connected to Operation Overlord (the Allies invasion of the Normandy Coast and liberation of France), or exercises which were conducted in the area in preparation for D Day. The main theories were considered to be;

- Lost from Whale Bridge either as a result of enemy action, overloading or bad weather
- Lost from a ship / landing craft either as a result of enemy action, overloading or bad weather
- Disposal after the war of surplus equipment.

The majority of researching of WW2 activities was conducted, mainly using the internet, but also seeking advice from subject matter experts to focus my research in the right areas. One of the first things I did was to write to the Receiver of Wreck [3] (RoW), to ask if she was aware of whom the owner of the site may be. The RoW in turn contacted the Ministry of Defence (MOD), who advised that they knew very little of the site and would be content for us to

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[1] Dive Sussex – A Diver's Guide – Site number 40
[2] Dive Sussex – A Diver's Guide – Site number 39
[3] http://www.mcga.gov.uk/c4mca/mcga07-home/emergencyresponse/mcga-receiverofwreck.htm

survey the site and would very much appreciate a copy of the report. At this stage we did not know whether the tanks were British, American or Canadian and so 'ownership' could not be determined.

The Hydrographic Office kindly sent me the details the have on the site[4], and some other sites which may have been connected in some way. They too were interested in seeing the final results of the survey investigations and requested that I filed a divers report.

Early Research

Initially research centred around the activities up to and including Operation Overlord and D Day. The South Coast has much evidence remaining of WW2 activities above and below the surface. Our own Club House at Fort Widley is only a few miles from the heart of the 'Overlord' HQs at Fort Southwick and Southwick House from where the invasion of Normandy was orchestrated.

A number of our regular wreck dives are from that time including a favourite 'Far Mulberry' Harbour Unit near Selsey[5]. Above the surface there is a broken Mulberry harbour unit in Langstone Harbour and 2 intact units at Portland. We therefore had a good understanding of what the harbours were and how they were intended to be used. However a visit to the D Day Museum at Portsmouth[6] revealed just what a phenomenal achievement the design, manufacture, transport and subsequent construction of these harbours was.

The scale of the Mulberry harbour project was enormous and was in danger of over-stretching the capacity of the UK's civil engineering industry. From late summer of 1943 onwards three hundred firms were recruited from around the country employing 40,000 to 45,000 personnel at the peak. Men from trades and backgrounds not associated with the construction industry were drafted in and given crash courses appropriate to their work. Their task was to construct 212 caissons ranging from 1672 tons to 6044 tons, 23 pier-heads and 10 miles of floating roadway. Each harbour was the size of Dover, and was ready and operational within days of the invasion.

To find out more about what we might expect to see at the dive site and to seek advice on the ways of identifying types of tank, I made early contact with the Tank Museum at Bovington[7]. The advice from Historian David Fletcher was that we would almost certainly find the tanks to be Sherman tanks as they were used in great numbers by the Allies during the war and for Operation Overlord. One simple way of identifying whether they were British

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[4] Hydorgraphic Office data sheet for wreck no 20008
[5] Dive Sussex – A Diver's Guide. Site number 59
[6] http://www.ddaymuseum.co.uk/
[7] http://www.tankmuseum.org/

or American, would be the position of the drive cog. If it was at the rear it would almost certainly be British, whilst most American tanks had the drive cog at the front. That said the British and Canadian forces used American Sherman tanks so identification of Shermans would not necessarily be an indication. Little advice could be given about the bulldozers types of at this stage and more information would be required.

The bulldozers could have been associated with the US Navy Construction Battalion (known as 'Sea Bees') museum[8] and I wrote to them to see if they could let me have details of the types/specifications of bulldozers used around the time of D Day. There were some tanks which were converted to have a bulldozer plough. The majority of bulldozers would have been normal Caterpillar models although some were modified. If British tanks, they may have been part of the 79th Armoured Division, who used specially modified equipment known as 'Hobart's Funnies'[9]. Subsequently a group of divers from SSAC visited the Tank Museum to have a look at and familiarise themselves with the types of tanks that we may find 20m below the surface in Bracklesham Bay.

I also made contact with the Royal Engineers museum[10] to ask about Mulberry Harbours and British bulldozers used by the 79th Armoured Division. Derek Fricker the RE historian kindly supplied me with extracts of various document about Mulberry specifications. An article about the specification for the Whale Bridge section[11] confirmed that it would not have been capable of supporting the combined weight of 2 tanks, 2 bulldozers and a field gun – (estimated at more than 100 tons). The steel roadways which were 80 feet long and 10 feet wide were designed to take either 20 tonnes or 40 tonnes when assembled in their final position and supported by floats.

Figure 1. Sections of 'Whale' bridge. Image courtesy of RE Museum and IWM

[8] http://www.seabeehf.org/museum/index.htm
[9] http://en.wikipedia.org/wiki/Hobart's_Funnies
[10] http://www.remuseum.org.uk/
[11] http://www.history.6th.org.uk/index.php?option=content&task=view&id=12

I also contacted Caterpillar Inc via their web site and the archivist Nicole Thaxton was able to supply some information/specifications on standard bulldozers to help identification[12] however these specifications were not based on the Armoured Bulldozers we subsequently identified at the dive site as they had been modified with armour in England by a company called Jack Olding Ltd[13].

I also made contact with the Naval Historical Branch (NHB) in Portsmouth Naval Base, to see what information they had which may help trace the loss of tanks/bulldozers in the area. Without more information about the tanks etc it was not possible at that time to make any headway other than introductions etc., but this contact proved to be one of the key areas of research as will be revealed later.

The BBC Coast programme and other media became interested in the project following the issue of a press release about the project and as a result of the Portsmouth News reporting the project I also began to get personal correspondence and support from some members of the general public which was very encouraging. I was asked to produce a brief for the BBC who was considering a programme which covered the involvement of the South Coast in Operation Overlord and what evidence - above and below the water – remains to this day. The intention was to cover the tanks and bulldozers project as a part of the episode. I produced a brief summary of Operation Overlord and local D Day/ WW2 points of interest.

Continuing research at the NHB identified a number of exercises which took place as rehearsals for D Day including Exercise 'Trousers' and 'Fabius III'. These exercises took place in the area and during Fabius III there were reports of an attack by German E boats on some of the landing craft taking part in the exercise. The report on Fabius III[14] also described how a number of landing craft had been overloaded with equipment (specifically tanks and bulldozers) making them very unstable.

Information gathering across a range of D Day related subjects over the following weeks whilst detailed plans were being put together for the diving programme and survey.

[12] Nicole Thaxton email dated 16 June 2008
[13] http://en.wikipedia.org/wiki/Jack_Olding
[14] ADM 202/306 2nd RM ASG March – Sept 1944

The First Dive

This dive took place in early June and was a major break through in many ways but primarily because of the opportunity to identify the tanks. 8 divers explored the site and took pictures and made notes of what they saw. It was evident as soon as we descended on the first tank that these were not the Sherman tanks we were expecting.

Initial thoughts from the limited identification notes we had were that they were British Cromwell tanks[15] [16] as they had 5 road wheels and a drive cog at the rear. However closer examination of the images revealed that the gun was not that typically found on Cromwells.

The dive also revealed that the wrecks were close together, only 3-5m apart and much closer than originally believed. The tanks and bulldozers were either lying on their side or upside down and this implied that they sank quickly, all at the same time rather than a gradual loss. The two tanks were ahead of the two bulldozers and all faced roughly in the same direction.

Armed with this information we consulted with David at the Tank Museum again. David was very interested in the images and believed that the tanks could be Centaur CS IV tanks, a related tank to the Cromwell but modified with a large 95mm Howitzer gun. There were a number of key indicators that would confirm the identification as Centaurs, primarily one of a round plate about 30cm in diameter on the front of the tank, but non of the images were clear enough to distinguish this plate. However a number of identifiers, such as holes in the tread of the road wheels, were a promising start and we remained hopeful that they were Centaurs.

Another significant discovery on this dive was the finding of a large 'kedge' shape anchor, the stem of which lay just under one of the tanks. The same style of anchor was used by landing craft[17], [18] and its presence on the site in a position which would suggest it was part of the same event strengthened my growing belief that the sinking of the tanks and bulldozers was connected to a Landing Craft incident. I began corresponding with Tony Chapman, historian and archivist of the Landing Craft Association[19], to see if he or any of his members was aware of a Landing Craft incident or loss in the Bracklesham Bay area. Tony was aware of several Landing Craft which were lost during Operation Overlord but their exact positions were not known.

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[15] http://en.wikipedia.org/wiki/Cromwell_tank

[16] Cromwell Cruiser Tank 1942-1950. by David Fletcher & Richard Harley (Osprey Publishing 2006 ISBN 1 84176 814 6)

[17] The Landing Craft Association crest contains a 'kedge' anchor http://www.lstlandingcraftassoc.org /

[18] http://en.wikipedia.org/wiki/Anchor#Kedging

[19] http://www.lstlandingcraftassoc.org/

Centaurs and the Royal Marines

Figure 2. Centaur CS IV towing a 'Porpoise' ammunition sled. Image courtesy of the Tank Museum

The identification of the Centaurs was a key factor in the subsequent success of the project as these were only produced in very limited numbers and this meant that tracing them could be much easier. Only 80 Centaurs were assigned for combat during World War 2 and these were exclusively assigned to a special unit of the Royal Marines for use on D Day. With the assistance of Major Mark Bentinck RM Rtd at the NHB and Matt Little from the Royal Marines Museum[20] I was able to view copies of the files held by the National Archive on the RM Armoured Support Group (RM ASG).

The Royal Marines Armoured Support Group was formed in March 1944 and took part in the invasion of Normandy giving fire support to the initial assault forces. The RM ASG was equipped primarily with Centaur IV tanks (equipped with a 95mm howitzer) as well as smaller numbers of the Sherman tank used as Observation Post/ command vehicles. The Centaur had protractor markings on the side of the turret and adopted the principles of naval gunnery. Due to the experience in naval gunnery possessed by the Royal Marines, Centaurs were the only tanks to be able to fire in a coordinated barrage on the same target.

Organizationally the Group comprised of 2 Armoured Support Regiments, plus an independent Armoured Support Battery. Each Regiment consisted of two Armoured Support Batteries, thus in total, the group consisted of 5 Armoured Support Batteries.

[20] http://www.royalmarinesmuseum.co.uk/index2.html

Each Battery was further subdivided into four Troops, with each Troop equipped with four Centaur IV and one Sherman tank, giving a total of 80 Centaur and 20 Sherman tanks in the entire Group. The Group did not fight as a single military formation but rather was divided between the British & Commonwealth D-Day beaches as follows:

- *1st Royal Marine Armoured Support Regiment* at Gold Beach comprising the *1st Battery* (A, B, C, and D Troops) and the *2nd Battery* (E, F, G and H Troops).
- *2nd Royal Marine Armoured Support Regiment* at Juno Beach comprising the 3rd *Battery* (J, K, L and M Troops) and the *4th Battery* (N, O, P and Q Troops).
- *5th Royal Marine Independent Armoured Support Battery* at Sword Beach comprising R, S, T and V Troops.

The World War II unit was returned home two weeks after D-Day (D+14) and was disbanded later that summer.

The files included reports on the RM ASG involvement in Exercises Trousers, Fabius III and Operation Overlord. [21] These files contained fascinating information about the build up and subsequent participation in Overlord. War Diary reports gave details of the progress of each Battery on a day basis, at times even hour by hour reports were made. They contained Operational orders for 'Overlord' which explained in the greatest detail the arrangements for transport, loading, rations/stores, procedures, and objectives for each Battery. The files also contained the 'After Action' reports from each Battery and their Troop commanders and the final activities leading up to the disbandment of the RM ASG shortly after D Day.

One notable entry in the RM ASG War Diary of 2nd June 1944 proudly recorded that:

"This Unit's 8 troops with Centaur tanks moved today under MC orders to G2 and G4 Hards at Stokes Bay, Gosport for embarkation in LCTs. This was partly witnessed by the Prime Minister and other visitors."

The diaries then continue with details of the events of D Day and the reports of action taken in the days following through to the return to England and subsequent disbanding of the Regiments. It was a real privilege to read these, sometimes hand written, accounts.

[21] RMASG file numbers ADM 202/305 1st RM ASG, ADM 202/306 2nd RMASG, ADM 202/304 5th Indep RM ASG - March to Sept 1944.

Figure 3. RM ASG at Juno Beach 6 June 1944 – D Day. Image Courtesy of the Tank Museum.

Centaur CS IV Tanks – Fact file

Centaur CS IV tanks are based on the Cromwell tank. 114 were produced of which 80 were assigned to the RM ASG for Overlord, the remainder for training. Of the 80 that set off for Normandy only 48 Centaurs are believed to have successfully made it across the English Channel and still fewer managed to make it up the beach and inland. However those tanks and crews who took part in Operation Overlord were successful in achieving their objectives with few casualties. When the RMASG returned from Normandy the Centaurs were passed to the Canadians and free French to use as the Allied forces advanced further into France.

Being front line forces they could not be re-supplied with ammunition and so they towed sled with additional ammunition – another Hobart 'funnies' invention known as a 'porpoise'.

Until now only 2 of the 80 Centaur CS IV tanks used by the RM ASG were known to be in existence, both as war memorials in Normandy. One stands alongside the famous 'Pegasus' Bridge[22] and the other at a small village called Lion Sur Mer.

[22] *The base on which it stands bears the message: "Constructed by the Engineers of the 3rd Division June 1977 'who also passed this way.....' June 1944."*

Figure 4. Centaur at Pegasus Bridge, Normndy.

Caterpillar D 7 Armoured Bulldozers – fact file

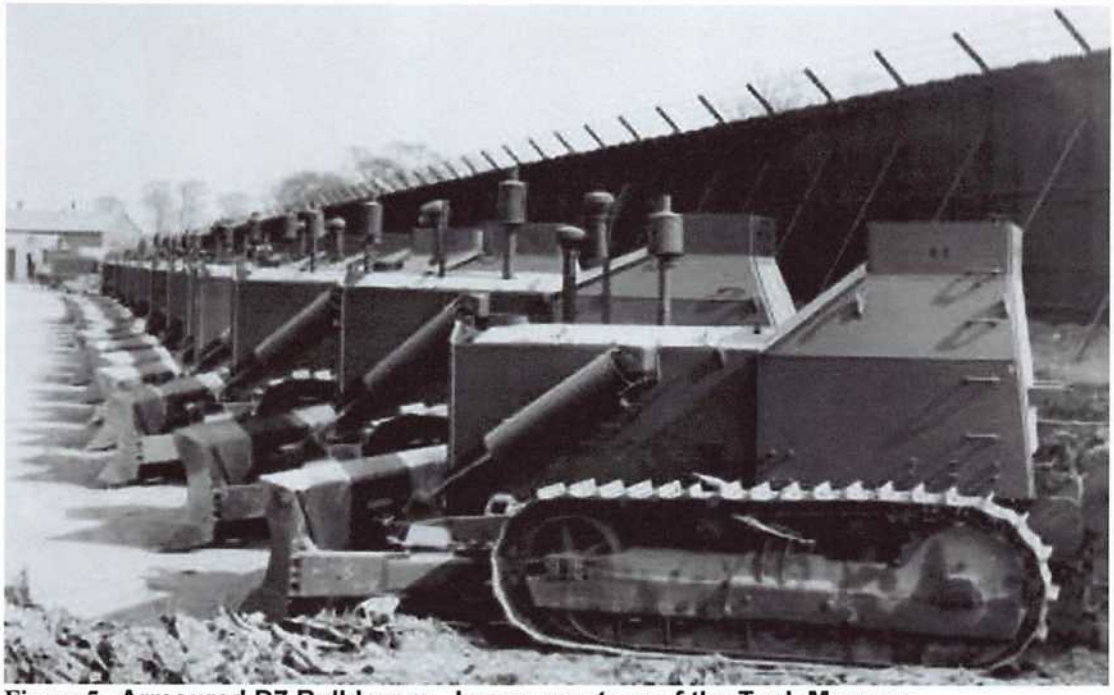

Figure 5. Armoured D7 Bulldozers. Image courtesy of the Tank Museum

The Bulldozers at the dive site are impressive machines. However little is known by Caterpillar Inc of the modifications made to the standard D7 bulldozers to prepare them for British military use. A number of D7s were shipped over to a company called Jack Olding Ltd of Hatfield, who carried out modifications primarily to add armour to them in order to protect the bulldozer and its driver. Caterpillar did not have records of how many or what alterations had been made.

A standard D7 would have weighed 23,910 lbs and the blade another 5,600 lbs (Approx 13.5 metric tons). The armour would have only added to the combined weight.

I have recently been sent a photograph of a D7 bulldozer owned by an individual who had been prompted to send it to me as a result of an article in Classic Military Vehicle magazine. Until that point we were of the belief that there were no surviving bulldozers of this kind. I am hoping to receive further information about the bulldozer soon.

Landing Craft Tank (Armoured) – Fact File

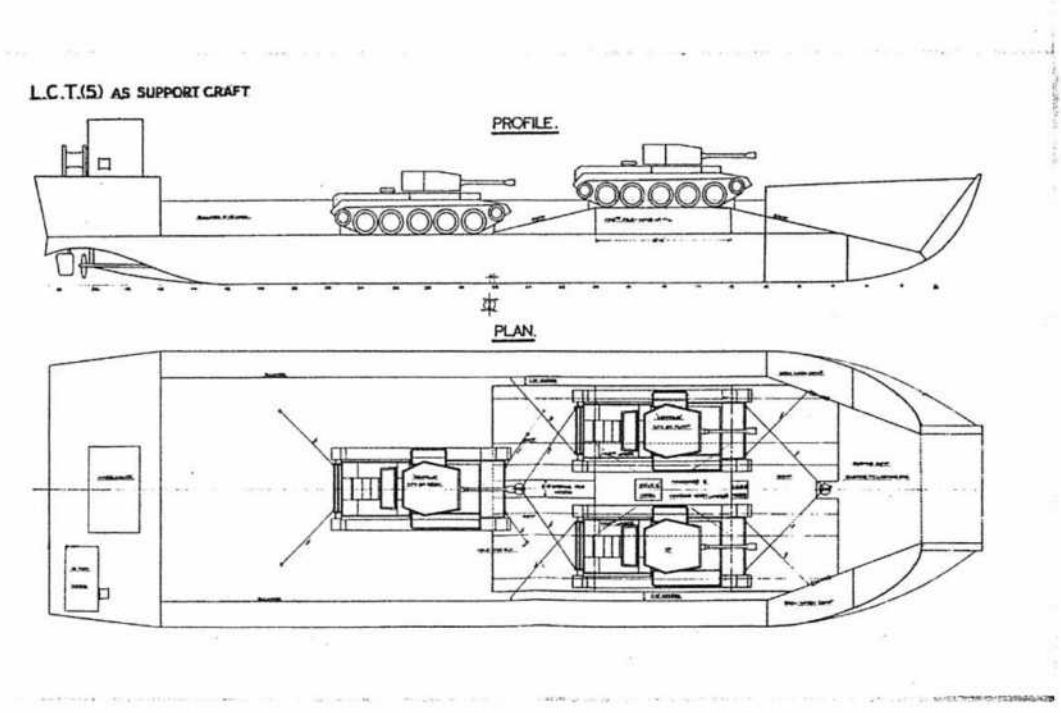

Figure 6. Illustration shows LCT(A) ramps for Centaurs to fire over bow. Courtesy of the Tank Museum.

A standard LCT Mk 5 specification:

- Displacement: 286 tons (landing)
- Length:117'6" (36.15m)
- Beam: 32' (9.85m)
- Draft: 2'10" (0.86m) forward, 4'2" (1.28m) aft (landing)
- Speed: 8 knots
- Armament: 2 x 20mm anti aircraft guns
- Complement: 1 officer, 12 enlisted
- Capacity: 3 x 30 ton or 4 x 40 ton or 3 x 50 ton tanks; or 9 trucks; or 150 tons of cargo.
- 3 Gray 225 hp diesels, triple screws
- Manufactured in the USA and lent to Britain under a Lease agreement.

The specialist role given to the RM ASG was to use the powerful 95mm Howitzer guns of their Centaur tanks to take out enemy gun positions in order that the remaining forces could land safely. In order to provide a suitable platform for the Centaurs to fire from a total of 48 Mark 5 LCTs were modified to fit ramps which would allow tanks to fire their guns over the bow at enemy positions before the LCTs landed. 26 of these were returned to the American forces for use in Overlord. Initially the intention was that the Centaurs would

remain on the LCTs and continue to provide fire cover, and so their engines were removed to provide additional space for ammunition. However following a comment, reportedly by General Montgomery, the engines were re-installed so that the tanks could move inland and provide additional cover to the front line forces.

These LCTs also had 50 tons of additional armour installed around the bridge and accommodation areas and they were re-classed as LCT(A)s and a number 2 was added to the original pennant number. LCT 428 became LCT(A) 2428. The addition of armour, together with the ramps for the Centaurs had a serious effect on the overall stability and handling of the craft at sea. LCTs are flat bottomed and do not perform well in poor seas and there was a tendency to overload craft with as much cargo as possible.

War Diaries and After Action Reports

In the 'After Action' report for 2 RM ASG[23], there was a table giving the availability of tanks in the first hours of D Day. The RM ASG were intended to be in the first waves of forces to land and one of the first documents to the first clue as to the possible link to the tanks and bulldozers. This table noted that "Q troop" had successfully landed 2 Centaurs and 1 Sherman tank at 0900 on 6th June but that the remaining 2 Centaurs had been "lost at sea".

Working back I was able to establish from the 2 RM ASG Loading Orders[24] that the 2 Centaur tanks of 'Q troop - Right Section' had been loaded onto a landing craft (Loading Table Identity Number (LTIN) 1008), and was destined for Juno beach. The LTIN number was not the same as the Landing Craft pennant number and with the help of Tony Chapman from the Landing Craft Association I was able to establish that LTIN 1008 was in fact LCT(A)HE 2428. This was a big step forward as I could now try to trace the records associated with this Landing Craft.

Loading Tables for 'J ' Force[25] confirmed that LTIN 1008 (LCT(A) 2428) was to have a cargo of 2 Centaur Tanks and crews (10), 2 D7 Armoured Bulldozers and drivers (4), 1 car 5Cwt 4x4 (1 Truck Airborne) and drivers (3). The tanks were confirmed as 2 RM AS Regiment (total of 15 personnel), bulldozers as HA RCE (Royal Canadian Engineers) of 3Canadian Infantry Division (Special Bulldozers Inc), plus troops from the 18 Canadian Forward Company (11 personnel) and 8 Kings "A" Company (6 personnel). It was also noted that space was available for additional ammunition. LTIN 1008 was to land at Juno Mike Green Sector at "H Hour". From these tables I estimate

[23] ADM 202/306 Report on Operation "OVERLORD" period D and D+1 dated 28 June 1944
[24] ADM 202/306 Operation Orders dated 25 May 1944
[25] WO 219/3412A Operation Overlord: coastal loading facilities, loading and embarkation programmes and allocation of ships. Loading tables for 7, 8 and 9 Canadian Infantry Brigades (Force J Loading Tables)

that 52 people would have been onboard comprised of 15 Royal Marines, 24 Canadian personnel and 13 British LCT crew.

The Naval War Diaries for June 1944[26] held at the NHB contain day by day accounts of all aspects of RN activities during World War 2. Each day covers the general situation around the world from home ports to the Far East and beyond including intelligence and political reports and engagements with /sightings of the enemy. Ship's signals and reports are included along with details of any ship casualties/losses.

An entry for 6 June 1944 under "Casualties" reports;

"LCT(A) 2428 damaged – LCT(A) 2428 capsized whilst under tow was stopped by gunfire. All crew and army personnel saved and on board tug. (JAUNTY, 061100B to Force "J")"

A number of other reports from RN ships confirm that LCT(A) 2428 of 312(b) group had been sighted "broached to" as a result of engine problems and was unable to make "good effect". In particular, HMS Wrestler signalled for a tug to take off personnel and take under tow.

The Allied Naval Commander-In-Chief Expeditionary Force War Diary[27] confirms that LCT(A) 2428 had a break down and was towed back to Portsmouth.

I was puzzled by Jaunty's reference to "stopped by gunfire" and had assumed (wrongly) that this was enemy gunfire. Correspondence with Tony Chapman and another Landing Craft enthusiast Danny Lovell corrected this view when they explained that Jaunty herself would have fired on the capsized LCT(A) 2428 to sink her if there was no way of recovering her and especially if she was believed to be a risk to shipping in the area. Danny kindly referred me to an entry in the 'Survivor reports' file[28] held at National Archive. Entry 164/165 is the information supplied by Able Seaman C R Hunt (P/JX 389342 CO) who was onboard LCT(A) 2428 at the time. The report (See Annex C) confirms that the attempt to tow by Jaunty had failed and that LCT(A) 2428 capsized but floated for some time until Jaunty sank her by gunfire. Importantly it confirms that all crew and military personnel were recovered safely and that no one was injured or killed.

Various extracts from the War Diaries and supporting files are copied at Annex A.

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[26] ADM 199/2295 War Diary summaries: situation reports 1-16 June 1944.
[27] DEFE 2/418 Report by Naval Commander, Force "J" (Force J After Action Report)
[28] ADM 199/1650 HM Ships and Vessels lost: survivors' interrogation reports, etc. (Survivors Reports)

This account by AB Hunt provides an explanation as to why the tanks and bulldozers are not resting on the seabed with LCT(A) 2428. It would be great if we could trace AB Hunt or other members of the RN, RM or Canadian troops who were involved in the incident and various requests for information have gone out in the media and veteran's newsletters..

Now the question is being asked by SSAC members.... "Where is LCT(A) 2428"? There are a number of possible sites that we hope to investigate soon, perhaps as a follow-on project for next year, being the 65th Anniversary of D Day.

Alison Mayor
Southsea Sub-Aqua Club
September 2008

ANNEX A – WAR DIARY DOCUMENTATON

PART 3 - ANNEX A - EXTRACTS FROM WAR DIARIES & RELATED DOCUMENTS

personnel worked less smoothly as one loading sheet showed all ranks as in vehicles and, therefore, TCVs did not arrive to move them until specially requested from Movement Control.

Movement from A.18 to the Hards was also carried out by Movement Control and appeared to work very well.

Embarkation. Craft loads were brought forward on to the Hards in rotation and the craft called in. The Tp Officers were each responsible for tactical stowage and loading of each craft. They also had to visit the RSO Officer to complete forms AF W 5169 etc. (AF W 3028 had been completed and fixed to the vehicle beforehand).

There was a lack of co-operation between RSO and the Hard Master, which resulted in one case of the Hard Master ordering a craft to sail while the Tp Comd was still completing forms in the RSO's office. Tp Officers must guard against this possibility.(For the purpose of this exercise, for which our vehicles were not waterproofed, bulldozers which had been waterproofed were allowed to load forward of our tanks instead of in rear).

Serious mistakes were encountered in the loading tables in that, in one case, three tanks and two bulldozers were shown in one craft = 2 Centaurs, 28 tons each, 1 Sherman, 31½ tons, 2 Bulldozers, 22 tons each. Two porpoises with ammn - 7 tons in all - totalling 138½ tons exclusive of approx 35 men who would weigh about 3½ tons making 142 tons in all, a gross overload which SOSG JI would NOT accept.

Arrangements should be made for bulldozers to be loaded in the Tp Lieut's craft. This matter will be taken up with the PILO.

Rations. Tps had no duties whatsoever in connection with preparation of food. Numbers to be fed being taken from unit sheets and confirmed on arrival with Camp Staff who required to know the numbers to be fed in Camp Dining Tents and numbers to be fed on vehicle standings, Camp Staff distributing food to the latter in camp tpt.

In view of the fluctuating numbers in camp, there were occasionally meals short. These were always made up by Camp Staff if requested by an officer.

A dry ration for 2 stranded tank crews was produced at once on the request of an officer and sent out to the crews concerned who were well outside the camp area.

DISTRIBUTION

Dep CRA	GSO II. RM	
FEMO J	3 Bty	(5)
1 RHAS Regt	4 Bty	(5)

Figure 1Exercise Fabius III – RMASG report concerning the overloading of Landing Craft. Indicates bulldozers are approx 22 tons in weight.

- 2 -

8. Troops of 2 RMAS Regt will load in craft as below and disembark on beaches indicated.

	Right Section	Left Section incl Sherman Tks (GCO)	Landing
P Troop	1011	1009	MIKE Green Beach
Q Troop	1008	1012	MIKE Red Beach
S Troop	1016	1015	NAN Green Beach
T Troop	1014	1017	NAN Green Beach
W Troop	1421	1422	NAN White Beach
X Troop	1424	1423	NAN White Beach
Y Troop	1419	1418	NAN Red Beach
Z Troop	1416	1417	NAN Red Beach.

(M.BRITTON JOHNSON)
Lt. Col RM
Commanding 2 RM AS Regiment.

Camp A.18
APO, ENGLAND.
25 May 44.

DISTRIBUTION

C. O. No.1

Figure 2 Extract from 2 RM ASG Operation Orders for 'Overlord' confirms Q troop right section to load onto craft LTIN 1008.

SHEET NO..2...

7 Cdn INF BDE GP LANDING TABLE

(Appx 'C' issued in conjunction with 7/Inf Bde OO No1 Dated _____)

OVERLORD
TOP SECRET

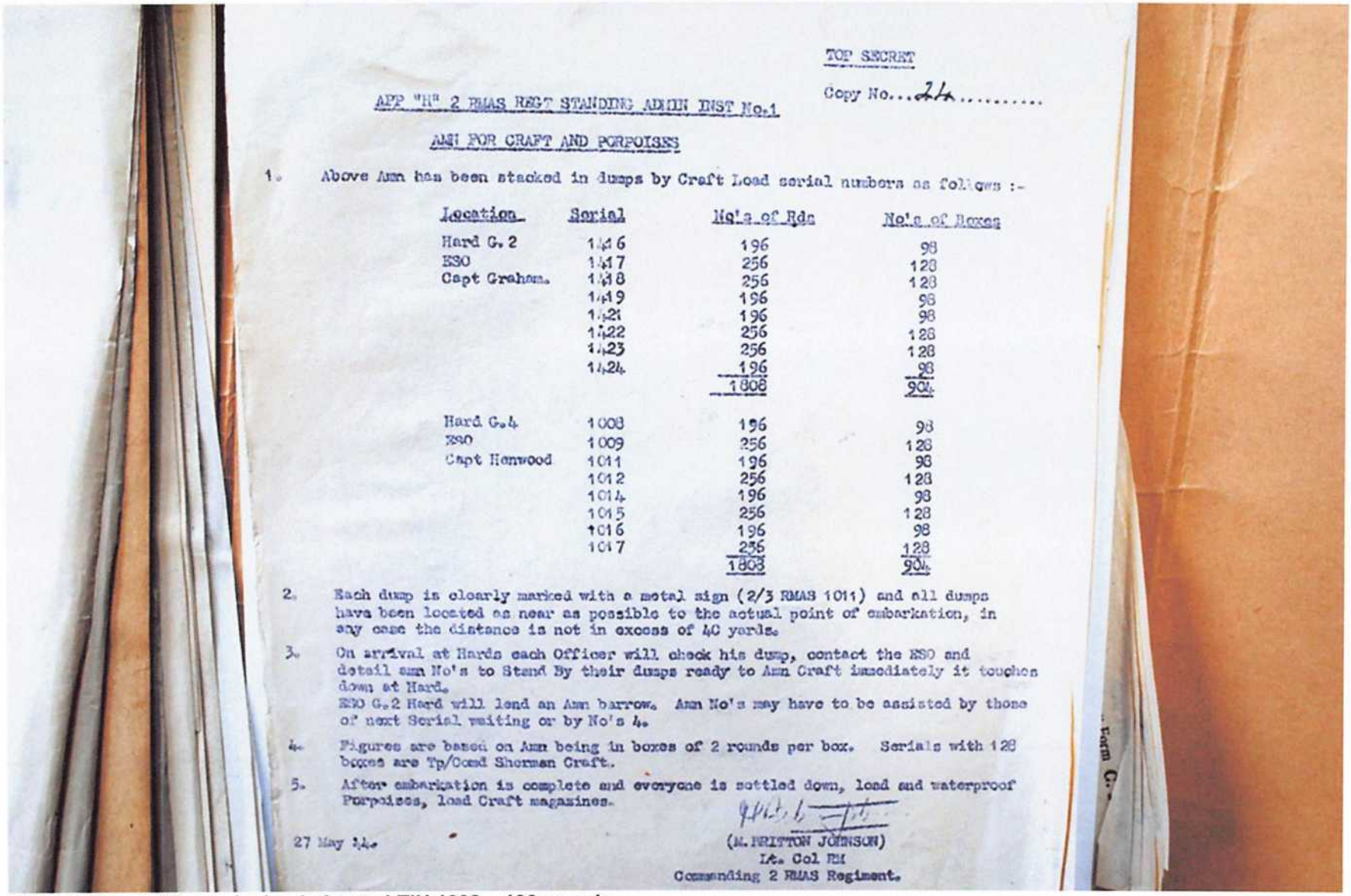
COPY NO.....

TOTAL NO OF SHEETS.....

DATED....14 Apr 44.....

Landing Table Index No (a)	Craft Ready to Beach (b)	Unit/Craft or Ship Serial (c)	Unit or Sub Unit (d)	PERSONNEL: Marching Pty (e)	PERSONNEL: Veh Pty (f)	VEHICLES/STORES: No/Tons (g)	VEHICLES/STORES: Type (h)	Embarkation Sector or Port (j)	Landing Ship or Craft: Craft Serial (k)	Landing Ship or Craft: Type & Mk (l)	Landing Sector & Beach (m)	REMARKS. (n)
1008	H Hour	/1008 LCT (A)HE	2 R M A S Regt ϕ	5	10	2	Tks Centaur	NEWHAVEN DOCKS	1008	LCT(A) HE	MIKE GREEN	Space for extra Amn
		714/1/ "	HQ RCE 3Cdn Inf Div (Special Bulldozer Inc)		4	2	D 7 Bulldozer Armd					
		717/1/ "	18 Cdn Fd Coy	11	3	1	Car 5Cwt 4x4					
		2484/ "	8 Kings "A" Coy	6			1 Truck Airborne					
1009	H Hour	/1009 LCT HE	2 R M A S Regt ϕ	5	10	2	Tks Centaur		1009	LCT HE	MIKE GREEN	Space for extra Amn
		714/1/ "	HQ RCE 3Cdn Inf Div (Special Bulldozer Inc)		5	1	" Sherman					
		717/1/ "	18 Cdn Fd Coy	13	4	2	D 7 Bulldozer Armd					
		2484/ "	8 Kings "A" Coy	12			1 Truck Airborne					
1010	H Hour	714/1/1010 LCT V	HQ RCE 3 Cdn Inf Div (Special Bulldozer Inc)		8	4	D 7 Bulldozer Armd		1010	LCT V	MIKE GREEN	
		717/1/ "	18 Cdn Fd Coy ϕ	24			1 Truck Airborne					
		934/1/ "	R Wpg Rif	9	6	3	Carriers (M)					
			Unit Detailing O.C. Troops									

Figure 3 J Force Loading Table for LTIN 1008 – LCT(A) 2428, 2 x Centaurs, 2x D7 Armoured Bulldozers, 1x Car 5Cwt 4x4



TOP SECRET

Copy No...24.....

APP "H" 2 RMAS REGT STANDING ADMIN INST No.1

AMN FOR CRAFT AND PORPOISES

1. Above Amn has been stacked in dumps by Craft Load serial numbers as follows :-

Location	Serial	No's of Rds	No's of Boxes
Hard G.2	1/16	196	98
ESO	1/17	256	128
Capt Graham.	1/18	256	128
	1/19	196	98
	1/21	196	98
	1/22	256	128
	1/23	256	128
	1/24	196	98
		1808	904
Hard G.4	1008	196	98
ESO	1009	256	128
Capt Henwood	1011	196	98
	1012	256	128
	1014	196	98
	1015	256	128
	1016	196	98
	1017	256	128
		1808	904

2. Each dump is clearly marked with a metal sign (2/3 RMAS 1011) and all dumps have been located as near as possible to the actual point of embarkation, in any case the distance is not in excess of 40 yards.

3. On arrival at Hards each Officer will check his dump, contact the ESO and detail amn No's to Stand By their dumps ready to Amn Craft immediately it touches down at Hard.
ESO G.2 Hard will lend an Amn barrow. Amn No's may have to be assisted by those of next Serial waiting or by No's 4.

4. Figures are based on Amn being in boxes of 2 rounds per box. Serials with 128 boxes are Tp/Comd Sherman Craft.

5. After embarkation is complete and everyone is settled down, load and waterproof Porpoises, load Craft magazines.

27 May 44.

(M. PRITTON JOHNSON)
LA. Col RM
Commanding 2 RMAS Regiment.

Figure 4 Ammunition to be loaded onto LTIN 1008 – 196 rounds

Instructions regarding War Diaries and Intelligence Summaries are contained in F.S. Regs., Vol. I. Monthly War Diaries will be enclosed in A.F. C.2119. If this is not available, and for Intelligence Summaries, the cover will be prepared in manuscript.

WAR DIARY
or
~~INTELLIGENCE SUMMARY~~

(*Delete heading not required*).

Army Form C. 2118.

Unit 2nd RM Armd Sp Regt.

Month and Year JUNE 1944

Commanding Officer (M. BRITTON JOHNSON) Lt Col RM

Place	Date	Hour	Summary of Events and Information	References to Appendices
C.9 Camp APO England.	1	-	Adv. HQ this Unit remained marshalled since 31 May 44. (Ref War Diary May 44)	
	2	1845	Adv. HQ embarked in LST 239. Move to docks a distance of 8 miles took 7 hours. OC Craft load Major Ross, Cameron Highlanders of Ottowa. 47 RM Cdo were passed during move to docks. This Units 8 troops with Centaur Tanks moved today under MC orders to G.2 and 4 Hards at Stokes Bay, Gosport for embarkation in LCTs. This was partly witnessed by the Prime Minister and others visitors.	
	2	2130	LST at anchor off Lee on Solent.	
Lee on Solent	3	0830	CO and Capt Richardson disembarked from LST to an LCP and visited the 16 LCTs in which the Regiment are embarked. All Officers and ORs in good spirits and had no major problems. Amn was being loaded and waterproofed in Porpoises. There were however several craft overloaded in spite of the careful plan made by 3rd Cdn Inf Div.	
	4	2200	LST at anchor all day. Wind now force 4 (Beauforts). Weather has lead to a 24 hour postponement today.	
	5	1905	LST under way, weather slightly improved.	
English Channel.	6	1030	French Coast sighted, weather improving after very rough passage.	
Off COURSEULLES.	6	1330	Orders received for no further disembarkation owing to lack of beach exits. Low ground in rear of MIKE SECTOR flooded.	
	6	1345	Information received that the objective in Phase I has been secured. At our present distance from the beach (1500 yds) it appears our Centaur Tanks have moved forward to plan :- Deploy on Beach at H. supporting Units as follows :- P & Q Tps. Royal Winnipeg Rifles S & T Tps. Regina Rifles. W & X Tps. Queens Own Rifles. Y & Z Tps. N. Shore Regt. All of 3rd Cdn Inf Div. In addition Z Tp supports 48 RM Cdo.	
	6	1710	Enemy Aircraft bombed MIKE & NAN Sectors, damage could not be observed.	
COURSEULLES.	6	2005	Disembarked from Ferry on MIKE RED Beach.	

WL 47724/258 2,000,000 3/43 W. H. & S. 51/8575

Figure 5 2 RMASG War Diary entry for 1-6 June 1944.

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SHEET 2

WAR DIARY

or

~~INTELLIGENCE SUMMARY~~

(Delete heading not required).

Army Form C.

Unit 2nd. RM. Armd. Sp. Regt.

Month and Year JUNE 1944

Commanding Officer (M. BRITTON JOHNSON) Lt. Col

Place	Date	Hour	Summary of Events and Information	References to Appendices
Banville.	6	2120	Visited P & Q Tps in Gun Positions.	
Berniers-Sur-Mer.	6	2250	Arrived at 3rd Cdn Inf Div HQ. Beach area bombed during night.	
Beny-Sur-Mer.	7	0650	Visited W Troop in Gun Positions.	
Reviers	(D+1) 7	0840	Visited S & T Tps.	
Beny-Sur-Mer.	7	1400	Div HQ now moved to this location, received information that X,Y & Z Troops are with RM Cdo. All remaining Troops with RCA Field Regts. Troops had not landed to plan, for details of actual employment refer to Report on Operation "OVERLORD" period D & D + 1.	See App "A" Attached.
	7	1430	Visited St Aubin-Sur-Mer and Langrune-Sur-Mer with Col.A.J.Harvey OBE RM and located X,Y & Z Tps. Brigadier LESTER RM reported that they had given valuable support in street fighting and gave his Cdo's added confidence. All Officers and ORS in high spirits. Total casualties to the Regt, Five ORs wounded.	
BENY SUR MER.	8	1000	X,Y & Z Troops rejoined Regt in this area.	
	(d+2)	1800	Day spent in rest and maintenance of Tanks and Equipment.	
	9	1800	Second ½ of W Troop were landed today and joined the Regt. Regt now re-organised and distributed on 7th & 8th Bdes Fronts. S,T,X & Z Tps with 12th & 13th Regts at Camilly. P,Q & W Tps with 14th & 19th Regts at Basly. Remains of Y Tp owing to Tank Casualties to itself being used to reinforce the deficiences in other Troops. Troops with 12th & 13th Regts in support of 7th Cdn Inf Bde employed on Indirect Fire tasks, moved to forward area location BRAY and were later withdrawn to 12th, 13th Gun area owing to position forward being very fluid. P,Q & W Tps with 14th, 19th Regts in support of 8th & 9th Inf Bdes were kept back in Regtl Gun area at BASLY and were out of range most of the day. They could not be sent forward owing to the very fluid nature of the FDL's. Capt's L.L.A.McKay SAUDF and K.R.M. Perrott RM however, moved forward independantly and found a N.NOVA SN. being counter attacked near ANISY, they immediately produced supporting fire.	
	(D+3)			

Wt.47724/928 2,000,000 3/43 W. H. & S. 51/6525

Figure 6 2 RMASG War Diary 6-9 June 1944

Instructions regarding War Diaries and Intelligence Summaries are contained in F.S. Regs., Vol. I. Monthly War Diaries will be enclosed in A.F. C.2119. If this is not available, and for Intelligence Summaries, the cover will be prepared in manuscript.

SHEET 3

WAR DIARY

or

~~INTELLIGENCE~~ SUMMARY

(Delete heading not required).

Army Form C. 21

Unit 2nd RM Armd Sp Regt.

Month and Year JUNE 1944

Commanding Officer (M. BRITTON JOHNSON) Lt

Place	Date	Hour	Summary of Events and Information	References to Appendices
Beny-Sur-Mer.	9	1800	On the right 7th Bdr had reached line OAK but on the left 8th & 9th Bdes had not been able to make similar progress. (LINE OAK BEING ALONG RAILWAY - CAEN - BAYEUX)	
Bray	10 (D+4)	2000	S, T, X & Z Tps with 12th, 13th moved forward today to area (near BRETTEVILLE l'ORGUEILLEUSE) 1200 yds in rear of the line OAK. Engaged targets 2000 to 3000 yds in front of leading infantry. P, Q & W Tps remained at Bray and had few tasks as they were still sited back owing to fluid position in forward area. Capt's McKay and Perrott however went forward in their Sherman Tanks and contacted infantry units (North Nova Scotia Regt) who were being counter attacked at VILLOUS LES BUISSONS. They therefore called for fire from their guns and successfully supported the infantry who held their position. Received orders from CRA 3rd Cdn Inf Div to move P, Q & W Tps from left sector to right front in area BRAY to support 46 RM Cdo on the 11th June 44 while employed in clearing the area alond the river MUR from BARBIER to ROTS. Our tasks being to shell ROSEL and later ROTS to cover the Commando attacks. Troops to move at first light on 11th June 44.	
BRAY.	11 (D+5)	1000	P, Q & W Tps in position at BRAY to support 46 RM Cdo. Owing to shortage of RCA FOOs I ordered Capt's McKay and Perrott forward to range their guns on targets ROSEL and ROTS, register and record targets. I joined them at OP and we planned the exact location in which fire should be placed in each village. Guns were ranged by Troops and checked by 1 round salvos. On completion I saw the Brigadier commanding 8th Bde who were working in conjunction with RM Cdo. ~~to take~~ over when the 46th had reached their final objective. His ~~GSO 3~~ was about to visit OC 46 RM Cdo so I sent my fire plan for each target for approval. I had planned 2 mins intense, 3 mins slow sweep and search, 2 mins intense from all 3 troops on each target when call for fire was received. In addition I offered a final shelling of five rounds gun fire from all guns for each target if desired. (HQ RCA had provided a special delivery of 600 rds for this task). OC. 46 RM Cdo was pleased with our plan and he requested our FOOs to join him so they could move down	

WL.47734/908 2,000,000 8/43 W. H. & S. 51/5/75

Figure 7 2 RMASG War Diary entry 9-10 June 1944

From :- OC 2 RMAS Regt.
Date :- 28 June 44.
To :- RMAS Gp.

SECRET

Subject :- Report on Operation "OVERLORD" period D and D + 1

1. Availability of Equipments on MIKE and NAN Sectors.
H = 0745 Hrs.

TIMES OF BEACHING

Tp.	0745 - 0800	0800 - 0830	0830 - 0900	0900 - 0945	D + 1	D + 2
P				1 Sh. 4 Cents (a)		
Q				1 Sh. 2 Cents (b)		
S		2 Cents.	1 Sh. 2 Cents.			
T		1 Sh. 2 Cents	2 Cents (c)			
W.		1 Sh. 2 Cents.				2 Cents.
X	1 Sh. 4 Cents.					
Y	1 Sh. 4 Cents.					
Z	2 Cents				1 Sh. 2 Cents.	

Notes :-
(a) 3 Centaurs out of action with tracks damaged by sand.
(b) Remaining 2 Cents lost at sea.
(c) 3 Cents in this Tp received track damage when leaving beach.
NO FIRING ON RUN IN BY ANY TROOP.

Figure 8 2 RMASG Operation Overlord – After Action report (note b – 2 Centaurs lost at sea)

(b)

Q Tp. Capt Perrott. RM

D Day.

1. Engine trouble in LCTA caused RIGHT SECTION, Q Tp (Lt V.J.Syborn RA & 2 Centaur Tank) to be turned back in mid-channel on the night of D - 1.

2. The LCTA formation was split by a large ship convoy during the night of D - 1 and the rear half, including the LCTA of LEFT SECTION, Q Tp, became detached and the craft did not beach until approximately H + 2 hours.

3. The craft beached in the correct place but by this time the 12th (SP) Field Regt had also landed and no calls for fire were made on the section.

4. On orders from OC 12th Field Regt, RCA., the section moved to the gun area "MARY" and occupied a position for the night where they were later joined by the Tp Comd of "P" Troop with 1 Sherman and 1 Centaur Tank. (MARY = BANVILLE Area)

D + 1 Day.

1. By order of OC 2 RMAS Regt the Section moved together with the Sherman and Centaur Tanks of P Troop to occupy a gun area at Basly and became attached to the 14th Field Regt. RCA.

2. During the move to Basly 1 Centaur of Q Tp became a casualty with Clutch trouble. 2 Centaurs of P Tp with Lieut Hunt RA., joined the remaining tanks at Basly later on D + 1.

3. No calls for fire were made on this composite Troop on D + 1, but a local mortar position was engaged by Direct Fire.

(c)

S Tp. Capt Brown. RM

D Day.

0500. Tank crews still sea-sick but far better than on D - 1. The craft was very

Figure 9 2 RMASG After Action report Q troop Capt Perret RM. 1) Engine trouble in LCT(A) Q troop Right Section turned back mid Channel

Spithead Gate with Group 301 at 1925 on 5th June and proceeded at 9 knots.

Weather conditions in the open sea with wind W.N.W. force 4 to 5 and sea force 32, were most severe for loaded landing craft.

Visibility remained satisfactory throughout the passage but conditions of wind and sea imposed great difficulties on accurate navigation, steering, and station keeping of craft at slow speeds, and made allowance for the cross tide unusually difficult.

CASUALTIES ON PASSAGE.

12. (a) At 2125, L.C.T. 413 of Group 313, loaded with priority ammunition, broke down near the Nab Tower. She was eventually towed back to the Solent and, so far as is known, did not cross the channel.
At 2140, L.C.T. 2428 of Group 312(b) broke down and anchored near the Nab Tower. She eventually sank while in tow, without casualties.
At 2220, M.T.B. 328 of Group 301 had engine failure and returned to Portsmouth in tow.

(b) Damage to H.M.S. WRESTLER.

At 0645, 6th June, H.M.S. WRESTLER (formerly escorting Group 313) was reported mined in position 49° 36' N., 00° 27½' W., with two U.S. Rescue cutters standing by.

.../She was proceeding

Figure 10 Admiralty Naval War Diary 6 June 1944. LCT(A) 2428 broke down...

H.M.S. "Wrestler.

No. 17/14/76.

10th June, 1944.

REPORT OF PROCEEDINGS - OPERATION "NEPTUNE".

Sir,

I have the honour to forward the following report of proceedings including damage sustained by mine at 0637, 6th June, 1944.

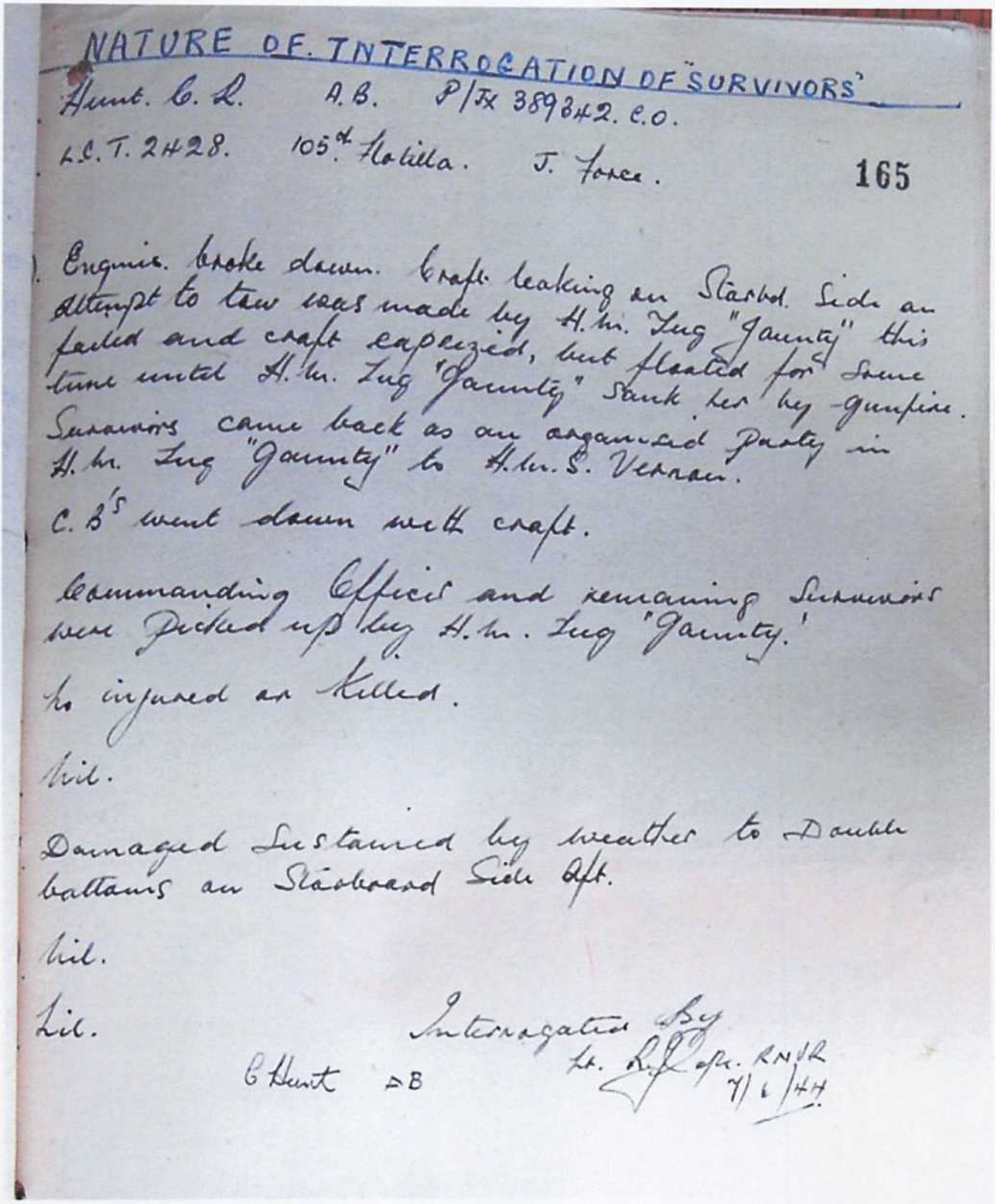
(2) 5th June.

1350. Weighed and proceeded.
1445. Joined group 313 (J.7) at South Gate.
1515. S.O. Group 313 stationed me 5 cables ahead.
1605. Passed "F" Buoy.
1724. L.C.T. 2428 to starboard of channel reported she was broken down and unable to make good defect.
1726. Course to close Nab Tower and report on L.C.T.
1800. Passed my signal 051754B.
1805. Course to rejoin Group 313.
1830. Rejoined group.
2156. Passed "BB" Buoy.
Ship at action stations and battened down over all, including magazines and shell rooms.
2214. Proceeded ahead to locate H.D.M.L. in position "CC".
2245. Rejoined group and guided it to "CC".
2320. Passed position "CC".

6th June.

2330. Reduced speed and signalled stragglers from unknown group to keep clear
0030. Stopped near entrance to Channel 7 (position "DD") to allow group 312 to get clear. Late arrival of 312 caused considerable confusion
0100. Group 313 proceeded to channel 7
S.O. Group 313 requested I round up stragglers - this we continued

Figure 11 After Action report from HMS Wrestler – LCT 2428 broken down.



NATURE OF INTERROGATION OF SURVIVORS

Hunt. C. L. A.B. P/JX 389842. C.O.

L.C.T. 2428. 105th Flotilla. J. Force. 165

Engine. broke down. Craft leaking on Starbd. Side an attempt to tow was made by H.M. Tug "Jaunty" this failed and craft capsized, but floated for some time until H.M. Tug "Jaunty" sank her by gunfire. Survivors came back as an organised Party in H.M. Tug "Jaunty" to H.M.S. Vernon.

C.B's went down with craft.

Commanding Officer and remaining Survivors were picked up by H.M. Tug "Jaunty."

No injured or Killed.

Nil.

Damaged Sustained by weather to Double bottoms on Starboard Side Aft.

Nil.

Nil.

Interrogator By
Lt. R. J. Lopez. RNVR
7/6/44

C Hunt AB

Figure 12 Survivor's report for AB Hunt of LCT(A) 2428 (hand written)

164 2

(a) HUNT, C.R. A.B. P/JX 389342/C.O.

(b) L.C.T. 2428. 105th. Flotilla. J. Force.

(c) -

(d) Engines broke down. Craft leaking on Starboard side
An attempt to tow was made by H.M. Tug "Jaunty",
this failed and craft capsized, but floated for some
time until H.M. Tug "Jaunty" sank her by gunfire.

(e) Survivors came back as an organised party in H.M.
Tug "Jaunty" to H.M.S. VERNON.

(f) C.B.'s went down with craft.

(g) Commanding Officer and remaining survivors were
picked up by H.M. Tug "Jaunty".

(h) No injured or killed.

(i) Nil

(j) Damaged sustained by weather to double bottoms on
starboard side aft.

(k) Nil

(l) Nil.

(Sgd.) C. Hunt, A.B.

Interrogated by Lt. R. J. Cope., R.N.V.R.
7. 6. 44.

Figure 13 Survivor's report for AB Hunt of LCT(A) 2428 (typed version)

TANKS AND BULLDOZERS PROJECT

PART 4 – REPORTING AND FEEDBACK

"WHAT THE PAPERS SAY"

Reporting our findings

Southsea SAC has always been keen to share the findings of the Tanks and Bulldozers project as widely as possible, both within the diving community and with the general public. It was recognised at an early stage that there was interest from a wide spectrum as it had as it had a connection with World War 2 and also a mystery to be solved.

To this end the Branch has issued regular press releases and made contact with various media organisations to let people know about what developments as they occurred.

Announcements and Publicity

The Tanks and Bulldozers project received early interest from the local diving community and newspapers as well as various other broadcasting services and media publications. This was also an opportunity to ask for any information from the public and as a result I had a number of letters and emails from people. Some were keen to tell me of relatives involved in Operation Overlord and others about pieces of equipment that had experience of. One or two divers also sent their congratulations after reading about the findings.

BSAC also issued a press release based on the Southsea Branch version but enhanced with a quote from BSAC Chief Executive, Mary Tetley who was very complementary in her support of the project.

Television

Following an appeal for diving stories by the BBC 2 Series 'Coast' I put forward the Tanks and Bulldozers project for consideration as a part of the next series. The BBC was very interested in the story and other WW2 shipwrecks in the area and initial thoughts were that they would cover the story as a part of a wider D Day programme. However this changed over time to a report more generally on the historic shipwrecks along the South Coast. The BBC film crew joined the dive team on the first day and Southsea SAC Diving Officer Martin Davies took hours of underwater video on behalf of

the BBC for use in the programme which is due to be broadcast later this year.

An ITV Meridian news team also joined the dive team on the second day and produced an excellent news article which was broadcast that same evening, again with underwater footage shot by Martin Davies. A number of people reported that they had seen it, and David Fletcher, a historian at the Tank Museum had numerous people comment about it during the following weeks.

Radio

Interviews were given to BBC Radio Solent, BBC Southern Counties, and Portsmouth's 'The Quay' radio stations. In addition I was also interviewed for British Forces Radio which is broadcast to British military forces all over the world.

Figures 1 & 2. BBC Radio Solent 'H2O' Programme.

Alison is being interviewed by record breaking yachtsman Sir Robin Knox-Johnson and Powerboat racer Shelley Jory. This was an opportunity to tell listeners about recreational scuba diving generally and for Shelly to try on some diving equipment live 'on air' – an interesting concept for radio! Images Martin Davies.

Newspapers

The Portsmouth 'News' was first to pick up on the story in March 2008 shortly after the initial plans had been put together. Since then 2 formal press releases were issued, one in the weeks before the survey and the other shortly afterwards. These were picked up by 4 National newspapers (Telegraph, Daily Mail, Sun and Daily Express) as well as local newspapers (Portsmouth News and Chichester Observer). Whilst the Telegraph was the most informative and closest to the Press Releases, the Daily Mail was best for photographic images. The Sun as expected, had the best (or worst!) 'headline'. Disappointingly the common theme seemed to be that Southsea Sub-Aqua Club had 'discovered' the tanks and bulldozers which was certainly not the case and was never claimed in the Press Releases. The Daily Mail 'sensationalised' the story in a way that pushed the limits of editorial licence and this led to a lot of misinformed debate/comment on various internet forums. The Branch was the first to identify the tanks, but they have been

known about for at least 20 years. We were not 'treasure hunting' nor did we 'stumble across' the tanks as reported by the Daily Mail.

Magazines

The wide appeal of the Tanks and Bulldozers project has meant that this diving project has received coverage in a number of non-diving publications. As might have been expected, both Dive and Diver magazine have reported the project and Dive are due to publish a full article in the coming months. However, as much interest has come from a variety of other publications not traditionally associated with diving projects. Boat news and Yachting Monthly are both to cover the story and also specialist magazines such as Britain at War and Classic Military Vehicle have both published articles on the project with the prospect of a full article in the future. I am also in contact with the 'Globe and Laurel' the magazine of the Royal Marines and am hopeful of publishing an article in their magazine in the future.

Copies of 2 Southsea Sub-Aqua Club press releases and various newspaper / magazine articles are at Annex A.

World Wide Web

The Branch web site www.southseasubaqua.org.uk was updated with regular reports on project progress and BSAC also covered the report on their news page.

There has been much debate on various forums, mostly as a result of the newspaper reports regarding the Tanks and Bulldozers project. Much speculation about lifting the tanks and whether lives were lost etc has resulted from ill-informed reports such as that in the Daily Mail. However some positive things have resulted in the widespread publicity that the project has enjoyed. A number of emails and letters have been received from members of the public offering advice and information about the tanks and the number of visits to our web site has increased.

Working With Others.

Whilst it is early days, a number of Museums have expressed an interest in mounting exhibits/displays in the coming year which will make available information and images/film footage of the work carried out by Southsea Sub-Aqua Club and the role of the Royal Marines Armoured Support Group as a part of the Allied forces in Operation Overlord. In particular the Tank Museum, the Royal Marines Museum and the D Day museum have all expressed an interest in having a display which covers the findings of the project – hopefully in time to mark the 65th anniversary of D Day.

Various reports have also appeared in organisation newsletters such as the Landing Craft Association 'Kedge' newsletter, the RM Historical Association, the City-Royal newsletter and also the on line magazine for the Royal British

Legion. I have also submitted a report for the Nautical Archaeological Society (NAS) Newsletter.

Future Publicity

There are still a number of opportunities to explore, including possible connections with Canadian and American media and various veteran organisations which have yet to be fully explored. There is also the possibility of working with the newly re-established Royal Marines Armoured Support Company who have recently returned from operations in Afghanistan. These opportunities will be explored in the coming months.

We are also working on a short film/dvd about the project which could be shown at any subsequent presentations or talks.

Summary

The Tanks and Bulldozers project has attracted a great deal of public interest and we have successfully promoted the Project (in terms of the survey and historical findings), the Branch activities, and British recreational diving across a wide audience. The level of interest remains high and there are possible future opportunities to continue to remind people of our WW2 history whilst promoting the best of UK diving will be explored as far as possible.

Alison Mayor
Southsea Sub-Aqua Club
September 2008

ANNEX A – Press Releases and Newspaper / Magazine articles,

TANKS & BULLDOZERS PROJECT

PART 4 - ANNEX A

PRESS RELEASES & NEWSPAPER/MAGAZINE ARTICLES

PRESS RELEASE (1)

ISSUED: 28 JUNE 2008 **FOR RELEASE: 20 JULY 2008**

DIVERS AIM TO SOLVE D DAY TANKS MYSTERY

A team of divers from Southsea Sub-Aqua Club will try to solve the mystery of how 2 tanks, 2 bulldozers and a field gun, believed to be linked to D Day, 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 known associated shipwreck nearby. The divers plan to spend 5 days surveying the site and will attempt to establish how the equipment came to rest on the sea bed.

Information gathered on an initial dive has revealed, to everyone's surprise, 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 80 Centaurs were to be used on D Day but only a small number actually made it across the English Channel and landed on the Normandy beaches. One Centaur tank now 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 bulldozer was used by the 79th Armoured Division of the British Army. Little is known about the modifications made and there are no known surviving bulldozers of this type.

So how did these war machines end up at the bottom of the sea? The local theory is that the vehicles were lost from a bridge section of one of the artificial (Mulberry) harbours, though it is now believed by the diving team that it is more likely that they were lost from the deck of a Landing Craft Tank (LCT). In rehearsals for D Day, known as 'Exercise Fabius III', a number of vessels carrying British and Canadian troops and equipment came under attack by German E boats in Bracklesham Bay which may have resulted in the loss of the tanks. Alternatively, the military vehicles may have been lost in rough seas on the crossing to Normandy for the D Day landings on 6th June 1944. The diving team hope to establish exactly what happened.

The project, which is being lead by Alison Mayor, has the approval of the Ministry of Defence and will start on 26 July. Teams of 12 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.

"It's a real puzzle how the tanks and bulldozers came to rest so far offshore when there is no shipwreck nearby. These war machines are of significant historical interest and we hope to find the clues that will help solve the mystery of how and when they sank below the waves."

The project has received a grant from the British Sub-Aqua Jubilee Trust and is supported by Silent Planet Ltd, Portland. The Tank Museum at Bovington, has provided assistance in the identification of the wrecks.

Any information or comments about D Day activities in the Bracklesham Bay area or to find out more about Southsea Sub-Aqua Club visit the club web site www.southseasubaqua.org,uk or email secretary@southseasubaqua.org.uk or please write to Southsea Sub-Aqua Club, Fort Widley, Portsdown Hill Road, Portsmouth PO6 3LS.

ENDS

NOTES TO EDITORS

CONTACT:

Alison Mayor, mob 07740873255, email alisonmayor2003@yahoo.com

Southsea Sub-Aqua Club was established in 1954 and is a branch of the British Sub-Aqua Club. The Club has a long history of significant achievements in this time, most notably being the discovery of the Mary Rose, Henry VIII's Flagship. Other achievements include the creation of "Octopush", a form of underwater hockey designed to keep divers fit in the winter months and now an international sport. The club is one of the most active recreational diving clubs along the south coast and has members of all ages, experience and from all of life. It prides itself on the variety of diving activities from overseas holidays to local shore diving, from marine life conservation and underwater photography to diver training and technical diving.

The Club meets twice a week at its own club house in Fort Widley.- Monday and Thursday evenings from 8:30pm to 11pm.

Southsea Sub Aqua Club,
Fort Widley,
Portsdown Hill Road,
Purbrook,
Portsmouth
Hampshire
PO6 3LS

www.southseasubaqua.org.uk

Photographs (underwater and surface) will be available

Club Diving Officer and Underwater Photographer Martin Davies LRPS, and member of the British Society of Underwater Photographers, will be taking underwater images for the survey and also in support of press/media reports. Contact martin@amberleyphotographic.co.uk tel 07957267391

The British Sub-Aqua Jubilee Trust

The Jubilee Trust is the official charity of the British Sub-Aqua Club. It was set up in 1977, the Queen's Silver Jubilee Year, with the main objective of providing financial support to divers for a wide variety of projects. These projects would fall beyond the scope and financial resources of normal Branch and local club activities.

http://www.bsac.org/page/76/bsa-jubilee-trust.htm

Silent Planet Ltd, UK distributor of Halcyon dive equipment, euro cylinders, and Turtle fins

www.silentplanet.info/ Tel & Fax : +44 (0) 1305 826666

The Tank Museum, Bovington, Dorset, BH20 6JG

Tel: +44 (0) 1929 405096 Contact David Fletcher, Historian.

SOUTHSEA SUB-AQUA CLUB

PRESS RELEASE (2)

ISSUED: 3 AUGUST 2008 **FOR RELEASE: IMMEDIATE**

DIVERS SOLVE D DAY TANKS MYSTERY

A team of divers from Southsea Sub-Aqua Club have spent 5 days surveying a local dive site to try to solve the mystery of how 2 tanks, 2 bulldozers and a field 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 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.

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 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 English Channel and until now only 2 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 79th 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, 2 ammunition sleds, 2 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 lead to the mystery finally being solved.

The historic War Diaries for 2nd RM 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 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.

The diving project, which is lead by Alison Mayor, has the approval of the Ministry of Defence and will submit its full report later this summer. Teams 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 conduct a survey of the marine life which has made its home on the wrecks.

"The Project has been hugely successful thanks to the hard work of Southsea Sub-Aqua Club divers and its supporters. The mystery of how these awesome WW2 fighting machines has long puzzled Club members and now it seems we have finally found the answers. 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".

The project received a grant from the British Sub-Aqua Jubilee Trust and is supported by Silent Planet Ltd, Portland. The Tank Museum at Bovington, 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 or email secretary@southseasubaqua.org.uk or please write to Southsea Sub-Aqua Club, Fort Widley, Portsdown Hill Road, Portsmouth PO6 3LS.

ENDS

NOTES TO EDITORS

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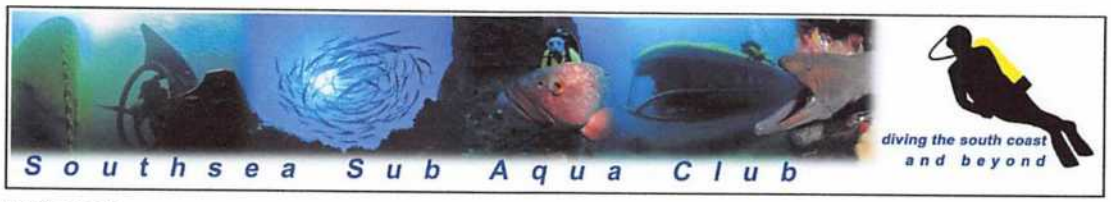
Southsea Sub Aqua Club,
Fort Widley,
Portsdown Hill Road,



Purbrook,
Portsmouth
Hampshire
PO6 3LS

www.southseasubaqua.org.uk

Photographs & HD Video (underwater & surface) are available to support any report

Underwater Photographer Martin Davies LRPS, a member of the British Society of Underwater Photographers, has taken underwater images and video for the survey and also in support of press/media reports.

Contact martin@amberleyphotographic.co.uk tel 07957 267391

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Tel: +44 (0) 1929 405096 Contact David Fletcher, Historian.

Daily Express and Daily Telegraph 5th Aug 08

22 Daily Express Wednesday August 6 2008

Divers find two D-Day tanks

SECOND World War battle tanks destined for the D-Day landings have been discovered at the bottom of the Channel. Scuba divers found the two armoured vehicles complete with heavy guns eight miles off the West Sussex coast.

After 80 dives in 60ft of water, they've identified them as rare British Centaur CS IV tanks. Records reveal they fell overboard when a landing craft capsized off Bracklesham Bay while heading for Normandy's beaches on June 6, 1944.

WEDNESDAY, AUGUST 6, 2008 | THE DAILY TELEGRAPH

D-Day tanks found on Channel seabed

By John Bingham

A PAIR of Second World War tanks – a long lost part of the D-Day landing fleet – have been found at the bottom of the English Channel.

Scuba divers located the rusting hulks, complete with heavy guns, 60ft down on the seabed eight miles off the West Sussex coast.

Now a seven-month investigation, involving painstaking archive research and more than 80 further dives, has identified them as two Centaur CS IV tanks that sank when a landing craft capsized in bad weather on its way to Normandy on June 6, 1944.

All the Royal Marines and crew aboard were rescued but the tanks, along with two armoured bulldozers and a field gun plunged to the bottom.

Intrigued after seeing the wrecks off Bracklesham Bay, a team of 12 divers from Southsea Sub-Aqua Club began taking photographs and videos.

With the guidance of The Tank Museum in Bovington, Dorset, they then did further dives in search of specific signs to identify the exact model.

Alison Mayor, 46, a diving club member from Havant, Hants, said: "You might expect to find sunken ships or even aircraft but these tanks were just so out of context out there on the seabed. It was very eerie diving down.

"I was really shocked to see what fantastic condition they are still in despite spending all those years under water.

"One of the tanks still has its Howitzer gun, machine guns and ammunition all in perfect order. It's just a pity that the tanks are upside down." The fighting vehicles, which had been specially

Divers discovered the tanks

adapted by the Royal Marines Armoured Support Group for Operation Overlord, had been intended to provide covering fire for Royal Marines and Canadian troops as they charged ashore at Juno Beach.

Only 80 were ever made and there were thought to be just two surviving in the world, both placed as war memorials in Normandy – including one at Pegasus Bridge, which featured in the film *The Longest Day*.

Daily Mail 5th August 08
(taken from the Daily Mail-on line Web site)

Revealed: The astonishing D-Day tanks found at the bottom of the English Channel By Debra Killalea

Scuba divers searching for hidden treasures at the bottom of the English Channel got more than they bargained for when they stumbled across two massive army tanks on the ocean floor. The divers, who were eight miles of the West Sussex Coast, were left baffled as to how the Second World War tanks came to be at the bottom of the Channel. But the mystery was soon solved after a lengthy investigation involving more than 80 dives at the site which is 65ft under water.

Drivers stumbled across two tanks, destined for battle during the D-Day landings, at the bottom of the English Channel

The mystery of the tanks puzzled scuba divers off the West Sussex coast.

Divers found the massive vehicles were relatively well preserved with guns still intact even after more than 64 years under sea. And by painstakingly checking minute details on the sunken vehicles against historical records, investigators managed to identify them as rare British Centaur CS IV tanks. The historic weapons were destined for battle during the D-Day landings but never arrived. Historians discovered the tanks fell overboard when a landing craft capsized on its way to the Normandy beaches on June 6, 1944.

A diver takes a closer look at the preserved weapon which was destined for the beaches of Normandy

A photo from the Second World War shows the same model of tank as those discovered on the bottom of the ocean floor. Image supplied courtesy of the Tank Museum, Bovington

Share this article:

Comments (1)

Great find. Hope they can be recovered and displayed in a museum.

- jim, rochester uk, 05

The Sun 5th Aug 08

22 Sun Wednesday, August 6, 2008

STAR'S NANNY GUILTY
Shook tot, 2

By TOM WELLS

A NANNY who cared for a star's child was yesterday found guilty of giving another tot brain damage.

Jasmin Schmidt, 32, violently shook the boy, aged two, breaking his arm at the same time.

The German-born nanny, who has worked for a pop star who cannot be named, lost her temper with the tot during a "restless night".

She was caring for him while his parents, from Harrogate, North Yorks, were at a London Fashion Week bash.

His mum and dad, who cannot be identified, found him "limp and lifeless" in his cot the next morning.

London's Old Bailey heard he had bleeding on the brain, but hospital medics prevented permanent injury.

Earlier this year Schmidt, of Hampstead, North West London, was cleared of injuring a baby girl in 2006 and a baby boy in 2003.

Yesterday she was convicted of two counts of grievous bodily harm and warned she faces jail when sentenced on September 8.

t.wells@the-sun.co.uk

Temper .. Schmidt yesterday

CHURCHILL'S SINK TANK

THIS tank was found at the bottom of the sea — more than 60 years after it sank on the way to D-Day.

Baffled divers spent seven months identifying two British Centaur CS IVs, which were lost when a boat capsized in 1944.

All the crew were rescued eight miles off Bracklesham Bay, West Sussex. Centaurs, *left*, were adapted to fire from boats bearing down on Normandy.

PM Winston Churchill had seen them embark two days earlier. Only two of 80 were thought to survive.

The News Aug 08

Sea bed mystery of tanks that didn't make it to D-Day

A Second World War Centaur IV tank found on the sea bed of the Solent

by Matt Jackson
Defence correspondent

TWO Second World War tanks have found on the seabed – a pair of only four left in the world.

More than 20 frogmen from Southsea Sub-Aqua Club spent five days examining the tanks, two bulldozers and a field gun on the sea bed eight miles off Bracklesham Bay, West Sussex.

They now know they are Centaur CS IV tanks, which were assigned to the Royal Marines Armoured Support Group, part of an 80-strong contingent bound for France on D-Day.

There are two others in France, but no others are known to exist.

Alison Moyer, who led the dives, said: 'The photos we took of the tanks allowed experts at the Tank Museum in Dorset to confirm them as Centaur CS IV – the type used exclusively by the Royal Marines for Operation Overlord.'

The tanks sit 20m below the surface off West Wittering but divers could not find a ship wreck.

But photos matched with entries from the Royal Marines War Diaries seem to confirm the vessels were lost from a landing craft.

Diver Magazine (October 08 issue)

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 kedge 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.

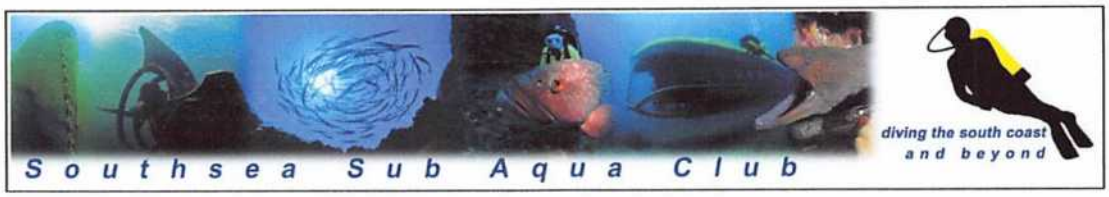
This summer's project received a grant from the British Sub-Aqua Jubilee Trust, and was supported additionally by Silent Planet Ltd, of Portland.

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


Pictured: Caterpillar bulldozer...

... and Centaur tank.

ALISTAIR DAVIES



TANKS & BULLDOZERS PROJECT

FINANCIAL REPORT

Estimated Costs

As a part of the documentation supplied to the BSA Jubilee Trust in support of a grant application for the Tanks and Bulldozers project a budgetary estimate of the cost of the project was produced. The initial estimated budget was for a total cost of £1,414.98. As a result of the application a grant of £1,415 to cover the estimated cost of the project was awarded in May 2008. A copy of the original estimate is attached at Annex A.

Actual Costs

The final account for the project is at Annex B. There were several costs in the estimated budget which increased for reasons beyond our control, or had not been anticipated at the time of the grant application. These costs were associated primarily in respect of the charter boat fee as a result of an extraordinary increase in the price of fuel.

We had included a contingency for fuel raises of up to 10% the cost of fuel rose significantly in the 4 months between submitting the application and the survey exercise – from 50 pence per litre to over 90 pence per litre. The dive skippers/Silent Planet Ltd had agreed to assist with the survey at cost only and this meant that the additional fuel costs and harbour dues and loading fees were added to the cost of the charter bringing the total cost from £796.10 to £1,222.90.

In July 08 a request was made to the Jubilee Trust to ask that, given the unforeseeable and exceptional increase in the cost of fuel, the Trustees would consider increasing the grant to cover the additional costs of the charter over and above that provided for by means of a contingency. The Trust was very understanding and in early August agreed to an extra £371.90 making the total grant £1,786.90.

At the time of the survey we did not know whether the 2nd application would be successful and so all divers were asked to make a contribution to the estimated cost the charter cost. This was also to be used towards a gratuity for the skippers Dave and Liisa Wallace of Silent Planet Ltd who had given their time free to the survey, and also to cover costs for commemorative T shirts for all the whole team.

Other changes from the estimated cost were in respect of costs for printing a number of copies of the report for the Trust, BSAC, the MOD and NAS plus our own copy for Club records. We also have used a cheaper form of

publishing the report in the form of dvds which also allowed the short film we had made to accompany the report to be distributed to interested parties. There were also costs associated with video equipment and also the use of a charter rib for the initial dive in June. This proved a cost effective way of allowing 8 divers to visit the site at one time rather that using our own RIB which only takes 4 divers and being a 2 stroke engine uses a lot of fuel (again at increased cost).

Other Indirect costs not included

In addition indirect costs not reflected in these accounts but met by individual divers include;

- Travel to and entry into the Tank Museum at Bovington
- Entry into the D Day Museum Portsmouth
- Cost of obtaining copies of historical documents from the National Archives
- Cost of BSAC training materials for the Wreck Appreciation Course.

Summary

The Tanks and Bulldozers project was would have cost significantly more if Silent Planet Ltd had not offered to provide 'Top Gun' at cost only. Also, the cost of fuel for bringing the boat from Portland to Portsmouth and return was not charged to the project. The average cost of a hard boat dive charter is in the region of £450+ per day this would have had an enormous effect on the project cost.

We are grateful for the support of the BSA Jubilee Trust and Silent Planet Ltd for their generous financial support of the project.

Alison Mayor
Southsea Sub-Aqua Club
October 2008

ANNEX A – ESTIMATED/BUDGET COST

BOAT CHARTER 'TOP GUN'	Cost per Trip £	No. of Trips	Cost £
Fuel per trip Portsmouth to T&B site *see note 1	40.00	11	440.00
Engine Hours @ £5/hr x 1.5 hours per trip	7.50	11	82.50
	Cost per Night £	**No. of Nights**	
Mooring per night @ £28.50 + 20% sleeping on board *see note 2	34.20	8	273.60
	Total Charter Cost		**796.10**

SSAC RIB 'Alan Blake' Exploratory trips * see note 3	**Cost per Trip**	**No. of Trips**	**Cost £**
Fuel per trip at average 2nm per gallon (20 mile round trip).	50.00	2	**100.00**
10% Fuel Contingency * see note 1			**65.00**

SURVEY EQUIPMENT * see note 4

Description	**£ each**	**Qty**	**Total Cost £**
PVC A4 Boards	10.00	6	60.00
30m tape measures	19.00	6	119.94
Small spirit level	2.50	2	5.00
Plastic line level	4.00	2	8.00
Retractable pencils	0.30	10	3.00
1m Folding Rules	3.99	6	23.94
Perma-trace (drafting film)	0.50	30	15.00
	Sub total		**234.88**
Miscellaneous			
Rope – polypropylene 10mm x 27m lengths (Screwfix).	4.69	15	70.35
Misc Sundries and fixings (Clips, pegs, markers).			50.00
UKHO chart SC5901.	45.00	1	45.00
UKHO chart SCF5600	45.00	1	45.00
UKHO Tidal Atlas NP337	8.65	1	8.65
	Sub-total		**219.00**
	Total Equipment Cost		**453.88**

TOTAL ESTIMATED PROJECT COST **£1,414.98**

NOTES

1. Based on fuel cost at 50p per litre at Gosport Marina. For every 1p over 50p the cost per trip increases by £1.00. e.g. 10% increase in fuel or 5p per litre will increase cost of 11 trips by £55.00. Any additional costs above this to be shared amongst divers.
2. Nights of 24 to 31 July inclusive.
3. Club RIB trips to establish marks and conduct initial reconnaissance of site. Launch at Bracklesham. Cost per gallon includes 2-stroke oil. Based on Bracklesham launch site.
4. Survey Equipment Prices based on NAS member's price list – see NAS web site. http://www.nasportsmouth.org.uk/shop/pdfs/MERCHANDISE_JUNE07_FINAL.pdf

ANNEX B – ACTUAL COSTS

		£
Jubilee Grant		1,415.00
Jubilee Grant		371.80
SSAC Divers Net Contribution		477.73
Total Income		**2,264.53**
Charts	- 95.65	
RIB Trip 5/6/08	- 192.00	
Video Lens Hire	- 50.00	
Stationery	- 27.76	
Stationery	- 9.98	
Dive Pencils	- 19.00	
Video Tapes	- 60.81	
Photo Paper	- 13.68	
Colour Inks	- 61.46	
Binders & dividers	- 16.98	
DVDs	- 9.61	
Tape Measures	- 67.61	
Top Gun charter	-1,222.90	
Top Gun Gratuity	- 200.00	
T shirts	- 141.09	
NAS slates & perma-trace	- 76.00	
Total Expenses		**- 2,264.53**

Notes

1) The SSAC divers contribution covers the Top Gun gratuity and T shirts (total £341.09) plus additional expenses associated with video equipment and printing.
2) The SSAC diver contribution was based on the number of dives each diver made and works out to be £5.90 per dive during the main survey.
3) Receipts can be supplied for all expenses.
4) RIB trip 5 Jun 08 - 8 divers x £24 each