DIVING EXPEDITION TO SHETLAND ISLES AUGUST, 2012

INTRODUCTION

The main focus of the expedition is to locate, dive and survey the wrecks of seaplanes. In addition there will be a mixture of wreck and wall diving

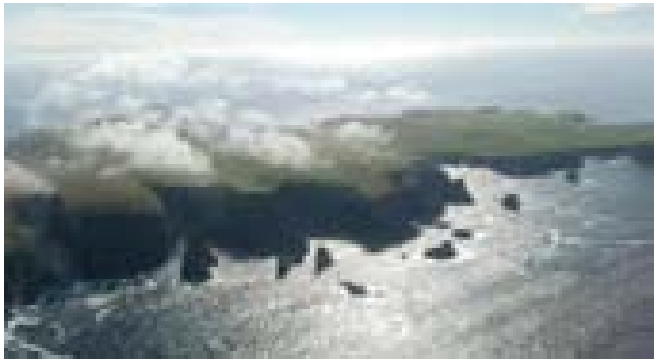
The diving will be off the liveaboard "Valkyrie".

The advantage of an island area as choice of location is that it allows for some flexibility in the selection of dive sites on certain days depending on the direction of the wind and if less than ideal weather is experienced during the expedition. However, the initial choice of dive sites assumes that the weather is favourable. Contingency arrangements and back up sites have been included.

This region of Shetland Isles is both beautiful and rugged in nature empasising the isolation of this part on the UK. Lerwick will be the base port for the Valkyrie in the Shetlands. In years gone by when seafarers did not have the advantages of electronic aids to navigation the waters around the Shetlands were considered dangerous and many ships met their doom. As divers we are able to inspect the remains of these wrecked vessels with the engineering and historical interest they provide. They also form artificial reefs that attract marine life of some diversity. Shetland lies in the track of the Atlantic depressions and is bathed by the relatively warm waters of the Slope Current, flowing north along the edge of the Continental Shelf, so the climate is classed as temperate maritime

The weather in this region can vary from warm days with little wind and calm seas to strong winds up to gale force, driving rain and mountainous seas. The change from one extreme to the other can take only at matter or hours. For this reason it is important to monitor the changing conditions and check weather forecasts frequently. Surface temperatures in late summer are likely to be from 4 degrees (all temperatures in degrees Celsius) at night to a maximum of 15 degrees during the day.

Water temperatures at this time of year will be in the region of 13 degrees on the surface and down to 8 at depth. The in water visibility will vary with the site and recent rainfall but is likely to be 10 metres within the islands and up to 20 metres out in the oceanic regions. Shetland lies 600 miles (960km) north of London.



More than a hundred islands, just 15 of them inhabited, span the hundred miles (145km) between Fair Isle and Out Stack, the northernmost point of Britain. This bustling archipelago of 22,500 people boasts abundant wildlife, a spectacular coastline and dozens of major archaeological sites. The 567 sq. mile (1468km²) county of Shetland is an entrancing mixture of Scotland and Norway.

There are about 1,697 miles (2,702km) of coastline and over 500 square miles (1,294km²) of open countryside. Surrounded by fishing grounds and oil & gas fields, Shetlanders have enjoyed almost Scandinavian-style prosperity for the past quarter-century as well as a largely unspoiled environment.

The position of Shetland in the high latitudes means that in August daylight length is dramatic with only a few hours of darkness. From May until July true darkness is replaced by the “simmer dim”. Some of the most spectacular views in the islands are below the waves - submerged cliffs, stacks and caves of long-drowned shorelines.

In addition to the profusion of wrecks, the submarine scenery and wildlife are major attractions for sport divers and underwater photographers. More and more divers are discovering that, quite apart from the fascinating wreck sites, Shetland's profusion of underwater wildlife is truly astonishing, one of the richest marine environments around the British Isles. Gordon Ridley, in Dive Scotland Volume III, estimates that Shetland's 1,450 km coastline has 405 geos (coves), 351 caves, 246 bays and firths, 205 skerries, 190 stacks, 158 natural arches and at least seven subterranean passages. Plenty to keep the keenest scuba enthusiast busy for a lifetime! Wrecks abound from the Swedish East Indiaman and WWI steamship Gwladmena - both in Lerwick Harbour - to modern trawlers and the 1993 wreck of the huge tanker Braer; from sea cliffs and gullies teeming with colours and life to offshore pinnacles and reefs. The shape of Shetland means that you can dive on almost any day of the year – there is always somewhere sheltered, with deep water close inshore. The long hours of summer daylight are an added bonus, allowing you to pack more diving time into a week's stay than would be possible further south

WEATHER

Weather information can be found at the following:
BBC radio 4 Shipping and/or inshore waters forecast on 198 LW at 0048, 0535, 1201 and 1754hrs
Marinecall website: http://www.metoffice.com/leisuremarine/marinecall.html
VHF Ch 16 will announce severe weather warnings and broadcast detailed costal and regional offshore forecasts at specific though changeable times daily. Lerwick coast guard will be kept informed of the progress of diving operations throughout the trip.

TIDAL INFORMATION

All tidal information refers to Lerwick as the standard port. The times and heights of high and low water are tabulated below. Times are British Summer Time

Sunday 19 August	Monday 20 August	Tuesday 21 August	Wednesday 22 August	Thursday 23 August	Friday 24 August	Saturday 25 August	Sunday 26 August
H 00:27 2.3	H 01:05 2.3	H 01:46 2.3	H 02:29 2.2	H 03:16 2.1	H 04:09 2.0	H 05:13 1.9	L 00:15 0.9
L 06:37 0.3	L 07:16 0.3	L 07:56 0.4	L 08:38 0.5	L 09:24 0.6	L 10:16 0.8	L 11:21 0.9	H 06:30 1.8
H 12:54 2.1	H 13:33 2.2	H 14:13 2.1	H 14:56 2.1	H 15:43 2.0	H 16:36 1.9	H 17:39 1.9	L 12:57 1.0
L 18:46 0.5	L 19:25 0.5	L 20:06 0.6	L 20 50 0.7	L 21:40 0.8	L 22:41 0.9		H 18:55 1.8

EMERGENCY PROCEDURES AND CONTACTS

For emergency and urgent situations at sea contact the coastguard (Lerwick CG) on channel 16 using MAYDAY or PANPAN procedures after activating DSC red button on VHF set or on land by dialling 999 and asking for the coastguard.
If advice on DCI problems is required on land while still in Scotland contact Hyperbaric Medicine Unit at Aberdeen Royal Infirmary on 0845 408 6008
The nearest chamber is at Stromness which can be contacted through Aberdeen as above
A list of emergency next of kin and contact numbers for the dive team will be available from the expedition leader.
Risk assessments for the diving and the boat operations prepared by the expedition leader and skipper will be available to the DM.

EXPEDITION MEMBERS

NAME	BS-AC QUALIFICATION	OPEN OR CLOSED CIRCUIT	CONTACT NUMBER	NEXT OF KIN DETAILS	BSAC CLUB
MIKE HOLROYD	FCD	OPEN	TBA	TBA	DARWEN SAC
ED HOWARTH	FCD	OPEN			RIBBLE VALLEY SAC
WENDY COOKE	AD	OPEN			DARWEN SAC
DAVID HIGSON	AD	OPEN			RIBBLE VALLEY SAC
BRUCE MILLS	DL	OPEN			RIBBLE VALLEY SAC
FIONA IMLACH	AD	OPEN			RIBBLE VALLEY SAC
SANDY THOMPSON	DL	CLOSED			MAVERICK DIVERS SAC
ANDREW LUND	DL	CLOSED			BRADFORD SAC
NEIL WALKER	AD	OPEN			RIBBLE VALLEY SAC
NICOLE OPITZ	DL	OPEN			RIBBLE VALLEY SAC
JOHN WILKINSON	DL	OPEN			RIBBLE VALLEY SAC
ANDY CRONSHAW	AD	OPEN			RIBBLE VALLEY SAC

A more detailed list showing individuals' skills and qualifications is included in the appendix. However, it should be noted that, not only are there 2 First Class and 5 Advanced Divers on the expedition, eleven members have instructor qualifications, and four of those are Instructor Trainers.

ROLES AND REPONSIBILITIES

The Expedition Leader will have overall responsibility for the expedition and will liaise with the boat crew in all non diving matters.

The Dive Manager will be responsible each day for diving operations, record keeping, safety, crew liaison in dive matters –and, together with the expedition leader, weather forecasts and buddy pairings. They will be able to delegate some of these functions to deputies.

The Assistant DM will take over the above when the DM is diving. They will have the added task of writing a full report on the day's activities.

The Boat Manager will assist the skipper with mooring and anchoring. They will also be responsible for deployment of the shot with the assistance of the navigator. They will organise the trapeze and will ensure that the extra decompression cylinders are available for each dive. With assistance and under the direction of the crew they will organise the deployment and recovery of the inflatable tender.

The Navigator will determine the correct position for deployment of the shot. They will also be the organiser for the marine survey when the dive includes this part of the expedition.

The Equipment Manager will bring the trapeze and extra equipment required for the drop bottles for lowering to divers and for attachment to the trapeze or shot line. In addition they will bring the extra gear for the marine survey exercise, together with extra emergency oxygen equipment and first aid box.

The Rescue Manager will be responsible for ensuring the emergency oxygen and first aid kit is readied prior to each dive.

The Gas Manager will be responsible for assisting the crew with the filling of cylinders and providing the desired nitrox and tri-mix fills as indicated by the diving team. He will also record the cost implication of mixes other than air. It is the responsibility of each individual diver to analyse their gas mix before embarking on their dive.

The roles will rotate on a daily basis so that all members of the team are involved - see table below.

ROLE	DAY 1 AM	DAY 1 PM	DAY 2 AM	DAY 2 PM	DAY 3 AM	DAY 3 PM	DAY 4 AM	DAY 4 PM
DM	A	G	B	H	C	I	D	J
ASSISTANT DM	B	H	C	I	D	J	E	K
BOAT MANAGER	C	I	D	J	E	K	F	L
NAVIGATOR SURVEY ORGANISER	B	C	D	E	K	F	L	G
GAS MANAGER	E	K	F	L	G	A	H	B
RESCUE MANAGER	F	L	G	A	H	B	I	C

THEN SEQUENCE REPEATS

Each team member will be given an i/d letter and their role at any particular time can be ascertained from the matrix.
All members of the team including the leader will be actively involved in making sure that help is offered to each other as and when required. The expedition members will be reminded that they should be good team members being able to lead others and also to be led by members of the group such as the DM.

EXPENDITURE

Diving costs		
Hire of MV Valkyrie	Includes breathing Air – 21%	£5,575

Travel		
Lancashire to Aberdeen for 2 cars plus 1 van and return	650 miles at average 30p per mile = £195 per vehicle (takes into account current estimates of fuel price increases)	£585
Moray Firth to Aberdeen and return	400 miles at 30 p per mile	£120
Car Park for 4 vehicles at Dyce Airport	Parking at the port costs double this amount	£200
Taxi fare for drivers Dyce Airport to Dock and return	Dive gear to be deposited at the port before leaving to park	£40
Ferry, Aberdeen to Lerwick and return		£1,488

Training costs		
Oxygen administration, AED	Costs include hire of suitable teaching dummies, oxygen and room hire	£100
Wreck appreciation	Cost of room hire, entry to Capernwray for practical session	£100
Sea Search	A shortened course suitable for participants on trip	£100

Equipment costs		
Resource material	Includes books, Bellfield chart and tide plotter	£150
Computer consumables	Used in production of plan and report	£30

Individual costs		
Personal nitrox / trimix to be settled at end of week	All divers will be encouraged to use appropriate mixes for the dives.	
Sofnalime		
Meals on route	Personal choice	
BSAC wreck appreciation course certification	For those who wish to complete full course and gain a qualification	£30

TIMELINE

Saturday 18 August		
PM	Leave Aberdeen on ferry.	

Sunday 19 August		
AM	Arrive Lerwick. Load boat.	
PM	Warm up dive, Lunokhods wreck. Back to Lerwick for night.	Alternative: Giants Leg reef or, in case of southerly winds, dive to north of Bressay. Holm of Beosetter etc,

Monday 20 August		
AM	Holm of Gunnister Planes. Surface search then dive on best 3 sites.	Alternative: Holm of Beosetter, Brethren, Greenholm, Outer Score or Soldian Rock (latter planned for later in week). Alternative in case of northerly or north easterlies: Fraoch Ban wreck (planned for later in week) to S of Noss. Or sites on sheltered coast of Bressay.
PM	Holm of Gunnister Planes. To survey best of site Back to Lerwick for night.	As above.

Tuesday 21 August		
AM	Sneckan Wall. LW is at 8.00 ish. In this location, tides may not be too much of a problem, but we could start early, (only 49 mins sailing time)	Alternatively, nearby Hoo Stack may be more sheltered from later tides. Alternative site in case of easterlies: Carry up to Whalsay and do drift dive to west of island.
PM	Continue to Outer Skerry Wall in Yell Sound for Dive 2. Slack at 14.00 ish. Continue to Sullem Voe for night.	Alternative sites in case of northerlies or southerlies: Dive in shelter of various nearby islands, (poss Muckle Holm) but some of these are tide sensitive.

Wednesday 22 August		
AM	Seaplanes off Sella Ness Surface search then dive on best 3 sites. Only 0.25 nm from berth at. Sella Ness.	In event of nothing found, dive wall on one of the islands in Yell Sound. It would be nice to dive on the wreck off North Holm of Burravoe which is scheduled for tomorrow, but the added depth may prevent. Slack at 15.00
PM	Seaplanes off Sella Ness To survey best of site. Back to Sella Ness for night.	As above.

Thursday 23 August		
AM	Wreck off North Holm of Burravoe. Slack at 09.00 to 10.00.	Alternative sites in case of northerly or southerlies: Muckle Holm or islands in the south of Yell Sound.
PM	Depart to Soldian Rock. Slack approx 15.30. Continue to Lerwick for night.	Alternative site in case of northerlies: Muckle Fladdicap. Alternative site in case of northerlies easterlies: Out Skerries

Friday 24 August		
AM	Glen Isla wreck	Alternative sites in case of southerlies: Sites to north of Bressay as last Sunday.
PM	Fraoch Ban wreck Back to Lerwick to board ferry for Aberdeen.	As above.

Saturday 24 August		
AM	Depart Aberdeen for home.	

DIVE SITES

LUNOKHODS
60º 07.11'N 001º 07.15'W

The Lunokhods was driven ashore below Bressay Lighthouse during a storm on 9 November 1993 - all the crew, including the ship's cat, were saved. The Lunokhods is a popular dive as it is only a few minutes from Lerwick Marina, sheltered from easterly winds and offering variable depth. A dive on the stern section between 8 and 20m allows you to see lots of wreckage and creatures, but it is more interesting to go down a shot-line to the bow section, which broke off and slid down a slope where it still sits at about 40m.

You are able to fin around the bow, admiring the rusty metal and dead-men's fingers, then go up the slope to the stern. There's no need for boring decompression on this dive - you can work it off exploring the engine room, refrigeration coils and other machinery and wreckage in the shallows. There are always shoals of tiny fish and it is quite usual to see a few ling and perhaps scorpionfish. Plumose and dahlia anemones and Devonshire cup corals decorate the metal together with tiny sea hares.

It is amazing how this relatively new wreck has been colonised so quickly. This is a site where you might well be accompanied by seals, which surface when you do and watch you fin back to the boat. Porpoises are also present on occasions.
This will be the first dive of the expedition and depths for those in the group that are not "dived up" will be limited on the recommendation of the DM

GIANT'S LEGS
60º 06.17'N 001º 04.38'W

This is a spectacular scenic dive off bard Head at the southern tip of Bressay
It derives its name from the apparent similarity to a pair of giant legs coming out from the rock which in the fullness of time will form into stacks.
It is possible to circum-navigate them on a single dive to approx. 20m. DSMB's will be required to allow the DM and skipper to monitor surfacing divers.
Descriptons of the site urge the use of cameras to record the profusion of encrusting life. This would be a useful site for the members to practice their Sea-search abilities before the surveys of the seaplanes.

HOLM OF GUNNISTA
60º 11.12'N 001º 16.04'W

This is the search area for the first of the seaplanes. As per the survey descriptions we intend to make an initial surface search then choose the best 3 sites to send teams of divers down followed by a detailed survey of the best site by the whole team. The likely depths are in the region of 20m so we should have reasonable bottom times allowing both a archeological survey of the wreckage and a Sea-search examination of the marine life. Where applicable a shot line will be dropped to give a datum for the surveys.

THE SNECKANS
60º 15.35'N 001º 03.80'W

No record of this site being dived has been found. It shows as a pinnacle that dries at low water but mostly is covered to a depth of 2m.The seabed drops away to 40m resulting in a steep slope or wall. From its position on the chart there should be good viz although the skipper may require us to dive from the inflatable depending on the weather conditions. Deployment of DSMB's will be required before surfacing. It is hoped that there will be abundant marine life to survey.

OUTER SKERRY
60º 33.04'N 001º 18.26'W

This site was chosen as its position allows diving to be carried out while on passage to Stella Ness – the second seaplane site. The site is marked by a small light at 8m.asl and shows as a steep wall from the islet to 36m. There is a shipping lane nearby but the site is very close to shallow water which will ensure vessels are kept at a safe distance.
Viz. should be good if not as great as the more isolated site visited earlier in the day. However this should be a sheltered site from the west. We expect marine life to be abundant and will carry out surveys to record what we find.

STELLA NESS
60º 26.99'N 001º 16.72'W

This is the second of our seaplane sites and similar methods will be employed as at Holm of Gunnista. The proximity of the Sullen Voe shipping area means that the viz may not be as good and care will be needed to avoid surface vessels. The use of the inflatable as a diver tender and marker will be considered after a initial inspection of the site

NORTH HOLM OF BURRAVOE WRECK
60º 35.30'N 001º 17.59'W

This is the charted position of an unidentified wreck in 40m.
Transit lines from Burge Taing to the tip of South Holm of Burravoe and North Holm of Burravoe lines with the Natural Arch on the main island.
The site is 0.36nm west of the island and needs to be carefully managed owing to the proximity of large surface vessel traffic. This will be an opportunity for the team to locate a larger vessel but at greater depth than the seaplanes consequently a relay of divers will be used to ascertain how accurate shotting of the site has been achieved. A simple survey of the site will be performed and the use of the rebreather divers to give greater bottom times at this depth will be an advantage.

SOLDION ROCK
60º 12.66'N 001º 05.03'W

This another undived isolated scenic site situated as a stop off dive on our return leg to Lerwick. It is marked and guarded by a south cardinal buoy and dries to half a metre at low water.
There should be a severe slope or wall dropping to 35m which hopefully will be covered in life and its relative isolation should provide good viz. We will be able to survey the marine life and get some photo opportunities. Its exposed position requires good weather conditions to make the site a realistic option.

GLEN ISLA
60º 07.53'N 001º 08.04'W

The steamship Glen Isla is, at 1263 tons and 250 feet, a large vessel which was sunk in 1917. She was lying at anchor in the middle of Bressay Sound when the Glenelg, which was under tow at the time, collided with her.
Although the Glen Isla lies more than 40m down she sits upright so divers do not need to reach the seabed to get a
Three boilers and a large engine provided her power, and these now lie redundant and exposed, as most of the decking has rotted away. The mast and a gun are among other pieces of wreckage that lie around on the sandy seabed.
Permission to dive this wreck must be obtained from the Port control. Tide is not a significant feature of this dive.

FRAOCH BAN
60º 07.98'N 001º 02.88'W

She was built in 1978 and is a small MFV at 15m length and lies in 27m.
The wreck sits in a bay off Bressay The seabed is white sand and the wreck appears dark against the light background
The small trawler is a fairly recent addition to Shetland's wreck-fest, she was lost in 1999, and its lines and nets are still in good order. It sank on a calm day in a sheltered spot because a wave shifted its hold full of sand-eels.
Without baffles in place the catch acted like liquid. Before the crew knew it the ship was turning over due to the sheer weight of fish sliding around.
Fraoch Ban now rests slightly on its side. The decks still have timber on them and the lines are tightly wound around the winches. Massive plumose anemones crowd the vertical structures. They are joined by edible crabs, algae and colourful macro life including sea-squirts and several species of nudibranch.

RESEARCH

Initial interested in mounting an expedition was generated by the skipper of the Valkerie who indicated that there were a number of possible wreck sites of sea planes in the waters round the Shetland Isles. Since then a number of the team have been studying books and websites in order to try and narrow down likely search areas.

Below is an indicative list of the resources used. Clearly many other resources were accessed but many provided little useful information.

Wreck Site www.wrecksite.eu/	The Wreck Site is the world's largest online wreck database. The site has 117.280 wrecks and 114,070 positions, 22,480 images and 1,311 maritime charts.
Aviation Research Group Orkney & Shetland www.crashsiteorkney.com/	The aim of A.R.G.O.S is to document all aspects of aviation history on and around the Orkney and Shetland Isles. These include recording and documenting aircraft crash sites both on land and under water.
www.scotsac.com/Scottish_Diver/Articles/200306_Shetland_Diving.pdf www.scotsac.com/Scottish_Diver/Articles/200306_Shetland_Surprises.pdf	Scottish Diver Magazine articles
The official site for Shetland tourism http://visit.shetland.org/diving	A web site listing a range of different dive sites
http://shetlopedia.com/Category:Shetland_Shipwrecks	The Shetland encyclopaedia
Tidal Stream Atlas NP209	Tidal information and timeline development
Guide Book "Dive Scotland" Third Volume Gordon Ridley	Wreck site information
Shetland Shipwrecks Shetland BSAC Local Club	Local knowledge
Shipwrecks Of Northern Scotland One of Bob Bairds excellent guides	Site location for non survey dives and foul weather contingency planning
Reeds Nautical Almanac 2012	Tide information
UKHO Charts 3282 3281 3292	Passage planning and site information
Bellfield Chart Plotter	Passage planning
Hazel Weaver Skipper of MV Valkyrie	Initial information on seaplane sites passed originating from local trawlermen

DIVING

All diving will be in accord with the BSAC "safe diving" document a copy of which will be available throughout the expedition. The atmospheric pressure will be monitored and a drop to below 984 millibars will be notified to the diving party. Due regard to the elevation of any land journeys on the way home should be given when calculating decompression procedures.

Decompression procedures.

Wreck diving will always be conducted with the use of a shot line either deployed by the team or if a satisfactory line is in place on arrival at the site this may be used.
A decompression trapeze will be available and will be used where the dive plans indicate that prolonged mandatory decompression periods will be necessary and where its use is appropriate to the dive site.
There can be considerable ferry and other large vessel traffic in some of the dive areas. It is therefore advised that on the wrecks divers return to the shot to make their ascent. It is, however, necessary that ALL divers carry a DSMB on all dives. Specific arrangements for decompression procedures will be briefed before each dive.

Planned decompression dives

These dives must be meticulously planned with due regard to gas supply and safe decompression timings. Where the decompression trapeze is used there will be pre-assembled scuba units with 50% and 80% nitrox mixes available as a backup. The units will have three second stages. The units will have been pressurised but the pillar valves will be turned off. On dives where the trapeze is not available these units will be suspended on the shot line at 9m and 6m. It is stressed that these gas supplies are an additional safety item and their use must not be included in gas planning calculations. There will also be similar units available on deck which can be lowered down a DSMB line to a diver in difficulties. The signal for this requirement will be part of the information given to the DM by dive leaders. Where it is considered a requirement the decompression trapeze will be able to be converted into a drifting decompression station once all divers have ascended the shot and where lengthy mandatory decompression stops are to be conducted in moving water. It will be necessary for buddy pairs to use a tagging system as they descend and return to the transfer line.
Detailed briefings concerning the operation of this system will be briefed by the DM before the relevant dives. It is hoped that the planned timing of individual dives at or near slack water will make the necessity for this procedure minimal, however divers of the experience level aboard this expedition should be able to utilise the system to advantage.

The skipper will brief us on diver recall and other safety matters relating to the boat.

Surface location aids (DSMB, flags, strobes, flares, reflectors and EPIRB's) are recommended.

The water temperature should be in the range of 13 degrees and appropriate thermal insulation will be required. The weather can change suddenly in the Shetlands even in late summer months and warm, waterproof clothing for use on deck will be necessary to avoid chilling between dives.

While the planned depths are in the range for air divers there will be the option of using Helium for those of the team qualified as tri-mix divers. The dive party includes four tri-mix OC divers, two CCRB divers and all bar one have taken the BS-AC ADP course. Some of the secondary dive sites are deep walls and wrecks where the use of mixed gases becomes a considerable advantage. Helium is available aboard this vessel and team members wishing to use tri-mix should inform the expedition leader. A booster pump is available to facilitate tri-mix filling.

Any divers who wish to use rebreathers should bring their own supplies of sofnalime.

Oxygen and helium analysers will be provided by the skipper but those who have their own should bring them as backup. The maximum depth for air divers will be 50M. Those using tri-mix will be allowed to dive to a deeper depth within the limits of their qualification and with the agreement of the DM. All diving will be undertaken with equipment that provides a truly independent alternative or bailout gas source. The use of rich nitrox mixes to accelerate decompression or to add a greater safety margin is to be encouraged. The DM will monitor RB divers on the surface before and after dives.
Diving will be recorded by the DM or assistant - it is the responsibility of each leader to render the required information before and after each dive. Divers will be checked into and out of the water using a tagging system. Lerwick coast guard will be kept informed of the progress of diving operations throughout the trip.

PROPOSED SURVEY TECHNIQUES

The approximate positions of the seaplanes sites are:

Holm Of Gunnista	60 11.12N	001	06.04W
Stella Ness	60 26.99N	001	16.72W

The surveys will be divided into four distinct phases:

1. Surface search.
2. Initial survey dives on the three best sites from the surface search by two buddy pairs on each site.
3. Full survey of wreck by whole team covering structure and marine life on the best site from phase 2.
4. Recording of results.

It is envisaged that phases 1, 2 and 3 will be managed by a different member of the team who will coordinate activities with the dive manager and skipper. The feedback from the first survey day will be used to improve our performance on the second seaplane survey day.

Surface searches.

Approximate lat/long co-ordinates for the seaplane wreck sites have been obtained from local fishermen via the skipper of Valkyrie. These will mark the origin of the surface searches which in the first instance be conducted by Valkyrie herself using the side scan sonar equipment. Members of the team will be responsible for operating the equipment and advising the skipper on the desired search pattern in a similar way to that followed on BSAC FCD examinations where the candidates navigate to and locate the wreck site prior to deployment of the shot line. To allow greater coverage and to search areas close to underwater obstructions and inshore the portable side scan unit will be operated by the expedition team from one of Valkyrie's RIBs.

The team will also take a portable magnetometer which can be towed behind the RIB. How effective this particular system will be in locating the seaplane wrecks will be determined on the day.

Once potential wreck sites have been isolated using side scan a more accurate position will be determined using conventional narrow beam sonar to assess the possible nature of the echo and help to confirm whether it will be promoted to one of the three initial survey dives.

Initial survey dives.

The expedition team will be divided into three groups of two buddy pairs. Each of the selected sites identified from the surface search as warranting further investigation will, in turn, be shotted and dived by the two pairs. Search patterns to be used will be agreed at the time depending on the underwater topography, and use of two pairs of divers will increase the area of seabed covered in unit time.

After collating the information from this phase a specific site will be selected for the detailed survey.

Detailed survey.

The entire team will be involved in this phase of the operation. It is planned to conduct these dives in the afternoon following lunch and a safe surface interval. The interval time will be used to develop and fine tune a suitable plan for the survey and conduct a dry run.

Six buddy pairs will be involved in the survey. The plan will include teams to deploy equipment, conduct a structural survey with control points and photography. A marine life survey will be conducted and a number of surface visible datums deployed to accurately identify the site location using onboard GPS equipment. Buddy pairs will be tasked with recovery of the underwater survey equipment. The staggered nature of the survey plan allows effective and dynamic dive management and recording of data retrieved.

Recording of results.

Following a successful pilot scheme in 2005, the NAS ran WreckMap Britain 2006 [1] with the support of Seasearch, Crown Estate, PADI Project Aware and the British Sub-Aqua Jubilee Trust. The project aimed to get UK divers to collect and report basic archaeological and biological information about wreck sites on which they dive.

[1] www.nauticalarchaeologysociety.org/projects/wreckmap2006.php

Now that the WreckMap Britain recording form (see Appendix) has been created and information has started to be added to the database that everybody will be soon be able to see and use, we hope that divers will continue to see the merit in adding their dives to the database. Using a form such as this will enable those less skilled to provide basic data, and for more experienced divers this will provide a framework to guide and support those developing skills in recording. The inclusion of Sea Search compatible data will ensure the expedition extends the range of data that can be provided. The form also allows us to prepare a site map which will be incorporated in the reporting stage of the expedition.

It is planned to try to identify the specific seaplane that we are surveying by examining and photographing serial numbers on the fuselage parts and engines. It is considered unlikely after the lengthy time that these aircraft have been underwater that any exact measurements of their dimensions would assist in determining the specific plane being surveyed. No physical evidence will be brought to the surface in accordance with BSAC policy of "Look, don't touch".

It is the intention to also use a daily diary for members of the expedition to record impressions, after-thoughts and additional details that they feel may enhance the final report. In addition we have a number of photographers on the expedition and by using photographs and report forms it is hoped a more complete description of the wrecks may be obtained.

TRAINING

The divers on this expedition are, in the main, highly experienced (see list of members in Appendix). However there are some specific training needs:

Expedition planning, execution and reporting as well as chart work and position fixing plus report writing will benefit all divers plus provide an opportunity for potential National Instructor development.

Wreck and sea life surveying and recording: A number of instructors on the trip have qualification and experience in these areas and will be leading teaching sessions prior to the expedition as well as involving all expedition members on the trip itself

Rescue skills: All divers will have had an opportunity to update their BLS skills according to the BSAC guidelines 2011.

It is anticipated that the following courses (or courses modified to meet the needs of expedition members) will be held prior to the expedition:-

Course	Date
Basic Life Support and O2 admin	Thursday 29 March 2012
Chartwork and position fixing	Thursday 4 May 2012 plus practical experience on a Sound of Mull trip 4-7 May 2012
Survey techniques	Theory – Thursday 10 June 2012 Practical at Capernwray on a date to be determined in June/July 2012

BSAC SDC training systems have been employed to introduce some of the team to the following areas :

Boat handling.
Search and Recovery.
Accelerated Decompression Procedures.
Sports Mixed Gas.
In addition courses involving the NAS and Seasearch have been attended.

Ten of the expedition team will be involved in a four day trip to the Sound of Mull in early May from a liveaboard – Gaelic Rose. It is planned to use this as platform to practise the search and survey techniques to be employed on the expedition in August. It will also give us the opportunity to modify any plans which have not been as effective as expected. We will be taking the side scan sonar equipment and magnetometer with us in May which will allow training and experience in their use to be disseminated to those in the team not familiar with this equipment.

TRANSPORT TO LERWICK

We will be travelling to Lerwick to arrive on the early morning of Saturday 18th August.

The Northlink ferry from Aberdeen sails overnight which means we avoid having to spend a night in B&B accommodation. We have booked cabins for all the party for both the outward and return journeys. We hope to travel in two cars and a van from Lancashire with one of the party driving down from near Inverness. The cost of the fuel from Lancashire and their car park charges will be divided equally amongst the eleven travelling north. The dive gear will be transferred onto purpose built trolleys to be loaded onto the ferry. The charter boat skipper will meet us in Lerwick with a minibus to transfer us and the gear to Valkyrie. The return trip also includes an overnight ferry allowing us to drive home after a good night's sleep.

ACCOMMODATION

The MV Valkyrie was built as the MFV Honeydew, fishing number FR399, by Rory Forbes of Sandhaven in 1967. She was the biggest boat built by them to that point. Being used as a Seine netter for only a short period, she was quickly fitted out for trawling as it proved far more economical. Travelling all over the world, even to New Zealand, bringing home sometimes record breaking catches of fish made her a popular and well known boat. On her annual refit she is always recognised in her old home port of Fraserburgh with many men having served aboard her. She was renamed the Bounteous Sea and carried on fishing in the North Sea until the late nineties when she was sold to Ireland. Eventually decommissioned and returned home, she converted for diving in 2003.

Her vital statistics.

Construction – Larch on Oak
Length – 22.1m
Beam – 6.3m
Draft – 3.2m
Gross tonnage – 167 tonnes
Displacement – 53 tonnes
Fuel capacity – 12,000 litres
Water capacity – 6000 litres
240v Generators - 3
Main engine – 500hp Cummins Diesel
Auxiliary engine - 20hp Lister
Range – 3000km
Compressor 1 – 24cft Hamworthy
Compressor 2 – 12cft Hamworthy

Wheelhouse equipment

Olex plotting computer
Searchlight scanning sonar
Su 1019 look down sonar
Simrad c-map plotter
GPS x 3
Four VHF radios
Navtext - Nav warning receiver
Navitron Autopilot with GPS gyro compass
Furuno 24 mile Radar

The galley is situated at the stern and is accessed via a watertight door on either side. It has two refrigerators, a cooker, microwave and the all important hot water urn which is on all day for as many cups of tea as you can drink. One huge table allows all 12 divers to eat at the same time in comfort. The Valkyrie in her previous days as a trawler had a large hold. This was converted into six cabins which are accessed via the lounge area. Each cabin has two full size single bunks fitted with memory foam mattresses. A small sink with hot and cold running water, a heater and two charging sockets and every bunk has a small reading light and main light. All bunks come with a duvet and all bedding, plus two pillows. A small towel is also provided. The lounge is situated midships and is accessed via a door into the shelter deck. It has seating with lockers underneath, a large widescreen television, DVD player, stereo, a large selection of DVD's and books and a large table .There are two toilets (proper loos, not marine heads), one in the shelter deck, one on the port side. Two showers are also fitted, one below decks in the accommodation, the other with the port side loo, both are electric shower.

Some of the team had the pleasure of diving from Valkyrie in the summer of 2011 at Scapa where we enjoyed a superb week.

The standard of accommodation, food and general organisation of the boat is of the highest order. We were impressed by the crew's knowledge of the needs of divers and, being regular divers themselves, made one feel at home and that all our requirements were being catered for.

When operating in the Shetland Isles the boat also has the use of another large RHIB that can be used to access dive sites unavailable to the larger vessel. This can also act as safety cover for divers near rocky shorelines where it would not be possible for the large boat to approach.

The use of the scanning sonar will be a great advantage when we are locating the seaplane wreck sites although we plan to take our own portable side scanner to use on the RHIB if required.

TRIP RECORDING AND PUBLICITY

We plan to keep a daily diary and photo diary of the trip to assist with report writing and later presentations. It will be the responsibility of the ADM to keep this up to date through the day but it will be available for all members of the trip to record information at any time. The DM will ensure that there are records of the diving each day to include site and weather details.

One member of the group will be designated "official photographer" and another diver will be tasked with producing an underwater record of the expedition. However, all of the group will be encouraged to contribute to the photographic records.

A written report will be produced detailing the expedition's surveys and findings and we will offer this to *Scuba* magazine for publication.

The expedition members will be available to give a presentation to BSAC Diving Conference as well as local groups.

The following press release will be distributed to local news media:

> Press Release: Ribble Valley Divers search for missing seaplanes in Shetland Isles.
>
> Date of release: 10/4/2012
>
> A group of 12 divers from Ribble Valley, Bradford and Darwen are heading for the seas off the Shetland Isles in August 2012 with the aim of discovering and surveying the wrecks of a number of seaplanes that were known to have crashed in the sea during the Second World War.
>
> Using dive boat MV Valkyrie as a base for the week long expedition, the team hopes to explore a number of sites they have identified from research on records of the time. Shetland was the base for a large number of aircraft as well as the famous "Shetland Bus" during WW2. The team includes a number of divers with qualifications and experience enabling them to dive to 60 metres, although much of the diving is expected to be in the 20-40 metres range.
>
> The team plans to undertake further training on wreck identification and surveying techniques before the trip.
>
> Publication of a full report on the expedition is expected by the end of October 2012.
>
> For further details contact the expedition leader Mike Holroyd on 07764 607961 or email

RISK ASSSSMENT

Risk evaluation will be carried out during the whole expedition by the DM or ADM. Information is to be communicated via briefings from the DM, dive leaders, buddy checks and debriefs following diving operations.
The expedition leader and the skipper will give a comprehensive briefing including areas of risk that relate to the operation of the boat on arrival of the diving party. Any hazards associated with the boat specifically as a diving platform are included below.
The abbreviated text used in parts of the risk assessment is to enable economy of space. There is a fuller explanation of control measures and actions to be taken in response to an incident in the main body of the plan.

Hazard	Who	Severity 1-3 (a)	Likelihood Risk 1-3 (b)	Evaluation (a * b)	Controls	Action to be taken in the event
DCI	all	3	2	6	Dive training and planning, approval. DM. Use of nitrox and computers. Extra safety stops over and above mandatory stops. Use of high % O2 for deco to 1.4 / 1.6 bar.	First aid Oxygen Contact CG
NARCOSIS	all	2	3	6	Use of mixed gas Buddy monitoring	Recognise problem Ascend
DARKNESS	all	1	3	3	Powerful torch and reserve	Use reserve Ascend
REPETITIVE DIVING	all	1	3	3	Conservative profiles Nitrox	Break Sequence
ENTANGLEMENT FISHING AND SURVEY LINES	all	1	3	3	Knives, cutters, buddy diving	Use.buddy to disentangle
WRECK PENETRATION	all	2	2	4	Use distance lines, careful finning, finger walking, monitor gas. Avoid contact with silt.	Stop. Look for blue window. Follow line.
OXYGEN TOXICITY	all especially nitrox and rebreather divers	3	2	6	Monitor depth. Planning, gas analysis, cylinder labelling, adhere to plan and MOD	Ascend. Buddy to assist to surface.
OUT OF GAS	all	3	2	6	Gas planning, reserve planning. Independent supplies, drop cylinders	Use buddy's AS
EMERGENCY INCIDENT	all	2	2	4	Provide 1st aid and O2 Rescue management training. Rescue diver kitted up	Assess, Plan, Act. Contact CG
REBREATHER CO2 TOXICITY	all	3	2	6	Care with preparation in undisturbed conditions. Choice of buddy pairings. Record scrubber use, time and depth.	Bale out to OC
REBREATHER HYPOXIA	all	3	1	3	DM to monitor RB divers at entry and on surface before and after dive. Rescue diver alert.	Rescue diver to aid unconscious diver
REBREATHER EQUIPMENT FAILURE	all	2	2	4	Provide bail out supply	Bale out to OC
SURFACE TRAFFIC	all	2	2	4	Skipper and DM to keep goodlook out. . A Flag. Divers use Shot line/DSMB	Alert craft Flares, vhf A-Flag
SURFACE SEPARATION	all	2	3	6	Plan for tidal steams. Use SMB DSMB, flares, mirrors, whistles, strobes Flags, dyes, tagging system Use DSMB when unexpected tidal stream	Record time position Alert CG search down stream
SURFACE CONDITIONS& WEATHER	all	2	2	4	Constant monitoring.Use of weather forecasts Skipper's local knowledge Plan contingency site DM to inform CG of diving ops	Diver recall

Hazard	Who	Severity 1-3 (a)	Likelihood Risk 1-3 (b)	Evaluation (a * b)	Controls	Action to be taken in the event
HYPOTHERMIA	all Less for RB divers	2	2	4	Correct thermal insulation in water and on boat. Monitor for incipient hypothermia over each day's diving	Assess degree1st aid, warm clothes,& drink Medical advice
DEHYDRATION	all	2	2	4	Adequate fluid before and after diving. Limit alcohol in evenings.	Re-hydration Medical advice
SEA-SICKNESS	all	1	3	3	Medication well in advance of passage. Keep in centre of ship. Look at horizon	Re-hydrate Don't dive
ALLERGIES	all	3	1	3	Pre trip reporting; take medication	1st aid; medical advice
COMPRESSOR	all	1	3	3	Compressor itself only to be operated by crew. Cylinder filling by trained divers. Analyse gas mixes	
MAN OVER BOARD	all	3	1	3	Monitor sea state. Restrict movement on decks when rough.	Inform skipper, record position & time. Alert CG. Search pattern
FIRE	all	3	1	3	Action to be briefed at start of trip. Safety notices / position of extinguishers.	Sound alarm, tackle fire
TRIPS & FALLS INJURY FROM EQUIPMENT	all	1	3	3	All lines and gear correctly stowed especially cylinders. Extra care in rough seas	1st aid, seek medical help
PROPELLER INJURY	all	3	1	3	Only enter water on command from crew. Care returning to boat esp in tidal streams	Emergency prop brake. Rescue diver
LAUNCH AND RECOVERY OF TENDER	all	2	2	4	To be briefed and supervised by crew. Dry run in sheltered conditions. Boat manager to organise team	DM to monitor performance

APPENDICES

Passage plans to and from the proposed dive sites, and to safe havens, including details of alternative dive sites in case of unfavourable winds.

Details of expedition members' diving and instructor qualifications and skills.

WreckMap Britain recording form

DAY 1 PASSAGE 1

RVSAC - VOYAGE PLANNING - BSAC BRANCH 594									
Wypnt #	Waypoint name / description	From / to (Lat & Long)	^{0}True	^{0}Var	^{0}Mag	Distance (Nm)	Speed (Kn)	Run time	Arrival time	Dangers / comments
1	Lerwick	60 09.67N 001 09.27W								
			094	3 W	091	0.3	8	00:03		N Ness light STB beam
2	Centre of Bressay Sound	60 09.64N 001 08.62W	145		142	0.9		00:07		Light on STB beam
3	Abeam Twageos Pt	60 08.89N 001 07.56W	196		193	0.5		00:04		Light on PORT beam
4	Abeam Cro of Ham	60 08.56N 001 07.87W	174		171	1.3		00:10		Light on PORT beam
5	Abeam Kirkabister Ness	60 07.05N 001 07.58W	078		075	0.2		00:02		
6	Lunokhods Wreck	60 07.11N 001 07.15W								
7					TOTAL	3.2		00:26		
8										
9										
10										
11										
12										
Nearest port / shelter – CONTINGENCY			From dive site to safe haven							
(Lat & Long)			^{0}True	^{0}Var	^{0}Mag	Distance (Nm)	Speed (Kn)	Run time	Arrival time	Dangers / comments
Back to Lerwick					~340	3.2	8	00:26		

DAY 1 PASSAGE 2

RVSAC - VOYAGE PLANNING - BSAC BRANCH 594

Wypnt #	Waypoint name / description	From / to (Lat & Long)	°True	°Var	°Mag	Distance (Nm)	Speed (Kn)	Run time	Arrival time	Dangers / comments
1	Lunokhods Wreck	60 07.09N 001 07.22 W								
2		60 06.71N 001 06.69W	149	3W	146	0.5	8	00:04		Following coast
3	Bard Head	60 06.14N 001 04.48W	117		114	1.3		00:10		Following coast
4	Giants Leg	60 06.17N 001 04.38W	055		052	0.1		00:01		
5										
6										
7					TOTAL	1.9		00:15		
8										
9										
10										
11										
12										

Nearest port / shelter – CONTINGENCY	From dive site to safe haven						
(Lat & Long)	°True	°Var	°Mag	Distance (Nm)	Speed (Kn)	Run time	Arrival time	Dangers / comments
Lerwick 60 09.67N 001 09.27W			~320	5	8	00:38		Follow coast to return

DAY 1 PASSAGE 3

RVSAC - VOYAGE PLANNING - BSAC BRANCH 594

Wypnt #	Waypoint name / description	From / to (Lat & Long)	°True	°Var	°Mag	Distance (Nm)	Speed (Kn)	Run time	Arrival time	Dangers / comments
1	Giants Leg	60 06.17N 001 04.38W								
2		60 06.14N 001 04.47W	235	3W	232	0.1	8	00:01		
3		60 06.81N 001 06.79W	300		297	1.3		00:10		Follow coast
4	Abeam Kirkabister Ness Light	60 07.21N 001 07.52W	318		315	0.6		00:05		Follow coast
5		60 08.69N 001 07.85W	353		350	1.5		00:12		Cro of Ham light on STB
6	Abeam Twageos Pt Light	60 08.93N 001 07.71W	016		013	0.3		00:03		
7	Abeam N Ness Light	60 09.61N 001 08.72W	324		421	0.9		00:07		
8	Lerwick	60 09.67N 001 09.27W	282		279	0.3		00:03		
9										
10					TOTAL	5.0		00:41		
11										
12										

Nearest port / shelter – CONTINGENCY	From dive site to safe haven							
(Lat & Long)	°True	°Var	°Mag	Distance (Nm)	Speed (Kn)	Run time	Arrival time	Dangers / comments

DAY 6 PASSAGE 3

RVSAC - VOYAGE PLANNING - BSAC BRANCH 594

Wypnt #	Waypoint name / description	From / to (Lat & Long)	°True	°Var	°Mag	Distance (Nm)	Speed (Kn)	Run time	Arrival time	Dangers / comments
1	Fraoch Ban wreck	60 07.98N 001 02.89W								
			199	3W	196	2.2	8	00:17		
2	Bard Head	60 05.94N 001 04.33W								
			303		300	1.8		00:13		
3		60 06.88N 001 07.28W								
			334		331	1.0		00:08		
4		60 07.79N 001 08.16								
			012		009	1.3		00:10		
5		60 09.09N 001 07.60W								
			315		312	0.9		00:07		
6		60 09.69N 001 08.80W								
			263		260	0.2		00:01		
7	Lerwick	60 09.67N 001 09.27W								
8										
					TOTAL	7.4		00:56		
9										
10										
11										
12										

Nearest port / shelter – CONTINGENCY	From dive site to safe haven

(Lat & Long)	°True	°Var	°Mag	Distance (Nm)	Speed (Kn)	Run time	Arrival time	Dangers / comments

MEMBERS' QUALIFICATIONS AND SKILLS

surname	first name	BSAC No.	Diver Grade	Instructor Grade	IT
Cooke	Wendy	A735502	AD	AI	✓
Cronshaw	Andy	A286653	AD	OWI	
Higson	David	A540598	AD	AI	✓
Holroyd	Mike	A643993	FC	AI	✓
Howarth	Ed	A660589	FC	AI	✓
Imlach	Fiona	A755283	AD	OWI	
Lund	Andrew	A793323	DL		
Mills	Bruce	A776517	DL	OWI	
Opitz	Nicole	A797594	DL	ADI	
Thomson	Alexander (Sandy)	A732456	DL	ADI	
Walker	Neil	A379924	AD	OWI	
Wilkinson	John	A797595	SD	ADI	

		LA	ALA	DRS	O_2	COX	GMD	ND	AND	ADP	SMG	EMG	AED	PRM	BH	DPM	CPF	FAD	CO	OBM	ADT	GB	DDA	SR	DS	MB
Cooke	Wendy	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓			✓		✓		✓
Cronshaw	Andy									✓																
Higson	David	✓	✓	✓	✓		✓		✓		✓				✓	✓	✓	✓						✓	✓	
Holroyd	Mike	✓	✓	✓	✓	✓	✓		✓	✓				✓	✓		✓	✓								
Howarth	Ed	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Imlach	Fiona				✓	✓		✓							✓		✓									
Lund	Andrew				✓				✓			✓					✓									
Mills	Bruce	✓			✓	✓	✓	✓	✓		✓				✓		✓									
Opitz	Nicole							✓		✓					✓			✓								
Thomson	Alexander (Sandy)				✓		✓		✓			✓		✓	✓		✓	✓				✓				
Walker	Neil				✓										✓											
Wilkinson	John							✓																		

ADP = Acc Deco Proceedures
ALA = Advanced Lifesaver Award
AND = Advanced Nitrox Diver
COX = Diver Cox'n
DRS = Diver Rescue Specialist
GMDSS Marine Radio Operator
IT = Instructor Trainer
LA = Lifesaver Award
ND = Nitrox Diver
O_2 = Oxygen Administration
SMG = Sports Mixed Gas
EMG = Explorer Mixed Gas
✓ SDC instructor

ADT = Advanced Diving Techniques
BH = Boat Handling
CPF = Chartwork & Position Fixing
CO = Compressor Operation
DDA = Disability Awareness
DPM = Dive Planning & Managing
DS = Drysuit
FAD = First Aid for Divers
GB = Gas Blending
MB = Marine Biology
OBM = Outboard & Boat Maintenance
PRM = Practical Rescue Management
SR = Search & Recovery
AED = Automatic external defibrillator
✓ SDC instructor

RECORDING FORMS

WreckMap Britain Recording Form ©

This form is designed to help record the observations that you make during your dive; in particular, what the seabed was like and what man-made structures and marine life were present.

Contact Information	Name:	
Address:		
		Postcode:
Tel:		Email:
Member of: NAS ☐ MCS ☐ BSAC ☐ PADI ☐ SAA ☐ SSAC ☐		
Dive Club:		Name of Buddy:

Site Information	Site Name:		
General Location:	Dive Date:		Start Time:
	Duration:	mins	U/W visibility: m
	Water Temp:	°C	Current: knots
	Max Depth:	m	

Position: (lat long or OS Grid Reference)

Position derived from: GPS ☐ (Datum used:) Admiralty Chart ☐
OS Map ☐ Dive Guide/Other ☐ (Details:)

Dive Type: Shore ☐ RIB ☐ Hardboat ☐ Night ☐

Site Type: Ship Wreck ☐ Aircraft ☐ Pier ☐ Harbour ☐

Activities at Site: Commercial Fishing ☐ Angling ☐ Sailing ☐ Powerboating ☐
Other ☐ (Details:)

Wreck Information	Estimated Dimensions: Length m, Width m, Depth to Seabed m, Depth to top of Wreck m,

Positioning: Upright ☐ Listing to Port ☐ Listing to Starboard ☐ Inverted ☐
Level ☐ Bow Up ☐ Bow down ☐ Orientation (stern to bow) °

State of Preservation: Intact ☐ Partially Broken ☐ Well Broken ☐ Ribs ☐
Scattered Structure ☐ Scattered Artefacts ☐

Degree of Burial: Proud ☐ Partially buried ☐ Mainly Buried ☐

Construction: Metal ☐ Wood ☐ Fibreglass ☐ Stone ☐ Concrete ☐

Features Present: Anchor ☐ Engine ☐ Boiler ☐ Propeller ☐ Rudder ☐
Hatches ☐ Portholes ☐ Bridge / Superstructure ☐ Bridge Gear ☐
Winches ☐ Cranes ☐ Cargo ☐ Guns / Armament ☐ Other ☐
(Details)

Other Details / Comments:

Environmental and Marine Life Information

Human Impact: Fishing Line ☐ Fishing Net ☐ Lobster pots ☐ Trawling ☐
Litter ☐ Diver Damage ☐ Other ☐ (Details)

Seabed Type around Wreck Site: Rocky Reef ☐ Boulders ☐
Cobbles and Pebbles ☐ Gravel ☐ Mixed Ground ☐ Sand ☐
Shelly ☐ Peat ☐ Mud ☐ Wall ☐ Stack ☐ Cliff ☐
Other ☐ (Details)

Marine Life Cover on Wreck: (Illustrations by Bob Foster-Smith, SeaSearch)

Kelp Forest	Kelp Park	Mixed Seaweeds
		
Encrusting Pink Algae	**Short Animal Turf**	**Tall Animal turf**
		

Species Seen: (indicate frequency: Rare - Occasional - Common, and any other comments)

Miscellaneous Information

Other Dive Records: 35 mm print ☐ 35 mm transparency ☐
digital photo ☐ video ☐

Other Observations / Comments:

Swim-over sketch or profile of wreck site, with features and dominant marine life shown.
Please record minimum and maximum depths on the site and indicate the scale used and compass orientation

compass	scale										max depth	min depth

The Crown Estate Disclaimer: Sub aqua diving is an inherently dangerous activity and it is not possible for the seabed owner to safeguard participants against accidents. Participants therefore undertake the activity entirely at their own risk and The Crown Estate will not be liable for any death, injury, damage or loss which might occur.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25