DARWEN SUB-AQUA CLUB

BSAC Branch 0047

DIVING EXPEDITION TO NORWAY

MAY – JUNE 2013

INTRODUCTION

Darwen SAC completed a very successful expedition to the Falkland Islands in January – February 2007. Although not as ambitious this time the plan is to use the Falkland Island trip (which is included in the BS-AC Expedition Manual as an example of diving in a remote location) as a template for mounting a two week expedition to Norway in the summer of 2013. We plan to adopt a similar format to explore the diving in the region of the city of Haugesund.

The trip will be completely self-supporting using two RIBs that will be ferried and towed to Haugesund together with compressors and the bulk of the heavy diving equipment. A core group of the team will be involved in the transport by ferry and road from Darwen to Norway and returning at the end of the expedition. This group will be present throughout which allows continuity of operations. The remainder of the expedition team will travel by air with light weight equipment.

Arrangements will be made to have oxygen and helium delivered to the expedition base to allow nitrox, accelerated decompression and mixed gas diving to be undertaken by those qualified.

The site of Haugesund was chosen to give access to a variety of dive sites which allows flexibility depending on wind direction and strength however the initial choice of dive sites assumes that the weather is favourable.

Alternative sites to be dived in the event of less than ideal weather conditions will be researched and included in the planning document.

The overall objective of the expedition will be to locate, dive, survey and record wreck, wall and reef sites as well as diving some sites known to the local divers. Research conducted in advance will indicate the likely areas to begin searching. Information from local sources will be collated and an attempt will be made to verify the accuracy of wreck positions.

The team will have access to side scan sonar and magnetometer equipment to aid in wreck location.

Haugesund is a small municipality of only 73 km². The population is 34,619 giving the municipality a population density of 509 people per km².

The town is situated on a strategically important sound throu gh which ships can pass without traversing heavy seas. The high density of ship movements through difficult, narrow waterways has resulted in frequent shipwrecks and collisions. The protective sounds of Smedasund and Karmshund gave the town potential to grow in both directions. In the early years the waters off this coast was a huge source of fish stocks especially herrings and the town grew accordingly however the petroleum industry now represents its main interest.

Haugesund has a coastline with the North Sea; however, the island of Karmoy and the archipelago Røvær shelter most of the city from the rough waters of the ocean. The sound of Karmsund, located between Karmøy and Haugesund used to be very strategically important, since ships could pass without having to sail through heavy sea. Haugesund's city centre has a distinctive street layout, similar to those found in Kristiansand and Oslo. Haugesund has a typical maritime climate with mild winters, cool but pleasant springs, and mild summers lasting until the end of September. 24-hr average monthly temperatures range from 1.1 °C in February to 14 °C in August. Mean annual precipitation is 1520 mm, with September - December as the wettest period. In June we expect approximately 118mm of rainfall and half the number of days to include some precipitation. The daytime temperature should average 15 degrees falling to 9 degrees at night. Sea temperature at the surface is likely to be 11 degrees. The high latitude results in there being 19 hours of daylight at this time of year which gives the scope for longer surface intervals providing the dive team are prepared to make an early start.

We can expect nearly 7 hours of sunshine each day with low humidity. We will need to be watchful for the high levels of ultra-violate radiation. Care will need to be taken to ensure high protection factor sun creams are used.

The wind direction in May and June can vary anywhere between ESE around to the north with the prevailing being NNW this can mean that dive sites may end up being exposed, fortunately we have ample sites to choose from allowing plenty of flexibility.

Haugesund is connected to Stavanger and Bergen by catamaran and bus services; and to Oslo by bus. The town is connected to Utsira by car ferry, and Røvær and Feøy by passenger ferry. The European Route E39 bypasses Haugesund to the east, passing through Aksdal. The European Route E134 leads eastwards to Drammen outside Oslo.

The boats being used for the trip

Diving opportunities in Norway range from sheer walls, overhangs and dramatic rock formations to vast wrecks and lots of night diving.

Norway can provide divers with the opportunity to swim through giant kelp forests; we might expect to see edible and spider crabs, squirrelfish, cod and similar fish, colourful nudibranchs, clams and mussels, starfish, anemones and jellyfish. In the open fjords killer whales and huge shoals of herring can be seen amongst some of the world's most dramatic scenery.

Coastal currents run continually around the islands and fjords of Norway, pumping the nutrient-rich, deep Atlantic Ocean waters in among the maze of islands, creating the foundation for an intriguing marine world, where rich forests of kelp give way to reefs covered in bright orange corals.

Fish tend to be evident more in quantity than in variety, but do reach enormous sizes. There is the chance to spot and photograph interesting varieties such as the wolf fish.

The flow of the Gulf Stream reaches Norway, creating warmer temperatures than might otherwise be expected.

However the real attraction of diving in this area is the profusion of mostly intact shipwrecks and the excellent visibility allowing divers to view the entire wreck in one vista.

The view of the coastline, which attracts cruise ships, is just an extra bonus to some of the most spectacular scenery in this part of the world.

Expedition Members

Name	BSAC qualification	Contact number	Next of kin details	BSAC club
Keith Adam	Sports diver	TBA	TBA	Darwen
Patricia Booth	Advanced			Darwen
Phil Botting	Dive Leader			Trafford
Martyn Dean	Dive Leader			Darwen/Trafford
Ian Dearden	Advanced			Darwen
Jill Dearden	Advanced			Darwen/Trafford
Keith Dearden	Advanced			Darwen
Jonathan Greenbaum	Advanced			Trafford
Mike Holroyd	First Class			Darwen/Ribble
Dave Lindsay	Advanced			Farnworth
Duncan Read	Advanced			Bury
Emma Starkey ***	Ocean Diver			Darwen
Paul Targett	Advanced			Darwen

NOTE: *** Emma is going as a non diver but may join us on the shallower afternoon dives

More detailed list showing individuals skills and qualifications is included in the appendix. At time of writing there are two 1 week spaces available.

ROLES AND REPONSIBILITIES

The Expedition Leader will have overall responsibility in conjunction with the boat coxswains for safety. He will ensure that the trapeze and extra equipment required for the drop bottles for lowering to divers and for attachment to the trapeze or shot line together with emergency oxygen equipment and first aid box is included in the expedition equipment. In addition he will arrange for the extra materials for marine survey exercises are available.

The Dive Manager will be responsible each day for diving operations, record keeping, safety, oxygen and emergency equipment, 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.

The Boat Manager will assist the coxswains 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 help of other members of the team the boat manager will keep the boats fuelled and tidy.

The Navigator will determine the correct position for deployment of the shot. He will also be the organiser for the marine surveys when dives include this part of the expedition.

The Rescue Diver will remain prepared to enter the water with basic equipment to hand to assist in case of difficulties whenever there are divers in the water.

The Gas Manager will be responsible for supervising 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 for example.

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	B	C	D	E	K	F	L	G
GAS MANAGER	E	K	F	L	G	A	H	B
RESCUE DIVER	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.

Other members of the team will be involved in transport to boat fuel sources, food preparation and expedition photography both above and below the water. A daily diary will be kept – all team members will be encouraged to add comments to the diary to assist production of the expedition report. Dive site recording will be carried out on a daily basis together with the results of any surveys that were undertaken

Expedition finances will be overseen by two members who will be responsible for retaining receipts and allocating costs as incurred by the members of each week.

The expedition equipment will be the responsibility of a suitably experienced and skilled team member.

The Darwen SAC training officer will be present throughout the entire expedition and will co-ordinate the training both in the preparation period and during the expedition itself. We are fortunate to have BS-AC instructors on the team to assist the training officer in this role.

TRAINING

The divers on this expedition are, in the main, highly experienced (see list 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 a potential NI 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.

At present it is anticipated 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	29 March 2013
Chartwork and position fixing	4 May 2013 plus practical experience on a Sound of Mull trip
Survey techniques	Theory – 10 May 2013 Practical at Capernwray on a date to be determined in May 2013

All diving will be in accordance 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 milibars 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. Those team members who are arriving and leaving by air will need to ensure that the timing of their last dive allows sufficient "surface interval" before their flight.

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 prolonged mandatory decompression periods will be necessary and where its use is appropriate to the dive site.

In some of the proposed dive locations there may be considerable ferry and other large vessel traffic in the area. 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 a 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 the ribs which can be lowered down a DSMB line to a diver in difficulties. The signal for this requirement must 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 undertaken 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.

A boat brief will be given by the coxswain before each passage.

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

The water temperature should be in the range of 11 degrees and appropriate thermal insulation will be required. The weather can change suddenly and warm, waterproof clothing for use on the ribs during the sea passages and while team members are acting as surface cover 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 two tri-mix OC divers, and many 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. A booster pump is available to facilitate tri-mix filling.

Oxygen and helium analysers will be provided by the expedition 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. 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. The local coast guard will be kept informed of the progress of diving operations throughout the day.

Tides and currents

There is attached in the appendix tide times for the duration of our stay, further information on local currents etc. will be sought on arrival in order to get the most accurate information from local sources.

Excerpt from
http://msi.nga.mil/MSISiteContent/StaticFiles/NAV_PUBS/SD/Pub182/Pub182bk.pdf

Tides—Currents.—The tidal current turns regularly 3 hours before and 3 hours after HW, so that at about HW the current is setting with its greatest velocity to the S; at LW the current is setting with its greatest velocity to the N. With strong, continuous N winds, the tidal current may set continuously S and, similarly, with strong, continuous S winds, it may set continuously N. The tidal currents attain their maximum velocity through Vibrandsoysund, off Osnesgavlen in Vestre Karmsund, and in Salhusstraummen. In the latter channel, the current may attain a velocity of 3 knots, but in Vibrandsoysund it is seldom stronger than 2 knots. Strong winds, as mentioned above, also greatly influence the velocity.
In Smedasund and other parts of the harbour, the velocity is usually about 1 knot. Nowhere do tidal currents affect the normal use of the port.

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 has been distributed to the following publications:
Lancashire telegraph
Accrington Observer
Manchester Evening News
BSAC Magazine
They were also sent to Local Radio Stations The Bee and Radio Lancashire

Darwen SUB-AQUA CLUB

A branch of the British Sub Aqua Club

NEWS

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Scuba Diving Trip to Norway

A group of divers from the Blackburn with Darwen & the Greater Manchester areas are travelling to Norway in May to dive the cool clear waters off the Norwegian coast near Haugesund. As well as the usual marine life found around the UK shores such as crabs, mussels. Cod etc. the divers are hoping to see killer whales; the area is also known for ship wrecks & because the water is so clear the whole ship can be seen in one view as you descend into the water; above the water is some of the most spectacular scenery in the world.

The divers will be completely independent which entails taking 3 vehicles to tow 2 ribs (boats), & all the equipment needed to make the diving safe & enjoyable; driving a distance of 1,200 miles across the UK, Denmark & Norway; & taking 4 ferries before arriving at the accommodation in Haugesund.

The trip has been in the planning stage since 2011 & we are all very excited. A couple of spaces are still available for qualified divers.

RISK ASSESSMENT

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 will give a comprehensive briefing including areas of risk that relate to the operation of the ribs 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.

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 disengage
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	3	2	6	Monitor depth. Planning, gas analysis, cylinder labelling, adhere to plan and MOD	Ascend. Buddy to assist to surface.

Hazard	Who	Severity 1-3 (a)	Likelihood Risk 1-3 (b)	Evaluation (a * b)	Controls	Action to be taken in the event
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
SURFACE TRAFFIC	all	2	2	4	Cox and DM to keep good look 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 obtain local knowledge Plan contingency site DM to inform CG of diving ops	Diver recall
HYPOTHERMIA	all	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

Hazard	Who	Severity 1-3 (a)	Likelihood of Risk 1-3 (b)	Evaluation (a * b)	Controls	Action to be taken in the event
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. 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 trained team members. Cylinder filling by trained divers. Analyse gas mixes	Gas manager to supervise operations.
MAN OVER BOARD	all	3	1	3	Monitor sea state. Dry suits to be zipped up at all times	Inform cox, 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

Hazard	Who	Severity 1-3 (a)	Likelihood of Risk 1-3 (b)	Evaluation (a * b)	Controls	Action to be taken in the event
PROPELLER INJURY	all	3	1	3	Only enter water on command from cox. Care returning to boat esp. in tidal streams	Rescue diver
LAUNCH AND RECOVERY OF RIBS	all	2	2	4	To be briefed and supervised by cox. Dry run in sheltered conditions. Boat manager to organise team	DM to monitor performance

Norwegian Sea Rescue

A humanitarian, voluntary, membership-based organization whose objective is four-fold: to save life, protect material assets, safeguard the coastal environment and pursue information work. The rescue boats are ready to continue saving life and material assets,
they have high-speed rescue boats all along the Norwegian coast. Twenty-five boats with permanent crews are in round-the-clock readiness, while 16 are operated by volunteers in the sea rescue corps - some year-round and others with a more seasonal commitment.
Our rescue boats are indispensable for maritime safety along the shores of Norway.
Assistance at sea and in open anchorages (Norway and Sweden)

Towage to the nearest port with opportunities for further assistance.
Help with diver assistance and in the event of engine failure.

Emergency procedures and contact numbers

110 - Fire
112 - Police
911 - Police (only from cellular phones)
113 - Ambulance
120 - Emergency at open sea

The best way to deal with any emergency/problem at sea is the same as in the UK, call the Radio Station, in this case it would be Haugesund Radio on Channel 16 - they will then make all decisions on chambers etc. The nearest chamber is Bergen. A list of emergency next of kin and contact numbers for the dive group will be kept by the trop organizer. Risk assessments for the diving and boat operations prepared by the expedition leadership will be available to the entire group

Survey techniques

The surveys will be divided into three distinct phases:

1. Surface search.
2. Full survey of wreck by whole team covering structure and marine life
3. 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. The feedback from the first survey day will be used to improve our performance on later surveys.

Surface searches.

Approximate lat/long co-ordinates for the wreck sites will have been obtained from local sources and various websites. These will mark the origin of the surface searches which in the first instance be conducted by the two ribs operating independently in pre-arranged areas one has integral side scan sonar and the other will use a towed "fish". Members of the team will be responsible for operating the equipment and advising the cox on the desired search pattern prior to deployment of the shot line
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.

Detailed survey.

The entire team will be involved in this phase of the operation. The diving team will be divided into two groups allowing for surface cover in both ribs. It is possible that we will have a non diving cox available on the expedition which will improve the flexibility of diving arrangements. Buddy pairs will be tasked with specific roles such as checking u/w position of shot, overall wreck structure, marine life, photography and shot preparation for recovery.
An assessment of the findings from the first wave of diving will allow any modification to the tasks for the second wave to be discussed before they enter the water. The use of Sea search and Wreckmap survey forms will ensure easy collation of results and uniform detail of recording by the various buddy pairs.
Where dive sites cover large areas plans to return to the site on another day can be discussed during the daily debriefing sessions. Where suitable a dry run of the survey techniques to be used can be performed prior to departure. This improves the efficiency of the procedure and identifies any areas that need further planning.
One advantage of the accommodation for the diving party being at one location is the enhanced ability to communicate plans to all.

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.
Although prepared for use in British waters the system of recording would still hold merit in the waters off Haugesund.
Now that the WreckMap Britain recording form 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 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 dive sites may be obtained.

Accommodation

We have booked 2 self-catering houses in Hagland approx. 8km north of Haugesund. They are on the coast and sleep 10 in each. There are 3 twin rooms and 1 room that sleeps 4. There is a shared kitchen & bathroom with a sauna. There is lots of parking for the vehicles and space outside for barbeques. The cost includes linen & cleaning but you pay for electricity at the end of the holiday.

Expenditure

Travel		
UK to Denmark ferry	Total return for all vehicles	£2199.00
Denmark to Norway ferry	Total return for all vehicles	£998.00
E39 Ferry in Norway	Total return for all vehicles	£370.00
Fuel costs UK to Haugesund	Total return for all vehicles (estimated at current costs) 1130 miles return Journey	£1140.00

Accommodation		
Cost of Houses in Norway	This excludes electricity	£2800.00
Food Costs		
Kitty for breakfast and lunch	This is best guess of £500/house/week and may need adding to or have surplus.	£2000
Boat costs		
Mooring fees in Haugesund	£12/day/boat	£336
Approximate boat fuel costs	Approx. 1000Liters for doing primary dive sites +20% to cover any eventualities (price depending on variations in cost/exchange rate)	£2000 approx.
Club Boat Fees	£15/person/week	
Individual/Miscellaneous costs		
Evening Meals	Will eat together most nights, on others it is up to individuals	
Overnight accommodation in Denmark for drivers	Cost for drivers and passengers	£275.31
Flight and ferry costs for other divers	Unknown at this time, up to individual to book	
Oxygen/Helium if used	This is down to the individual	
Vehicle fuel while we are there		

Equipment

This expedition involves transporting 3 vehicles, 2 RIB's and associated equipment, 2 compressors and gas blending equipment, and all the equipment for 12-14 divers and enough spares to allow us to be as self-sufficient as possible.

Currently we are trying to obtain a local source for oxygen and helium. If this is unsuccessful we will arrange for supplies to be shipped from the UK in advance.

It has been arranged with the harbormaster in Haugesund regarding the launch, recovery and siting of the boats whilst there. We have also arranged the siting of the compressors close by

so that they can be set up and left in position close enough so that we can fill cylinders using 25-50m long filling hoses then we do not have to remove our cylinders from the boats after every dive.

Timeline

	Thursday 23rd May	
AM	Set off 09:00 from Darwen	
PM	Leave Harwich on Ferry 17:45	

	Friday 24th May	
PM	Arrive Denmark 13:00, drive up through Denmark to hotel in Hirtshals	

	Saturday 25th May	
AM	Ferry departs Hirtshals 08:30	
PM	Ferry arrives Stavanger 20:00, drive from Stavanger to Accommodation (including another ferry crossing)	

	Sunday 26th May	
	Day to be used to get organized, launch boats, set up compressors and sort food etc. Time permitting may have dive in afternoon.	

	Monday 27th May	
AM	Schwalbe	Alternative sites if required to be selected on the day depending on wind direction
PM	Krakene	Alternative sites if required to be selected on the day depending on wind direction

	Tuesday 28th May	
AM	Helganes	Alternative sites if required to be selected on the day depending on wind direction
PM	Ceang	Alternative sites if required to be selected on the day depending on wind direction

	Wednesday 29th May	
AM	Dresden	Alternative sites if required to be selected on the day depending on wind direction
PM	Sterling	Alternative sites if required to be selected on the day depending on wind direction

	Thursday 30th May	
AM	UJ1704	Alternative sites if required to be selected on the day depending on wind direction
PM	RØAVER	Dive around islands should provide shelter whatever wind direction.

	Friday31st June	
AM	Dresden	Alternative sites if required to be selected on the day depending on wind direction
PM	ULVØYA	Dive around islands should provide shelter whatever wind direction.

	Saturday 1st and Sunday 2nd June	
	Changeover days for people doing the1 week trips. Suggested 2 day break from diving for people on 2 week trip.	Time off to allow some sightseeing

	Monday 3rd June	
AM	Ceang	Alternative sites if required to be selected on the day depending on wind direction
PM	RØAVER	Dive around islands should provide shelter whatever wind direction.

	Tuesday 4th June	
AM	Broughton	Alternative sites if required to be selected on the day depending on wind direction
PM	Heimdal	Alternative sites if required to be selected on the day depending on wind direction

	Wednesday 5th June	
AM	Dresden	Alternative sites if required to be selected on the day depending on wind direction
PM	Nappholmen	Alternative sites if required to be selected on the day depending on wind direction

	Thursday 6th June	
AM	Agnes	Alternative sites if required to be selected on the day depending on wind direction
PM	Schwalbe	Alternative sites if required to be selected on the day depending on wind direction

	Friday 7th June	
AM	Dresden	Alternative sites if required to be selected on the day depending on wind direction
PM	ULVØYA	Dive around islands should provide shelter whatever wind direction.

	Saturday 8th and Sunday 9th June	
	Some divers will be flying home & the boats will be recovered from the water & loaded onto the trailers. There will be more time for people to relax and sightsee.	

	Monday 10th June	
	Drive to Stavanger to catch 21:00 Ferry	

	Tuesday 11th June	
	Arrive in Hirtshals and drive down Denmark to Esbjerg to catch 18:45 ferry	

	Wednesday 12th June	
PM	Ferry arrives back in Harwich, time for the final leg, driving to Darwen	

Research

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

http://elizabethgcharters.co.uk/	Robert Barlow Skipper for emergency procedures
Bellfield Tideplotter	Tidal information
http://www.norwaydiving.net/	Wreck site information
http://dykkepedia.com	Wreck site information
http://home.online.no/~ge-joer/frame.htm	Wreck information/local knowledge
Garmin Homeport	Used to help with passage plans
skipsforlis gjennom tidene	Wreck location information
skipsforlis i bergensleden	Wreck location information
http://www.haglandhavhytter.no/	Accommodation
http://www.windfinder.com	Information on weather
http://msi.nga.mil/MSISiteContent/StaticFiles/NAV_PUBS/SD/Pub182/Pub182bk.pdf	Information on local currents

Appendix

Contents

Wreck info

Passage plans to possible sites

Divers Qualifications

Tide times

This list of wrecks and passage plans contains primary dive sites as well as reserves. The list covers both wrecks and scenic dives, the scenic dives are in the approx. area of the co-ordinates as they are around islands which should provide sheltered diving sites whichever way the wind is blowing. There are wreck locations without detailed descriptions as we are currently trying to get translations regarding those wrecks, this may need to be done once we get to Norway.

Pysan 59° 37' 00" N, 5° 05' 60" E Depth Approx. 30m

Pysan was a small freighter. At the time it ran aground and sank, she would go from the UK to Iceland. So she was mildly off course.

Sterling 59 ° 28 '0 "N, 5 ° 13' 60" E Depth Approx. 18M

Sterling schooner was travelling from Gothenburg to Spain with a load of wood, when on the the 26 December 1918 during a storm she got in trouble in the North Sea and headed toward the Norwegian coast to seek a safe haven. Outside Førland harbour Sterling ran aground at night and signalled for urgent assistance. The crew of eight men were then taken to Haugesund, while Sterling was standing on the reef. The wreck of Sterling was rescued from the cut a few days later and towed into harbour Førland where she sank shortly after. Today remains of Sterling rest in eighteen meters on the northwest side of the pole in the middle of Førland bay on sandy soils. The wreck is quite broken up.

Strassburg 59 ° 25 '60 "N, 5 ° 13' 0" E Depth Approx 40m

Steamship Strassburg went down by Skåretrebåen north of Huagesund during a voyage from Cuxhaven in Germany was commissioned to go to Ålesund to fetch a load of fish. In Haugesund City she took on board empty boxes and left the harbour on the evening of the 10th February 1923. North of the town heading west, the ship ran aground on Skåretrebåen at high speed and got stuck. Salvage boats Achilles and Hercules came to the place the day February 11 and attempted to save the ship, but had to leave Strassburg because o f bad weather and the damage to the ship. Some fixtures were still salvaged from the wreck. Today the wreck of the Strassburg rests at forty meters and is fairly broken up. The boiler and lots of debris are located along the reefs and there is little that resembles a ship now. The wreck is very difficult to find and it is recommended that you obtain the assistance of local divers who know the place. You have to have good weather and a boat to get out to Strassburg.

Kirkholmen 59 ° 25 '0 "N, 5 ° 12' 0" E Depth Approx 45-65m

This wreck is located on the east side of Torvestad-Trebo rocks at Haugesund. She was a 41-meter 284gt trawler built in 1959 by Ankerløkken Floro. She ran aground with Torvastad-Trebo in May 1980. They mapped the position where it lay for a while on a shelf at 13m. but it was later knocked off the shelf in a storm and now lies on its side at 55-65m, with a least depth of 45m at the highest point.

Unknown / Risoy 59° 23' 60" N, 5° 16' 0" E

According to a local resident there is the wreckage of a small boat on the east side of the island south of Risøy in Haugesund. Local divers have also been looking for a small freighter Kaupanger west of the island, so far without success.

Kraft 59 ° 23 '60 "N, 5 ° 16' 40" E Depth Approx 60m

The wreck of the tug Kraft is on 55m north of a "mapped closed pipe" in Haugesund and about 200 yards from shore. The ship was pulled down when the crew failed to release a rope. Skipper escaped but the engineer was killed.

Kraft stands upright with the bow to the south-east. The hull is intact, but the wooden wheelhouse has gone. The wreck lies in the fairway in strong tides.

Agnes 59° 23' 60" N, 5° 16' 60" E Depth Approx 20-40m

Steamship Agnes went down just outside Haugesund by October 9, 1930. The ship was about to load coal on board when a storm blew up in the area. Agnes tore her moorings and sank right off the pier she was at. It has not been possible to obtain more details about the ship's history, but the wreck lies twenty to forty meters deep in the channel south of Haugesund city just south of the entrance to the quay. The wreck is on its keel in relatively good condition. Salvage Operations in the fifties have destroyed the stern and the bridge is completely gone. The wreck is on a fairly steep slope so you need to keep an eye on your depth. There is still a lot of coal dust on in the area so visibility could be drastically reduced if not careful. The remains of the superstructure may be unstable. It is possible to dive this wreck in all but the worst weather.

Schwalbe 59° 22' 60" N, 5° 17' 49" E Depth Approx 18-30m

Steamship Schwalbe was built in Bremen in 1898 and was the first large ship to be built at this shipyard. Schwalbe went down in the night of 2 December 1916 during a trip from Germany to Ålesund with a load of different goods. Aboard the ship was a crew of seventeen men. Schwalbe collided with the German steamship Timandra when they passed Salhus and the ship floated after the collision. An attempt was made to salvage the ship, but before they got the situation under control the ship sank in the middle of the strait near Haugesund. Today the wreck of Schwalbe rests at a depth of eighteen to thirty meters exactly where the sound is narrowest just below the bridge over Karmsundet. The wreck rests on the port side of the bow section pointing north and despite the age of this wreck is in very good condition. One can see that the rust and old age has begun to break down the ship so a certain amount of caution should be exercised. The wreck is easily accessible from the land where she rests a scant thirty feet from shore. The decks and superstructure have gone but the engine and utilities still remain but are very unstable and on the verge of collapse.

The current is strong here but there is a slack period approx. 3 hrs from H/LW. Planning for this dive must also involve looking at the ferry timetable as the catamaran passes at approx. 20 kts.

Heimnes A.K.A *Morild* 59° 22' 36" N, 5° 17' 54" E Depth Approx 15m

Heimnes capsized off Haugesund town south of Salhus 16 June 1966. Heimnes was traveling from Sandnes to Hardanger with a load of building materials and a crew of two men when they were taken by a strong current in Karmsundet and hit the ground. The hull sprang a leak and a while later the ship tipped over and sank. The crew survived the accident without injury. Heimnes was built in Bergen in 1870 under the name Skjold for the Norwegian company Det Stavangerske steamship company, but over the years was sold several times before she ended up with the name Heimnes during the past owners of Hebnes. The wreck is today neatly on the bottom near Karmøy Bridge at a depth of fifteen m and is easy to find. The place is however subject to strong currents, so care before a dive is a must.

Helganes 59 ° 16 '60 "N, 5 ° 10' 60" E Depth Approx 20-36m

Friday, November 16, 1990 at night, grounding Helganes north of Klovningen in Rogaland. The weather was fine with a light breeze and skipper Karsten P. Vedøy controlled her by autopilot. The captain spotted Klovningen reefs close by on the starboard bow and turned the rudder, but a grounding was inevitable. The boat did not stop but continued on the same course. After a quick trip down to the engine room, the crew could see that the water pouring in and they tried to start the pumps.The water was now too high in the engine room and there was just time to put on survival suits and notify Rogaland Radio. The boat was already deep in the water when the raft was launched. After a short time they stopped the engines and the captain was informed by radio that help was on the way. When the boat began to hew to the bottom they saw the lights of the ship Cross Company which came to help. When the crew was taken aboard Helganes had taken too much water and sank quickly. The skipper himself said after the grounding that the accident was due to human error. A few days later it was reported in Haugesund Avis that the site would be guarded because divers had atempted to dive the wreck. A guard was set up over the wreck for

security reasons. The wreck is currently at a depth of twenty to thirty-six meters and is an intact wreck with the bow being deepest part. The wreck is located at Marøy Åkra at Karmøy Island and you need a boat to get out to the site. The wreck is normally marked with a buoy.

Dresden 59° 12' 0" N, 5° 19' 0" E Depth Approx. 18-50m

Dresden was wrecked in June 1934 near Kobbervik at the plant. Dresden was originally built as a passenger ship in 1914 and was named after the famous German Count Zeppelin, who visited as Dresden left the dock in 1914. The ship was also among those which brought over many emigrants from Europe across to the American continent. Today the remains of Dresden are easily accessible to divers close to shore, but the wreck is getting in a bad condition. Another curiosity is that in villages around Kopervik you can find some of the inventory from Dresden. In a small cafe in Skudeneshavn there are images of the ship and various other equipment salvaged from the sea. Today the remains of Dresden lie in 18 to 50 meters depth close to land easily accessible to divers by boat. Towards the stern there are several shafts down below deck where porcelain and other items have been found, although most has now been removed by divers. The engine room has been completely cleared, but forward of this there can be found shattered sections of the galley, bathrooms, messrooms etc. Nowadays the wreck has started to deteriorate- in passageways where once you could swim there are hanging wires and steel plates are collapsing in many rooms and corridors. However if care is taken this wreck can be dived many times, constantly revealing new things.

UJ1704 59 ° 7 '60 "N, 5 ° 16' 0" E Depth Approx. 30-35m

UJ 1704 was originally built as a trawler in 1939 under the name Uhlenhorst, but after the outbreak of the Second World War she was requisitioned by Kriegsmarine and converted into submarine hunter. On the evening of the 12th December 1942 the Germans expected that the pocket battleship Lützow and support vessels to pass Haugesund on their way to northern Norway. UJ 1704 patrolled Skudefjord to protect against enemy submarines and on that night she went aground on Trebåen south of Skudenes in strong winds and high seas. The ship got stuck for a few hours and the crew went into the lifeboats and sent out distress signals. A losskip from Haugesund rock with a German guard vessel and tug Jomsburg crew was dispatched. Four men from UJ 1704 died in this accident. Today she rests at a depth of twenty meters and is very broken down due to the harsh weather Only the bow section and the stern are still partly complete. The wreck is unfortunately hard to find, lying between two large rocks in a rather rocky area, so it is best to enlist the help of local divers who know the wreck. To dive wreck you must have good weather and a boat There may still be live ammunition on the wreck after an attempt by the navy to detonate the depth charges and ammunitionon aboard was thwarted by a curious dolphin.

Ceang 59° 12' 41" N, 5° 28' 8" E Depth Approx. 9-25m

Ceang was a ship that was loaded with 576 tons of gravel which was traveling from Høgsvik to Bergen when it went on aground on the 16th August 1977. The accident killed three people from a crew of six men. Two of the dead were found after the accident, while a person from the crew is still missing. Divers from Falken went down on the wreckage after the accident, but could not find the missing person. The divers could also conclude that the ship had sunk rapidly as one of the lifeboats was still mounted on the wreck. A crack in the bottom with a ten foot length gave the crew no more than a few minutes to get into the sea during the accident. The wreck is now a great dive that is twenty-five meters deep and is certainly worth a visit. The wreck lies outside Western Bokn about 45 miles from Haugesund city. Boat is recommended if you are going to visit the wreck of Ceang, but it is also possible to reach it from the land. Drive to the end of the south pier and swim out to the reef right off. She lies between eastern and western Bokn nearly a hundred yards from shore, just north of the candlestick. Ceang is normally marked with a buoy...

The wreck lies outside the breakwater east of Knarholmen, about 2 miles south of Lead Deceit. Approx. 100m from the shore north of the candlestick.

Directions: From the pier Knarholmen, go to the end against the Knarholmen and go in the water there. There is a dock at the pier with steps that make ilandstiging easier. Then swim over to the island which is located in the entrance to Knarholmen On the eastern side of the island, swim directly east of the fishery industry in Knarholmen remain aligned over the island, it is about 100 yards out to the wreck. To the South Pole, wreck lies on the inside of the pole. Depth from 12-26m. Normally wreck marked with ropes to the mast and blow on the surface. Condition: The wreck is over on the left side, and is overgrown. Some rope and fishing equipment on top of the wreck, so have a knife you. The front of the cab crashed in 2006 and located on the bottom under the wreckage. Penetration is not recommended, as there is much mud inside the boat, and narrow access. But it is possible to swim into the hold as cargo hatches are missing and there is good access in and out. The load consists of shingle that is still there. If you are lucky you can see long under the wreck, it is entirely under the keel. Otherwise a lot of fish around the wreck in the summer mast and propeller. Nice photo. The bottom of the wreck is overgrown with nice fans that pull in when the light comes on. Current Conditions: It can sometimes be strong tidal currents at the surface of the wreck; it is advisable not to dive from shore in between tides. The current decreases when descending on the wreck and is not as troublesome

Anna Sophie 59 24.85N 005 14.43E Depth Approx. 37 to 52m

The wreck is lying on the port side (90 deg list!) bow to the south. There have been no attempts to salvage scrap metal and because of the depth no breaking action from the waves thus the hull and superstructure is nearly intact. The wooden floors are all eaten by the pile worm. Easy to find, but the main fairway goes right over the wreck. The tidal currents are rather strong in the area often with layers, so even if it seems calm at the surface, the current at the wreck may be considerable. This is a wreck for the hardcore wreckdivers, even though there has been no fatal accidents, but a lot of narrow escapes.

SS Vestra 59 24.32N 005 15.77E Depth Approx. 40-51M

She is now standing on an even keel, bows facing north. The superstructure is collapsed. Apart from the holes from the air raid, the hull is also suffering some damage from anchor chains or wire from oil rigs doing repairs at the shipyard. The bottom in this area is nice and even, making it quite easy to locate wrecks by echosounder A boat is needed, beware all the ships entering the outer harbour sail here. A small zodiac might not be seen... Apart from that, and the strong tidal current, and the fact that if you loose your bearings you can't follow the bottom to the surface, it's a nice place to dive. A smart move is to call the security dept of the "UMOER" shipyard before the dive, sometimes they have oil rigs moored near the wreck making diving risky.

Chart showing area covered and distribution of dive sites.


Lat/Lon hddd°mm.mmm' WGS 04
Domio
E5 22.400
E5 32.000
Hardangerfjorden
511
N59 37.600
North Sea
Alfjorden
134
N59 27.200
Haugesund
Karmoy
Akrehamn
Boknafjorden
N59 16.800
N59 06.400
Norway
E5 01.600
E5 12.000
E5 22.400
NORWAY
GARMIN

WRECK DIVES

Agnes

Waypoint	Waypoint name/ description	From/to (Lat and Long)	TRUE	Var	Mag	Distance (Nm)	Speed (Kn)	Leg run time (H:M:S)	TotalTime (H:M:S)	Total Fuel used (L)	Comments
1		N59 24.817 E005 15.335		0.05			15	00:00:00	00:00:00		
2		N59 24.739 E005 15.272	202.2	0.05	202.25	0.084		00:00:20	00:00:20	0.1	
3		N59 23.935 E005 16.713	137.6	0.05	137.7	1.09		00:04:42	00:05:02	1.7	
					Total	1.174					

Anna Sofie

Waypoint	Waypoint name/ description	From/to (Lat and Long)	TRUE	Var	Mag	Distance (Nm)	Speed (Kn)	Leg run time (H:M:S)	TotalTime(H:M:S)	Total Fuel used (L)	Comments
1		N59 24.817 E005 15.336		0.05			15	00:00:00	00:00:00		
2		N59 24.643 E005 15.053	219.6	0.05	219.65	0.226		00:00:54	00:00:54	0.3	
3		N59 24.768 E005 14.660	302.0	0.05	302.05	0.236		00:00:57	00:01:51	0.7	
4		N59 24.85 E005 14.43	306.3	0.05	306.35	0.14		00:00:34	00:02:25	0.9	
					Total	0.602					

Broughton

Waypoint	Waypoint name/ description	From/to (Lat and Long)	TRUE	Var	Mag	Distance (Nm)	Speed (Kn)	Leg run time (H:M:S)	TotalTime(H:M:S)	Total Fuel used (L)	Comments
1		N59 24.817 E005 15.336		0.05			15	00:00:00	00:00:00		
2		N59 24.643 E005 15.053	219.6	0.05	219.65	0.226		00:00:54	00:00:54	0.3	
3		N59 24.768 E005 14.660	302.0	0.05	302.05	0.236		00:00:57	00:01:51	0.7	
4		N59 25.018 E005 14.221	318.3	0.05	318.35	0.336		00:01:21	00:03:12	1.2	
5		N59 24.970 E005 14.035	242.9	0.05	242.95	0.107		00:00:26	00:03:38	1.3	
6		N59 25.090 E005 13.872	325.7	0.05	325.75	0.147		00:00:35	00:04:13	1.5	
7		N59 25.224 E005 13.494	304.8	0.05	304.85	0.235		00:00:56	00:05:09	1.9	
8		N59 25.344 E005 12.698	286.5	0.05	286.55	0.423		00:01:42	00:06:51	2.5	
9		N59 24.69 E005 06.94	257.5	0.05	257.55	3.002		00:12:00	00:18:51	6.9	
					Total	4.712					

Ceang											
Waypoint	Waypoint name/ description	From/to (Lat and Long)	TRUE	Var	Mag	Distance (Nm)	Speed (Kn)	Leg run time (H:M:S)	TotalTime (H:M:S)	Total Fuel used (L)	Comments
1		N59 24.817 E005 15.335		0.05			15	00:00:00	00:00:00		
2		N59 24.739 E005 15.272	202.2	0.05	202.25	0.084		00:00:20	00:00:20	0.1	
3		N59 24.088 E005 16.139	145.9	0.05	145.95	0.788		00:03:09	00:03:29	1.3	
4		N59 22.817 E005 17.521	151.0	0.05	151.05	1.455		00:05:49	00:09:18	3.4	
5		N59 22.362 E005 17.784	163.6	0.05	163.65	0.475		00:01:54	00:11:12	4.1	
6		N59 22.007 E005 17.946	166.9	0.05	166.95	0.365		00:01:28	00:12:40	4.6	
7		N59 21.203 E005 18.692	154.7	0.05	154.75	0.89		00:03:34	00:16:14	6.0	
8		N59 20.430 E005 18.924	171.3	0.05	171.35	0.784		00:03:08	00:19:22	7.1	
9		N59 18.997 E005 19.610	166.3	0.05	166.35	1.477		00:05:55	00:25:17	9.3	
10		N59 14.504 E005 21.116	170.3	0.05	170.35	4.567		00:18:16	00:43:33	16.0	
11		N59 14.292 E005 21.961	116.1	0.05	116.15	0.482		00:01:56	00:45:29	16.7	
12		N59 14.980 E005 23.550	49.7	0.05	49.75	1.066		00:04:16	00:49:45	18.2	
13		N59 14.811 E005 25.523	99.6	0.05	99.65	1.025		00:04:06	00:53:51	19.7	
14		N59 13.974 E005 26.974	138.4	0.05	138.45	1.12		00:04:29	00:58:20	21.4	
15		N59 13.743 E005 27.586	148.0	0.05	148.05	0.592		00:02:22	01:00:42	22.3	
16		N59 13.363 E005 27.512	199.0	0.05	199.05	0.177		00:00:28	01:01:10	22.4	
17		N59 12.70 E005 28.12	154.7	0.05	154.75	0.733		00:02:56	01:04:06	23.5	
					Total	16.08					

SCENIC DIVES

Espeaver

Waypoint	Waypoint name/ description	From/to (Lat and Long)	TRUE	Var	Mag	Distance (Nm)	Speed (Kn)	Leg run time (H:M:S)	TotalTime (H:M:S)	Total Fuel used (L)	Comments
1		N59 24.817 E005 15.335		0.05			15	00:00:00	00:00:00		
2		N59 24.896 E005 15.165	312.2	0.05	312.25	0.117		00:00:28	00:00:28	0.2	
3		N59 25.211 E005 14.051	331.7	0.05	331.75	0.358		00:01:26	00:01:54	0.7	
4		N59 26.106 E005 14.051	336.1	0.05	336.15	0.982		00:03:56	00:05:50	2.1	
5		N59 26.708 E005 13.090	320.6	0.05	320.65	0.776		00:03:06	00:08:56	3.3	
6		N59 30.025 E005 12.603	355.7	0.05	355.75	3.332		00:13:20	00:22:16	8.2	
7		N59 32.249 E005 13.550	12.2	0.05	12.25	2.279		00:09:07	00:31:23	11.5	
8		N59 33.742 E005 11.013	319.3	0.05	319.35	1.974		00:07:54	00:39:17	14.4	
9		N59 35.14 E005 09.301	328.4	0.05	328.45	1.655		00:06:37	00:45:54	16.8	
					Total	11.473					

Indrevaer

Waypoint	Waypoint name/ description	From/to (Lat and Long)	TRUE	Var	Mag	Distance (Nm)	Speed (Kn)	Leg run time (H:M:S)	TotalTime (H:M:S)	Total Fuel used (L)	Comments
1		N59 24.817 E005 15.336		0.05			15	00:00:00	00:00:00		
2		N59 24.643 E005 15.053	219.6	0.05	219.65	0.226		00:00:54	00:00:54	0.3	
3		N59 24.768 E005 14.660	302.0	0.05	302.05	0.236		00:00:57	00:01:51	0.7	
4		N59 25.018 E005 14.221	318.3	0.05	318.35	0.336		00:01:21	00:03:12	1.2	
5		N59 24.970 E005 14.035	242.9	0.05	242.95	0.107		00:00:26	00:03:38	1.3	
6		N59 25.090 E005 13.872	325.7	0.05	325.75	0.147		00:00:35	00:04:13	1.5	
7		N59 25.224 E005 13.494	304.8	0.05	304.85	0.235		00:00:56	00:05:09	1.9	
8		N59 25.128 E005 11.759	263.8	0.05	263.85	0.889		00:03:33	00:08:42	3.2	
9		N59 25.22 E005 08.80	273.5	0.05	273.55	1.508		00:06:02	00:14:44	5.4	
					Total	3.684					

Krakene

Waypoint	Waypoint name/ description	From/to (Lat and Long)	TRUE	Var	Mag	Distance (Nm)	Speed (Kn)	Leg run time (H:M:S)	TotalTime (H:M:S)	Total Fuel used (L)	Comments
1		N59 24.817 E005 15.336		0.05			15	00:00:00	00:00:00		
2		N59 24.643 E005 15.053	219.6	0.05	219.65	0.226		00:00:54	00:00:54	0.3	
3		N59 24.768 E005 14.660	302.0	0.05	302.05	0.236		00:00:57	00:01:51	0.7	
4		N59 25.018 E005 14.221	318.3	0.05	318.35	0.336		00:01:21	00:03:12	1.2	
5		N59 24.970 E005 14.035	242.9	0.05	242.95	0.107		00:00:26	00:03:38	1.3	
6		N59 25.090 E005 13.872	325.7	0.05	325.75	0.147		00:00:35	00:04:13	1.5	
7		N59 25.224 E005 13.494	304.8	0.05	304.85	0.235		00:00:56	00:05:09	1.9	
8		N59 25.344 E005 12.698	286.5	0.05	286.55	0.423		00:01:42	00:06:51	2.5	
9		N59 25.37 E005 12.48	286.6	0.05	286.65	0.114		00:00:27	00:07:18	2.7	
					Total	1.824					

Nappholmen

Waypoint	Waypoint name/ description	From/to (Lat and Long)	TRUE	Var	Mag	Distance (Nm)	Speed (Kn)	Leg run time (H:M:S)	TotalTime (H:M:S)	Total Fuel used (L)	Comments
1		N59 24.817 E005 15.335		0.05			15	00:00:00	00:00:00		
2		N59 24.896 E005 15.165	312.2	0.05	312.25	0.117		00:00:28	00:00:28	0.2	
3		N59 25.211 E005 14.051	331.7	0.05	331.75	0.358		00:01:26	00:01:54	0.7	
4		N59 26.106 E005 14.051	336.1	0.05	336.15	0.982		00:03:56	00:05:50	2.1	
5		N59 26.708 E005 13.090	320.6	0.05	320.65	0.776		00:03:06	00:08:56	3.3	
6		N59 30.025 E005 12.603	355.7	0.05	355.75	3.332		00:13:20	00:22:16	8.2	
7		N59 32.249 E005 13.550	12.2	0.05	12.25	2.279		00:09:07	00:31:23	11.5	
8		N59 36.781 E005 17.733	25.0	0.05	25.05	5.012		00:20:03	00:51:26	18.9	
9		N59 38.46 E005 20.28	37.5	0.05	37.55	2.125		00:08:30	00:59:56	22.0	
					Total	14.981					

Qualifications of divers on trip

Name	Office	Club	Diver grade	Instructor grade	Boat Handler	Diver Cox	Radio op	O2	First Aid	PRM	Lifesaver	Advance lifesaver	AED	ADT	ADP	Bouyancy	Plan Man	Gas blend	Search Rec	Wreck Appreciation	Chartwork and positionfixing	Sports mixed gas	Sea Search
Keith Adam		Darwen	S																				
Patricia Booth	Training	Darwen	A	AAI	X			X	X	X	X		X		X	X	X		X		X		X
Phill Botting		Trafford	DL		X		X				X												
Martyn Dean	Boat	Darwen/Trafford	DL		X			X			X				X			X					X
Ian Dearden	DO	Darwen	A		X		X	X			X							X					
Jill Dearden	Secretary	Darwen/Trafford	A	ADI	X		X	X	X	X	X				X			X					X
Keith Dearden		Darwen	A		X		X	X		X	X							X			X	X	
Jonathan Greenbaum		Trafford	A	ITC	X			X		X	X						X				X		
Mike Holroyd	DO Ribble	Darwen/Ribble	FC	IT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X
Dave Lindsay		Farnworth	A	ADI	X			X															
Duncan Read		Bury	A	AI	X	X	X		X				X					X	X				
Emma Starkey		Darwen	OD																				
Paul Targett		Darwen	A	ADI	X										X								

Tide times

Sunday 26th May		Monday 27th May		Tuesday 28th May		Wednesday 29th May		Thursday 30th May		Friday 31st May		Saturday 1st June	
05:57	0.3m	00:43	0.9m	01:29	0.9m	02:17	0.9m	03:08	0.9m	04:01	0.8m	05:03	0.8m
12:22	0.9m	06:44	0.3m	07:32	0.2m	08:24	0.2m	09:19	0.2m	10:18	0.3m	11:24	0.3m
18:18	0.2m	13:09	0.9m	13:58	0.9m	14:49	0.8m	15:45	0.8m	16:45	0.7m	17:55	0.7m
		19:04	0.2m	19:51	0.2m	20:42	0.3m	21:36	0.3m	22:36	0.4m	23:47	0.4m

Sunday 2nd June		Monday 3rd June		Tuesday 4th June		Wednesday 5th June		Thursday 6th June		Friday 7th June		Saturday 8th June	
06:11	0.8m	00:59	0.4m	02:08	0.4m	03:05	0.4m	03:52	0.3m	04:33	0.3m	05:11	0.3m
12:34	0.3m	07:21	0.7m	08:27	0.7m	09:23	0.8m	10:10	0.8m	10:51	0.8m	11:29	0.8m
19:06	0.7m	13:42	0.3m	14:41	0.3m	15:30	0.3m	16:12	0.3m	16:50	0.3m	17:25	0.3m
		20:14	0.7m	21:10	0.7m	21:56	0.8m	22:36	0.8m	23:48	0.8m	23:48	0.8m