

CLIDIVE BSAC 410



North Shetland 2011 Expedition Plan

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Purpose

The overall purpose of the expedition is to further explore the area of North Shetland, and in particular the largely un-dived West Coast of Unst. The expedition aims to:

- Discover new dive sites in the area
- Extend Clidive's Dive Guide to Unst
- Cascade skills from First Class Diver level through to Sport Divers
- Complete a more extensive Seasearch survey of the area
- Carry out a further survey of the wreck of the E49
- Promote expeditionary diving, and North Shetland as a location, to the wider diving community

Background

In 2009, Clidive carried out our most adventurous expedition, to dive the most northern tip of Britain in Unst, Shetland. The expedition went on to win the Peter Small award for the most worthwhile and ambitious BSAC Project conducted in British waters that year. Everyone who went on the expedition found it to be an inspiring experience, leading to an increase in skills amongst the group and a desire to organise more adventurous diving. It was also widely felt that Unst held some of the most remarkable diving in British water, and we were only able to skim the surface of this extraordinary location.

At our annual Dive Planning Meeting in October 2010, where the following year's aims are discussed, it was decided that the club would like to re-visit North Shetland in order to build on the previous expedition and learn more about this location. In addition to this, the expedition helps to meet the club's overall aims for 2011, which include:

- 1) To provide an adventurous and wide-ranging dive programme that includes expeditionary diving around the UK.
- 2) To encourage all members to continually develop their skills and experience and promote an environment of self-improvement, teamwork, responsibility and safety awareness.
- 3) To ensure that marine conservation is at the heart of the club's ethos and activities.
- 4) To play an active part in the promotion of diving both locally and within BSAC as a whole; sharing knowledge, resources and best practice.

Area Overview

North Shetland is remote. There is no commercially available air available in Shetland and no dive shop. The nearest hyperbaric chamber is in Stromness in Orkney, 150 miles away. Therefore we will need to be completely self-sufficient. We will be diving around the most northerly tip of the UK, on the same latitude as Bergen in Norway.

As you might expect, Unst has its fair share of weather. It holds the UK record for the strongest recorded wind speed – 177mph. Gales, strong swells and sea fogs are common in this area. When the wind drops, the midgets descend. The land temperature in August is entirely weather



dependent, but underwater, the temperature will be around 13 degrees Celsius. Underwater visibility in Shetland, though variable, can reach 30+ metres. The diving is challenging – there are strong currents, including complex eddies and strong up and down currents. Periods of slack are very short, even on neaps. We will be diving sites that are previously undived or are very rarely dived. In short, the weather and underwater conditions are unpredictable, and therefore flexibility in the dive plan, and an experienced level of diver, are paramount.

Dive Platform

We will be taking one of our club RIBs, Clidive Yellow. It is a 6.5m vessel with space for 8 divers with kit, and room for a further 8 cylinders on board. Clidive Yellow has twin engines, allowing redundancy in case of engine failure. Taking our own RIB will give us the ultimate flexibility to explore previously un-dived areas.

Contingency Plan

Although the weather in Shetland can be unpredictable, even in strong winds there are options of dive sites on one side of the island, and there are sheltered sites around Bluemull Sound in Yell. In a southerly or easterly wind, there is potential to moor the RIB in Burra Firth and explore the sites both in the sound and the western side of Unst. In a westerly wind, the eastern side of Unst can be explored and the wreck of the E-49 just outside Balta Sound is sheltered. In case of extremely severe weather, Balta Sound has a number of areas that could be explored and Seasearch surveys completed as it is well protected in all weathers. In the unlikely event of not being able to dive at all for a day, Unst has excellent coastal walking. The opportunity could also be taken to undertake theory based skill development courses and provision will be made for this in advance by having adequate training materials available.

Expedition Management

There will be an in depth planning meeting in spring for all participants, to firm up the plan for the week and to assign tasks and responsibilities both prior to and during the expedition.

On the expedition itself, the dive management will be overseen by mentor and First Class Diver John Davies, who will support two dive managers: Rory Budds for week one, and Ben Jaffey for week two. Both dive managers have extensive experience at expedition planning and management, and both are former Diving Officers in the club. Rory Budds is an Open Water Instructor, and Ben Jaffey is an Advanced Instructor. Both are advanced divers.

In order to cascade skills, each day an advanced diver will buddy a less experienced diver to plan the following day's diving. They will also decide diver pairings dependent on experience, training needs and in order to assign surveying tasks.



Participant Criteria

The aim is to open up expeditionary diving to those who have progressed their sports diving sufficiently and have not had an opportunity to take part in this type of diving before, to cascade skills to experienced divers to give them the skills necessary to plan expeditionary diving in the future, as well as having sufficient advanced divers present in order to run the expedition and achieve its aims. More specifically, all participants are to meet the following criteria:

- Be an experienced UK diver, with depth progression to a minimum of 35m and experience of decompression diving.
- Dive fit at the time of the expedition, having completed similar diving from RIBs immediately prior to it.
- Be committed to the aims of the expedition and to personal progression and training.
- Be prepared to take part in compressor training or already be qualified and proficient.

Potential participants were chosen based on the criteria above. A full list of team members can be found as appendix B. The participants reflect this aim as there are a broad range of qualifications:

- 1 First Class Diver
- 6 Advanced Divers
- 5 Dive Leaders
- 5 Sports Divers
- Every participant has committed to extend their training, or to cascade skills to others

Getting There

The RIB is based in Plymouth during the summer. Once we get the RIB the 230 miles from Plymouth to London, it is a further 810 miles from London to Unst – getting there is logistically challenging.

Each week there are four drivers – two will drive the club's red van carrying the equipment and compressors, and two will tow the RIB using the club's white truck. Getting to North Shetland involves driving to Aberdeen, and taking an overnight ferry to Lerwick in Mainland, South Shetland. Two ferries then need to be taken between Toft, North Mainland and Ulsta, Yell, and then between Gutcher, Yell and Belmont, Unst. The ferry timetable for summer is not yet available, but ferries run frequently. They will be booked closer to the time to ensure that there is space for the two club vehicles and club boat. The Aberdeen to Lerwick ferry is already booked.

The remainder of the team will either fly or get the train and ferry to North Shetland. There are several ways of doing this, but by air, it involves flying to Aberdeen or Glasgow, then changing onto a flight to Sumburgh airport on the Southern tip of Mainland Shetland. It is then an 80 mile drive, via the ferries named above, to the accommodation in Unst. These ferries do not need to be booked in advance for cars. Those flying will hire a car to drive up to Unst – this will also allow us an extra vehicle during the expedition for driving to the mooring, and for different people to take on different tasks during the week such as shopping and fueling the boats.



Dates

The expedition will take place over two weeks, with a total of 12 days diving. In order to allow an increased number of club members to have the opportunity to extend their skills and to experience this fantastic area, there will be two dive teams. The anticipated timetable is as follows:

March / April	Servicing of RIB and trailer
Sunday 10 July	Yellow RIB towed from Plymouth to Penton Hook Marina, London
Thursday 28 July	All put diving kit and boat kit into van on club night
Saturday 30 July	Pick up compressors
Friday 5 August	4 x week one team drive equipment and boat to Aberdeen and catch overnight ferry to Lerwick
Saturday 6 August	4 x week one team arrive in Lerwick and drive to Unst Supermarket shop in Lerwick, then fuel and launch boats Remainder week one team fly London to Sumburgh, drive to Unst
Sunday 7 August	Week one team complete 6 days expeditionary diving
↓	
Saturday 13 August	Changeover Day All week one team drive to Lerwick for night All week two team fly to Sumburgh, drive to Lerwick Handover briefing meeting in Lerwick All week two team drive to Unst
Sunday 14 August	All week one team fly Sumburgh to London Week two team complete 6 days expeditionary diving
Saturday 20 August	4 x week two team drive to Sumburgh then fly to London 4 x week two team drive with boat to Lerwick, ferry to Aberdeen
Sunday 21 August	4 x week two team drive to Penton Hook Marina in London Compressors returned
Thursday 25 August	All retrieve personal kit from van on club night
Friday 26 August	Boat towed from Penton Hook Marina to Plymouth

Costs

All participants have paid a deposit of £150 to secure their place on the trip. During the trip the nominated money marshal will collect receipts for expenses and ascertain the final price in conjunction with the dive manager. Participants will pay at the end of the trip. A waiting list of divers is in operation in case a diver has to cancel. If a replacement cannot be found, the diver cancelling will need to pay in full, and hence all participants are encouraged to purchase adequate travel insurance.

Approximate cost per diver is £580.13 excluding most transport and training costs. A full breakdown of predicted costs can be found as appendix C. This is significantly more than the cost of a usual RIB trip, and therefore a BSAC expedition grant is being applied for in order to contribute to the extraordinary costs associated with running a remote two week expedition – for example hiring of compressors and extra training for the expedition.



Accommodation

Two adjacent cottages have been booked at Saxa Vord resort – www.saxavord.com – and are a 10 minute drive from the two locations where the boat will be moored.

The cottages are spacious, with lounge areas, large self-catering kitchens and a dining space large enough for everyone to eat together and have briefings for the following days diving. There are also laundry facilities in case of leaking drysuits, garages where equipment can be stored, and ample parking for the two club vehicles and one hire vehicle. Fresh sheets and towels will be provided by the warden for the second week of the expedition.

Keys will be collected from the warden on Saturday 6th August after 14.30, and then collected by Annette and Declan for the second week, as they will be arriving earlier. Check out is by 10am on Saturday 20th August. There is also a restaurant on site, and a bar with wi-fi internet access.

Room allocations are as follows:

Room	House 1	House 2
Week One:		
Double Bedroom	Mary Brown and Rory Budds	Warwick Mason and Bethan Young
Twin Bedroom	John Davies	Paul Reid
Single Bedroom	Naomi Davies	Natasha Gewaltig
Week Two:		
Double Bedroom	Cori Crider and Ben Jaffey	Declan Daly and Annette Miller
Twin Bedroom	Nick Harrison and Elaine Hendry	Dave Pickford
Single Bedroom	Spare in case of excessive snorers!	Chris Coles

Directions from Gutcher ferry terminal in Unst:

- | | | |
|----|------------------------------|-----------|
| 1. | Continue straight onto A968 | 6.8 miles |
| 2. | Turn right to stay on A968 | 0.6 miles |
| 3. | Turn left to stay on A968 | 0.3 miles |
| 4. | Turn right to stay on A968 | 2.6 miles |
| 5. | Continue onto Beach Rd/B9086 | 0.8 miles |
| 6. | Turn left | 0.2 miles |
| 7. | Take the 1st right | 308 feet |



Address:
Saxa Vord Resort, Vaslgarth
Unst, ZE2 9TJ
01957 711 711



Catering

To keep costs down, self-catering cottages have been rented. A large quantity of food will be bought in a supermarket in Lerwick on route to North Shetland. The Final Checkout shop and petrol station in between Baltasound and Haroldswick also stocks a wide range of food. There is also a bakery at Skibhoul Stores in Baltasound, who offer cash back. Next to Skibhoul Stores there is a post office.

Participants will prepare their own breakfasts, and a packed lunch will be prepared for everyone each morning on a rota basis. Dinner will also be cooked on a rota basis. It is anticipated that on the final evening, we will eat out at the Saxa Vord restaurant located on site.

Air and Fuel

Fuel is available at the petrol station at The Final Checkout near Haroldswick, a five minute drive from the mooring in Balta Sound. Each day as needed, a fuel run will be done on a rota basis.

There is no commercially available air on the island, and hence we will need to bring our own compressors, and fill cylinders on a rota basis. Each day, divers will take enough air for two dives onto the boat. Two compressors will be hired and transported to Unst – one primary compressor, and a secondary one as a backup. There is plenty of open space in Unst to fill cylinders without disturbing anyone. All participants are expected to complete BSAC's Compressor Operator course and participate in filling cylinders. We will be bringing supplies of O2 in order to use Nitrox for accelerated decompression and additional safety.

Personal Equipment

This list is not exhaustive, but all participants will be expected to bring:

- Complete set of personal dive gear
- Flag and Delayed Surface Marker Buoy
- Cylinders x 2 / Rebreather
- Alternative air source – twin set / pony cylinder
- Knife / shears / line cutter / torch and back up
- Dive slate
- Warm hat / windproof jacket for boat
- Sun protection - hat / sunblock and insect repellent (midges)
- Passport (for ferry / plane ID), cash (no cashpoint on island) and cheque book
- Underwater housing and camera (optional)

Dive gear will be transported to Unst in the club vehicle, and stored in the secure garage at the accommodation whilst not in use. Due to space limitations, participants will be sharing some equipment with those on the opposite week. These items include tool kits, cylinders (including ponies) and weights where possible. Sharing will be arranged closer to the time by the equipment marshall.



Expedition Equipment

In addition to the items above, the following will be necessary:

- 2 full sets of scuba equipment as spares, including spare weight and cylinders
- 2 compressors and nitrox blending equipment
- Clidive Yellow RIB (with inbuilt VHF radio, GPS and echosounder), shot and tools
- Fuel containers
- Handheld backup GPS and VHF radio
- Safety equipment including flares, emergency O2 kit, first aid kit, EPIRB, diver log sheets
- Survey equipment, Seasearch logs and marine identification books
- Training materials, charts, literature about area

Diver Safety

Clidive has a culture of prioritising the safety of its members, and this will be especially important whilst diving in a remote location like Shetland, where there is very limited support available in the event of an emergency. All participants on the expedition are to be qualified to a minimum of Sports Diver, and have dived in similar conditions in the UK. In addition to this, divers who hold the VHF, O2 admin, lifesaver, PRM and first aid qualifications have been identified as expedition medics who will take the lead in the event of diver injury. On the RIB we will carry 2 x 12 litre cylinders of oxygen, with capacity for four divers to be treated with oxygen at the same time. We also carry adequate water, a first aid kit, and throw rope. All our boat handlers are qualified to a minimum level of BSAC Diver Cox'n and have completed O2 administration, PRM and VHF qualifications.

Everyone will be expected to have read and understood BSAC safe diving practices and the risk assessment, which can be found as appendix A. In addition to this, an individual risk assessment will be carried out for each dive site dependent on the individual conditions, and the Coastguard will be kept informed of our movements. Due to diving unknown sites with potentially strong currents, some sites will be designated no-decompression dives. Divers are expected to carry out decompression on wreck sites using a static shotline.

Interclub Collaboration

Several members of the expedition have dual membership with other BSAC clubs. We will also contact Zetland BSAC in the coming months. One of the primary objectives of the expedition is to promote expeditionary diving and particularly North Shetland as a location to the wider diving community, and this will be done primarily through the Dive Guide to Unst. Several participants have expressed interest in holding a workshop on expedition diving for BSAC branches in the region.

Roles and Responsibilities

Each evening different people will take responsibility for the following tasks on a rota system. The exact rota will be decided at the pre-expedition planning meeting, and may be subject to change during the week. The aim is that all participants will take a lead on all aspects of running an



expedition during the week in order to maximise the learning experience. See appendix G. In addition to this, each participant will take overall responsibility for a role for the week, as outlined below. Some roles are subject to change following on from the pre-expedition planning meeting. This ensures that expedition runs smoothly and is determined by current skills. Development of skills will occur through the daily rota and buddy system as detailed above.

Role	Week 1	Week 2
Mentor and First Class Diver Oversees expedition and ensures aims are being met Supports dive managers and expedition leader	John Davies	
Expedition Leader Under guidance of mentor, manages expedition Manages BEGS application and reporting	Ben Jaffey	
Dive Manager Co-ordinates dive plan for the week and manages risk	Rory Budds	Ben Jaffey
Assistant Dive Manager Shadows Dive Manager to progress experience Takes on planning tasks as delegated by Expedition Leader	Naomi Davies	TBC
Drivers x 2 – red van Drives club red van to/from Shetland, with club equipment	Paul Reid Natascha Gewaltig	Ben Jaffey Declan Daly
Drivers x 2 – white truck + boat Drives white truck and tows boat to/from Shetland	Rory Budds John Davies	Nick Harrison Elaine Hendry
Money Marshall Collates receipts and completes money marshall sheet Collects money and passes to expedition leader	Paul Reid	Chris Coles
Equipment Marshall Ensures correct equipment is brought and working	Rory Budds	
Dive Site Information Co-ordinator Collates information about sites dived, including location, features, slack times, depth etc. for Dive Guide to Unst	John Davies	Ben Jaffey
Seasearch Co-ordinator Ensures Seasearch data is being collected and reported Collates information	Naomi Davies	Annette Miller
Food Co-ordinator Plans shopping for the week, and books any meals out Ensures that boats are stocked with water and chocolate	Mary Brown	Cori Crider
Boats Co-ordinator Ensures boats are fuelled, oiled and in working order each day	Warwick Mason	Declan Daly
Blog Co-ordinator Ensures blog is updated every day	Natascha Gewaltig	Dave Pickford
Trip Report for Club Writes trip report for club website	Bethan Young	Elaine Hendry
Training Co-ordinator Ensures that training needs within group each week are met Ensures cascading of skills	John Davies	Ben Jaffey
Expedition Medics Divers who hold the following qualifications – VHF, O2 admin, lifesaver, PRM and first aid courses	RB, MB Back up: ND, JD	DD, AM Back up: BJ, EH
Media Co-ordinator Co-ordinates press coverage	Mary Brown	



Launching and Recovery

We will be launching and recovering in Balta Sound, where there is an easily accessible slipway, and we can launch at any state of tide. It is anticipated that we will moor the RIB at Burra Firth for much of the expedition, as it allows quicker access to the northern and western side of Unst where we aim to explore new sites. However it is exposed to the north, so in a strong northerly wind we will moor in Balta Sound. At both locations there are toilets on site, and ample parking space. Charges are minimal but we will need to arrange moorings in advance.

	Balta Sound	Burra Firth
Position	60° 45.53' N; 0° 50.53' W	60° 48.63' N; 0° 52.43' W
Chart	3282 / 3293	3282
Depth (low water)	5.0 metres	3.1 metres
Tidal Differences	-0055 Lerwick	-0110 Lerwick
Main Contact	Penny Thompson, 01957 711444	Edmund Nicholson, 01806 522447
Notes	Accessible slip, well sheltered	No slip, exposed to the North

Location of key sites in Unst:



Tidal Information

The neap falls on Monday 8 August, during week one of the Expedition. The spring tide falls on Monday 15th August near to the beginning of week two. However the tidal range is quite small, as shown below and our previous experience is that there is little difference between spring and neap tides; the currents are always strong!

Tidal information for Lerwick, August (BST):

Sunday 7 0517 1.9 1131 0.8 1750 1.7	Monday 8 0013 0.9 0635 1.8 1301 0.9 1907 1.7	Tuesday 9 0154 0.8 0805 1.7 1421 0.9 2027 1.8	Wednesday 10 0307 0.7 0922 1.8 1524 0.9 2133 1.9	Thursday 11 0404 0.6 1021 1.9 1614 0.8 2226 2.0	Friday 12 0449 0.5 1108 1.9 1656 0.7 2312 2.1
Sunday 14 0603 0.4 1225 2.0 1809 0.6	Monday 15 0028 2.2 0637 0.4 1259 2.0 1842 0.6	Tuesday 16 0101 2.2 0709 0.4 1331 2.0 1914 0.6	Wednesday 17 0133 2.1 0740 0.5 1401 2.0 1945 0.6	Thursday 18 0204 2.1 0810 0.6 1431 1.9 2017 0.7	Friday 19 0235 2.0 0841 0.7 1503 1.9 2051 0.8

NB: For Balta Sound, -0055, For Muckle Flugga, -0110

It was discovered during our last expedition in 2009 that slack times are difficult to calculate as the tidal stream information is inaccurate close to shore, and therefore part of the expedition will be to determine slack times for new sites, for future expeditions.

According to chart tidal information and the Admiralty tidal stream atlas, the strongest currents are on the north of Unst and in Bluemull Sound between Unst and Yell, with the west and east coast providing more shelter and most sites seemingly able to be dived at any state of tide. It appears that slack is approximately 4.15 hours before HW Lerwick and again at 1.45 hours after HW Lerwick.

We will arrive on site over an hour before 'slack', to monitor the current in the area and to give ample opportunity to explore the area. As we are diving in waves, it is likely that the last buddy pair will not be able to dive when it is fully slack and will therefore deploy a DSMB as soon as the current picks up so that the boat can monitor them. If a dive site can only be dived at slack, such as the sites on the North of Unst, a maximum dive time will be set and divers will need to return to the surface when the current picks up.

Navigation

Waypoints below are taken at safe points from the island, to allow safe navigation in the event of summer fogs. Many areas of Unst are not well charted, and hence caution must be taken in case of submerged rocks. There are also warnings of severe wind over tide off the Holm of Skaw, and fast currents in Bluemull Sound. Extreme caution must be taken in these areas and great attention paid to tidal and weather conditions.



Latitude North	Longitude West	Location and Comment
60 43.420	0 59.515	W entrance to Bluemull Sound
60 46.823	0 59.426	W of Brindacks / Unst
60 51.606	0 53.498	NW of Muckle Flugga
60 50.687	0 51.434	Entrance to Burrafirth (shelter from E, S, and W)
60 51.478	0 52.659	Channel between Muckle Flugga and Out Stack
60 51.863	0 52.278	N of Out Stack
60 50.679	0 44.604	NE of Unst (Holm of Skaw)
60 48.517	0 43.873	E of Norwick
60 45.886	0 45.198	E of Balta Island
60 45.662	0 47.921	Balta Sound N Channel
60 44.008	0 47.693	SE of entrance to Balta Sound
60 44.483	0 48.316	Entrance to Balta Sound
60 45.268	0 48.453	Balta Sound (anchorage/slip)
60 39.408	0 49.451	SE of Haaf Gruney (for S entrance to Bluemull Sound)
60 38.571	0 52.028	E of entrance to Bluemull Sound
60 40.228	0 55.802	Uyeasound channel (alternative anchorage/slip)
60 39.965	0 57.682	Bluemull Sound S entrance
60 41.848	0 59.107	Off Cullivoe (alternative anchorage/slip)

Scientific Observations

We have been in contact with Chris Wood from MCS Seasearch regarding completing surveys in Shetland. He has said that new records in Shetland are few and far between, especially for North Shetland, and therefore that any surveys completed would be of great use, particularly on sites not previously dived/recorded. To support this, a Seasearch course will be arranged prior to the expedition, and there will be a co-ordinator on each week to ensure that surveys are being carried out and to collect records. We will also be providing records on our observations for MarLIN, the Marine Life Information Network's Marine Biology Database.

In 2009, Clidive carried out a survey of the wreck of the E-49. This involved creating a detailed plan and measuring the main features of the wreck. As the E-49 is slowly sinking into the sand, a further survey will be carried out to measure the speed of this and any other deterioration in the wreck. The E-49 can be dived at any state of tide, and is sheltered, making it an ideal dive in worse weather days.

Cascading Skills

One of the key aims of the expedition is to cascade skills from First Class Diver level to Sports Diver, in order to increase the skill base in the club. Clidive places a strong emphasis on adventurous diving, and being involved in expeditionary diving at this level is a unique opportunity for the team to build the necessary skills to organise adventurous diving in the future, and to move up through the BSAC qualification levels.



In order to ensure that divers are fully equipped with the skills needed to participate in carrying out the expedition's aims, an extensive training programme has been organised, with all participants expected to take part in progressing their training and/or progressing the training of others. All participants will be supported to take part in all tasks related to the running of an expedition during the week, via a buddy system with a more experienced diver.

Training courses being run specifically for the North Shetland expedition include Compressor Operator, Advanced Diver Theory, Chartwork and Position Fixing and Seasearch Observer. A full list can be found as Appendix F. All five Dive Leaders on the expedition are taking part in the Advanced Diver theory training and will be working towards their Advanced Diver qualification during the expedition. This expedition plan was also prepared by an Advanced Diver candidate. In addition, three participants are working towards their Dive Leader, and six people are working towards taking their Dive Cox'n examination.

Typical Day's Dive Plan

As we are diving from a RIB, we will be diving in waves. Two divers will remain on the boat at all times. There are sufficient diver cox'ns – four on week one and five on week two. Each day sufficient air will be brought onto the boat for two dives, allowing access to more remote sites without returning to base. A packed lunch will be brought each day.

Below is an outline plan for a typical day's diving:

Week One, Day One	Person	Time
Breakfast	All	07.00
Make packed lunch	JD	07.15
Travel to mooring	All	07.45
Go through boats check list – fuel, oil etc.	PR, JD	08.00
Load cylinders into boat and ensure boat is tidy	All	08.00
Depart for dive 1 – arrive and check marks / slack	All	08.30
Dive briefing	RB	09.15
Dive 1 – two waves	All	09.30
Locating potential new sites for future dives	RB, ND, JD	11.30
Lunch – in transit or moored up	All	12.30
Dive briefing	JD	14.00
Dive 2 – two waves	All	14.15
Return to mooring	All	16.15
Two divers to fill cylinders	WM, NG	16.30
Two divers to complete any shopping needed and cook meal	MB, ND	16.30
Two divers to fuel and oil boats	JD, PR	16.30
Two divers to return to accommodation and plan next day	RB, BY	16.30
Log days diving and Seasearch forms, update Blog	Not cooks/cylinder bods	19.00
Evening meal	All	20.00
De-brief and discuss following day's diving	John Davies	20.45
Relaxation time / training	All	21.00



Dive Sites

As the area is largely unexplored and access to sites is weather dependent, it is not possible to specify exactly what sites will be dived on which days. The overall aim is to find new sites on the West coast of Unst and Yell in order to extend the Dive Guide to Unst, complete Seasearch surveys, and determine slack times. Each day time will be built into the dive plan for exploration of the area. We will be completing an echosound survey of each headland as yet un-surveyed, using the latest charts looking for areas with interesting topography and exposure to currents and a range of depths, to identify new dive sites.

Each evening the following day's diving will be planned, depending on weather, tides, and diver fatigue and training needs. The dive manager and mentor will retain overall responsibility for dive planning, overseeing the trip to ensure that a range of diving is being undertaken in line with the expedition aims. Sites dived will be logged using the Dive Site Reporting Log (see Appendix H).

We will dive a variety of sites, including walls, caves, wrecks and drift dives, and to a variety of depths up to 50 metres. Our focus will be on finding new scenic dives, and we will not revisit a previously dived site unless there is a particular reason, such as weather conditions or to complete a survey. A full list of dive sites / areas we wish to explore can be found as appendix D.

Reporting the Expedition

During the expedition, we will provide daily updates on our progress on our website 'blog', which can be found at <http://clidive.blogspot.com>. In case of poor internet connection at the accommodation, wi-fi internet is available at the reception, and there are also internet facilities at The Final Checkout shop.

We will have a dedicated media co-ordinator for the expedition, with the aim to promote expeditionary scuba diving, and North Shetland as a diving destination. We will prepare press releases for London and Shetland media, and will contact DIVE magazine regarding running an article.

The updated Dive Guide to Unst will be available on our website and the Expedition Report will be made available to BSAC. We will produce a report for Seasearch on our findings.



Sources of Information

The following sources of information were used to create this expedition plan:

- Reeds Nautical Almanac
- UK Hydrographic Chart 3293
- Admiralty Tidal Stream Atlas NP209
- C-Map Electronic Chart Software
- OS Explorer Map 470
- Clyde Cruising Club Sailing Directions and Anchorages for Shetland Islands
- Shetland Shipwrecks by Shetland Sub Aqua Club
- Dive Scotland Volume III by Gordon Ridley
- Shipwrecks of Northern Scotland by RN Baird
- Shipwrecks of Orkney and Shetland by David Ferguson
- Clidive Dive Guide to Unst





Appendix A – Risk Assessment

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All divers will be expected to have read and understood the below risk assessment. In addition to this, an onsite risk assessment is completed before each dive to take into account the individual conditions of each site, and the dive manager will refer to the risk assessment in the briefing both before the start of each dive, and in the debrief at the end of the day.

Hazard	Frequency	Severity	Risk Evaluation	Risk Controls	Immediate Action
Heart attack/ unconscious diver	Rare	Fatal	Medium	Self-declaration / medical, buddy monitoring, all divers trained in CBL/RB, 15 divers qualified in oxygen administration boat cover at all times with qualified Diver Cox'n*.	CBL to surface, Rescue Breaths, recovery to boat, oxygen assisted basic life support, diver recall, evacuation with assistance of coastguard.
Ear damage	Occasional	Moderate	Medium	Divers not to dive with a cold, care in ascents and descents.	Assistance from buddy, referral to hospital or GP as appropriate.
Out of gas	Occasional	Fatal	High	Careful buddy checks, monitoring of self and buddy on dive, all divers to carry AAS, all divers to carry fully independent gas supply on decompression dives, boat cover at all times, O2 kit available.	AAS ascent with buddy, first aid, casualty assessment, O2, fluids and evacuation if necessary.
Uncontrolled ascent	Occasional	Serious	High	Work up dives prior to trip, training in drysuit use, care in ascents, boat cover at all times, O2 kit and fluids available	Recover diver, administer O2 and fluids, carry out casualty assessment, arrange evacuation if necessary
Entanglement	Rare	Fatal	Medium	All divers to carry cutting device.	Assistance from buddy.
Diver separation	Occasional	Moderate	Medium	Divers to dive in buddy pairs, briefed on separation drill.	Search for 1 minute then surface. If both divers do not return, recall divers, contact coastguard, begin search if divers are available to do so.
Poor underwater visibility	Frequent	Minor	Medium	Use of torches and strobes.	Divers to remain in close contact.
Cold/Heat	Frequent	Moderate	Medium	Use of appropriate thermal protection including suit, gloves and hood where necessary. Divers to be properly hydrated. Sun tan lotion carried. All divers have drysuits.	Dive to be aborted if a diver cold. Treat for hypothermia / hyperthermia and hospitalise if necessary.
Rough sea conditions	Frequent	Moderate	Medium	Check weather forecast, monitor conditions, use of land as shelter, divers to carry DSMB/flag and reflective items, alternative dive site and passage plan prepared.	If conditions worsen, abandon plan and use diver recall signal if appropriate. Good lookout by boat cover, knowledge of tidal patterns for search. If diver not found at surface, contact Coastguard immediately.
Poor surface visibility	Occasional	Moderate	Medium	Check weather forecast, observation of conditions, no diving if poor surface visibility, use of shot line and distance line underwater if possibility of poor visibility, preparation of passage plan suitable for low visibility navigation, divers to carry torch, DSMB, whistle etc.	Monitor conditions and use diver recall signal if appropriate. Good lookout by boat cover, knowledge of tidal patterns for search. If diver not found at surface, contact Coastguard immediately.





Appendix B – North Shetland 2011 Team List

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Name	Week	Diver Grade	Additional Skills	BSAC Number	Primary Roles
John Davies	1	FCD / AI	CO / RB / MB / DC / GB	A103392	
Rory Budds	1	AD / OWI	CO / MB / DC	A393924	Boats Officer
Mary Brown	1	AD / OWI	CO / SS / DC	A659396	Diving Officer
Warwick Mason	1	AD / OWI	CO / SS / DC	A684598	Chair
Naomi Davies	1	DL	CO / SS / BH	A756026	Membership Officer
Paul Reid	1	DL / OWI	CO / BH	A783575	
Bethan Young	1	SD		A799636	
Natascha Gewaltig	1	SD	BH	A799625	Marketing Officer
Ben Jaffey	2	AD / AI	CO / SS / DC / BHI	A707257	
Declan Daly	2	AD / AI	CO / DC / BHI	A393946	
Annette Millar	2	AD / AI	CO / BH	A706492	
Elaine Hendry	2	DL / OWI	DC	A393927	
Nick Harrison	2	DL	DC	A660884	
Dave Pickford	2	DL	BH	A776834	
Chris Coles	2	SD	BH	A735018	
Cori Crider	2	SD		Pending	
Waiting List:					
Dave Speck					
Alex Czinczel					
Gary Connolly					
Reiko Yamazaki					
Skills Key:					
CO / GB	Compressor Operator / Gas Blender Rebreather Marine Biology / Seasearch Diver Cox'n / Boat Handler (including VHF radio licence) Boat Handling Instructor				
RB					
MB / SS					
DC / BH					
BHI					

NB: Skills shown are current skills as of January 2011. See Appendix F for breakdown of training to be undertaken prior to and during the expedition.





Below are approximate costs. It does not include all of the training courses that participants will be attending, nor does it include flight costs to / from Shetland (approx. £250 return). It also doesn't include the ferry cabins on the Aberdeen to Lerwick of £388 – the drivers will pay this themselves as their contribution towards transport costs.

	Details	Total
Diving Costs		
Fuel for RIB	Based on fuel used in 2009 expedition + 20%	£1400
Oil for RIB		£200
Compressor Hire	Including fuel to pick up and drop off	£1200
Mooring in Unst		£60
		Total Diving Costs: £2860
Transport Costs		
Ferry to Lerwick	2 x vehicles, 4 x drivers return cost (already paid)	£1010.80
Internal ferry	Based on 16 passengers, 4 x vehicles and trailer	£112
Hire car	Based on quote 2 vehicles, one per week	£391.28
Petrol	London to Unst, 2 x vehicles x 1212 miles return	£1400
Petrol	During week, Unst, 120 miles	£140
		Total Transport Costs: £3054.08
Other Costs		
Accommodation	2 x self-catering cottages, Saxa Vord	£1840
Food	Based on 3 meals a day, £60 per person x 16	£960
Training Materials	Compressor Operator Course £23 x 9	£207
	Wreck Appreciation Course (bad weather) £23 x 7	£161
Fuel	Towing boat from Plymouth to London	£200
		Total Other Costs: £3368
		Total Cost: £9282.08
		Estimated Cost Per Diver: £580.13





1	Name / Location	The Clapper, Gloop Holm, North Yell
	GPS Marks	60° 44.444' N 1° 07.015' W
	Distance	11.72 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 41 minutes
	Max Depths	20-50m
	Notes	Appears to be undived. Likely to be strong currents. Slack estimated to be 45 minutes after HW Lerwick but this will need verifying.
2	Name / Location	Bluemull Sound, SW Unst / NE Yell
	GPS Marks	60° 41.890' N 0° 58.414' W
	Distance	11 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 55 minutes
	Max Depths	30m
	Notes	Previously dived but there are many areas of the Sound yet to explore. Drift dive – no true slack, acceptable at 4-5 hrs before and 2 hrs after HW Lerwick.
3	Name / Location	Kirkaby Headland, West Unst
	GPS Marks	60° 43.878' N 0° 58.924' W
	Distance	10.17 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 36 minutes
	Max Depths	30m
	Notes	Appears to be undived. Various stacks including Long Holm and The Vere to be explored. Likely to be strong currents – slack 4-5hrs before HW Lerwick.
4	Name / Location	South Holms (NW side), West Unst
	GPS Marks	60° 46.227' N 0° 56.978' W
	Distance	7.53 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 27 minutes
	Max Depths	Unknown due to lack of information on chart – could be depths on NW side
	Notes	Appears to be undived. Dive any state of tide – needs confirming.
5	Name / Location	Leegal Skerry, North Holms, West Unst
	GPS Marks	60° 46.771' N 0° 57.489' W
	Distance	6.88 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 24 minutes
	Max Depths	10m to potentially 40m, but unknown due to lack of chart information
	Notes	There are potentially walls and stacks around Hevda Hill headland. Area appears undived. Dive any state of tide – needs confirming.
6	Name / Location	Flubersgerdie Headland, West Unst
	GPS Marks	60° 47.689' N 0° 57.215' W
	Distance	5.97 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 21 minutes
	Max Depths	Unclear on chart
	Notes	Area appears undived. South Croga Skerry looks promising – could be an interesting pinnacle / wall. Dive any state of tide – needs confirming.



7	Name / Location	Tonga Headland, West Unst
	GPS Marks	60° 48.986' N 0° 56.047' W
	Distance	4.79 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 17 minutes
	Max Depths	Unclear on chart – 20m+
	Notes	Area appears undived. Longa Stack and Tonga Stack look promising. Dive any state of tide – needs confirming.
8	Name / Location	Toolie Headland, West Unst – Tooa Stack / Stakins-Hocka
	GPS Marks	60° 49.722' N 0° 54.580' W
	Distance	3.72 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 13 minutes
	Max Depths	Unclear on chart – c. 20m
	Notes	Area appears undived. Could potentially be shallow, and so could be an area for a second dive. Dive any state of tide – needs confirming.
9	Name / Location	Clingra Stack and Flodda Stack, West Hermaness, West Unst
	GPS Marks	60° 50.355' N 0° 54.119' W
	Distance	3.07 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 11 minutes
	Max Depths	Unclear on chart
	Notes	Likely depth and exposed to current on western tip. Area appears undived. Slack 30 minutes before HW and LW Lerwick – needs confirming.
10	Name / Location	Muckle Flugga, North Unst
	GPS Marks	60° 51.240' N 0° 53.329' W
	Distance	3.44 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 12 minutes
	Max Depths	35m
	Notes	Previously dived but top UK dive so worth a repeat. Slack is 30 minutes before HW and LW Lerwick, 20 minutes duration and strong currents. Other areas of Muckle Flugga can be explored.
11	Name / Location	Out Stack, North Unst
	GPS Marks	60° 51.658' N 0° 52.461' W
	Distance	2.61 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 10 minutes
	Max Depths	40m
	Notes	Previously dived but top UK dive so worth a repeat. Slack is 30 minutes before HW and LW Lerwick, 20 minutes duration and strong currents.
12	Name / Location	The Noup, North Unst
	GPS Marks	60° 50.685' N 0° 50.029' W
	Distance	1.98 Nautical Miles from Burrafirth mooring
	Travel Time	Approximately 7 minutes
	Max Depths	30m
	Notes	Area appears undived. Slack 30 minutes before HW and LW Lerwick – needs confirming.



13	Name / Location	North Outer Flaess, Holm of Skaw, North East Unst
	GPS Marks	60° 50.192' N 0° 46.235' W
	Distance	6.34 Nautical Miles from Balta Sound mooring
	Travel Time	Approximately 22 minutes
	Max Depths	27m
	Notes	Area appears undived. Slack 30 minutes before HW and LW Lerwick – needs confirming.
14	Name / Location	Potential pinnacles near Outer Flaess, North East Unst
	GPS Marks	60° 50.958' N 0° 46.413' W
	Distance	7.31 Nautical Miles from Balta Sound mooring
	Travel Time	Approximately 26 minutes
	Max Depths	50m
	Notes	Area appears undived. Slack 30 minutes before HW and LW Lerwick – needs confirming. Two submerged pinnacles from 28m to 50m.
15	Name / Location	Lamba Ness Headland, East Unst
	GPS Marks	60° 49.025' N 0° 45.450' W
	Distance	4.85 Nautical Miles from Balta Sound mooring
	Travel Time	Approximately 17 minutes
	Max Depths	30m
	Notes	Area appears undived. Can dive at any time – needs confirming.
16	Name / Location	The Nev, East Unst
	GPS Marks	60° 46.935' N 0° 46.678' W
	Distance	2.73 Nautical Miles from Balta Sound mooring
	Travel Time	Approximately 10 minutes
	Max Depths	30m
	Notes	Area appears undived. Whole area around Hill of Clubberswick will warrant exploration for potential sites. Can dive at any time – needs confirming.
17	Name / Location	Wreck of the E-49, East Unst
	GPS Marks	60° 42.213' N 0° 47.930' W
	Distance	1.4 Nautical Miles from Balta Sound mooring
	Travel Time	Approximately 5 minutes
	Max Depths	34m
	Notes	Previously dived – this site will be surveyed to check for possible deterioration. Can dive at any time but can be challenging on a spring tide.





Emergencies:	
Shetland Coastguard, at Sea	VHF Channel 16, MMSI 002320001
Diver Helpline, Scotland	0845 508 6008
Shetland Coastguard, non-emergency only	01595 743500
Non-Diving Related 24hr Health Advice inc. dental	08454 242424
A+E – South Road, Lerwick, ZE1 0TB	01595 743000
Emergency Dentists, Yell (Mon, Wed, Fri)	01957 702031
GP and Pharmacy (prescription only) – Baltasound	01957 711318
Optician, Lerwick	01595 693690
Unst:	
Shop and Fuel, The Final Checkout	01957 711666
Saxa Vord Reception	01957 711711
Saxa Vord Restaurant / Bar	01957 711839
Mooring, Baltasound – Penny Thompson	01957 711444
Mooring, Burrafirth – Mr Edmund Nicholson	01806 522447 / 07747 630340
Boat repairs, Unst Inshore Services	01957 711881
Transport:	
Taxi Service on Unst	01957 711433
Inter-Island Ferries	01957 722259
Northlink Ferries	0845 6000 449
Other:	
Boat Storage, London, Penton Hook Marina	01932 568681
Compressor Hire	TBC
Zetland BSAC, Lerwick, Duncan Fothergill	01950 460511
Sullom Voe Harbour Authority	01806 244200
Valhalla Brewery (Tours), Unst	01957 711658

NB: Coastguard Maritime Safety Information is broadcast on VHF at:

07.10; 10.10; 13.10; 16.10; and 19.10





Below is a list of training which participants have committed to, and additional training needs which will be met during the trip.

Pre-Expedition Courses	Participants	
Compressor Operator <i>Instructors:</i> <i>John Davies and Ben Jaffey</i>	Dave Pickford	Nick Harrison
	Chris Coles	Elaine Hendry
	Bethan Young	Natascha Gewaltig
	Cori Crider	Naomi Davies (refresher only)
	Paul Reid (refresher only)	Mary Brown (refresher only)
Advanced Diver Theory <i>Instructors:</i> <i>Declan Daly, Ben Jaffey,</i> <i>Colin Yule (National Instructor)</i>	Dave Pickford	Nick Harrison
	Naomi Davies	Elaine Hendry
	Paul Reid	
Chartwork and Position Fixing <i>Instructors:</i> <i>Joli Riley, Ben Jaffey (TBC)</i>	Dave Pickford	Naomi Davies
	Chris Coles	Natascha Gewaltig
	Bethan Young	Cori Crider
Seasearch Observer Course <i>Organiser –Naomi Davies</i> <i>Instructors: Seasearch</i>	Natascha Gewaltig	Bethan Young
	Chris Coles	Naomi Davies (qualifying dives)
	Dave Pickford (qualifying dives)	Mary Brown (qualifying dives)
	Warwick Mason (qualifying dives)	Rory Budds (qualifying dives)
RYA Courses	Mary Brown	Day Skipper Theory
	Warwick Mason	Day Skipper Theory
	Rory Budds	Coastal Skipper
	Natascha Gewaltig	VHF Radio
	Chris Coles	VHF Radio

Training needs on the expedition itself	Participants	
Working towards Diver Cox'n	Dave Pickford	Chris Coles
	Naomi Davies	Paul Reid
	Annette Miller	Natascha Gewaltig
Working towards Dive Leader	Bethan Young	Natascha Gewaltig
	Chris Coles	
Working towards Advanced Diver	Naomi Davies	Elaine Hendry
	Paul Reid	Dave Pickford
	Nick Harrison	

