PROJECT HIGHBALL
BSAC BEGS EXPEDITION

Mark Paisey

LOCH STRIVEN
15-22 JULY 2017

LAWRENCE BROOME
LINDSAY BROWN
CAMERON CROMWELL
PHILLIP GRIGGS
DAVID KETTERINGHAM
LOUISE KETTERINGHAM
HENRY PAISEY
MARK PAISEY
KEVIN PHILLIPS
FREDERICO SANTOS
SIMON SMITH
SUZANNE WAINWRIGHT

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1. Introduction

This report describes the results of the Highball Project, conducted as a BSAC BEGS Expedition, to Loch Striven between 15-22 July 2017.

The Project brought together 12 BSAC divers, the RN Northern Diving Group (NDG), Aspect Surveys, GSE Unique Systems and SubSea Tooling. The BSAC divers were based at the Glenstriven Estate utilizing 2 RHIBs. The NDG deployed from Faslane and stayed at Rothesay utilizing Cato their normal workboat. Aspect Surveys operated from Largs Marina, while engineers from GSE and SubSea Tooling were accommodated at Glenstriven.

The overall primary objective of the Project was to locate and raise 2 Highballs for donation to Brooklands and de Havilland Museums. Secondary objectives were surveying the Loch test sites to determine how many Highballs remain and create a diver trail so others may enjoy this underwater museum.

Project tasks were specified as follows:

1. Locate large anchor and circular search for Highballs to determine a datum for the shallow site.
2. Run semi circular searches from shot datum's down range of the anchor datum to locate Highballs.
3. Photograph the anchor and follow the anchor chain as a possible diver trail.
4. Utilise a jackstay search east of the anchor chain to locate Highballs.
5. Side-scan the deep and shallow test sites to determine number of Highballs on the seabed and seek interesting targets of opportunity.
6. Raise 2 Highballs for restoration and preservation.
7. Recover all equipment.
8. Prepare a report on the project week to include the diver trail.

This report presents the results of the above tasks and identifies further diving project opportunities.

2. Planning the expedition.

Barnes Wallace, bouncing bombs, midget submarines, Loch Striven – the terms sounded like the making of a perfect expedition for my new-found FCD skills in 2015. I heard that Iain Murray of Dundee University was looking for a dive team to fulfil his dream of delivering a Highball to complete the Barnes Wallace collection in the Brooklands Museum. In September 2015 I took the train to Dundee to meet him and assess the viability of the project.

In 2010 Iain had matched the Imperial War Museum footage of the Highball test drops to the actual landscape in Loch Striven to find an approximate location of the test site. This was dived by Phil Griggs and Lindsay Brown in 2010 and Highballs were discovered.

On the train back from Dundee I started planning the expedition. First step was to contact the Receiver of Wreck (RoW). As the Highball was dropped from an aircraft deliberately, it did not constitute wreckage to the RoW and was therefore not in their remit.

The main problem was getting permission from the owner to raise a Highball. Iain Murray had had no luck to date. I thought of Simon Smith, fellow First Class Diver and Army Officer. He approached RAF Heritage in the MOD internally and after a vigorous email exchange obtained permission to lift two Highballs.

The next step was to obtain lifting permission from Marine Scotland. This was a time consuming process but they were very helpful. A long form is required to be sent to all interested agencies ranging from Scottish Heritage to the RYA. These agencies then raised objections, which had to be answered.

Public notices then have to be placed in a local newspaper and public places for twenty-eight days to inform local residents. This process took twelve months but was crucial to the legality of the expedition. Meanwhile, a BEGS grant application was submitted and approved for £1000 which required an expedition plan similar to the FCD module. This plan was then sent to likely interested divers to advertise the expedition and get commitment for the £620 per head costs.

Next step was to source a side-scan unit to get a good picture of the Loch seabed. I took another train to Aberdeen to speak with GSE Unique Systems who hire side-scan units. Alan Cameron, Operations Manager, was on board from the start but required insurance and a boat for the unit. Insurance proved impossible without an insured interest in the unit. Alan overcame this by using a new model and calling it a trial before entering service with GSE.

However, the unit could not be operated from a RHIB so an alternative was required. After many enquiries, Alan suggested Aspect Surveys who specialise in land and hydrographical surveys. Gordon, their owner, offered a boat and crew capable of taking the 'vessel of opportunity' winch for the side-scan. Out of the blue came a call from Sub Sea Tooling offering an ROV for the project.

With all this kit in place, all that remained was to finalise the team and deal with the logistics. Loch Striven is remote, which is why it proved suitable for the tests in the war. Everything required would need to be transported to the location including IBCs to transport the Highballs – fuel, gas, food, boats, compressors, booster pump, shots, and lines plus all personal dive gear for 30 metre and 60 metre dives.

Kevin Phillips, East Cheshire, provided most of these from his club and worked tirelessly to get everything ready. The lifting part of the expedition was finalised when Dave Ketteringham, Swindon SAC, worked out the webbing systems required, combined with a two tonne net and two tonne lift bag.

With two months to go Iain Murray contacted me offering the services of the RN who had contacted him. The Northern Dive Group, (NDG), are EOD experts and specialise in mine warfare. This was a perfect evolution for their training. Their CO, Lt Cdr Tony Hampshire, was keen to get involved. The NDG planned surface supply with twenty minutes bottom time per diver every six hours. Their plan was to build a square of scaffolding around the base of the bomb with straps to an eye above it. The support vessel would then winch the bombs to the surface for placement into IBCs for preservation. This was different to our planned method but in the end both worked well, with the RN and the BSAC divers recovering Highballs. The NDG were also able to supply Free From Explosive Certificates free of charge.

2.1 Planning Factors

The process of planning and management of the expedition required a number of factors to be taken into account:

1. Location: Loch Striven is a sea loch branching off from the Clyde and is remote served by one small access road. Nearest ports are Rothesay on Bute and Largs on the mainland. Depths at the point of interest ranged from 30m to 60m plus tide. Seabed was known to be relatively flat but a mix of silt and

sand. The water column was anticipated to be dark with 4-5m visibility. Tidal range is 3.5m with little to no tidal stream.

2. Time: the project was set around a neap tide with boat launch and recovery timed for HW. Diving was achievable throughout all daylight hours.
3. Buddy pairs: 12 divers created 6 pairs. Constituted pairs were matched by equipment and experience and stayed together all week. Support divers' and cox' roles were rotated.
4. Decompression: The project anticipated 2 dives per day on the shallow site with 10 minutes decompression per dive. The deep site was planned on a single dive with a runtime of 90 minutes maximum.
5. Safety: All diving had to comply with BSAC Safe Diving Practices with suitable emphasis placed on task loading and work at depth on decompression schedules.

2.2. The Plan

1. Location

Fig 1: Location of Loch Striven

Loch Striven lies on a north-south orientation off the Clyde. The weather is predominantly from the west or southwest so the site was sheltered from likely prevailing weather conditions. The strongest recorded gust over the deck was 77 knots on Wednesday 19th July with frequent 50 knot gusts hampering lifting operations. Tides did not effect the project other than RHIB launching. Both RHIBs were launched and recovered at HW. The shallow test site was known to lie SE of 55 56 986N 05 04 304W. Navionics showed the shoulder of the loch descending sharply to 30m before a plateau with a gradual descent to 50m. The deep test site SE of 55 56 634N 05 04 490W

showed a flat bottom at 60m. In the event the shallow site was far flatter than expected ranging from 28m to 35m. Alternative sites for diving were identified within Loch Striven but were not explored on this project.

2. Timings

The project members came from all over the UK and assembled at Glenstriven on 15 July 2017. An advance party determined the accommodation, slipway suitability, and central equipment store. Briefings were held at 2000 hours in a central location for the next day. Boats were left on a mooring for the duration. The fixed time points were 0730 meet to prep equipment and 1630 finish diving operations. A sample day plan is below:

Start time	**Task**
0630	Breakfast
0730	Prepare kit and dry run
0820	DM brief
0830	Load boats
0900	Ropes off
0930	Wave 1 in
1030	Wave 1 out
1130	Wave 2 in
1230	Wave 2 out
1245	Lunch
1400	Wave 3 in
1500	Wave 3 out
1600-1730	Kit and cylinder filling
1800	Dinner
2000	Debrief and briefing

Table 1: Planned daily schedule

The planned week schedule is shown below:

Day	**Planned activity**
Saturday 15 July	Assemble at Glenstriven Estate Launch RHIBs by 1600. Prepare kit.
Sunday 16 July	Locate anchor on shallow site. Search for Highballs using diver searches
Monday 17 July	Identify 2 Highballs for lifting Start Jackstay search RN arrive on site
Tuesday 18 July	Side-scan operations Lifting operations
Wednesday 19 July	Press day. Lifting operations. Side-scan operations Diving operations
Thursday 20 July	Lifting operations. Diving operations
Friday 21 July	Dive deep site. Recover equipment. Recover RHIBs by 1230.
Saturday 22 July	Pack and depart

Table 2: Planned weekly activity

3. Buddy pairs and tasks

Divers	**Equipment**
Simon Smith/Phil Griggs	CCR MG
DaveKetteringham/Louise Ketteringham	CCR MG
Fred Santos/Loz Broome	OC MG
KevinPhillips/Cameron Cromwell	OC MG
Lindsay Brown/Mark Paisey	CCR MG
Henry Paisey/Sue Wainwright	OC

Table 3: Buddy pairs

The divers were split between the 2 RHIBs. With transit times short only one pair of divers with their kit were loaded at a time. Wave 2 acted as support, coxing and helping with kit. The boat returned to base between dives to change over. Mutual support was maintained by VHF radio on CH68 and through a central day controller on the shore known as Highball Base.

Kevin Phillips

Fig 2: Highball Base

4. Dive plan and decompression schedules

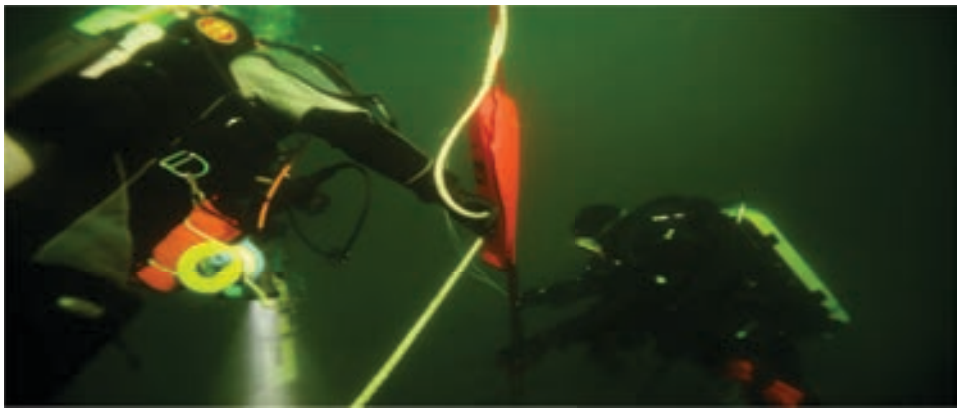
In order to ensure safe nitrogen management each pair was asked to calculate the planned run times according to their equipment and comfort levels working at the planned depths. The project was incident free.

3. Survey method and results

Among the objectives for the trip was the creation of a detailed map of the seabed and identification of key features and targets for diving and lifting later in the week. We had two main methods for this, a manual diver led search using a jackstay (a reference line near the seabed secured at both ends on shot lines) and a detailed seabed survey using a high-resolution side scan sonar system.

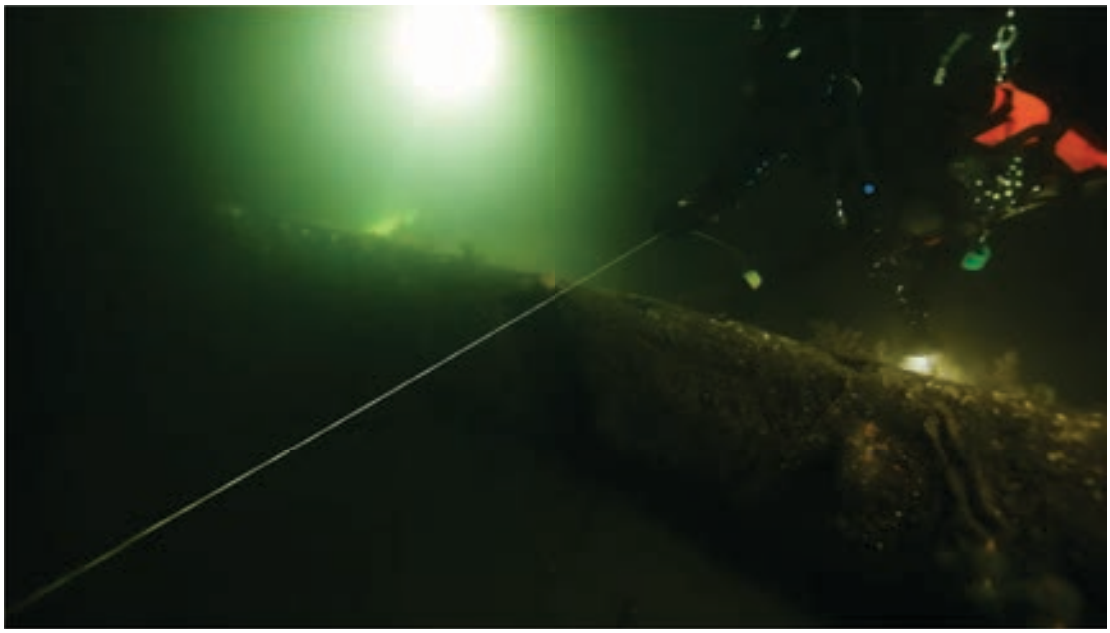
3.1 Diver searches were completed by circular, semi circular and jackstay searches. The team assembled a 30m wide jackstay with 25kg weights on both down lines to search east of the anchor chain.

The jackstay was deployed from the surface but tightened by divers at 33m. The team used the jackstay for 2 days until the side-scan data became available and led to discovery of the x craft side cargo charge plus several Highballs. Divers sent up DSMBs on discovering an item on the seabed and the RHIB marked the GPS position before signaling the diver to pull down the bag. Whilst basic this proved an effective method of ensuring good seabed coverage in the dark visibility conditions of the Loch. Results are at Appendix 7.1.



Lindsay Brown

Fig 3: Divers on the Jackstay at 33m



Lindsay Brown

Fig 4: Side charge found by use of Jackstay

Henry Paisey

Fig 5: Vigilance. Survey vessel supplied by Aspect Surveys

3.2 For the side-scan sonar we were assisted by Aspect Surveys, who supplied their survey vessel Vigilance, and Unique Group, GSE Rentals who supplied a Klein System 4900 Side-Scan Sonar. We spent two days running three separate search patterns, one for the "shallow" 35-40m site, and one for the deeper 60-75m site and a third search in the top of the Loch to check for evidence of the X-Craft base.

The side-scan works by transmitting sound energy from a pair of lateral transducers mounted on a "towfish" body that is streamed behind the vessel at about 4 knots. The system analyses the return signals to create high-fidelity, high definition images of the seafloor and other objects. All data are digitally stored on the survey vessel and can be replayed on a normal PC. As the survey progresses the sonar images are plotted in real time on a PC to produce a representation of the target area that can then be used to identify areas of interest that require further investigation.

Kevin Phillips

Fig 6: Deploying the tow fish from Vigilance

The side-scan sonar we used on this project was the Klein System 4900. This is the latest technology that produces high-resolution images to 75 m per side at 900 kHz; it also uses the more traditional 455 kHz for lower resolution but longer range imaging to 400m swath width. The imaging produced by the Klein System 4900 during the course of this survey was the best 900 kHz imagery that any of the survey crew from Aspect Survey, or the engineer from Unique Systems, had ever seen and certainly allowed the dive team to create a very detailed picture of our target dive area.

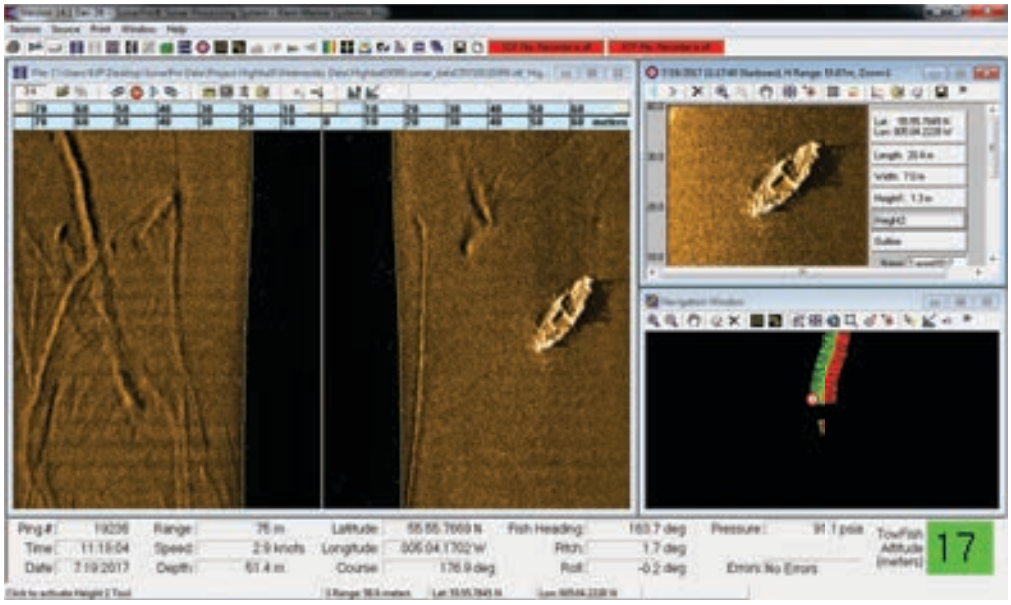


Fig 7: Side-scan of charted wreck 1

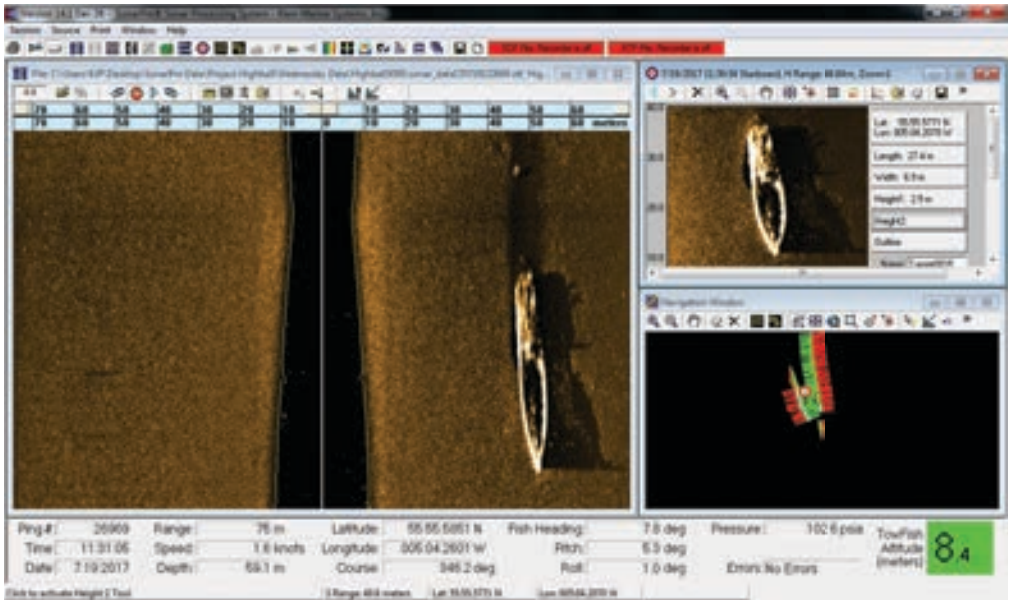


Fig 8: Side-scan of charted wreck 2

Our search for the X-Craft base proved fruitless, with evidence of heavy trawling and moorings but little else of major interest. The deeper site we did learn more from, we found an uncharted wreck in 70m which may be worthy of a return visit in the future, we also got good imagery of the charted wrecks in the Loch as well as deducing that the bottom composition in the deeper areas is unsurprisingly much siltier and thus unlikely to be suitable for recovery of any highballs that lie there. We therefore focused our efforts on the shallower 35-45m site and conducted a high-resolution survey of the

entire area taking in a 1km swathe of the Loch. The resolution of the resulting data allowed us to identify over 100 Highball bombs, three new lengths of mooring chain and four X-Craft Side Charges.

Fig 9: Side-scan of discovered isolated X craft side charge

As the survey progressed we were able to build up a detailed picture of our target dive site and marry the data with the information coming back from the Jackstay search as well as first-hand accounts and photos and video from the divers to build up a very clear and detailed picture of the dive site.

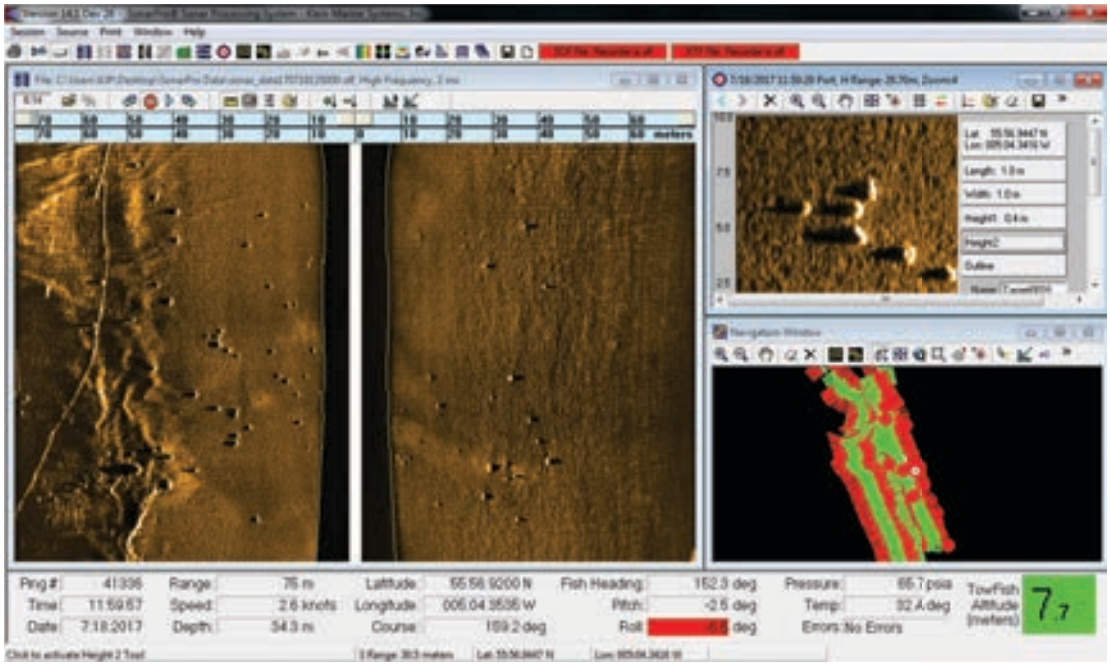


Fig 10: Highball debris field

With the Navy Team working on targets identified earlier in the week we were able to task our dive team with survey, identification, and photography work based on the side-scan data and also identifying suitable targets for lifting later in the week.

Our final lift was a real team effort, using the side-scan data to shot a very specific set of coordinates we found an isolated Highball in 25m of water, right on the coordinates identified by the side-scan imagery.

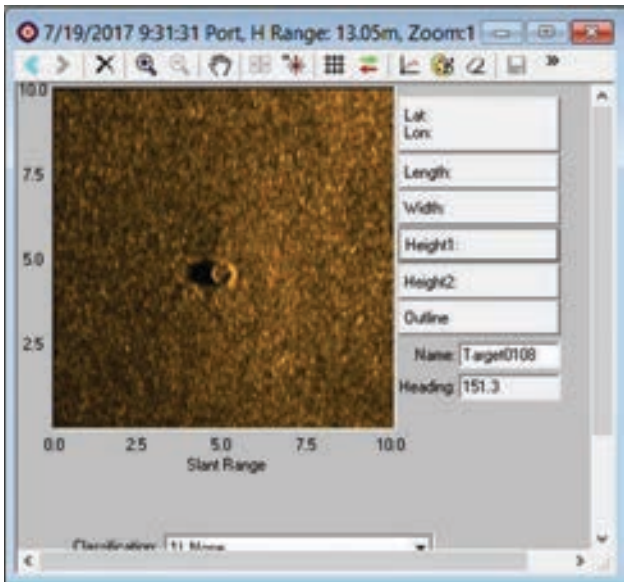


Fig 11: Side-scan of Highball lifted by BSAC team

The dive team was able to deploy its newly-built cargo net trawling system to snare the bomb following a tow of the rig in the correct direction from the Navy's dive vessel Cato. Once in the cargo net the BSAC dive team returned to the bottom to tidy the rig, strap the highball and attach a large hawser to the cargo net ready for the lift. Later in the day the highball broke the surface and was retrieved onto the support vessel, the Moorfowl, to great cheers and applause from the entire team.

4. Lifting Techniques

The Highball weighs 600kg on land and measures around 36 inches diameter. The Highball shape is similar to a grass bowling bowl and similarly came to rest on its side in the silt. The risk assessment identified 1) use of nets and lines underwater 2) task focus and gas consumption at 30m plus 3) reduced visibility working in silt and separation 4) lifting with divers in water 5) damage to RHIBs whilst towing 6) physical injury moving large weights.

Our initial plan was to build a web of straps, which would surround the Highball and be secured with ratchet straps below the half way point. The web would meet in a loop above the Highball providing an attachment for the lift bag. A 2 tonne bag was planned to provide lift for the weight plus silt suction. The bag would be filled from cylinders. Once on the surface a secondary lift would raise the Highball as close to the surface as possible. The Highball would then be towed to the shallows where it would be floated over the IBC secured to a trailer at HW. The trailer would be towed out at LW. The offer of SD Moorfowl with a 10T crane dramatically changed technique and mitigated our risk assessment issues. This removed the need to use lift bags and provided a direct lift capability from the sea bed into the IBCs on deck. The webbing was attached by BSAC divers to a Highball but the lift failed, as the Highball slipped between webs.

The RN method involved building a short scaffold square below the half way point of the Highball and attaching ratchet straps from the scaffold square, around the Highball to a loop above. This loop was attached to a line and small lift bag, which could be winched to the surface for placement on the cranes hook. This technique worked but was time consuming to build underwater. 2 lifts failed with this

technique either due to insufficient ratchet straps or failure of the scaffold square under load.

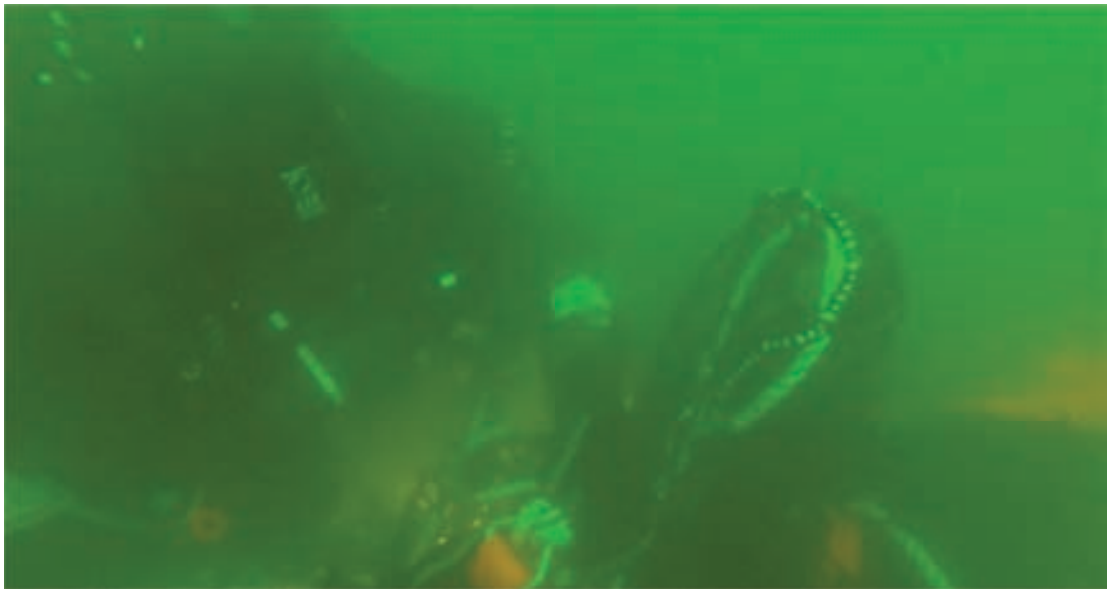
BSAC divers adapted their technique and employed a 2 tonne net in the same way as a trawl net works. The net was weighted and taken down folded into net bags. The net was dragged over the Highball and dug under the base in the silt. Web straps were attached to the net neck biased to the underside of the Highball. The straps were then attached to a loop and line allowing it to be taken to the surface for connection to the crane. The intent was to pull the net from under the Highball thus rolling it into the net. This worked very well and successfully lifted one Highball from 30m.

Kevin Phillips

Fig 12: Deploying the lift line

Mark Paisey

Fig 13: RN lift with scaffold square visible



Kevin Phillips

Fig 14: Highball net lift in progress by BSAC divers

Henry Paisey

Fig 15: IBCs proved ideal for storing and moving the Highballs

5. The Diver Trail

The Highballs in Loch Striven all lie in 30 metres or more on a silty sea bed, and the water is usually clear but very dark. The dive is therefore for experienced Sports Divers or above, comfortable with the inevitable decompression stops required from a deep square profile dive.

The dive site is not marked by lines or buoys, and can only be found by boat with a GPS and sounder. The nearest slipway is within the private Glen Striven Estate (www.glenstriven.com) and is only accessible by prior arrangement via Max on 07909 582219.

After launching from the slipway, head south down the loch until you are level with the white lodge on the eastern shore, and use a GPS and sounder to search for the side charge in c30 metres at 55° 56.972' N 05° 04.283' W. Drop a shot on the side charge, and descend carefully to begin your dive; halting a couple of metres above the bottom to avoid a silt storm. Spend a few minutes looking around the side charge jettisoned from a midget submarine, then head directly west and slightly deeper.

Lindsay Brown

Fig 16: Side charge on the trail

Lindsay Brown

Fig 17: Highball on the trail

After about 15 metres you will reach a group of three Highballs close together; despite the short distance between them, you'll need a good torch to see from one to the next. Have a closer look at them, then continue due west for another 15 metres and you will reach a very

heavy duty anchor chain, very close to another Highball 2/3 metres to the west of the chain.

Lindsay Brown

Fig 18: Anchor chain on the trail.

From the anchor chain you have three options:

1. For those qualified and prepared for a deeper dive, cross over the anchor chain and head north-west. As the slope descends, from around 40 metres onwards you will find groups of Highballs lying close together in the silt. Once you've seen enough you can ascend from deep, or reverse your dive and swim south-east until you reach the anchor chain from where you can follow it either way.

2. The most interesting way is to turn north, and follow the anchor chain as it runs slightly upwards and curves towards the east. On the way you will see another 2 Highballs lying 4/5 metres to the west of the chain, and after about 10 minutes you will arrive at a huge anchor in c30 metres (55° 56.988' N 05° 04.306' W), which we believe is unconnected to the Highball trials and from a much later period. From the anchor, inflate your DSMB and ascend to your deco stop and then on to the surface.

Lindsay Brown

Fig 19: Large anchor on the trail

3. Alternatively, turn south, and follow the anchor chain as it runs broadly straight in c35 metres. You will pass a handful of Highballs on either side of the chain, and after about 10 minutes you will find the chain turning sharply to the left and heading up the slope. The anchor chain ends 5 minutes later in c22 metres (55° 56.908 N 05° 04.191 W), and from here ascend under your DSMB to complete your deco before surfacing.

Whichever dive you choose to complete, think carefully about gas planning and decompression. Unless you choose to cross the anchor chain and go deeper, your dive will be around 30 minutes plus decompression. A 30% nitrox mix will maximise your time along the chain, and this is an ideal dive for accelerated decompression for those qualified.

6. Conclusions

The Highball Expedition was an exciting and worthwhile activity. We met the aims of discovering what lies on the sea bed in Loch Striven - establishing a diver trail, so others can enjoy this underwater museum, and raising 2 Highballs for restoration and display in museums. We believe this Expedition showcased what BSAC divers can achieve and delivered an amazing amount of positive publicity for the BSAC.

On practical grounds the expedition exercised a range of skills and modern technologies to solve elusive problems. The expedition also importantly brought together paid professionals from commercial companies, and the Armed Forces, with voluntary members of the BSAC in a common aim to raise another piece of evidence to increase the knowledge of the nation to the historic struggle to withstand tyranny in the Second World War.

7. Appendices

Appendix 7.1: Objects found by diver survey

Object Found	**WGS84 Coordinates**
Large anchor	55 56 986N 05 04 305W
Highball	55 56 967N 05 04 307W
Side charge	55 56 970N 05 04 282W
Highball	55 56 947N 05 04 266W
Highball	55 56 947N 05 04 292W
Highball	55 56 949N 05 04 306W
Highball	55 56 943N 05 04 319W
Highball	55 56 939N 05 04 313W
Highball	55 56 939N 05 04 309W
Highball	55 56 925N 05 04 300W
Highball	55 56 917N 05 04 288W
Highball	55 56 907N 05 04 279W
Highball	55 56 902N 05 04 225W
End of chain	55 56 908N 05 04 191W

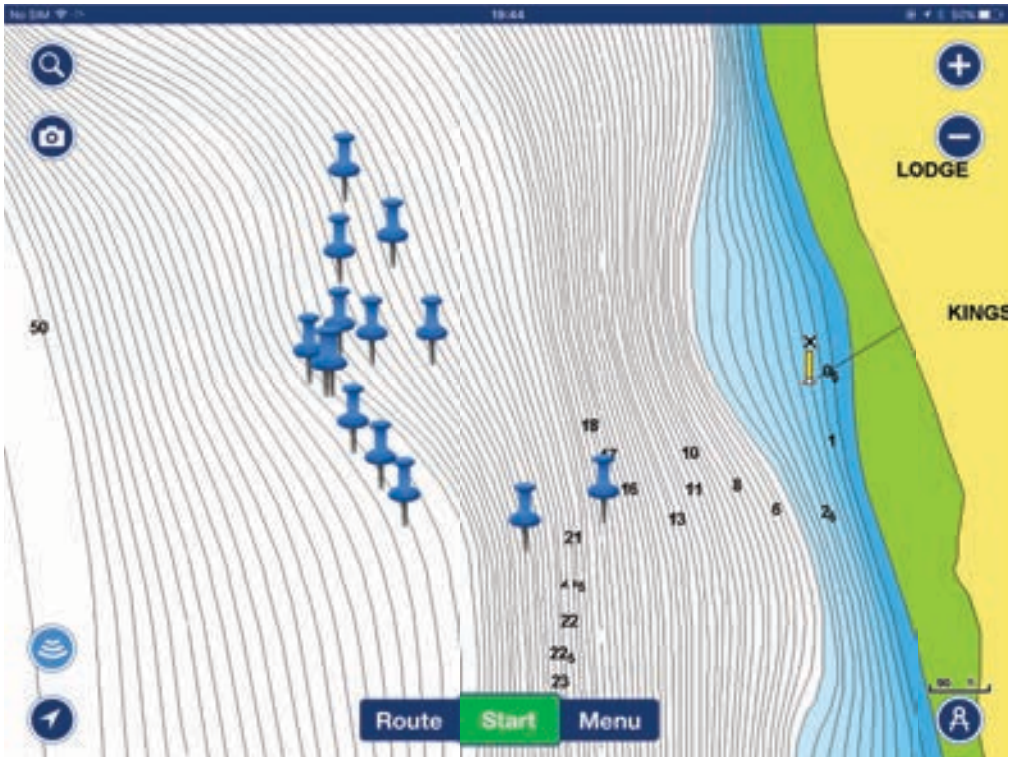


Fig 20: Distribution of diver found objects

Appendix 7.2 Dive Logs

Name	16/7	17/7	18/7	19/7	20/7	21/7
L Broome	36m/40min 34m/24min	34m/40min 30m/28min	30m/47min 32m/36min	26m/29min		25m/22min
L Brown	35m/51min 36m/50min	32m/41min 32m/52min	33m/52min 30m/45min	26m/29min	35m/39min 35m/45min	35m/45min
C Cromwell	36m/33min 30m/38min	35m/32min 32m/30min	33m/52min 30m/45min		35m/39min 35m/45min	35m/45min
P Griggs	34m/62min	33m/63min	33m/54min	35m/45min	38m/50min	42m/62min
D Kett	36m/66min	32m/63min	31m/56min		23m/90min	
L Kett	36m/66min	32m/63min	31m/56min			
H Paisey						25m/22min
M Paisey	35m/51min 36m/50min	32m/41min 32m/52min	33m/52min 30m/45min		23m/90min	25m/22min
K Phillips	36m/33min 30m/38min	35m/32min 32m/30min			35m/39min 35m/45min	35m/45min
F Santos	36m/40min 34m/24min	34m/40min 30m/28min	30m/47min 32m/36min	26m/29min	35m/39min 35m/45min	35m/45min
S Smith	34m/62min	33m/63min	33m/54min	35m/45min	38m/50min	42m/62min
S Wwright						25m/22min

The project accumulated 3220 minutes underwater: 53 hours and 40 minutes.

Appendix 7.3 Equipment lists

The following equipment was taken by the project:

2 RHIBs Topcat and Cheshire Cat

Kevin Phillips

Fig 21: Topcat and Cheshire Cat

2 shot lines 60m
2 x 25 kg weights
1 x 30m line for Jackstay
1 x 2 tonne lifting bag
2 x 2 tonne cargo nets
2 Oxygen kits
AED
2 portable compressors
1 booster pump
2 x J of Oxygen and 1 x J of He
10 x 20 litre fuel jerry cans
2 x IBCs
10 x spare 15 litre cylinders
Expedition first aid kit
Numerous lift bags
Charts and planning kit

Appendix 7.4 Project Budget costs

Income	Expenditure
BEGS grant £1000	Accommodation £2918.67
12 x £620 personal contribution	Marine Scotland £56
	Public Notice £154
Total £8440	RN presentation gift £450
	Trailer hire £220
	Notice to Mariners £475
	Crown Estate £300
	Dive gas £420
	Cargo net £216
	Karabiners £105
	Food £983
	Liftbag repair £20
	Pallet Lift £68
	Fuel towing cars £862.73
	Lift webbing £135.71
	Ferry for boats £117
	Chemicals £40.74
	Ratchet straps £43
	Fuel boats £303
	Trailer clean £10
	Wear n tear charge £45.43
	T shirts £450
	T shirt frame £45
	Total £8438.28

Appendix 7.5 Team Members

Lawrence Broome	East Cheshire SAC	Advanced Diver
Lindsay Brown	Dundee SAC	Dive Leader
Cameron Cromwell	Richmond SAC	Advanced Diver
Phillip Griggs	BSAC Direct	Dive Leader
David Ketteringham	Swindon SAC	Advanced Diver
Louise Ketteringham	Swindon SAC	Dive Leader
Henry Paisey	East Cheshire SAC	Sports Diver
Mark Paisey	East Cheshire SAC	FCD
Kevin Phillips	East Cheshire SAC	Advanced Diver
Simon Smith	Tyneside 114 SAC	FCD
Frederico Santos	East Cheshire SAC	Dive Leader
Suzanne Wainwright	East Cheshire SAC	Sports Diver

Henry Paisey

Fig 22: Team members

Simon Smith, Cameron Cromwell, Loz Broome, Kevin Phillips, Phil Griggs, Frederico Santos, Lindsay Brown, Louise Ketteringham, Suzanne Wainwright, Mark Paisey

8. Acknowledgements

8.1 Whilst this was an expedition organized and led by BSAC divers the results would not have been achieved without the full support and participation of the following.

Kevin Phillips

Fig 23: Tim Pinnington with Side scan and GSE engineer Mike Osterberger

Henry Paisey

Fig 24: RN NDG and Cato their dive platform. Special thanks to CPO Garth Spence, Chief diver (Operations).

Henry Paisey

Fig 25: SD Moorfowl

Henry Paisey

Fig 26: Dr Iain Murray

Henry Paisey

Fig 27: Aspect Surveys vessel, kindly provided by Company Director Gordon Campbell

8.2 Report preparation

This report has been prepared by Mark Paisey, Kevin Phillips and Simon Smith. Photographs have been taken by team members Lindsay Brown, Kevin Phillips and Henry Paisey and accreditation given.