



Scapa Flow 26 July - 4 August 2002

Gaffer tape, women and WD40 - what more does a diver need?

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The Divers

The tekkies:

- David "Popeye" Martin
- Iain "Whipping Boy" Smith
- John "Gaffer tape" Kendall
- Rowan "Kettle Boy" Woodhouse

Their groupie:

- Serena "Blonde cork" Dobson

And the Boys:

- Ed "Koala" Pain
- Rich "Powershift" van der Hoff
- Ross "69er" Hill
- Simon "Out in the toilet" Parker

As CUUEG had singularly failed to take advantage of this opportunity to do some fantastic diving, we were joined by Simon and Ross from [CamBSAC](#), whilst Rowan travelled up from Southampton to be part of the fun.

Some Brief Background

The High Seas Fleet of the German Imperial Navy was interned in Scapa Flow at the end of WWI, pending negotiation and signing of the Armistice. On 21st June 1919 Rear Admiral von Reuter, believing the armistice to be about to end, ordered the scuttling of 74 warships and a host of smaller craft, to prevent their anticipated seizure by the British. Between 1922 and 1946 much of the fleet were salvaged whole, mainly by Cox & Danks. The salvage left 3 battleships, 4 cruisers, and a number of other smaller ships, some of which had been used in the salvage of larger ships, then re-sunk. These German vessels are the best known attraction for divers and while there are many other excellent dives in Orkney's water, both wreck and scenic, they were the focus of our attention throughout the week.

Friday 26th July

We were due to leave Cambridge at 6pm on Friday to drive up to Scapa, however, Ed was rowing, John was in Thetford until 10.30pm, Serena and Rowan were on the M25, oh and we still had 3 unfilled places. Not the most auspicious of starts, but never mind. Over eighteen 12 & 15L cylinders and weight were provided by the boat, but we nonetheless proceeded to fill a long wheelbase landrover and high roof transit van.

Saturday 27th July

Both the van and Landrover drove through the night, arriving in Scrabster in good time to make the 12:00 ferry to Stromness. The Landrover, travelling almost without break made particularly good time. It was, however, abandoned in Scrabster, with the occupants embarking as foot passengers.

As the St Ola rounded the point to Stromness, a line of flags was run out by the ferry crew. Certain divers keen to show off quickly realised that they were letters and numbers, but no-one knew quite what they spelt. A ferry mechanic told us they were just to look pretty for the festival! Cue a certain number of rather sheepish divers!

This festival, while clearly great fun, proved to be somewhat troublesome to us, as it had blocked the 30m of street between the ferry's pier

and charter boat's pier, which made moving our van-load of equipment something of a challenge. After a number of failed attempts, a combination of careful diplomacy (in which Iain was predictably not involved!), a helpful local and the simple fact that a transit van really does have the inertia to go exactly where it wants to enabled us to manoeuvre through the crowd with a minimum of disruption to the festivities.

Once our kit, less the four 50 litre cylinders of Helium, was loaded onto the boat almost everybody started to assemble something, or faff with something else. Rich assembled a backplate harness, John fixed a pee-valve, David assembled a drop cylinder of 50% oxygen, to be lowered to an out-of-gas diver as an emergency supply. Iain, despite fiddling for most of the journey still tinkered with our brand new filling whip. We then met to discuss the Sunday's diving with the skipper, choosing the cruiser SMS Dresden as our first dive, to allow Serena a workup, whilst offering deeper opportunities for those who arrived more dived up.

Rich and Ross wanted to visit a curry house for dinner, but Stromness doesn't have one and the fish and chip shop had shut early for the festival. We called at a nearby pub, which even rearranged its seating for us. The meal was good, we got a round of 7 drinks for £11, and even stayed for desert, due in no small part to Serena's persuasion. A stream of floats and marching bands paraded past the restaurant. Iain initially tried to identify the bands by cap badges; David believed the 3-inch high letters on the drum might be a better clue.

Upon returning to the boat we noticed the jellyfish prevalent in Scotland, which were new to some people. We soon moved inside to avoid the midges, which were happily not really seen after the first night.

The mobile office came out in force; with two printers and a laminator joining the three laptops already out. We created new marshalling slates for the upcoming dives, Iain continued to revise his Nitrox lecture materials, whilst David made a start on the trip report, hoping to set the pattern for the remainder of the trip.

Quotes from the day:

- Ed: *I've used one once [long hose], and wouldn't again, it keeps getting caught around my groin.*
- Serena: *I'm not blonde.* [slight pause]
David: *What are we doing about eating tonight?*
Serena: *Food.*
- Ed: *I'm a liveaboard virgin.*
Rich: *Me too.*

Sunday 28th July.

Our first dive was to be *SMS Dresden*. The *Dresden* was chosen, because she is the shallowest of the "morning" cruisers. *SMS Karlsruhe* had been assigned to an afternoon dive. The *Dresden* lies in 34m of water, with a least depth of 16-18m. We hoped that this would allow a couple of the group a shallower first day as build up. It was also a good depth for the 30/16 Trimix (top from 21/35) that Iain and David had, left over from a missed dive in Weymouth.

We all rose to a first breakfast of cereal and toast at just after eight, David having squeezed in an early morning run before this. Iain, to set the tone for the week, had stayed up working until 4.00am and decided to opt out of the run. Ross sat the first dive out, worried about an inability to clear his ears. The first pair were to hit the water at 11:20.

SMS Dresden

A 510' long, 5531 ton cruiser, nameship of the "Dresden II" class and along with the *Coeln*, one of the only two examples of that class completed before the end of the war, the *Dresden* lies on her port side. The shot lay on the deck side, aft of the bow anchor chains. The port anchor chain runs out along the sea bed for quite a way. Iain and David followed it for about three minutes out of sight of the wreck. The bow itself lies just above the sea bed, at about 26m, and its appearance was sufficient to confuse at least one of the group who, despite the protests of his buddy, lead them down the hull side. Swimming aft, there are no 5.9" guns to see at the bow, these presumably were salvaged. The bridge and control tower are relatively intact, some of the group managing to identify them as such underwater. Behind this lies the foremast, resting on the seabed, with platforms and much of its rigging and fittings still attached. An easy detour could have been made along it, although none of the group did. Further back the wreck is more broken up, with holes, and probably the potential for swimthroughs. This area originally contained the 3 funnels, but was broken into to salvage the condensers. Further aft the wreck regains its structure. Some of the group got to the second mast, although many were either on their way up, or at least in shallower depths by this point. David and Iain had just got to an aft 5.9" gun, as they reached the end of their planned bottom time, so had to forgo the chance to examine it.

In the first of many deco stops groups tried to find something to do to ward off boredom. Figure-of-eights around DSMB lines, and a short range "throwing" game with foil packets of Lucozade Sport tried. Paper, scissors, stone became a staple, although Serena was rumoured to be keen on "pattercake".

A fabulous "second breakfast" of a full fry-up awaited us along with mugs of tea, once back on the boat. Ed, whilst conscious of sounding like *Oliver Twist*, asked rather pleadingly for a little more, hoping than one of the portions from a non-present diver could be put to use. Ronnie obliged, serving, to Ed's delight, an entire other portion.

Iain had ordered the filling whip as component parts, and therefore we lacked some rather crucial O-rings! A little PTFE tape, and the approximately-right o-rings bought during a quick trip to the Dive Cellar in Stromness over lunch, were the best that we could do, and it was

hoped that this would prove adequate, as this hose would otherwise have proved an utterly useless and highly expensive decoration for the cabin.

V83

We turned to Andy's suggestion for an afternoon wreck with decent vis, but not a blockship, due to the tide. V83 was a 909 ton destroyer of 269 feet, capable of 36 knots. She was used by Cox in his salvage attempts, and sunk in her present location. The wreck apparently lay on a slope from 20m of water upwards, in two distinct sections. We found the main portion to be relatively intact, but with a greatest depth of 13.5m, those looking deeper for a second portion were disappointed. The most notable features were the two massive propshafts, which terminated by the rudder on the well-preserved stern. They extended externally almost half the length of the remaining wreck, with a diameter of over 18" . A number of the party initially thought they were guns! A gentle teasing about boat structure inevitably followed.

Iain assessed Rowan teaching an "advanced" nitrox course to Serena, Simon and Ed. The ascent from 12m with gas switches and everyone sending up at least one DSMB, resulted in a "blob forest" which amused the other four of us. The skipper had been briefed to ignore yellow DSMBs, which allowed the "tekkies" (as a certain group of four came to be referred to) a chance to practice deploying yellows up our main lines, and allowed Iain and David to play with their new spools. Whilst a suitably undemanding dive to do this, the site was less than ideal, with long fronds of strong brown string-like seaweed getting tangled as we swapped DSMBs and reels. David dropped the double-ender from his spool twice, in 6m, once to the bottom at 7m, where it landed on a pound coin. As mistakes go, this was actually financially beneficial. Iain was to do the same thing at 21m, above a 35m bottom later in the week, and have to resort to using the boltsnap on his spare mask as a "winder", before we were able to buy spares to carry as backup.

We returned to Stromness at about 7:30pm. Everyone had things to fix and play with, so initially we all dispersed to our kit. At eight, Serena mentioned that "someone had better volunteer to cook dinner" - this was heard on deck as "Simon has volunteered to cook dinner". David went inside to inform Simon of what was required, only to be sharply corrected, and find himself cooking. Rich lent a hand with chopping vegetables, and soon took over, as the galley didn't accommodate two easily, thus letting David join the gas planning group.

Due to a supply problem, new oxygen cylinders had yet to arrive. We didn't have the the boat's whip to decant from their cylinders, or a cylinder key, because our helium cylinders all had wheeled valves. It was thought unlikely that the cylinders would have enough pressure to top oxygen onto the helium. Equally, filling both gasses and air in the morning would have taken too long. We wished to dive a 21/35, made by topping helium and air, to a selection of nitrox or weak hyperoxic trimixes. By eleven we had come up with a solution, involving decanting some of Rowan's (fortunately hot) nitrox-38 into John's 28/18 trimix, then topping to varying high helium pressures. Fortunately with 4 new helium cylinders this was just possible. We prided ourselves on the calculations, which had taken until 11:30pm, and then started blowing the cylinders down, whilst not making any noise to disturb the other harbour occupants! Despite the whip being firstly a product of Iain's own design and secondly being held together with some dubious o-rings, the blending went as well as could be hoped, although Iain was up until 4am doing it. David was also up, relegated to using his laptop only when all others had finished with it for gas planning or nitrox lectures. He produced revised marshalling sheets, to reflect the nature of the diving, to include kit details for diver identification, and new requirements, such as deco gasses and multiple stop details, which were then laminated for each day, grouped in the buddy pairs planned the evening before.

Once Ed had gone to bed, however, details of the afternoon dive were rapidly revised, planned, printed and laminated, to allow the scenario for his dive leader rescue management to occur with precise timings. Iain and David were greeted by dawn breaking through a clear sky from about 3:40am, before finally making it to bed, separately.

Quotes from the day:

- Rich: *How many blokes does it take to get a girl into her dive kit?*
John: *Not as many as to get her out of it.*
David: *Surely one bloke can do it by himself.*
Simon: *But he's got to be subtle about it.*
- Ed: *I just hold onto my bollocks personally.*
- Iain: *If I do that Ed'll smell a rat.*
Rich: *Yes, because Iain will have to take his Weezle off before having a shower.*
- David: *I've just put Tabasco in my eye.*
- Iain: [To Serena] *I want you all to myself...*
- Ronnie [To Iain, wringing his Weezle out] *Everything OK?*
Iain: *Yes, I just sweat lots.*
- Serena: [To Simon, and assembled group] *What's KY Jelly?*

Monday 29th July

David passed up the opportunity to go for a run, also letting Iain and Ed sleep in. It was to take Andy yelling "5 minutes to the dive site", to rouse the aft cabin, eliciting a similar exodus to that which might be expected had he dropped a grenade through the hatch! He was,

needless to say, just joking. The late risers were even treated to tea and toast, which they felt rather guilty about, having missed the previously agreed breakfast time.

About 20 minutes from the dive site the Trimix fills were analysed.

Oxygen percentage readings were consistent, but unfortunately ranged from 13-17%. The first fill analysed was 17%, prompting a rapid re-plan of the dive, but 13% was just too far off the target of 21% for us to have any clue as to what had happened. The cylinders were moved out of the way of the slightly smug divers of air or air tops, and the valves blasted a little before re-analysis, all had crept up a little. The dive was abandoned to work out what happened, whilst the others got ready. The mood was downbeat to say the least. Someone suggested shaking the tanks (a much derided and theoretically pointless practise), and with nothing to lose the tanks were shaken. The first twinset was tumbled vigorously, and came out near to 21%. The others were see-sawed up and down, and their new analysis came out at very nearly 21%. Our range was 19.5-22.0%, which given a first attempt at blending and the strange cross-mixing we were attempting was viewed as a creditable effort. The dive was back on, with the tekkies only 29 minutes behind the first pair in.

SMS Kronprinz Wilhelm

the most accessible of the battleships, lies almost upside down at 39m, lying on her starboard rail, with a least depth of 12-15m over her keel. Rod MacDonald's book suggests a maximum depth of 34m, but this is more like the depth of the port rail. The shot was meant to lead us down the better side of the wreck, the port side, which its above the seabed. The tekkies went down as a foursome, but later broke into pre-agreed pairs, to give each other a bit more space, whilst peering into holes. Iain's direction finding ability for hulls struck again, as the group veered off the shot at the first sight of wreckage, and descended the wrong side. The mistake was not immediately obvious due to the breakup of the hull on the starboard side, but the lack of deck features was somewhat surprising. Rounding the stern, made the mistake rather obvious. To rub salt into the wound, the groups only got to the overhang from where it was rumoured that a penetration to the 12" guns could be achieved as they ended their bottom time. Thus far 3 dives and not a single definite gun for some of us. The other pairs each had a sport diver with them, and thus stayed above 35m, which prevented them from peering much under the rail. Indeed the shallow profile, spending much of the time at 25m only really gave them the hull. No one noticed any distinctive features other than the bilge keel and the stern, but the potential of the dive site was such that many of us were already hoping for a second visit later in the week.

Ronnie had by this stage worked out the feeding requirements for each of us, as well as realising that certain members of the group were likely to spend rather longer both in the water and in preparation before and debriefing after the dive than others. We tended to eat second breakfast in a slightly staggered fashion leaving our computers, mixing whips, kit under repair and other general clutter to permanently occupy one of the two tables in the saloon. This table rapidly became colonised by the tekkies as "their territory".

SMS Karlsruhe

A cruiser in 26m, was the venue for the afternoon's exercise. She is the most broken of the High Seas Fleet, although elsewhere, could be described as intact. She is marginally smaller than the Dresden class cruisers. The shotline was tied between a pair 5.9" guns at the bow, giving only the most incompetent diver a chance to miss them. The shallower water makes her quite bright, and allows more life than the deeper wrecks. We were treated to a range of colours, the most striking being the deep wrecks and purple of some encrusting species. Copper based greens could be seen on the non-ferrous metals of the condenser tubes. The deck was made of wood, and the planks can be made out in places. Behind the deck, and around bulkhead are conduits, and a mass of cabling. The complexity and sheer amount of it was surprising, particularly given how much more reliant we are on electricity today. Sadly there isn't a modern cruiser next door for our comparison! Particularly towards the stern there are a number of swimthroughs, a number of which could be turned into significant penetrations. We were still sufficiently in awe of the exterior of the ships not to be tempted, though.

Ed believed that the assessment on this dive was for his advanced nitrox course and was diving with Iain. The second wave had been planned furtively, hoping to give nothing away. Iain had suggested that Ed might borrow wetnotes from David or John, these contained the laminated timetables for the rescue management exercise, and Ed had to be diverted rapidly. In the end, the first wave of Ed, Iain, Serena, Ross and Simon seemed to be fine, and the second wave eagerly helped them kit up, to explain their own lack of kitting-up.

The marshal slate suggested that David, Rowan, Rich and John, who were in reality diving as 2 pairs, were a loose foursome. David, recorded the times that each would descend, forgetting to change the time for John and Rich, to pretend the four. With descents ten minutes apart, the foursome was stretching credibility! The flaw wasn't realised until David was at 24m, by which time it was rather too late. Fortunately Ed missed it too. The exercise was designed to make the pairs appear to be a three with a separated diver, who then developed an out of gas situation. Both pairs started killing time on the upper part of the wreck and then ran into each other, although due to the current, and John using a bottom line, the DSMBs stayed apart.

Having surfaced and dekitted, Iain slipped away, to await a cry for help, leaving Ed, Serena and Simon on deck. When Ed eventually realised that something was amiss he called for Iain, who was hiding in the loo, getting bored, having expected to have been called somewhat earlier. Serena came and found him, only to be told to tell Ed "P:ss off, I'm having a w @ nk".

Deployment of the emergency drop-bottle was not great, and even the second attempt didn't find the divers, and was eventually observed to be drifting away. We agreed that clipping it to the divers DSMB line would be required, rather than merely dropping in the vicinity. Clearer instructions that the gas had been analysed, and should simply be deployed, were another idea after the event. This would hopefully have stopped the confusion, that resulted in stripping the set to analyse its oxygen content. Nitrox-50, on a 6m line, is safe under all agency guidelines.

After over an hour in the water, and about 25 minutes after John indicated "send gas", Simon dropped onto them; Serena had got her weighting wrong, and couldn't sink. John passed Simon a laminated sheet on the ascent, telling him that a supposed bounce dive to 21m he

was to pretend to get bent. Eighty minutes after descending, with 40 minutes of ascent, Rowan and David came up, rather cold. To compound matters, David had even flooded his drysuit at some point.

On the boat the situation was confusing, as Rich pretended not to exist (cue John shouting "I've lost my buddy") then Rich taking the role of Iain, about to drop onto the safety divers, then finally being allowed to be himself once Rowan and David were up.

As Ed checked that everyone was in fact on the boat, wondering why no DCI had yet happened, Simon got his acting skills out the closet and waited on the loo, with worsening symptoms. The cold divers got tea, and all seemed happy. We even joked about where Simon was. Following heavy hinting, Simon was eventually found, and Ed picked Rich, the only diver without oxygen administration training, to put him on O2. The rest of us drank tea. Simon was sitting under the naked flame of a gas boiler, so it was fortunate that the oxygen wasn't actually turned on(!). Iain told Simon to pass out, and he was dutifully carried out onto deck. Offers to pour tea over Simon to revive him were not appreciated, and the exercise finally wound up.

Instructors, participants and candidates all learnt a huge amount, not just Ed, who had been subjected to the most realistic and demanding exercise that CUUEG have staged to date.

As soon as we got to port, in the pouring rain, we visited Stromness' recompression chamber at the invitation of one of the technicians. We were grateful for the opportunity to do so and as an evening activity, coming right after our rescue management exercise, it could not have been more appropriate. Amidst a stream of questions we had a minor incident. Rowan almost fainted and collapsed, dazed, onto one knee. We couldn't have been in a better place, and as Rowan mentioned his low blood pressure, and not to worry, it all sounded rather hollow. With such a stupidly slow ascent, it seemed such an unlikely day for a problem. Iain made preliminary medical checks, then described the mornings dive - Rowan's first on Trimix. David volunteered to get Rowan's dive computer. We had all been lent extra Vypers to record our dives for the week, as part of a research project being undertaken by DAN Europe. Rowan's was round his pillar valve. Careering down the hill, on extremely slippery stones, David had to force himself to slow down. The boat had moved out from the harbour, requiring a series of pulls and stretches to get the boat nearer the quay, before jumping aboard. David ran back with the computer, the marshal file, and some Lucozade. In the event, the Lucozade was the only thing required, as having sought professional medical advice, the length of time underwater, lack of fluids, and the hot room were judged the problem. Rowan vowed to buy a P-valve, and keep better hydrated.

Rowan's little problem was not, however, considered to be an adequate reason for him to be excused filling duty once we got back to the boat, having detoured via the chip shop. He and John proceeded to get soaked to the bone as the rain lashed down. The boat had not been able to get a resupply of oxygen, and we were only able to predict 175bar fills of 50% in the 7L stages. The next dive was planned accordingly.

Quotes from the day:

- Iain: *I hate Trimix. [15 minutes later] I love Trimix.*
- John: *Next time, let's do a back of the envelope calculation.*
- Simon [To Serena]: *Do you want to pop down and get some KY jelly?*
- Serena: *Ross and I sixty-nined together...and Rich watched.*
Rich: *No, I just left them to it.*
- Serena: *It's not a happy pussy.*
- Andy [on a poster in the saloon]: *Naked lights should never be used as a means of locating gas leaks.*
- David: *So, I now know my hieght in feet & inches and my weight in centimetres*
- David: *So if we're diving as a four, how come we went in 10 min apart? Whoops!*
- Iain: *P:ss off, I'm having a w @ nk.*

Tuesday 30th July

The morning was misty, and despite the sun being strong it didn't lift until after lunch. We used the morning to visit Lyness museum, and postponed the morning dive to the afternoon.

John sat out, feeling slightly under the weather, deciding it better to be little groggy on the deck than at 45m. The plan for the tekkies was 45m for 25min, using gradient factors of 20/80 [Gradient factors determine the safety margin built into a dive profile. 100/100 would be the raw output from the formulae which determine the decompression requirements. 20/80 is a widely accepted pair of settings.], an extended gas switch stop, and slightly lengthened 12m and 9m stops. The bail out was consecutively doing the twice the stops of a less conservative profile (20/100), repeating each stop time, once on deco gas and once on backgas, often wasn't that much shorter than the backgas only deco). Our plan called for 129 bar of deco gas to leaving 6m, the bailout 158 bar, with additional options of backgas deco, and the 50% drop bottle. The 7L stages were under filled, at only 150bar, although, once in the water it was more like 145. This was OK, for our own gas, but not enough to bail a buddy out. The stages also contained mixes of 53-54%, meaning we would need to do a short 21m stop, then pull the gas switch shallower. We should have got the stages air topped again, but decided not to, lest we irritate the skipper. With John on the boat, David suggested that taking the 4th stage, would be sufficient redundancy for the group, as we would not separate. We had not written down

the gas required for the profile, so each tried to remember what we required. Iain thought the gas carried was sufficient, David thought it wasn't. David decided to take the extra stage anyway, amidst jesting comments that it was just to look hard for the photos that were planned for the end of the dive!

SMS Markgraf

At 45m, the deepest of the High Seas Fleet, the *Markgraf* is possibly the most imposing of the battleships. At 25,388 tons and 575 feet, there was a lot of wreck to see. The least depth of 24m sounded deep, but the sports divers were convinced that some of the torn plates at the bow, and the rivet and porthole lines would give them some features above their 35m floor. Compared to the Karlsruhe the wreck was dark, and had little life on it. We dropped onto the flattish hull, next to one of the bilge keels and followed the slope down to some broken up wreckage. It was not immediately obvious that the shot was on the other side of the wreck to what we had been told. (And this time it genuinely was on the wrong side and wasn't a case of Iain's navigation going pear-shaped!) Even on the wrong side there were bits to look under. Due to the immense gloom and bright beams of our 50W torches, it was hard to tell when you went under and overhang. At one point, David found he had unintentionally swum into a large void, which was then subdivided. The exit was only just visible, a slightly less dark bit of grey-green. This was quite unsettling.

Two of the groups saw the bow, which rises, knifelike, from 45 to 33m, and, being intact, is simply breathtaking. Swimming away along the bottom, looking back at the bow was the highlight of the dive. Unfortunately Ed, Ross and Rich, soon to be known as "the Boys", didn't see much of interest on their dive. There was quite a current round the bow, and fining into it was strenuous enough that it was almost better to simply go back around the "wrong" side. At times like this, frog-kicking comes into it's own, as the tekkies demonstrated. Encouraged by Iain's seemingly effortless progress, despite being lumbered with their twinsets and deco cylinders, Rowan and David followed him round to the starboard side. The minutes ticked by rather quickly, and David decided to forgo the last overhang, which was the best seen so far, to get ready to deploy the DSMB. A good fill from 45m and a slightly sticky reel, meant that towards the end the buoy was heading for the surface faster than the reel wanted to unwind. David started to drift upwards, reaching 42m, as Iain grabbed his fins, whilst ditching wing buoyancy. Letting go of the reel was always an option, but didn't seem required. The ascent was a little slow, as David re-composed himself, although a slightly early DSMB deployment had helped to pre-compensate for this.

Rowan, deploying his DSMB after the gas switch, suffered a reel jam, forcing him to jettison the reel. Iain passed over his reel, and as agreed in the briefings, deployed a yellow on a spool.

John decided to send Serena and Simon in as safety divers for real, and because he was sure that we were OK, he allowed Serena to take Iain's camera to take photos at 6m, in the event that we were fine. When we said that we were fine Serena grouped us for photos.

However, we had used more deco gas than planned, due to a slower phase just after switching, and an elevated consumption rate due to the minor hiccups. Partway through the photos Rowan indicated that he wanted the spare stage, which David and Serena interpreted as vanity for the photos. David then realised that Rowan actually needed the stage, so passed the reg, then the stage across. We had completed the 20-100 stops by this point, so could have come up, but it was obviously not ideal. Lessons were certainly learned, from the dive. No-one had really enjoyed the dive, so we decided not to do the Konig, but a couple of cruisers next.

With a maximum depth of 36m, we chose a 30-30 Trimix as bottom gas, whilst keeping nitrox-50 for deco. With new oxygen supplies, fills were simple again, and we noisily blew all the cylinders off on the way into port. David and John started filling at eight, whilst Simon cooked a curried egg and vegetable dish. Whilst filling, a couple of the divers from the next-door boat came round after a few drinks to say hello. A number of them were amazed at our use of helium in the 30-40m range. We had paid for the cylinders in advance, so the gas cost was not a factor, so felt that the choice was not extravagant. One of them tried to convince us that helium was dangerous at so shallow a depth and that in the event of a DCI hit that a chamber would not know how to treat us. We believed our gas choice preferable and knew from our visit to the chamber that they were well aware of what to do with bent trimix divers. To be frank, the fact that they were to dive the James Barrie in 46m with heavy hangovers, most of them on air, caused a loss of what little credibility their stance on Trimix diving safety had. It was probably fortunately that Iain was busy planning and delivering nitrox lectures and thus took no part in the discussion of trimix safety as his characteristically blunt verdict on the other divers might well have aggravated the situation beyond recovery. At 1.00am they had run out of ice for Gin and Tonics and came to ask if they might have some of ours. Regrettably, we were unable to render assistance, as with the less exciting Tea, squash or water as our staple drinks, we had neglected to fill our ice maker at all.

Quotes from the day:

- Iain: *It's not a Weezle anymore, it's officially become a skunk.*
 - Iain [to David, 3am]: *Once again, whose still up?... It's the trimix that does it.*
 - John: *It'll involve a couple of J's of O2 and some gaffa tape/*
 - David: *Well, it depends how dead you are.*
 - Iain: *I'm not washing my suit. [Exit]*
Serena: *Well at least he realised he smelled, and moved.*
 - Simon: *You [John] can go down in Serena's underwear.*
 - David: *It's good to have f*ckups that don't kill you.*
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Wednesday 31st July

Analysis of the gas mixes revealed that a number of them were of lower pressures and higher O₂ percentages than requested, the 30-30 Trimixes were high, so we blew down a little, and re-topped. Our knowledge of fudge factors, and accounting for fill warmth was improving from first-hand experience.

SMS Brummer

The *Brummer* lies on her starboard side in 36m, with a least depth of 20m. The shot was aft of the bow 5.9" gun, which still sits on the vessels centreline. A number of the males decided to straddle it, clearly trying to impress each other by compensating for something clearly lacking...

The wreck is in good structural condition, but with a number of missing plates, or holes to allow the inquisitive to look through, or even swim through. The wreck was remarkably devoid of silt, and the bottom less easily stirred up than on the battleships. This was a wreck which was well lit from the surface, with powerful torches a bonus for looking inside rather than restricting those without them. The masts have fallen away from the superstructure but the range finders and fittings on them are still obvious. The blasting amidst the engine rooms has opened up a number of simple swimthroughs, and no doubt some deeper penetrations, although at this stage we were still content to merely swim through without lines, remaining in sight of an exit, rather than attempt anything more advanced. Towards the stern are another fine pair of 5.9" guns. Many divers made it the full 462 feet bow to stern, some with considerable planned time left. Those who did were rewarded with an anchor still held to its hawse pipe, and the sweeping curve of the stern itself. There is a good swimthrough from above the anchor to the stern gun, the barrel of which is just large enough to prevent divers on opposite sides from seeing one another. A good end to a longer dive would be to look around the shallower sections of the engine room opening, which starts from the least depth of 20m, downwards. A number of penetrations seem possible, but reaching it after 35min on a 40min profile, it wasn't practical. The promised seals did not visit on the decompression stops, maybe next time we'll have do even more!

On this dive, a the inevitable spectre of kit failure raised it's head; there are no prizes for guessing that Iain was the victim. When turning on his nitrox-50 decompression mix the O-ring on the high-pressure hose blew out, letting a cloud of bubbles burst forth. Having his vision completely obscured by bubbles did not particularly assist Iain in his attempts to diagnose the problem! Having turned the tank off again, he considered his options. In this situation there are a number available, assuming that one has anticipated and planned for such an eventuality. Specifically, they could ascend using only Rowans gas, either buddy breathing, or doing the stops consecutively, either of which could be aided by sending the yellow DSMB up to ask for the drop-bottle. In addition regulators could have been swapped around, either between deco cylinders, or from the left post of the twinset. Iain prepared the yellow to send, but would wait until 6m to do so, in case the bottle was not clipped to the DSMB line.

Whilst ascending, Iain and Rowan noticed John and David on the wreck beneath them. At this stage John and David were still in their bottom phase, having entered the water after Iain and Rowan. Due to the delay in John and David ascending, Iain and Rowan started their ascent, trying to watch John and David beneath them. As John and David came to their 9m stop, David caught sight of Rowan and Iain. They were at the limit of visibility, and had drifted out of sight again as David signalled to John. Swimming over, David wondered what they were doing at this depth. Having started 8 minutes before, Rowan and Iain should have been up at 6m by this point. When the four divers met up, Iain was breathing Rowans stage, with Rowan, having done his stops on the deco gas, now back on backgas. A quick exchange of hand signals and wetnotes revealed the problem. At 6m Iain buddy breathed the stops, first with Rowan, but then with David and finally John. This was done to maximise the gas margins in each of the three stage cylinders. All of us had been taught buddy breathing when it was still part of the BSAC syllabus and had, in our turn, taught it to others, but had never done it for this long, or for real before. The divers who were buddy breathing chose to pass off their DSMB reels, and by the end, Rowan had his, John's and David's platted together. Iain added a couple of minutes to the 6m stop, to reflect the time spent waiting on the deeper stops, making over 20 minutes of buddy-breathed stops. It was in fact a measure of how under control the situation was that we could just stay there a bit longer. The surface cover, were a bit confused by the fact that a foursome had appeared from two pairs who went in eight minutes apart, and by the extension to Iain and Rowan's predicted runtime. The situation appeared contained, but the explanation was still a surprise. An incident report has been sent to BSAC, including the suggestion of retaining buddy breathing as a skill to be taught to Extended Range Divers. The failed regulator was repaired and performed flawlessly for the rest of the week.

F2/YC21

A Second World War German destroyer and the barge used to salvage her lie 30m apart in 18m of water in the sheltered Gutter Sound. A line on the bottom connects the two, and is easier to find for the first time from the YC21, so we all started our dive on this barge. The 550 ton wooden vessel sank in a storm, but is still in good condition. The small size of the wreck made it a good place to swim into. Much of the structure is intact, and there are only a couple of diver sized holes into the wreck, but as most of the top is open, it isn't a safety concern. The spaces between uprights are fine for a single-tank diver, anyone as foolish as to take a twinset and stage would need to be thin. David had justified the stage to check changes to its rigging, although Rich was convinced that it was purely to increase the difficulty of his DL rescue assessment. A pair of anti-aircraft guns sit together in the barge, salvaged from the *F2*. Next to them is a small workshop, where despite searching, Iain was unable to find an appropriate imperial size replacement for his lost P-valve bolt. Various members of the group found hiding holes for conger eels and ling.

The *F2* is intact in the bows, but aft of the bridge is completely smashed up, a mass of twisted wreckage. She is tiny in comparison to the High Seas fleet, and the 4.1"gun looked slightly impotent in comparison to the 5.9" ones we had grown accustomed to. The back of the gun was open, and much of the working parts were accessible. Further round, the life that had grown over the wreckage made it hard to believe that the outcrop was steel and not boulders, until the odd obviously artificial item such as a cog wheel showed through. The two wrecks fitted well into an hour's dive, and the shallow depth of both wrecks meant that 9m stops could be done on them, and 6m ones looking at them. David had asked for an oxygen top to his 30-30 Trimix, due to doing multiple ascents for the rescue assessments. He got a little more oxygen than asked for, ending up with a 42-23 mix, equivalent to an END of 3m for the dive. Such gasses didn't hurt the bank balance, too much, but coupled with slow ascents were incredible at reducing drowsiness in the evenings!

Andy had kindly let us conduct an exercise in the afternoon, this one requiring the use of the boat's winch. After towing David, who's kit weighed almost as much as he did, Rich was to dekit him in the middle of the Flow. Dropping kit would have been more serious than at the

quay in Stoney Cove, so we allowed people in to help out. Rowan and Serena both leaping into the water, and squabbling to be allowed to hold things. Flailing without fins, they made similar speed to Rich. David was then strapped into a spare backplate and harness, chosen as an item CUUEG is likely to be able to produce on a boat. Comments about the plate's size did not endear him to the boyfriend of its owner; hindsight diplomatically suggested that there would be excess webbing on the owner too, due to the larger girth of its previous owner and the fact that it hadn't yet been fitted for its new owner!

David was, in due course, winched aboard. Ed tried to pull him aboard, this involved pulling the crotchstrap, which was already taking no small share of David's weight. Unable to see his tormentor, David screamed, and lashed out. Three punches later David was lowered to the deck, wondering why he had agreed to do this whilst conscious. As David lay prone on the deck, people rushed around helping Rich out. Whilst rushing, Iain failed to notice that David was lying in the middle of the deck, and promptly tripped over him, breaking his fall by putting his hand straight into David's crotch. Whilst this did cause David to double up, and hence appear to have miraculously recovered, it not recommended, either for reviving the genuinely unconscious, or as a way of encouraging others to volunteer to act as casualty in the future! A period of time had to be allowed for the various parties involved in managing the casualty to stop rolling around the deck either crying with laughter or curled up in pain before the resuscitation could continue!

Our evening meal was chilli, prepared by John. John describes his chilli as mild, with heat to be added to taste, by means of supplementary hot sauce. Some members assumed the heat had been added already, and by the end of the meal most of the hot sauce remained uneaten. This was probably not surprising, given that the chilli and hot sauce between them contained an entire pot of chilli powder, the liquid of the sauce being chiefly tobasco and vinegar. Deeming the hot sauce a pollutant dangerous to marine life, even if diluted in the contents of the harbour, we packaged it carefully into a sealed container for swift disposal. Given the lack of ingredients, and an order to exclude meat, John had done well.

Quotes from the day:

- Rich: *So, what do you put in a vegetarian chilli?*
John: *Vegetarians.*
- Serena: *I was doing feet-first bouyant ascents all night.*
- Iain: *You must have read "69 things to do with pineapple rings behind the knees"*
John: *No. I got the "Little blue book", they [CUSU] must be giving different things to medical students.*
- John: *Gaffer tape sticks. Many things are sticky, not all of them stick; waterproof plasters being a prime example..*
- David: *Have you any idea what Iain smells like?*
- Ed: *@ rse, Bo11ocks, W @ nk...oh I say that all the time. Sometimes just A.B.W.*

Thursday 1st August

We had agreed with Andy that for the morning the tekkies would do the *James Barrie*, which would have required a 6:00am rise for an 8:00am tide. The others would be treated to a normal rise for the *Coeln* at about 11:00am. It would have been the first morning that we could have got to bed early enough to make it feasible, mainly due to the marked improvement in our filling efficiency, however the tekkies unanimously came to the conclusion that, while the *James Barrie* would have been nice, our catalogue of little problems were perhaps a hint that we might have been pushing our luck. It was therefore decided that everyone would dive the *Coeln*. Besides, we now had another good excuse for a return visit!

SMS Coeln

The *Coeln* lies marginally shallower than the *Brummer*, at 35m, and allowed most of us to re-use the previous days planned profiles. She was bigger than the *Brummer* at 510 feet, and 5,531 tons, but still easily "completed" on one dive. Her good condition means that she is regarded as one of the finest dives in the UK, hence why we felt her a more than acceptable alternative to the *James Barrie*. Perhaps the fact that she is also a Dresden II class ship, added to the slight sense that we'd seen it before. We were looking for swimthroughs as a highlight for the dive, and once again were grateful to have started near the bow, and to be able to finish at the more exposed engine room area, which was quite far aft. A number of these could be negotiated in such a way to ascend slowly, making it appropriate for towards the end of the dive.

Iain and Rowan found an absolutely stunning penetration at the bow, running from the starboard hull vertically up to the port hull - an excellent way to start the ascent.

The only "incident" on this dive was a case of excess caution. A current that had meant holding onto DSMB reels was required, rather than merely locking them and hanging near them. Upon reeling in from 6m David felt his shoulder seemed a bit funny, so stopped his ascent, and did some more stops. Being comfortably within a conservative profile, that we had dived before, it seemed unlikely to be significant, but feeling rather aware of the need for caution and the change of location it became worrying. Back on the boat, a need to go to the toilet, was rather close to Simon's acting efforts earlier in the week. The paranoia built, but frankly was nothing more, and a stretch of the affected muscle, was more than sufficient to resolve the problem.

We had been over cautious, but better safe than sorry, I guess.

Tabarka (aka "Musical buddies")

Tabarka was sunk in WWII as a blockship in Burra sound, where the regular tidal streams prevent silt build-up, and give wonderfully clear water. The same tide means that the slack window lasts approximately four minutes, after which about an hour is comfortable within the upturned hull. At 2,624 tons she was about half the size of the cruisers. The many rocks used in her sinking lie on what are now the floors, disconcertingly they mainly lie in the topmost compartment, which would have been the lowest when she was right-way-up. A maximum depth of 15m, a beam of about 10m, and the number of rocks, made her upside down situation confusing, and something only achievable by the Royal Navy, who lacked the excuse of a battleship's top-heavy turrets.

The internal appearance has been described as like a cathedral, which bears some resemblance to the truth. Rotten and damaged holes allow light to pour in, with occasional shafts piercing inside. The dive would have been feasible without a torch, due to the wide open spaces, but one was useful in the engine room. Three huge boilers have fallen from their mounts, and a complete triple expansion steam engine sits behind them, many of its working parts visible. The bulk of metal here, and better condition of the enclosing hull make it quite dark, but also very sheltered from the currents, which by the end of the dive were significant even within the hull of the wreck.

We had to be ready on time for the dive. The number of warnings about the current, and time added by Andy then, by David to Andy's time, meant that we were all kitted up and waiting well before the tide was ready for us. We dropped in quick succession five minutes before the tide was due to turn, with instructions to get down fast to the wreck. The first pairs in made it to the upstream edge, the later ones passed over, and dropped into the lee scour. Ed was unfortunately able to match Iain's descent onto the upstream side and drifted over the top of the wreck before dropping into the lee with the others. Ed followed John and Serena into the wreck, to look for Iain. However, he had neglected to tell John and Serena that he was attaching himself to them! He then defected to David, Rowan and Rich, had a slate conversation with David, who split from his three, and accompanied Ed to the surface. Iain meanwhile had swum over the wreck, couldn't see Ed, who was, by this time, inside the wreck, and surfaced. He was collected by the *Jean Elaine*, discovered that Ed hadn't surfaced, swore repeatedly, then did a solo drop, looking to join a pair for the dive, but completely missed the wreck. He re-surfaced to find Ed and David boarding the boat. They went in as a three, twenty minutes after the original plan, with a building current. However, Andy's years of practise showed, as he dropped us perfectly onto the wreck.

When leaving the wreck we shot DSMBs and then frantically followed them. The current was rather unpredictable, with a number of groups being yo-yo'd up and down. The trio, leaving last had the highest current to deal with, and managed to get a fair drift dive with what we estimated to be a 4+ knot current, with a flyby of the *Doyle*. Frantic finwork was required to pass the same side of a large bit of wreckage as the preceding DSMB. The dive was very different to the others, and unusual in being the only afternoon without any teaching.

We took advantage of our early return to Stromness to go to the Dive cellar en-mass. We bought polo shirts and hoodies, which were then personalised, with what seems to have become a CUUEG trip motto:

Plan the dive, dive the wreck, wreck the plan

Coming from places where pretentious Latin mottos are the norm, we asked Rowan's father to translate. Unfortunately:

Urinum propone, naufragium urinate, propositum frage

didn't have quite ring to it that we were looking for.

We voted on the last days diving, the *F2/YC21* combination was quickly chosen for the afternoon, but the morning was a little tougher. The tekkies and Serena, fast becoming known as their groupie, wanted to do the *Kronprinz Wilhelm*, again for the 12" guns (for a long while, the only main armaments fired by either side at Jutland still accessible to divers, although Innes McCarteny's recent Jutland expedition has found others), with each of the *Dresden*, *Brummer* and *Coeln* also nominated. Rich went for the *Kronprinz*, making it 5-3 (David deciding to be impartial). Later whilst blending the 21-35 Rich decided that he'd changed his mind, thus apparently making one of the cruisers the preferred choice, notwithstanding the already partly blended gas. Iain, knowing David's preference following a previous discussion, took executive power of David's vote, and made it 5-4 for the *Kronprinz*.

Rich also sat and passed his Dive Leader theory test, the questions for which had been compiled by John and David the previous night. Meanwhile, to get the last of the gas out of the cylinders, we resorted to the well known kettle trick - pouring hot water over the bank cylinder. Rowan was kept on kettle duty, with a production line of two saucepans and the kettle. Those waiting for tea were less impressed with the resulting accuracy of the mixes than the blenders felt might have been appropriate.

Quotes from the day:

- Iain [re. penetration]: *I'm not into little holes...whose idea was it to bring KY Jelly onto the boat?*
- David [on slate to Ed]: *Where / who is your buddy?*
Ed: *Iain*
David: *Where is he?*
Ed: *I don't know*
David: *Why aren't you with him?*
Ed: *Because I don't know where he is!*

Serena was promoted from "groupie" to "honorary tekkie" to join Iain and John for the morning's dive. The dive would have to be planned within the limits of her computer, which she had previously been using all week, and to Iain and John's Trimix tables. The computer could only be told about the 27% bottom mix, and not the 50% deco mix she would switch to. Her stops in reality could have been far less than the trimix divers, and the profile included 25 minutes at 3m, which was to all intents and purposes optional, but would be done to stop the computer getting stropy. The dive was starting to get overtones of the last day in Mull, so David asked for a timetabled entry, to ensure that he would be on the boat after his dive with Rowan for the end of the threesomes' ascent.

Kronprinz Wilhelm

The water was lower than on Monday, and the maximum depth was 36m. Following Ronnie's directions we made it down the correct side of the wreck. There was much more to see on this side of the wreck, with many of the deck fittings and items of superstructure forced out onto the seabed, or in the space between the seabed and the overturned deck. Many of the holes were just black, voids into the massive internal volume of the ship, which even the 50W torches couldn't illuminate. There was one outstanding feature of the Kronprinz, it had 12" guns, and the aftmost turrets stood proud of the seabed. Only David and Rowan found them, Rowan scarcely able to believe that they were guns and not pipes. David's made gesticulations were unhelpful, so '12" guns!' was scribbled across a whole wetnotes page. The superimposed turret is only just above the seabed, with one of the barrels only partly exposed. Further back, the aft turret showed the real size of the guns, and also the 600ton turret they stuck out from. A 3m void extended well out of the range of significant light, whilst providing a calm place for silt to settle. It was possible to swim over and under the higher (port) gun. It was a fitting end for the trip. Returning over the same ground, they met John, Serena and Iain, just starting their dive, and pointed enthusiastically towards the big guns.

At the 21m gas switch, David was to play musical regs, as he knocked DIN fittings and purge buttons, one after another, to prompt 6 DV switches, and 3 shutdowns. Rowan just watched the bubbles, and waited until after the show to begin his switch. This didn't seem serious enough to be interpreted as our daily dose of bad luck, so Rowan and David sat fully kitted, in case they should need to drop in on the threesome in the water. This wasn't required, as they surfaced shortly afterwards, because the computer hadn't wracked up anything like the stops that had been anticipated, which wasn't surprising, given the Aladdin's planned profile had been for 42m, but the dive was mainly above 35m. John's computer was not so lucky. He was diving on two dive-timers, and took the computer to attach to a DSMB. When deployed from 35m, it found itself happily at 35m on one sample recording point, then just shy of the surface on the next. Twenty minutes of stops had been added due to the rapid ascent, which needless to say weren't completed. It therefore sulked for some considerable time!

Serena had been given Iain's 7L aluminium stage, so Iain had taken two 3L steels, mounted bilaterally. The change in trim had caused him a real inconvenience, and he had found the dive incredibly stressful. It would appear that, to an observer, he had coped well, as neither buddy realised he was having problems, until the ascent, where his discomfort was obvious. Perhaps an object lesson in the need to remember to communicate, especially when you are the one having the problem.

F2/YC21

An pleasant but unremarkable dive. Compared to the grandeur of the weeks big wrecks, and the fact that it was our second visit, made it a minor anticlimax for some. Iain, on the other hand, was getting back into the groove after the morning's clusterf*ck and by the time he and Serena reached the gun was back in "There's a rather interesting dark hole over there..." mode. Having decided that there was no way to get more than his head into the small hole heading "down" aft of the gun, he proceeded to lay line three compartments into the wreck, round some tight corners and finished up in a space where he suspects no-one had been for some time, judging by the amount of rust displaced by his bubbles. However, noticing that his buddy was not following him, he had to stop there and turned back to discover that Serena had suffered a torch failure and had done the sensible thing of staying in the daylight zone.

On surfacing, we presented Andy and Ronnie with thank-you presents, each had nominated Morgan's Spiced Rum for the other, making shopping simple. We raced back to the pier, to get the space next to the pier itself to offload kit. David sat in the cabin, to work out the gas bill for each of our oxygen use, then pay a somewhat scary overall trip bill, before finding out how much everyone owed him. After collecting cheques from everyone, he realised the ferry cost wasn't on the bill...

We hit the town for the evening meal, only to find that booking a restaurant would have been sensible. Serena was dispatched to work her feminine charm on one of the restaurant owners, second time lucky we got a young guy, who, succumbing to the batting of Serena's eyes while the rest of us hid round the corner, realised that he could give us space later. He was a Spaniard, who had come to Scapa Flow for the diving, but after 3 weeks, he hadn't managed a single dive. The meal was an all you can eat buffet, which Ed made the most of, going up five times, for enough food to feed four average adult males; Ed is obviously not average. We were split between two tables, and whilst the first ate it's way through dessert and drank their many bottles of wine, the second were more restrained. David despite the coffee, lay down on a padded bench, and went to sleep. The alcohol went to our heads quickly, especially those of us who had been up gas mixing, rather than sneaking off for a crafty pint of an evening. Simon went back to the boat, whilst the rest of us took advantage of Scotland's more liberal opening hours.

Harbour Freediving

As we boarded the boat, Serena passed her hoodie aboard. Her digital camera, which was in the pocket at the front didn't make the full distance, and fell out, predictably disappearing into the sea between the boat and the quayside. Most of the dive kit was in the van, parked 100m away, but some was on board. Iain and Rowan quickly scrambled for torches to look, whilst Ed and Ross held boat off the quay. The camera had obviously gone in, and not stopped on a fortuitous ledge. David put on his drysuit, and borrowing a mask and snorkel got in. Rowan passed off his Kowalski, which David attached to a suit D-ring. Iain and Rowan prepared to assemble a full scuba set, whilst David added items to his rather bizarre snorkel kit. He got his canister light, forgetting about the new loose connection, put some lead in his suit pockets, and squeezed into Serena's fins, amidst comments of "small feet, small..." The skipper had thoughtlessly stowed the ladder aboard,

making each return for new kit configuration require no small amount of clamouring up the tyres used as fenders.

A common safety rule is don't free dive after scuba diving. 2am, several pints, and the under boat location were unlikely to provide mitigating circumstances. With David temporarily on the boat to add fins, Ed got the ladder in the water. David went in again, just to fill the time before the full scuba diving was ready. Iain was struggling to get into John's suit. Iain's own suit would have required him to get into a pee-valve catheter, having lost the external blanking bolt earlier. Following the wall down, with a huge improvement in mobility from the fins, David saw the bottom, then noticed a reflection from a shiny object. The metallic body of the camera stood out from the dull brown of the harbour bottom. We were lucky that the camera had fallen out of its homemade case, which was made of dull cloth. With a positively buoyant drysuit, getting down had been tricky, but returning without the camera, only to say, "Well I saw it!" would have been bitter. The swim had taken David under the ladder, and not wanting to surface under it he swam off at an angle to ascend. His ascent brought him up under the hull of the boat, but the detail of the red wooden slats was rather less important than a breath at the surface.

Serena was rather happy, about its return, although the state of the electronics after 20min submerged was uncertain. Subsequent reports, however, suggest that both the memory card and the camera are thought to have survived!

Stromness harbour offered the worst visibility of any dive site so far, no ambient light, and many particles to backscatter torchlight. No pelagic life was seen, only a little seaweed. Jellyfish, however, have been sighted from the surface. The bottom at about 6m is silty, and the visibility poor. The only ship seen was a mere 70 tons, and its position is not marked on any admiralty chart. We would, therefore, not recommend this as a dive site.

Quotes from the day:

- Iain [entire log for the Kronprinz dive]: *Do it right, or don't do it at all.*
- David: *12" guns!*
- Iain [passing a double-ender]: *When she's not looking clip Serena to me.*

Saturday 3rd August

We left on the 3pm ferry, so had some time to write up logbooks eat the multiple breakfasts that we had become used to, and generally get sad about going home. Plans for 2003 were already being made. Iain had asked to be dropped at home in Dunblane on the way through, so we headed down to Perth to regroup before travelling to his house for pizza, kindly supplied by his parents. Despite a slight initial lead by the van, the Landrover soon overtook, and reckoned themselves 20 minutes ahead by Inverness. 50 minutes from Dunblane their lead was to come to naught. The Landie had a puncture.

We brought the van up to shield John as he worked on the off-side wheel. Ed had the joy of standing down the road in a fluorescent jacket waving at passing motorists. We discovered that Iain's drive is wide enough for a transit to reverse into, but not for the wing mirrors, so left it partly on the pavement outside. Following pizza and obligatory coffee for the drivers we headed south again, only to be forced down to thirty or forty miles per hour on motorways by fog near Glasgow. We regrouped at Ferrybridge services, for coffee and cake. Pulling out of yet another fuel stop for the van the two vehicles drove the last hour in convoy, David not fully understanding the game of leapfrogging Serena was trying to play.

We arrived in Cambridge at six thirty, and had to set new standards in quietness for kit return to avoid irritating the neighbours. John volunteered tea, which was eagerly taken by those without beds immediately available to fall into.

It was good fun, I'm sure we'll be back to Scapa Flow, maybe combined with some of the more distant Orcadian sites.