Free Flow

The magazine for LSAC

Jan 2005
Issue 84

CONTENTS

Cover Photo Courtesy of Anon

Editors Bit...

At all good Newsagents now…..
Hence only downloadable from lsac.co.uk

Free
It should be

Free Flow

CONTENTS

Happy New Year to you all and hopefully a prosperous one.

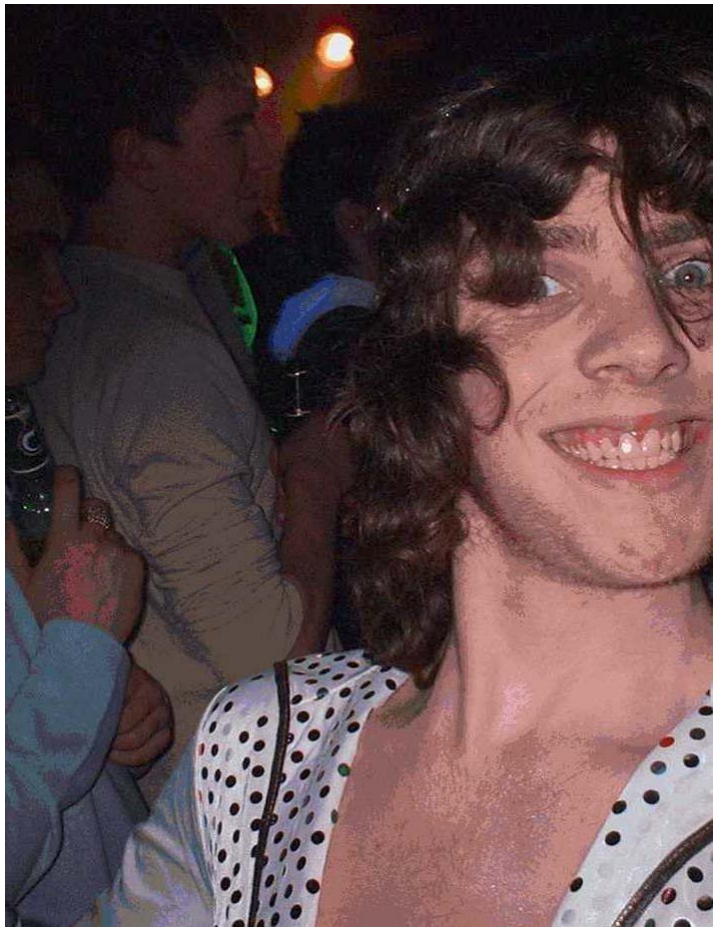
This edition might appear a bit morbid with articles on the Tsunami, 2004 Diving Incidents and Cold Water Breathing Problems.

To compensate have Kev demonstrating AV via the ear. Not a widely used technique but obviously it works as Helen seems to be recovering. Perhaps next month you might see Kev's recovery position.

Any articles, news, gossip, jokes and the like should be sent to the Ed at

pete.barnard@power.alstom.com

Page 3 Luvlies



My hard felt condolences go to Mrs Yates, mother of this months luvlie. I was honour bound to bring these images to the clubs attention since this fashion statement would even put the ed. into second place.

Chairman's Report

This is my first report for the new year and I must admit I am looking forward to a good years diving. I think by the time we have braved the cold of Stoney Cove over the next couple of months, the first club trips will be eagerly awaited. Over the last month we have had a lovely night with our quiz night competition, which I believe was as always a great success. I must thank again Helen & Pete for all their hard work in making the night so enjoyable. Plus I have also apologised for the table that I was on for their rowdy behaviour. By the time I suspect this will be read we will have had the annual dinner dance and award ceremony, so I would also like to congratulate all the winners for their trophies and their enthusiasm for the club. In the month of February we will have a number of people who are prepared to give up their time to give us some entertainment on the Tuesday club night. So far we will have Alex Bullard who is to give us a talk on his interesting visit to the South China Seas and Steve Appleton who will be giving a valuable to talk on Kit configuration. This will be of particular interest for those in the club who are embarking this year on their first dive trips and even for the rest of us because there is always something to learn. Also Nigel has agreed to give a talk on the boat, as yet a date is to be confirmed and I hope to persuade two others to pass on their knowledge and experiences. So therefore we should have some interesting evenings coming up and everyone's support for these people would be very gratefully received.

There was a committee meeting in December, but unfortunately not enough members turned up to make it constitutional. We did form a quorum with those of us that where there and addressed the issues that the membership had put before us. Hopefully these have been actioned and I thank those of you who took the time present their thoughts/requests before us. The next committee will be this month, as yet a date has to be confirmed, but I will announce it as soon as possible.

Well that's all from me for this addition and all that is left is to wish you all a happy and good years diving.

Chairman Jon

Diving Officer's Report

Hi all

Well I hope you have all had a good Christmas and New Year and now going through the January blues whilst you settle back in at work after the festive period. If you are thinking of working off that Christmas pudding then don't forget the pool is always there for use on a Tuesday. Whether you just want to go out for a swim, brush up on those techniques or try out any new dive gear that Santa may have bought you.

Now that the new year is here, is time to get dive on with dive planning for the years trips, the calendar is already starting to take shape and there are three Tuesday Nights dedicated to the organizing of these trips. Just because a trip destination is not on there it doesn't mean it can't be organized, so please speak up.

The planning sessions are on the following dates 18th Jan, 25th Jan and the 1st of Feb.

As for training there are a number of SDC's already penciled in on top of the usual Sports and Ocaen diver courses. If you are interested in any of them can you let my self or Neil Tomlin know.

Also if people are interested I will run another session at Eddie Stobarts so that you can have a go at maneuvering the boats on the trailers. If you want to have a go at this then please let me know but I will only organize it if people are interested.

The links below are for the training and trips, these will be linked to the web site shortly
http://www.netcomuk.co.uk/~lucyht/Lsac/downloads/diving_calender.doc
http://www.netcomuk.co.uk/~lucyht/Lsac/downloads/lsac_training.doc

Anyway that's about it from me for now so if you are at the annual do then will see you all there

Happy New Year
Neil Brown

TSUNAMI DISASTER UPDATE

No one can have failed to be moved by the images of devastation and destruction wrought by the Tsunami that hit Asia on Boxing Day. The response from governments and more significantly individuals from across from the globe has been swift and heartfelt.

The coastal and island resorts of the region are well known to many UK based BSAC members, and of course there are international BSAC branches and schools in a number of the areas affected. Speaking on behalf of BSAC Council, Marcus Allen BSAC Vice Chairman said "As time moves on the enormity of the situation in Asia is becoming clearer and the immense scale of the disaster hard to comprehend. Following many suggestions on how we can help and much discussion among council members we feel that the following actions are most appropriate:

"In the first instance BSAC Council would encourage our members to make a personal donation to the Disaster Fund as they see fit by following the links on our website front page http://www.dec.org.uk/ or by phoning 0870 60 60 900. The reason for this is that the international agencies have an infrastructure in place and individuals may also have personal preferences about where their donations are best directed.

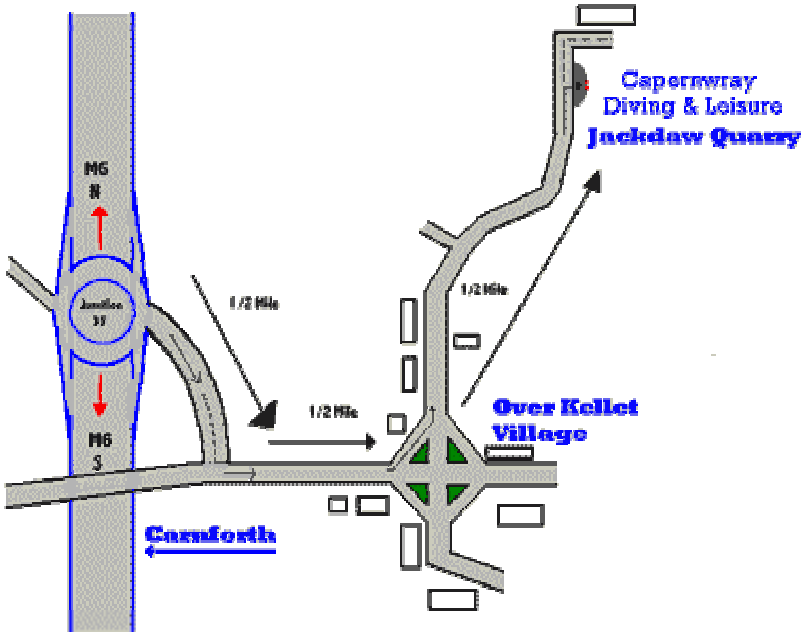
"BSAC will continue to contact our overseas members, branches and schools in the region and offer them our support for the medium and long term. We feel that in this way we can help to re-build what has been lost and we as divers know what can work best for these branches and members."

The extent of damage caused is patchy and whilst many coastal locations and islands have suffered colossal damage, other resorts escaped comparatively unscathed. Tourism is fundamental to the economy of many of the countries and provinces affected. As well as immediate aid in the short-term, what they really need is our business. National tourism departments are keen to balance the images of devastation with the message that many resorts are operational, with more and more re-opening every day.
Contact details and website addresses for up to date information from the countries effected and major dive tour operators can be found on the Travel Club section of the BSAC website.
Wednesday, January 05, 2005

Capernwray Diving

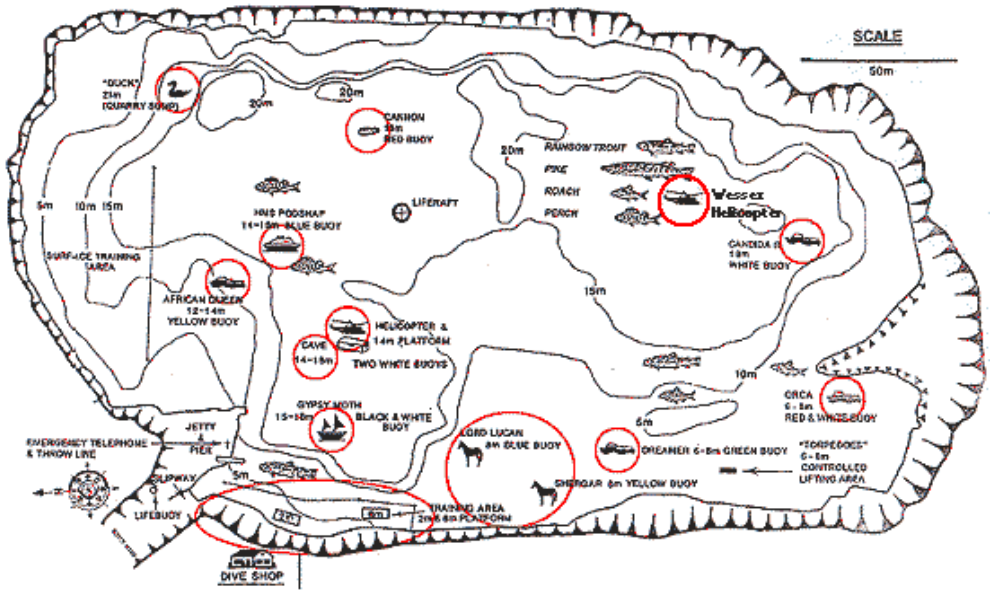
Over the Christmas holidays a small group of us (Steve, Mike, Gary, Ann-marie, Martin, Kev and me) headed up north to dive Capernwray quarry. Getting up at 5 was a bit of a shock to the system, especially as we were supposed to be on Holiday.

Capernwray is located just off junction 35 of the M6 and not far from a truck stop café which were to use seeing as the site did'nt open til 10, and we had an hour to kill, oh well the breakfast was nice!



Capernwray is a great little site with full dive centre facilities including shop, air fills, kit hire, etc. The best bit is the bar/restaurant that overlooks the water, in which you can sit in your drysuits (great place to warm up in between dives).

The site is a maximum of 20 m deep, with the majority at 15 – 18 m with a further shelf at 6 – 8 m. The main underwater attractions include:- Hms Podsnap (a wwII mine sweeper), cessna plane, small oil rig, 2 wessex helicopters, various small boats, cars, etc. and lord lucan and shergar giant horses (worth the trip alone!). Most of the big stuff is on metal containers which help to stop the bottom being stirred up, you can also swim through most of the containers if your that way inclined. There are also lots of large trout that congregate in the shallows, which do like being fed by divers.



We completed 2 dives, both of which had great viz (we dived as a group of 7 and stayed together so it must have been good!) approx 8 – 10m, although patchy in places. The water temp was a cool 7 degrees and the mug of tea and chip butty in between dives was a must to warm up.

Everyone seemed to enjoy the dives and we will probably look at going again next xmas if anyones interested.

For further site info go to www.dive-site.co.uk.

Roger Holmes

2004 DIVING INCIDENTS REPORT RELEASED

Brian Cumming, BSAC DivingSafety & Incidents Advisor, announced the findings of this year's Diving Incidents Report at the annual Diving Officers' Conference in London on Sat 4 December. The 2004 incident year included 498 reported incidents up from 409 the previous year. There was a serious rise in fatalities up from 11 to 25, the highest annual recorded figure for 30 years. However Cumming pointed out that the average over the last 10 years is 16.5 per annum. 6 of the 25 were BSAC members which is consistent with previous years.

In the report Cumming concludes that reported incidents are in line with the trends of recent years. The number of fatalities has risen substantially in the 2004 incident year.

- No new causal factors have been identified and there is no evidence to suggest that any changes are required to the current recommendations for safe diving practices.
- Non-diving-related medical problems were above normal.
- A failure to achieve positive buoyancy once a problem was encountered was present in a high number of cases.
- Non-pair diving may have contributed by providing a distraction that allowed a problem with another member of the team to go unnoticed.
- Increasing depth significantly increases the difficulty of resolving an incident satisfactorily. 4 of the 14 incidents with depths of greater than 50m involved fatalities.
- Training in safe ascent procedures should be a high priority for branches and instructors.

Most of the incidents reported within this document could have been avoided had those involved followed a few basic principles of safe diving practice. The BSAC publishes a booklet called 'Safe Diving' (latest edition May 2002). This booklet summarises all the key elements of safe diving and is available to all, free of charge, through BSAC HQ. Remember you can never have too much practice and the further you stay away from the limits of your own personal capabilities the more likely you are to continue to enjoy your diving.
The full report is on the BSAC website here 2004 Incident Report.
Monday, December 06, 2004

"Solving Cold Water Breathing Problems"

By: Bev Morgan, Pete Ryan, Trent Schultz, and Mike Ward

The results of recent tests at the Dive Lab in Panama City Beach, Florida, reveal a problem that has gone relatively unnoticed and unreported in open circuit scuba diving for many years. **Bev Morgan, Pete Ryan, Trent Schultz, and Mike Ward** outline the reasons behind the difficulties divers encounter when breathing in cold water.

The refrigeration effect of gas pressure reduction in open circuit scuba is known, but has not been the subject of published information due to the lack of investigation on the subject. The refrigeration effect has been recognized as a factor in mechanical failure of the demand regulator when scuba diving in cold water, but the exact mechanical source and effect has not been defined. Most all divers have noticed that the air/gas coming from the open circuit demand regulators is cold, but just how cold? The physiological effects and possible danger to the diver of the refrigeration of the breathing gas/air has not been investigated, to the authors' knowledge.

In commercial diving operations using Helium and Oxygen breathing mixtures (HeliOx) and umbilicals, it is common practice to use hot water systems to heat the exterior of the divers' body and the breathing gas. It is known that the breathing gas must be heated (in addition to heating the exterior of the body) for the divers' core temperature to be maintained. Heating only the exterior of the diver's body is not enough to keep the diver warm.

HeliOx transfers heat about seven times more efficiently than air or Nitrogen/Oxygen mixtures (NitrOx). Divers using HeliOx on deep dives rapidly become cold by loss of body heat through respiration. The problem is overcome by heating the diver's breathing gas (in addition to heating the exterior of the body). This is accomplished in most commercial diving operations with a flow of hot water through a shroud over the piping in which the diver's breathing gas flows. The hot water is produced at the surface and sent to the diver through a hose that is part of the umbilical.

Scuba divers are not connected to the surface and do not have this means of warming. Heating the scuba diver's gas/air supply has not been done successfully. Scuba heating efforts have focused on the exterior of the body by means of passive insulation and more recently, electrical heating with batteries.

Pressure and Temperature

Since no obvious indicators point to cold inhalation gas/air being a problem to scuba divers, it appears that no studies have been done to investigate this cold breathing gas/air effect on their physical well being.

Mechanically, breathing regulators have been modified to retard freezing. While some designs do work to retard freezing, little success has been achieved in warming the gas/air temperatures to the diver.

Scuba divers store their supply of breathing gas/air in tanks that contain the compressed gas/air. Pressures of 3,000 psi (206.8 Bar) are common in the United States, with 4,000 psi (275.8 Bar) common in Europe. In some cases technical divers have used pressures of 6,000 psi (413.7 Bar) or more. The use of higher-pressure storage tanks and mixed gas by deep divers has significantly increased the potential danger and risk associated with the breathing gas/air cooling effect of pressure reduction by the first stage regulator.

A first stage regulator, usually attached to the tank valve, reduces the tank pressure to approximately 150 psi (10.3 Bar) This lower pressure is fed by means of a hose to a second stage demand regulator that is located near the divers' mouth.

The reduction in pressure by the first stage causes the compressed gas/air to greatly expand at the first stage flow orifice. The rapid expansion of gases dramatically reduces the temperature of the breathing gas. The Dive Lab has found that drops of 50 degrees F (27.8 degrees C) are common, and drops of 100 degrees F (55.6 degrees C) or more are possible when 6,000 psi (413.7 Bar) storage pressures are used.

The cooling appears to be linear and predictable. The higher the pressure at which gas is stored, the greater the temperature drop will be when the pressure is reduced to a typical low pressure of about 150 psi (10.3 Bar).

When the diver is immersed in relatively warm water of 75&186; degrees F (23.9 degrees C) and is breathing from a tank of compressed air filled at 3,000 psi, the low pressure air coming out of the first stage regulator is in the range of 25 degrees F (or minus 3.9 degrees C). That is below freezing.

Most scuba divers do not sense this cold breathing gas and are not concerned. However, even at these warm water temperatures when using air or NitrOx, divers have been unknowingly using a great deal of body heat/energy to warm

the cold gas inhalations. The lower temperature of the breathing gas shortens the time that it takes for the diver to get uncomfortably ³cold² and start to shiver. In addition to diver heat loss through respiration, the cold inhalations are very dry, causing increased dehydration to the diver.

When the water temperature is 40 degrees F (4.5 degrees C), the temperature of the breathing gas is in the range of minus 10 degrees F (minus 23.3 degrees C) when the tank is full to about 3,000 psi (206.8 Bar).

When the water temperature is 32 degrees F (zero degrees C) the demand second stage regulator is being fed minus 18 degrees F (minus 28 degrees C) gas/air when the tank is full to about 3,000 psi (206.8 Bar). During testing, ice build-up on the regulators being tested was impressive. There was one-half-inch coating of ice inside and outside of the demand second stage, and the first stage was encased in a large, thick ball of ice. Needless to say, the second stage mechanically failed in less than five minutes. A first stage equipped with a cold water environmental cap mechanically failed due to being entirely encased in ice.

Effects of Cold Water Diving

At these temperatures there is an immediate danger to the diver in two ways. First, ice may cause the regulator to mechanically freeze up, threatening the diver's supply of breathing gas. Second, the cold air hitting the diver's mouth, throat, and airways presents a real danger of causing respiratory shock, which results in the diver being instantly rendered unable to breathe.

The physical mechanism of respiratory shock is not fully understood by the authors. It appears that laryngospasm occurs. The diver's airway is completely blocked by the epiglottis, sealing the trachea closed. If the airway is blocked, embolism can occur even in relative shallow water if the diver goes toward the surface. Whatever the exact physical mechanism to the diver, the result can be catastrophic. This may explain why some previous cold-water diving fatalities have happened without an apparent cause.

Panic may be the catch-all explanation, but the authors suspect that respiratory shock can be the true cause for the panic and the real cause of the problem. Certainly anyone who has observed a diver experiencing severe respiratory shock would see it as panic.

The diver, if he or she survives, may be confused and interpret the event as a sudden mechanical blockage of regulator gas/air flow, since there is little awareness in the scuba diving community of respiratory shock, let alone identifying the event.

When a diver is using Helium in the breathing mix the danger is compounded. This is due to the greater heat transfer characteristics of Helium mix at depths where this mix is used.

A technical scuba diver using Helium in the breathing gas mixture switches to this mix from a nitrogen mix during descent, usually deeper than 100 feet (30m). At these depths the water temperature can be below 40 degrees F (4.5 degrees C). The tank of Helium mix would be full. If 3,000 psi (206.8 Bar) were the tank pressure, the first two or three inspirations would be at minus 10 degrees F (minus 23.3 degrees C). Even lower temperatures of the inspired gas are found with the continued reduction in temperatures of the metal breathing regulator system caused by the refrigerator effect of the first stage regulator.

It is not known at what temperature respiratory shock occurs in divers and it undoubtedly varies from diver to diver. We believe that minus 10 degrees F (minus 23.3 degrees C) on any gas including air, but especially Helium mix, is cold enough to cause a serious danger to any diver. This means any diver in water that is below 45 degrees F (7.2 degrees C) or so, can be on the threshold of respiratory shock if their breathing source is a scuba tank of compressed gas/air.

If breathing mix is stored at 6,000 psi (413.7 Bar) the temperature of the inspired gas to a diver in 40 degrees F (4.5 degrees C) water can be around minus 60 degrees F (minus 51.1 degrees C). In cold water technical scuba diving, switching over to a tank of HeliOx that is stored at 6,000 psi (413.7 Bar), in our opinion, can be extremely dangerous.

High percentage Helium mixes in deep commercial diving operations require the incoming gas temperature at the diver to be above 100 degrees F (37 degrees C). Below that, the diver's time underwater is shortened in direct proportion to the lowering temperature of inspired gas.

The deep commercial diver that experiences interruption of gas flow in their umbilical must switch to emergency gas, which is usually an open circuit system supplied by a high pressure scuba tank. If the hot water flow is also interrupted, the diver will receive only very cold gas from the tanks. This is a very dangerous situation.

Heating the Breathing Gas

From the above information the obvious solution to the problem is to heat the breathing gas/air of any deep water or cold water scuba diver. Deep water or cold water commercial divers, as well, should heat emergency gas/air that is supplied from high-pressure tanks worn by the diver.

Power is necessary to do the work of heating. We believe that Kirby Morgan Dive Systems has a potential solution to this problem in the works and will publish the results when they are available.

Many years of scuba and commercial diving in moderately cold water have been done seemingly without problems from cold gas. Careful observation and awareness by divers can help all of us understand how cold breathing gas truly affects us. **UW**

Bev Morgan is Chairman of the Board at Kirby Morgan Dive Systems. He began designing and manufacturing diving equipment in 1950 and continues today. Along with Bob Kirby, Bev designed the Kirby Morgan Superlite Helmets and Bandmasks. He now lives in Panama City, Florida, where he is working on several new commercial helmet and mask designs.

Pete Ryan is a Senior Engineer at Diving Systems International and has been designing equipment for the commercial diving industry for over 20 years. Originally from Massachusetts, he now makes his home in Orcutt, California, with his wife and two children. Pete has been with Diving Systems since 1975.

Trent Schultz is a Design and Production Engineer at Diving Systems International. He has worked for the company for over 10 years, starting in the Parts Fabrication and Assembly Department and working his way into Engineering. He helps design, patent, and maintain the commercial, scuba, and specialized diving equipment that Diving Systems International manufactures. Trent has also worked creating working props and costumes for several different Hollywood productions.

Mike Ward is the President of Dive Lab, Inc., in Panama City, Florida. Mike retired from the U.S. Navy in 1992 with 21 years of service, 18 years as a navy diver. With three tours at the Navy Experimental Diving Unit, he has experience in both manned and un-manned diving equipment testing. Mike represents DSI as their liaison for all military and government entities.

{Ed's note: As promised last month rewrite of article with pictures}

SIX GO TUBING !!

Six female from LSAC were allowed out one Saturday night to celebrate (allegedly) one of it's members birthday.

Recipe was as follows -

Ingredients - Fran (the plank) Duinker, Claire (anything for a laugh) Stockdale, Erica (scaredypants) Clarke, Annmarie (the big dipper) Barnard, Danny (too young to know better) Clarke and Mary (old enough to know better) Pearson.

Method - stir ingredients vigorously with some snow, rubber tyres and push repeatedly down vertical slope allowing some maniacal waving and screaming.

Cook with Indian spices, rice and poppadoms; plenty of liquid refreshment and let the ingredients marinade for an hour or two.

Finished result - 6 (well 4, actually as 2 were sober responsible citizens !!!!!”””???) Inebriated very happy LSAC females.

Would they do it again - you bet they would !!!!

Next recipe will be a toboggan challenge with the male of the species - “ a recipe for disaster?”

Watch this space ……

{Ed’s note:- How long does one have to watch this space before something happens ? }

Tuesday Night Schedule:- Be There or Be Square ☺

DATE	INTRO/OCEAN DIVER	SPORTS DIVER	DIVE LEADER	SKILL DEVELOPMENT	INTEREST EVENINGS	POOL TRAINING
04-Jan-05	**N0 CLUB - HAPPY NEW YEAR**					
11-Jan-05	OT4 Catch up - Pete Barnard					
18-Jan-05	OT7 Catch up - Neil Tomlin				Dive Trip Planning	
25-Jan-05	EXAM - Neil Tomlin				Dive Trip Planning	
01-Feb-05	Drysuit Intro - Roger Holmes				Dive Trip Planning	
08-Feb-05				Dive Planning & Marshalling	Equipment maintenance-Pete Barnard	
15-Feb-05				Dive Planning & Marshalling	Alex Bullard-Diving south China Seas	
22-Feb-05		ST1- Jon Brewis		Dive Planning & Marshalling		SS1
01-Mar-05		ST2 - Neil Brown		Dive Planning & Marshalling		SS1
08-Mar-05		ST3 - Roger Green		Dive Planning & Marshalling		SS1
15-Mar-05		ST4 - Roger Holmes			O2 - Refresher	
22-Mar-05		ST5 - Gary Rose		Practical Rescue Management		
29-Mar-05	**N0 CLUB - EASTER**					
05-Apr-05		ST6 - Phil Turney		Practical Rescue Management		TRY DIVE
12-Apr-05		Catch up week		Practical Rescue Management		TRY DIVE
19-Apr-05	OT1 / INTRO - Neil Tomlin	REVISION - Neil Brown		Practical Rescue Management		Intro Course
26-Apr-05	OT2 - Jon Brewis	Exam - Neil Brown		Practical Rescue Management		OCEAN DIVER
03-May-05	**No Club May Day Bank Holiday**					**Bank Holida**
10-May-05	OT3 - Neil Brown			AT2 - Advanced Diving - Neil Tomlin		OCEAN DIVER
17-May-05	OT4 - Richard Green			AT2 - Advanced Diving : Twinset configuration - Roger Holmes		OCEAN DIVER
24-May-05	OT5-Roger Holmes			AT2 - Advanced Diving : Rebreather awareness - Fran Duinker		OCEAN DIVER
31-May-05	**N0 CLUB - WHITSUN BANK HOLIDAY**					**ND. StITSU**
07-Jun-05	OT6 - Gary Rose			AT2 - Advanced Diving : Rebreather awareness - Fran Duinker		OCEAN DIVER
14-Jun-05	OT7 - Phil Turney			Lifesaver # 1		OCEAN DIVER / LS # 1
21-Jun-05	Catch up week			Lifesaver # 2		OCEAN DIVER / LS # 2
28-Jun-05	REVISION - Neil Tomlin			Lifesaver # 3		OCEAN DIVER / LS # 3
05-Jul-05	EXAM - Neil Tomlin			Lifesaver # 4		OCEAN DIVER / LS # 4
12-Jul-05				Lifesaver # 5		OCEAN DIVER / LS # 5
19-Jul-05				Lifesaver # 6		OCEAN DIVER / LS # 6
26-Jul-05	Drysuit Intro - Pete Woodcock			Lifesaver - Exam		OCEAN DIVER / LS Exam
02-Aug-05	**N0 CLUB - August Bank Holiday**					**ank Holiday**
09-Aug-05						
16-Aug-05						
23-Aug-05						
30-Aug-05	**N0 CLUB - AUGUST BANK HOLIDAY**					**ND.StGUS**
06-Sep-05		ST1- Pete Woodcock				SS1
13-Sep-05		ST2 - Ian Jennings				SS1
20-Sep-05		ST3 - Bob Mulholland				TRY DIVE
27-Sep-05	**AGM**					TRY DIVE
04-Oct-05	OT1 / INTRO - Neil Tomlin	ST4 - Nigel Spickett				Intro Course
11-Oct-05	OT2 - Ian Jennings	ST5 - Fran Duinker				OCEAN DIVER
18-Oct-05	OT3 - Bob Mulholland	ST6 - Alex Bullard				OCEAN DIVER
25-Oct-05	OT4 - Nigel Spickett	Catch up week				OCEAN DIVER
01-Nov-05	OT5-Fran Duinker	REVISION - Neil Tomlin				OCEAN DIVER
08-Nov-05	OT6 - Alex Bullard	EXAM - Neil Tomlin				OCEAN DIVER
15-Nov-05	OT7 - Neil Tomlin					OCEAN DIVER
22-Nov-05	Catch up week					OCEAN DIVER
29-Nov-05	REVISION - Neil Tomlin					OCEAN DIVER
06-Dec-05	EXAM - Neil Tomlin					
13-Dec-05	**Quiz and Social Night**					
20-Dec-05	**Christmas No Meeting**					
27-Dec-05	**New Year No Meeting**					
	INTRO/OCEAN DIVER	**SPORTS DIVER**	**DIVE LEADER**	**SKILL DEVELOPMENT**	**INTEREST EVENINGS**	**POOL TRAINING**