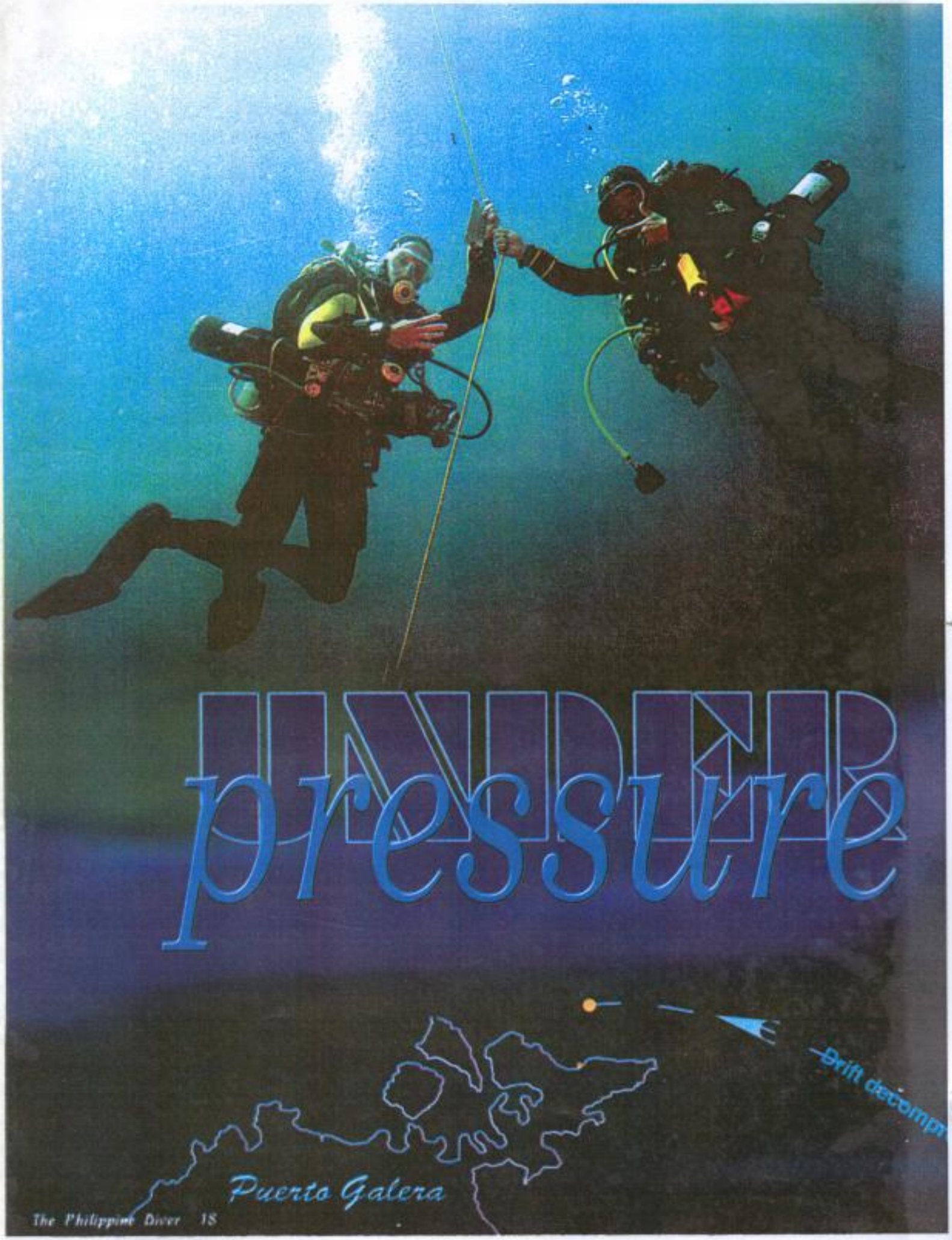
UNDER
pressure
Puerto Galera
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A WORLD RECORD DIVE

By: John Bennett
Photo © Phil Shaw

Sabang Beach, Puerto Galera, Philippines: The delays were starting to wear us down. This was the third morning there had been a last minute cancellation. We sat around in Capt'n Gregg's looking at the weather and feeling sorry for ourselves. It was 7am on the 4th June. The last three days had all begun at 3am and the combination of sleepless nights & early starts was beginning to take its toll.

Jim Noble sat typing another e-mail explaining the delay to some of the sponsors. Jim's help had been vital to getting the series of dives this far. He was the event organiser and had helped enormously in raising the funds needed. Jim and co-supervsior Noel Godfrey, who had flown in from Wales in the UK, both had more than twenty years experience in the physical training corps of the British army. Their attention to detail would be important to our success, and my safety, it had come from years of running miltary diving expeditions.

Chuck Driver, owner of Capt'n Gregg's, my former deep ocean depth record partner, would this time be part of the support team. (In 1999 we had broken the 153m/500 ft mark four times on dives together and our 200m/656 ft dive was, at the time, the deepest oceananic dive ever completed. It was bettered by Barte Vestor who set a challenging 225m/738 ft mark later the same year).

As with previous record dives Axel Lehward would be the first diver I would see on my ascent, meeting me at 122m/400 ft. Axel had worked incredibly hard preparing the dive support platform with Tom Tom and they had made several stability improvements on last year's design. Although the dive would be a solo dive (unilke the 1999 joint dive with Chuck) we had decided to keep two decent lines, this time with periodical pipes between the two lines. The second line would give us a working line for the team and provide me with a second reference point, hopefully minimizing the chance of disorientation.

Daran Bull would meet me at 91m/300 ft. He had worked with me on Mark Andrews deep air dive, I knew him to be a calm and very good deep diver. During the build up his common sense approach to things helped a lot as he worked to ensure the ardeous task of mixing tanks was completed.

Mark Cox was also with the team right through the training, all the way to the 155m/506 ft training, but unfortunately he would not be available for the final dive.

Jorge Marques, another close friend, was also working with us again. Like many of the other team members he had sacrificed a lot to be here. His support diver role would take him to a depth of 140m/ 460 ft, shattering his native country's (Portugese) record.

Jorge's dive made me realise how lucky I was; the experience level of the team was stunning, seated around me that morning, were some of the best deep divers in the world. Now all we had to do was put it all together. Other team member commitments meant that tomorrow would be the last opportunity for the attempt.

This type of pressure was something that I had tried desparately to avoid. Jim Bowden, who had dove to 282m/925 ft in the Zacaton cave system (still the deepest open circuit dive ever completed), had warned me to avoid time and media pressure, but now it was there. The rest of the day was spent checking and rechecking the equipment and mixes. I tried to stay away from most of the checks, concentrating instead on my mental preparation. The delays had started to drain my energy so I left the team to it and went home to my family.

Like most of the team I had another restless night and for the first time I questioned why was I doing this.

Upon waking, both the weather and my mood had improved. When I arrived at the shop Noel, Jim, Axel and Tom Tom had already left with the platform and the rest of the team loaded the tanks, making sure the only thing I needed to do was dive. The trip to the site was about an hour, further than I had thought but we were rewarded with a beaming Tom Tom: "It looks good, John". The countless workouts and weeks of training were over.

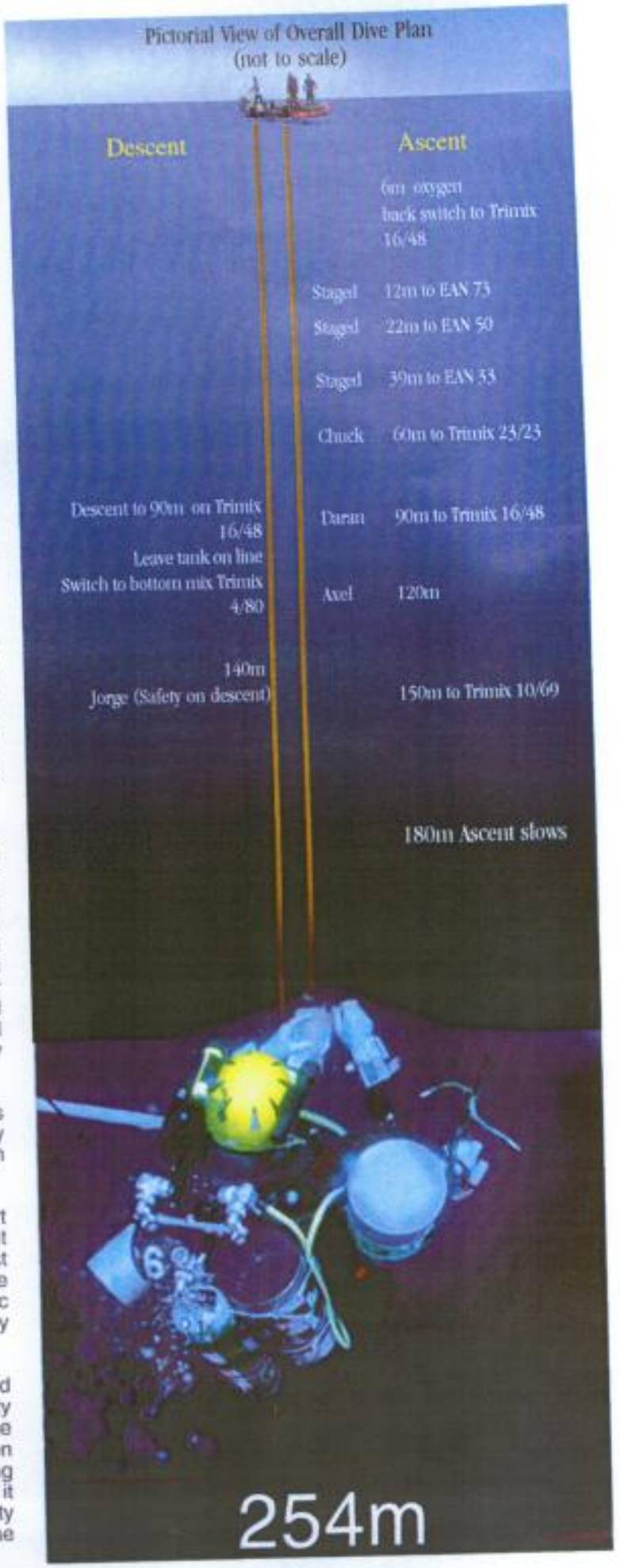
The "O Three drysuit" donated by Sean and Kevin made getting into the six tank set up hot work. The dive was also to be a test for the suit: Without it the four degree bottom tempertures waiting for me would quickly sap my strength and coordination. But I had to be careful not to over heat in the twenty eight degree surface waters where I would spend most of my time decompressing, this meant the normal thick undersuit was out.

Noel ran through a check list, making sure that all members of the team had their mixes positioned correctly. This seemingly mundane chore and desciplined approach to the dives, was one of the factors which ensured the success of the project. I rested and composed myself on the surface for ten minutes and also used the time to fit the helmet that had two Halcyon flash lights attached. I carried two other flash lights, both Pinceton Tec and unlike previous dives where lights had either imploded or flooded, all the lights performed well. (I would have preferred to carry a primary light as well, but despite all the glamorous advertising you see I could not find a company that was willing to risk their light!)

Jorge was next to me on the working line, he began his descent a few minutes before me, his role being to check my first gas switch and then wait in case there was a problem in the early stages.

I had decided to carry a 40 cu/ft tank of 16/45 mix to start the decent but as soon as I began my descent I regretted it. It was clipped between my legs and banged annoyingly against them. My desent was fast; around thirty metres per minute and I soon reached the 91m/300ft tag clipping off the 40 cubic tank and switching to my bottom mix before beginning my final drop.

The darkness closed around me as I sped past Jorge and dropped through the 140m/460ft mark. As the visibility dropped, the suspended particles speeding past added to the disorientating effect. At 160m/524ft a wave of disorientation hit me as I lost track of the line. I slowed my descent, tracking from left to right to find the line. After a few seconds I found it and with a sigh of relief I speeded up the descent. The visibility was still dropping and by 180m/590 ft I could barely see the second descent line which was only two metres from me.



Priming myself to expect an increase in breathing resistance although it never came. The Apex 100 regulators were superb, likewise the Tx 50's I used for decompression. Suddenly my vision went... the world was a blur... HPNS I thought (I had had a mild case of HPNS on my dive to 200m / 656 ft with Chuck)... again I slowed the descent and with another two or three metres it cleared.

I realised that I had just passed through a thermocyline, it was probably this that had lead to the blurred effect. The water was now bitterly cold. Glancing at my gauge I knew that I had lots of gas left. I soon passed the 225m/738 ft mark knowing that I was now in new territory. Visibility was now bad, down to between 1 and 3m, both computers were locked out reading 252m/833 ft – converted to saltwater 246m/808 ft.

I carried on down, now focusing on the depth markers and after a couple of minutes I saw the 250m marker. I was surprised that it took so long to reach it from where the computers had locked up (and sometimes wonder how deep I really went). Later we measured the line dry at 254m/833ft. I clipped off the signed slate reading it for the first time. Both Jim Noble and Allan Nash, the two judges, had signed it and added comments. I looked around straining to make out anything through the flashlight beams. Total blackness.

I started my ascent letting the line run through my fingers, the overall objective of the next six hours being to prevent bubble formation. I started at 25m per minute and at 180m/590ft I slowed to 15m/50ft per minute. By 150m/495ft I had slowed to 10m adding 30 second stops every 10m/33ft to ensure a slow ascent. Looking up from 140m/462ft and seeing the silhouette of Axel, I relaxed a little. On reaching him he handed me a slate and pencil, I wrote '250m' and carried on up.

From Axel it was up to Daran; the long decompression was only just starting. I extended each gas switch point with the exception of the 150m/490ft, this ensured that the new gas was fully circulated, it also made the most of the high PPO2 in the new mix. Because of the increased off gassing at the switch points I cut time from the stops just above them resulting in no increase in the overall dive time. I used seven different mixes for decompression, finishing on oxygen at 6m. Chuck, John Millard and Peter Wilson all helped with the required switches. Weighing up the pros and cons I had decided to rotate the O2 with a helium rich mix at the 6m stop. This was aimed at protecting my lungs (After a short period on oxygen the blood vessels constrict, shortly after this the pulmonary tissues start to swell. This dual effect cuts back on the offgassing process. Helium back switching was aimed at ensuring a cleaner decompression. On top of this the scheduled breaks from oxygen helped to buffer the toxic effects caused by breathing oxygen for to long.)

The decompression was to say the least boring. For my two to three minutes on the bottom I had to pay six hours and forty minutes in decompression. The time passed slowly, very slowly with both Noel and Peter staying with me during this time.

Three hundred and ninety six minutes after entering the water I left the 6m stop taking another six minutes to reach the surface (the slow ascent on the last few metres absolutely critical). I remained on oxygen for 30 minutes whilst resting on the surface. This period was to ensure that there was no exercise, and to allow the body to carry on off gassing. I felt drained, but very happy to feel the sun. I was surprised at how far we had drifted, the platform had worked well.

Joe ran continuous medical and nuerological checks, ensuring there where no problems. Joe, a working Para-medic had flown in especially to be our medical cover. At the end of the day all had gone well: Measured coiled on dry land the line was 254m/833ft.

On arriving back at Capt'n Gregg's I radioed Gab, my wife and our two children:

"How was it?" she asked.

"Fine" I replyed. After a pause I added

"Gab, I think that's far enough"

Silence and then "*John, can I have that in writing?*"

Like many endeavors, there are many people who ensure its success and apart from heart felt thanks to all those mentioned above :

Frank Doyle of Lauguna Beach Club who lent me so much equipment (even making up another set for his customers)

Apex Regulators & the Drysuit from 'O Three' (when you have the best there is no need to add anything else)

As well as CTM (Macau), Abyss Dive Software (by Chris Parrot), Rodrigues Viagons, Rotary, Mott Macdonald & Zazimec Int.

John Bennett is now head of technical dive training at Atlantis Dive Resorts in the Philippines. He can be contacted at info@atlantishotel.com (www.atlantishotel.com) and jbennett254@yahoo.com

A Journey To 308m or 1010 feet
The Deepest Open Circuit Scuba Dive Ever

Long regarded as the four-minute mile of open circuit scuba diving the depth of 305m (or 1,000feet) marks the goal of those in the deep diving community striving to go deeper than anyone before. These divers fall into their own category for although many divers have been deeper before (in fact those that use submersible bells, surface supplied gas and other commercial rigs regularly dive and work at deeper depths) those on open circuit face infinitely greater risks; it's no exaggeration to say that they are working at the very limits of physiological knowledge.

In the world of open circuit many world record depth attempts are made in fresh water sinks. The relatively 'ideal' conditions of these environments make the staging of tanks and logistics that much easier than those who face the more uncertain conditions of open waters. Unpredictable currents, surface conditions and a massive difference in surface and bottom temperatures are just some of the environmental factors taken into consideration.

John Bennett is the director of technical diving at Atlantis Tech in the Philippines where provides state of the art deep diver training through a variety of agencies. He is no stranger to the logistics, stress and hazards involved in pushing depth limits; on June 4, 2000 John made a solo dive to 254m/838feet (that stood as the world record for depth on open circuit scuba in the open ocean until this dive) in the beautiful waters off Puerto Galera on the island of Mindoro in the Philippines.

John knew at the time he could go deeper and soon started making plans to break the 1, 000 foot mark; for John, the ultimate dive lay ahead.

Once the decision had been made to do the dive the hard work begun, months of planning and training preceded the dive itself. The equipment configuration alone caused a delay of two months and even with all the team assembled in September the dive was put back to November. The original quad pack on John's back had been awkward and restricted movement, he opted for a more flexible set up that consisted of a triple pack of OMS low-pressure 20liter tanks required to carry the huge amounts of bottom gas he would consume (over 620 liters per minute on the bottom; that's a regular scuba tank every four minutes). John also strapped a forth 5.5 liter tank behind the triple set for dry-suit inflation. OMS also provided a specially constructed canister light that was placed between the left hand tanks. Two side slung 11.1-liter tanks made up the last part of the tank rig – these would be used for the first two gas switches in 150m/500feet and 90m/300feet of water; from there on up John would rely on the support divers to supply decompression gas. Other essential pieces of equipment that John would test to the limits included Apeks regulators, Otto Dry-suits and backup lights supplied by Princeton Tec.

John's tough physical regime over the months preceeding the dive was aimed at maintaining a very high level of aerobic, cardio-vascular and muscular fitness and consisted of ten workouts each week, five aerobic and five muscular. Diet wss also important and John supported his training by eating four times each day, keeping the carbohydrates high, proteins moderate and fats low.

Puerto Galera, Philippines was again the location chosen for the 1,000 foot dive; not only did John feel more comfortable and rested working from home but the easy access to deep water and ample supplies of gas, warm surface water and relatively good surface conditions made it a good all round choice. The great choice of diving and conditions is another reason why many people choose to take their technical diver training from at Atlantis Tech.

John's June 2000 dive had gone very smoothly and as a result the team incorporated many of the techniques employed then, one of which was the use of a specially built free floating decompression platform that allows a vertical pan style="mso-spacerun: yes"> The unique design allows the platform to be cut free if necessary and drift with the current while keeping essential support mechanisms in place.

The team of divers that support John are another key part of any successful dive and the November team remained almost unchanged from the June 2000 dive: Mark Cox, Targa Man, Ron Loos, Axel Lechwald, Kfir Zorev and Portuguese depth record holder Jorge Marques are all experienced deep divers many of whom John trained personally. It's no coincidence when you find a group of dedicated people in one location – all specialists in their fields – John has attracted a team around him that makes Atlantis Tech stand out. Other experienced deep divers including Frank Doyle and Jongin Lee would join the team closer to the day itself and prove essential to the dive's success. Equally essential was Joe McLary, a veteran paramedic who flew in from Hawaii to take care of contingency medical procedures (although at one point it seemed uncertain whether he could make it, the team's decision to make some last minute calls and Joe's own decision to do little short of threaten to resign to get the time off work proved invaluable on the day).

Their work intensified the week before the dive, briefings and discussion sessions were planned to ensure that each knew their role. This was a long and complex process as John would be working from seven potential profiles and even though an abort at relatively shallow depths would be probably be easily handled and gas problems minimal, an abort at 200m/660feet or deeper could still lead to complex in water situations. The warm relaxed setting of Atlantis Dive Resort did not lessen the tension.

Depths were set for the support divers: 90m/300feet, 65m/215feet and 35m/120feet, then 21m/70feet and the shallow stops. Arguments regarding the deep stop persisted: John had asked for no one to be deeper than 90m/300feet

to reduce the risk to members of the support team (in other attempts support divers have perished) but the fact that no one would know what was going on until this depth was of great concern along with psychological effects on John. The end compromise was a series of tanks clipped to the line at depths below 90m/300feet. The deeper support divers also needed support and contingency planning, the plans got ever more complex. These divers would send a slate to the surface to indicate the start times and profiles the support divers would be working to but everyone had to calculate gas mixes and consumptions to account for a variety of situations.

There were practical considerations: Axel worked tirelessly to assemble he platform and layout, tag and measure the line, Mark, Kfir and Frank spent hours blending gases, Jongin prepared the camera, Targa prepared profiles, laminated them and took care of much of the logistics with Tony Gower who joined the team from Hong Kong and took on the role of coordinator. Food and drink had to be prepared, boats organized as well as the numerous extra tanks, clips, slates and equipment to make the dive work. Joe assembled the emergency kit, contacted the recompression chamber (who kindly agreed to postpone a major overhaul) and made evacuation plans. There were practice sessions with the platform and John's equipment exchange. In addition the team dove, ran and trained to stay ready. The big day drew closer.

Although John had originally planned a series of dives over the week it became apparent from the amount of work going on that this would not be practical, but before this became an issue John let the team know he had decided some time before that it would Tuesday or nothing.

The final meeting was subdued as the final arrangements were confirmed and Joe ran through the medical contingencies for everyone involved.

Tables were 'cut' for this special dive using Abyss software and despite a bottom time of just a few minutes his total dive time would be over nine and half hours. The dive incorporated six different trimix blends and although his use of large amounts of helium at all stages of the dive is somewhat experimental in dives to date he has made the decompression 'cleaner', cut back on CO2 problems and increased the ease of breathing. Even normal air breaks have been replaced with switches back to trimix aimed at buffering the oxygen clock (protecting against oxygen toxicity), reversing vassal constriction (caused by breathing high PO2's), reversing pulmonary edema (caused by breathing high PO2's) and cutting back on the amounts of CO2 retained.

Even though he hadn't managed much sleep John woke feeling good on Tuesday November 6th. He knew that this would be the day, the day to go to 1,000 feet. He said goodbye to his family who were still sleeping and made his way to the dive shop... it was 7.30am.

The team had assembled at 4am, equipment had been moved to the boats and the platform was being towed out, last minute checks were being done and final adjustments made. Everyone on the team knew that if it was going to happen this was going to be the day, as John walked in to the organized chaos the team tried not to let the mounting tension show. It was now that the extent of the dive store collaboration became apparent; local competitors Atlantis, Lalaguna Beach Club, Asia Divers, Action Divers, Captain Gregg's, South Sea and others had given much and asked for little or nothing in return.

By 8am everyone was on the move, although from a daylight perspective it would have been better to start earlier the tide changes meant there was little chance of John entering the water before 9am.

John traveled out on the medical chase boat, accompanied by a couple of the support team he begun to focus on the job in hand. The site was about fifteen minutes from the beach and on arrival John was transferred to the MV Galera where he could begin gearing up. As he did so two slates were prepared and signed by Atlantis Dive Resort General Manager and PADI Course Director Andy Pope and IANTD Franchise holder Alex Santos. One was clipped to the bottom of the line and sent of the edge attached to over 320m of chain and rope, just below the incredible camera that would capture the morning's events. The other was given to John leaving him the choice either clipping on or pulling off to verify the depth he reached.

Things were running relatively smoothly, the depth had been verified with a sounder, conditions were calm and despite a couple of hitches the line was now out. John checked his equipment set up, it was, he believed the best available. The words of Tony Gower, who had become a pillar of strength within the team, echoed as John stepped over the side: " John you just do the dive and leave the rest to us". It was now or never.

At 9.10am John begun his descent, initially much slower than he had wanted; he reached the 90m/300feet switches after 3minutes 45 and it was only after 120m/400feet that he begun to speed up. The 130m/430feet spare-tank passed and the darkness came, with the darkness came the cold. This was his seventh time below 155m/510feet, so the transformation was not such a shock and the descent continued uneventfully. He focused in on his position in the water column, his remaining gas supply and monitored for signs of HPNS. As John approached the 250m/820 ft marker an ominous tremor ran through him, it was well within the critical point of helium (this is the point where the body will lose heat faster than it can produce it - normally this is countered by commercial divers by heating the breathing mix, this luxury was not possible on scuba). At this point the water temperature was 4 degrees, it had been since 200m/656ft, John Womacks Otto "Extreme" dry-suit was working well, it also helped in managing another potential problem. Stopping at the bottom.

On the surface the 90m/300fet support divers had already descended and many of the others were already in the water preparing, a short run time would not give them much time to prepare. As the minutes ticked by Andy Pope and Tony Gower who had been left to run things realized that either John was close to the 1, 000 foot mark... or that he wasn't coming back.

John had reached the 275m/905feet marker and was still going down, the tremor had become more pronounced and his vision was blurred. He knew it was HPNS, but was within manageable limits, the Apeks TX 100's were still breathing superbly each with no increase in resistance. John shone the OMS light down, nothing, just the light disappearing into black. Slowly the lights of the camera (Jongin Lee had made the camera casing in one day and much to National Geographic's amazement it worked) appeared as a distant glow and gave John a target. He hit the inflator mechanism but the line kept slipping through his hand.

In what seemed like eternity the OMS 100lb wings filled, he inflated the dry-suit as well the light was getting closer, he knew that if he hit the end of the line too fast he would just fall off the end. The camera was on him and although still negative he could stop. On checking his gas there was 100bar left plus 180bar in the single OMS 20L. He unclipped the slate and wedged it into a knot, after a quick glimpse into the darkness he was on his way back up.

The minutes ran over John's longest possible run time to reach 90m/300feet, Andy and Tony begun to fear the worse... still no balloon. Then a yellow mark on the surface was spotted and there was a mad rush... but it was nothing more than a plastic bag.

John was ascending slowly, he passed the 200m/660foot tank and slowed to 15m/50 feet per minute pausing for 20 seconds first, he repeated this at 175m/580feet. He made his first gas switch at 150m/500feet and extended the stop time to a full minute. As he turned the valve of the tank it free flowed wildly, sending a cloud of bubbles to the surface. After quickly taking a breath he shut down the valve and only opened it to take a breath. He reached the 130m/430foot spare tank and breathed a sigh of relief and continued up. Ron and Mark were waiting at 100m and John indicated which profile he was on, the balloon was sent to the surface.

Meanwhile Axel had been put in the water by Andy & Tony and prepped to go to 90m/300feet... a move they knew would throw out other support roles later in the dive but there were no other options left... they were now looking at last resorts... shouts went up as the balloon hit the surface and Axel was stopped just seconds from his descent. After a highly emotional few minutes the team re established roles as they confirmed the profile everyone would work to for the next nine hours.

Frank Doyle and fellow Atlantis instructor Kfir Zorev met John at 66m/220feet and although everything appeared to be going well as John left the stop he was hit by a wave of vertigo and he spent the next 10minutes vomiting violently, he didn't know which way was up. As he settled he checked his gauge and noted he had burned through his mix quickly. He looked at Frank and felt comfort from the calm eyes that came with years of dealing with problems underwater. They resumed the job in hand and continued ascending. Frank extended his long hose when John reached 50bar, the contingency planning had ensured that all of the team was breathing John's mix at their time of support; he remained on his decompression schedule. Targa Man and Axel Lechward along with paramedic Joe Mclary replaced Frank and Kfir who were left to ascend.

Joe immediately begun running neurological checks on John and although he knew John was not suffering from DCI there was confusion about what was causing the vomiting and what at the time appeared to be micro sleeping. Bouts of nausea, vertigo and violent vomiting continued to plague John; the prospects of another eight hours to go did not look good. But, the equipment exchange at 36m went well and although grateful that it had done its job, John was glad to be rid of the huge OMS low-pressure 20liter triple pack.

On the surface news spread that John had reached the 305m/1,000foot mark but the work was far from done and as the team realized John still had major problems to overcome plans were made to get extra gas and divers from friendly stores; it was going to be a long day. Joe had stayed in the water far longer than planned and although cold and fatigued he was to spend much longer in the water before the day was up. He and Andy decided that evacuation plans had to be put into place; boats were made ready and ambulance put on standby. There were long telephone calls with dive doctors as they planned for the worse case scenarios. The weather had also turned and stormy showers made it difficult for the support team to stay warm.

John has said since that as he very literally "toughed it out" he just kept reminding himself that no one had asked him to do this dive, he was there of his own choice. The hours went by slowly as the team rotated round keeping at least two divers with John at all times. The good news was that John appeared to be recovering and became more aware as the time went by and a fellow tech diver had also arrived to ensure that the decompression schedule was adhered to.

John was amazed at the faces that appeared before him; other Puerto Galera Instructors had come to see if they could help, none asked for anything in return, some spent several hours in the water. Every 15 minutes he switched back to a trimix 16/44 for 5 to 8 minutes. This was done at the 21m, 12m and 6m stops. This eased the damaging effects of breathing high PPO2's for to long.

He reached 6m, just 20 feet from the surface but it would take another hour and half before John would be on the boat. Night had fallen and the team rigged a series of torches.

Nine hours and thirty-seven minutes after leaving John surfaced surrounded by familiar smiling faces, fatigued but jubilant. He was quickly taken back to the resort under the watchful eye of Joe and put on a drip to replace lost fluids. Friends monitored him throughout the night.

It was resolved that the vertigo and vomiting were caused by an inner ear baratrauma. John was back managing Atlantis Tech the following day and returned to training, diving and teaching two weeks later. Atlantis Tech remains at the cutting edge of technical diving and John and his team offer training from Advanced Nitrox through to full Trimix training and diving, instructor crossovers and blending programs. He and the team will take you as far as you can go, just drop him a line on john@atlantishotel.com.

WE are sure John can go deeper but at the celebratory party he was forced to sign a document ensuring he wouldn't by his wife... it was quickly co signed by the entire support team... anyway John has other challenges ahead... the wreck of the Japanese warship Yamashiro is calling.

Footnotes:

One of the major problems with this style of dive is actually verifying you have the depth. With no depth gauges a measured line is the only way. John used a free hanging line lowered under supervision. After it was lowered he was given a signed slate, which I had to clip off on the bottom. This was then raised after John transferred to the platform trapezium. It was then measured on dry not taking in to account "stretch factor" caused by over 70kg of weight attached to the bottom.

John's sincere thanks to the following companies and individuals... team work... works:

In his latest venture, a company called John Bennett Deep Ocean Research International (JBDORI) he and his partners aim "To go beyond diver training and actively support individuals and groups that explore the underwater world and extend the boundaries of diving knowledge".