

**DIVERS GO TUNNELING IN
FRANCE**

**INSIDE THE PORTUGUESE
NAVY'S DIVING SCHOOL**

**THE ANNUAL MEETING
IN LARNACA**

THE LAST DIVE

INTERNATIONAL DIVING SCHOOLS ASSOCIATION

iDSEA

EDITION No. 28 JULY 2016

NEWS



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Dear Members

I hope that the weather in your various countries has been as you would like it, In North West Europe most of us have seen too much rain and now a heat-wave !

May I first extend a warm welcome to two new Associate Members:

Seanergy Ocean Indien

- Reunion Island

Atlantis Marine Services

- Fujairah UAE

And Affiliate Members

Scan Srl - Italy

The Neel Diving Institute - India

Deep Dive Est - Saudi Arabia

The board have been making good use of SKYPE in their recent meetings, and in June had a 'face to face' meeting in Barcelona where they took the opportunity to visit the new facilities of the local school 'Oceanos', which has recently moved to a new location with new premises and improved water access dedicated to the school's use.

One of the main agenda items for the Board's discussions was the necessary changes to the Association's Standards and Procedures ready for discussion at the forthcoming Annual Meeting in Cyprus - which included the specification and availability of Chambers. Incidentally, if you have not registered

FROM THE CHAIRMAN



for the meeting, please do so as soon as possible so that the appropriate arrangements can be made.

If you have any ideas for agenda items or nominations for the Board please send them in by 1 September.

Plans for the Association to gain ISO 9001 status are continuing and a meeting with the consultants took place on 12 July. The audit is planned to take place at the end of August.

I am very pleased to report that the Full Member School in Sicily 'CEDIFOP' after several years of hard negotiation has been instrumental in persuading the Regional Assembly of Sicily, to accept the IDSA Standards as the basis of their first law to control and regulate commercial Training and Operational Diving activities in Sicily.

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My best wishes to all members

A handwritten signature in black ink, which appears to read 'Leo Lagarde'.

sincerely Leo Lagarde Chairman

DUAL BASKET LAUNCH & RECOVERY SYSTEM

Design is compliant with Lloyds Register Rules for Offshore Lifting

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Dive Control Panels



1.8M DDC with remote control panel



Machinery Containers



Wednesday 12th
to Thursday 13th
October 2016

THE IDSA ANNUAL MEETING IN LARNACA

About Cyprus

Cyprus, is the largest island in the eastern Mediterranean some 350km from east to West and 100km from North to South. It has a rich, turbulent history stretching back over 4500 years. Known for its beaches, it has a rugged interior with wine-growing regions. The population is well over a million, the local languages are Greek & Turkish but English is widely spoken, and the currency is the EURO.

Cyprus gained its independence from the United Kingdom in 1960. Despite a constitution which guaranteed a degree of power-sharing between the Greek Cypriot majority and the Turkish Cypriot minority, the two populations – with backing from the governments of Greece and Turkey, respectively, clashed in 1974, with the end result being the occupation of the northern and eastern 40% of the island by Turkey. In 1983, the Turkish-held area declared itself the “Turkish Republic of Northern Cyprus”. So far, only Turkey recognizes the TRNC, while all other governments and the United Nations recognize only the government of the Republic of Cyprus over the whole island. The UN operates a peacekeeping force and a narrow buffer zone between the two Cypriot ethnic groups. Fortunately, open hostilities have been absent for some time, as the two sides (now with the growing involvement of the European Union) gradually inch towards a reunification of some sort.

About Larnaca

Larnaca is an area of outstanding beauty - endowed with numerous attractions, waterfronts and scenic vistas as well as some of the islands most outstanding beaches. It is located on Cyprus' southernmost coast and is the country's third largest city and home to the second largest commercial port. Larnaca's International Airport is located in the outskirts of the city with easy access to and from the city centre.

The Meeting Programme

The Association Dinner will take place on Wednesday evening and Thursday afternoon will include presentations and demonstrations

Accommodation

A special rate is being negotiated at one of the leading Hotels, and full details will be circulated to members by Memo as soon as arrangements have been made. The intention being that the meeting takes place in the Conference.

Hotel, Attendance & the Conference Fee

The meeting is open to both Members and non-members – the latter as observers. The Conference Fee this year is expected to be about €300 per delegate for Members and €350 for non-Members. This will include Attendance, welcome drinks on Tuesday evening, refreshments throughout the meeting, Lunch Wednesday and Thursday, the Association dinner on Thursday plus any necessary transport.

Wives or Partners wishing to attend meals and other social occasions e.g. the Association Dinner may do so paying the amount relevant to the event.

Travel

Larnaca International Airport is the main airport of the Island and is about 5km from the town centre. The easiest method to get from the airport to the Hotel is by Taxi.

For further information contact:

The Administrator

info@idsaworldwide.org





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THE PORTUGUESE NAVY DIVING SCHOOL

A very professional
approach to
Military Training



*Lieutenant Comander
Rui Manuel Zambujo Madeira
Escola de Mergulhadores
Diretor Técnico-Pedagógico*

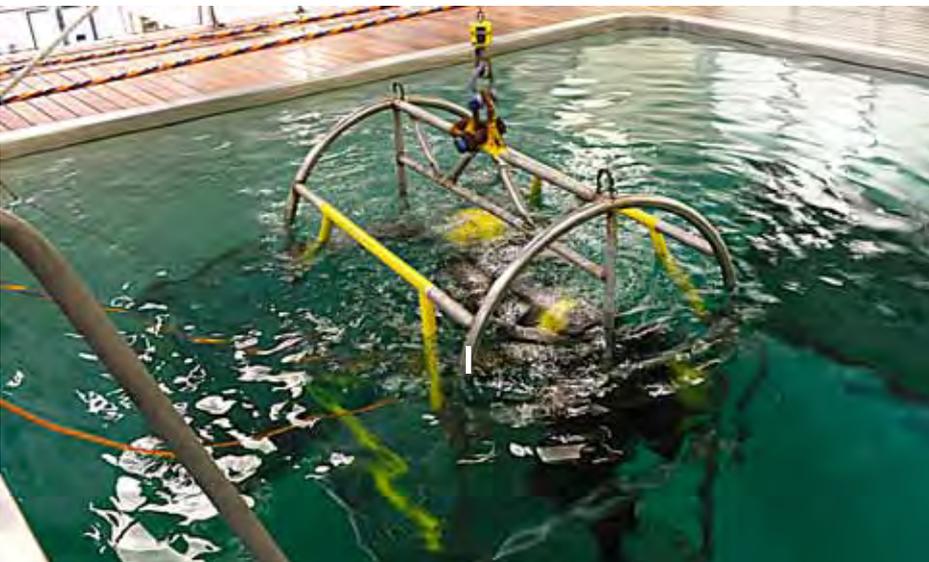
The Portuguese Navy's Diving School in Lisbon is first and foremost a military school. Its main purpose is to train divers in combat diving, both offensive and defensive, therefore the school comes under the submarine division of the Portuguese Navy. The school trains between 120 and 160 divers a year. As well as caring for the nation's defence, Portugal is a member of NATO and the Portuguese Navy is very involved in NATO missions and exercises.

There are two detachments. The first is occupied with such tasks as: beach survey, pre-landing recce, estimate enemy strength and report, countering enemy devices, sabotage, beach clearance, IED disposal, mine hunting and clearance, damaging enemy harbour facilities and ships at anchor, countering enemy landing craft and enemy combat divers. The second detachment was developed from the first detachment and is occupied with mine warfare, counter measures, mine hunting, AUV operations, assesment of enemy strength and mine clearance.

The base has an array of state of the art AUV devices which can sniff out explosives and covert enemy communication equipment.

continued on page 8





continued from page 7

The training also covers salvage, lift, cut and weld, urgent first response, search and rescue, as well as some deep level onshore tasks. Due to the lack of diving training for commercial divers in Portugal, it also offers some training to the commercial sector but does not train in tasks that are not already covered in Navy's training program, so training may be for commercial use provided it does not fall outside the navy's own military limits. Included in the training is experience of working with and from helicopters.

TRAINING FACILITIES

The School has a large outdoor training and recreational pool where new trainees are first introduced to the diving program through scuba diving. Inside the facility is a purpose built 6 meter deep tank with floor level observation panels and closed circuit monitoring. This is the maximum depth for some of the equipment used. The training for various underwater exercises can easily be monitored with this system.

Diving doctors must always be on hand whenever diving takes place and there is



a First Aid room which can also be used for training purposes. The First Aid Room is also used for medical check ups. There is a Hytech decompression chamber 2 meters in diameter which holds up to 6 people, with a separate chamber for change of crew or medical personnel, who can exit independently of the divers.

There is also a small training tank housing one person working underwater on 'dirty' tasks, for example: the use of blow-torches. This is housed externally so that the dirty water can be changed quickly and easily,

Trainees learn to use hydraulic and pneumatic tools, welding and underwater cutting. They also train with lifting bags of up to 40/50 tons. Saturation diving as in long haul underwater projects of 15 days or more, is not taught at the div-



The school has a blending station for oxygen and helium from which they make all the gasses as required. Gases can be produced and mixed for specific depths.

ing school. For both cost and supply reasons, the facility makes all its own gas mixes.

MILITARY EQUIPMENT

The school houses an equipment unit which meets the diving requirements of the entire fleet.

Amongst the specialist equipment used by the divers, are devices with sensors that can mark and map the sea bed for later investigation, these include a prototype for harbour investigation that is being developed by the Portuguese Navy in conjunction with Porto University.

Once they have been located, mines, limpets, bombs, etc., are neutralised by other devices with the ability to separate the bombs' components; this is achieved by shooting a white plastic substance at high speed into the ordnance thereby interrupting the firing chain and preventing the device from exploding.

Direct to computer X-ray equipment can be used underwater which connects via Wi-fi or cable, it can take various exposures in order to establish the components of the mines. This can give divers an idea of how much explosive the device contains as well as the layout of the transmission system and wiring.

These devices used for mine sniffing



Suits and equipment with low magnetic signatures enable divers to approach explosive devices with a degree of safety. For dives up to 54 meters.

and sabotage are used in both harbour defence and intrusion.

STORAGE AND MAINTENANCE

Maintenance is of great importance and cleanliness is vital.

All equipment is thoroughly checked after every dive and includes helmets, underwater lights, scooters and Autonomous Underwater Vehicles.

THE DIVING MUSEUM

Ageing equipment that can no longer be maintained is often transferred to the base's museum.



A hyperbaric chamber for one person only, used to transport injured divers



To be found in the museum is this vintage diving suit weighing 100kgs.

FIRST RUN OF UNDERWATER OXY ARC CUTTING (BURNING) COURSE FOR FUGRO



Darren Brunton, Managing Director of KBAT

KBA Training Centre (KBAT) completed two runs of Underwater Oxy Arc Cutting (Burning) Course for Fugro FTSM divers in March 2016. The training was part of planning and competency development prior to an offshore surface diving project for Shell Sarawak. During the course a representative from an IOGP operator was present to audit the training course in accordance with the International Association of Oil & Gas Producers (IOGP) 471 Document – “Oxy-arc underwater cutting recommended Practice” and IMCA D003 Guidelines for Oxy-Arc Cutting.

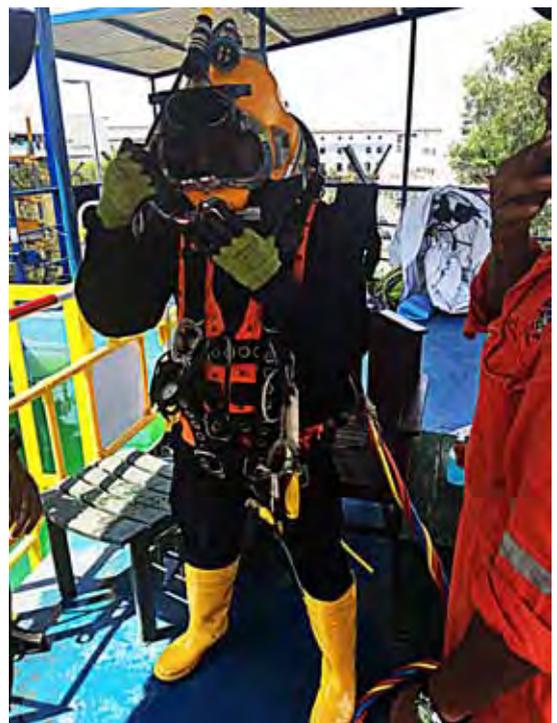
Divers engaged in underwater cutting using burning equipment need to be competent in the task, aware of the hazards involved and safe practices when conducting such tasks. This course is designed to raise the diver's level of competence and safety awareness when using underwater burning equipment through theory based presentations and in-water practical training demonstrating the safe use of the equipment.

The course involves both theoretical and practical assessment dives with actual hands-on cutting tasks to assess the divers cutting procedures and skills. The training covers safe burning practices and procedures, correct equipment selection, correct burning rod selection, safe oxygen handling, correct power source amperage and equipment testing, equipment set-up and pre dive testing, correct oxygen regulator pressure setting, equipment testing and check lists as well as trouble shooting equipment and equipment maintenance.

The course is open to certified commercial divers who wish to gain training and certification for the use of underwater burning equipment. Candidates must hold a valid industry recognised commercial diving certificate (surface supplied diver or saturation diver) and a valid in-date diving medical certificate.

Public run training is scheduled on the 29 August to 02 September, for further information regarding the course fees, and/or in-company package, please contact KBAT at Tel: +65 6542 4984,

divingadmin@kbassociates.org or visit our website at: www.kbatraining.org.





Oceanos new location. The wet bell station with its LARS system to the left, classrooms and offices in the centre with the equipment store on the right



OCÉANOS

A NEW LOCATION IN BARCELONA

OCÉANOS commercial diving school in Barcelona has moved to a new location with improved facilities and practice areas. The new location allows for standardisation of the diving equipments and improves working versatility with enhanced quality of training for the different courses.

The new complex is 340 m2 divided between the classrooms, administration, stores, dining room, locker rooms and toilets. However, the most important feature is the semi-open seawater facility with appropriate ranges of depths for training from the quay with a container system, or from a vessel and pontoon, which is adapted with dive control and wet bell system.

The nearby city of Barcelona provides students with the possibility of accommodation and all the different services that Barcelona can offer during their stay.

Our training program reaches courses of different levels such as, Scuba Surface Supplied to 30 metres, Surface Supplied to 60 metres and safety and first aid courses such as First Aid at work and Oxygen Provider.

In order to promote good practice for occupational divers, OCÉANOS plans the incorporation of new categories of diving courses such as Air/Mixed Gas, commercial diver and Inshore Supervisor under the recommendations and standards of ANEBP (Spanish Association of Diving Contractors)

Taking into account the latest trends of the professional diving industry, OCÉANOS will incorporate training in diving related subjects such as the maintenance of helmets and ROV pilots.

Priority is given to safety and risk assessment measures before any diving operation in all practical classes. The aim is that good practice becomes second nature in all diving activity and becomes ingrained in the student, so that unnecessary risks are always minimized. Safety in underwater activities is a priority. OCÉANOS has supported for a long time preventive safety measures and training implemented by such organizations as ANEBP and IDSA with the aim of increasing diver safety and instilling good working practice in divers.

OCÉANOS has an on going curriculum which provides an annual average of 2600 dives and a pass rate of 90 %.

Thanks to the enforcement of safety measures established in current legislation and the implementation of

formative standards, OCÉANOS is a centre authorised to teach all courses that have been developed by the Department of Maritime Affairs of the Generalitat de Catalunya. Additionally, it has the international IDSA certification –International Diving School Association as full member to IDSA Level 3.



In January 2016, OCÉANOS was accepted as IMCA Training Establishment Member of the Diving Division in the area of Europe and Africa. OCÉANOS is the first professional diving school in Spain that has been awarded this certification and it develops diving training programs based on safety and quality. In addition, OCÉANOS proposes new targets for complementary training, related with commercial diving.

OCÉANOS continues to support the safety of professional divers who cover the needs of the Spanish market.

We take this opportunity to thank the members of the IDSA Board for their visit to the school during their last meeting in Barcelona.

CAVITCLEANER SYSTEMS

Innovative Underwater
Cavitation Cleaning
Technology

Developed BY divers,
FOR divers
By Marco Montanari,
R&D Test Diver



The Cavitcleaner System is the result of years of development work and research focused on finding a new world of underwater cleaning products able to satisfy the huge and growing demand for cleaning and maintenance of underwater structures, commercial, military and coast guard vessels, cruise ships, motor yachts, sailboats, etc.

My goal is to find the right products to meet customer's needs: efficiency, versatility and safety, together with excellent performances, affordable costs, time saving.

Cavitcleaner products sum up all the above. And this is why I focused on cavitation technology, for its obvious advantages in terms of high efficacy, capability and security.

Cavitcleaner is a revolutionary and unique underwater cavitation cleaning system, performed by a stream of implosive microscopic air bubbles that are able to dislodge fouling and any other biological material by using an intense shock-wave.

Our cleaning system is highly effective, works rapidly and at a relatively low pressure and will not harm the surface being cleaned. It is also the safest underwater cleaning system available today.

The performances are pretty high as the power is generated by the implosion of air bubbles so that the machines work at relatively low pressure of 140/160 bar, that can be compared to a water jet working at 500/800 bar. The system gives a higher yield but it is also safe for the divers as the cavitation stream can get in contact with bare skin without causing any injury.

Cavitcleaner machines are designed to be used both in sea and fresh water, with no need of any chemical additive. Furthermore our new cleaning system does not remove the anti-fouling paint which makes all Cavitcleaner products environmentally friendly.

Cavitcleaner is extremely effective at removing any type of growth or fouling from any underwater surface (risers, columns, hulls, stern gear, propellers, shafts, rudders, thrusters, sea chests, pontoons, chains, ropes, pipes), regardless on the material type (steel, fiberglass, aluminum, wood, concrete, rope) or the structure's shape.

Cavitcleaner products are CE-marked. In addition, TUV has certified that the methods used by us with the support of the cavitation cleaning system meets the ISO14000 environmental standards. As of today many Port Authorities have acknowledged the validity of a cavitation cleaning system that preserves paints and coatings and respects the environment. Also many coastguard has authorized and requested cleaning of their vessels using the cavitation system. Cavitcleaner R&D divers team has been involved in creating and testing specific machines and accessories for every different jobs and needs:

Evo2 gun and the new Turbo Jet gun are the chief



Champions in safety: Cavitcleaner and Kirby Morgan



BEFORE



AFTER

Heavy growth easily removed

products among the vast range of our tools. These are capable of removing any kind of encrustations, from light fouling to acorn-shells and mussels and ensures manageability and safety.

2D Double Diver's kit is a simple and smart system composed by a full stainless steel switch and two cavitation Evo2 guns. This system allows the simultaneous use of two Evo2 guns by two divers using the same machine. The full bronze switch splits the flow, granting the same pressure for the two guns.

Twin Jet gun with double cavitation nozzles, it is perfect for quickly cleaning areas covered with light to medium fouling. It is light weighted and easy to use.

Stingray underwater cavitation cleaning plate, designed to clean easily and fast big areas covered with medium fouling. It has excellent performance in terms of square meters/hour. The plate creates its own suction and it stays attached at the surface being cleaned, making your work easier and lighter.

New Double Stingray plate s our new accessory ideal for treatment of big yachts and vessels. It's very powerful, fast and effective. This tool is composed by two single plates that can be easily separate in a few minutes into two highly efficient Stingray single plates, that can be used by two different divers in two different sites.

Extensions kit is a simple and clever accessory composed by two modular extensions that can be used combined with Evo2 and Twin Jet guns. It allows you to reach and clean inaccessible places and it avoids to remove the grids of the sea chest, bow thrust, etc.

All these accessories are supported by reliable and efficient machines powered

by diesel, gasoline or electric motors:

EASY ENERGY 220 and 380 models powered by a single and a three-phase electric motor respectively, a very useful part of the boat's equipment: light and compact in size, they can be easily stored in a small space.

HOT ROAD DIESEL and PETROL models, underwater cavitation cleaning machines driven by a powerful and reliable Yanmar 8 kw diesel engine and a Honda 9.5 kw petrol engine respectively. They are our best sellers.

New ELECTRA ROCKET V3 (single phase and three phase) our last and new models for underwater cavitation cleaning. The machine comes in two versions: mono-phase and three phase electric motor, same power and performances of the Cavitcleaner Easy Energy series machines but now with an unordinary compactness and lightness, easy to

carry around and to load onboard, extraordinary performances, quietness and affordable price.

New BOMBARDIER 42 DIESEL model, our last and new model for underwater cavitation cleaning. It is driven by a powerful and reliable Kohler Lombardini 22 Hp diesel engine. It's been designed to give excellent performance along with maximum safety for divers.

Thanks to the evident advantages in terms of cleaning power, safety and ease of use, performances, efficiency and versatility, cavitation systems are set to become a primary choice in the underwater cleaning growing market. With the Cavitcleaner line we intend to lead the way in product innovation and establish ourselves as a global leader.

For further info, please visit www.cavitcleaner.com



PALEBLUE TRAINING GOES DIGITAL FOR DIVING SUPERVISORS

PaleBlue is located on the west coast of Norway, in the country's oil capital, Stavanger. The company was established in 2013, and by now has five employees, specializing in building simulator solutions. Having the oil & gas major names just around the corner as their closest neighbour, and coming from the background of developing industrial simulators, it is a natural choice for PaleBlue to build innovative systems for the businesses in the petroleum sector.

It has always been a bigger ambition than just the oil companies for PaleBlue. Since the very start, the company's vision was to develop advanced simulation and visualisation solutions for a wide range of industrial applications including subsea, maritime, and renewable energy.

Some of the brightest heads in simulator development joined the company in order to implement the vision. Building simulators is a challenging task lying at a cross-section of several disciplines such as computer science, realtime 3D visualisation, physics simulation, and computer interface design. This is why top talent is needed to secure engineering of the whole, with all those elements in place.



Dive Control Simulator being used at Norwegian Diving School (NYD) facilities in Oslo.

With all that, PaleBlue is now aiming to radically improve the way in which the diving supervisors are trained. To do this, the company is plugging in its proprietary 2D/3D simulation engine.

Dive Control Simulator, or DCS, is an advanced digital simulator that is set to provide the diving industry with more accessible and cost-effective training of diving supervisors, for air and saturation diving. Big players have already shown their interest in the product, and Subsea 7 and Technip, two of the largest diving companies in the world, have signed endorsement letters towards PaleBlue and the DCS simulator.

Creating a diving-oriented product implies that underwater domain knowledge is an absolute necessity in order to achieve realistic behaviour in the simulator, and to incorporate a well-founded training scenario bundle. This is why PaleBlue has teamed up with Norwegian School of Commercial Diving, NYD. Together with a Glasgow-based company Industrial Systems and Control, responsible for gas- and fluid-process modelling, the three parties form a development consortium for DCS, with financial backing from the EU-hosted Eurostars programme.

During the development of the sophisticated simulator, the engineers faced a couple of challenges. How to make a dive control simulator realistic in behaviour and operation? How to automate and pre-program training scenarios, when much of the training relies on voice communication?

Solving one of the challenges led to using touch monitors with a graphical representation of dive control panels. The touch panels allow interacting with all the switches and rotary valves using the natural interface: pushing and rotating. As there is a great variety in how dive control panels look at different vessels, the solution allows for switching of panel representation from one vessel to another, while maintaining full interactivity.

The controls in the simulator have the same visual representation as their real counterparts, and the underlying processes of the control systems and their states are carefully modelled by a dynamic process engine. Pressure, temperature, and other dynamic parameters are processed behind the scenes in a real-time manner.

"We believe that we have created the best-in-class touch panel simulation engine called Icon. It is fast, provides graphics that are highly realistic, and is powered by a unique input technology, making touch panel interaction," says Felix Gorbatshevich, the manag-

ing director at PaleBlue.

He continues: "In order to create the user interface of DCS, we have taken control panels of dive support vessels and carefully digitized them, making sure all the details are in place. Then, we have programmed the controls to respond to touch interaction."

The simulated monitors on the touch panels also run video fragments, displaying "live" video stream from the CCTV cameras, including diver helmet cameras, bell camera, other.

Two workstations are featured, one for trainee and one for instructor. Instructor has the full overview of the training process. He selects the training scenario to begin with. Once the training is ongoing, abnormal situations can be introduced, for instance, by changing pressure in the diving bell, or introducing a gas cut.

Svein R. Reinhardtson, a partner in PaleBlue, sees huge benefits for the industry, when using a digital simulator. "In today's situation in training, you are mostly able to exercise on normal diving operations only, not the emergency situations. One of the advantages of our solution is allowing training on emergency cases, when there is a possibility of a harmful development," says Reinhardtson.

Felix Gorbatshevich elaborates on the training routines: "This technical platform of ours has many advantages. We give a lot of freedom to the instructor in what exercises he chooses to practice on."

"New scenarios are added easily, and that includes real-life incidents from the past that can be now experienced in a simulator, allowing the trainee to attempt to solve a well-known incident. We record all training sessions, and play the recorded content back during a de-briefing, with communication, video and panel operations analysed," adds Gorbatshevich.

Furthermore, the software architecture allows for connecting to other simulators, and running a simultaneous operational training, with specialists in several disciplines collaborating in the same training simulation session. This can be, for example, crane, DP and ROV simulations running together with DCS.

"Now that we have a flexible training solution for diving supervisors, it is easy to adapt it to specific needs, either with adding certain control panels, or enhancing the training scenarios list", concludes Reinhardtson.

More information on Dive Control Simulator is available at PaleBlue's website, www.paleblue.no



Dive Control Simulator trainee workstation.



DCI IS PURSUING ITS GROWTH STRATEGY WITH THE ACQUISITION OF A NEW DIVING BOAT: MIRAK

DCI-NAVFCO, the naval branch of DCI, has competencies over several maritime areas including maritime safety, military divers, special forces and mine warfare, thanks to its own International Training Centre for Military Diving (ITC-MD) located in Saint-Mandrier (South of France) close to the French Navy Diving Center. The ITC-MD is composed of former French Navy EOD (Explosive Ordnance Disposal) divers and Combat divers.

The ITC-MD has just received a new diving boat called "Mirak" to strengthen its technical equipment for the trainees and increase the level of the training provided to teach French know-how in diving.

Built in 2015, with a length of 10 meters and equipped with 2 outboard engines of 225hp, the Mirak can accommodate up to 21 divers. The Mirak is equipped with a crane for underwater operations or work with divers using an ROV

or an AUV (Autonomous Underwater Vehicle). The Mirak has been entirely re-designed by the ITC-MD instructors and perfectly matches the trainees' requirements.

DCI, PROVIDING THE EXCELLENCE OF THE FRENCH ARMED FORCES TO FRIENDLY NATIONS

DCI's mission is to impart French military expertise to the armed services of nations friendly to France. DCI has set a high standard for the French Ministry of Defence, offering services that can be certified as "French Forces Training". For over 40 years, DCI has been present across the full range of defence and national security services, offering Consulting, Training and Technical Assistance.

Through its sophisticated approach, DCI offers friendly nations customized French solutions for personnel training and equipment maintenance.

In addition to its Paris headquarters, DCI operates several international training centers throughout France. There are bases outside France: in Qatar, Kuwait, the UAE and Saudi Arabia, also in Southeast Asia with Malaysia and Singapore, and more recently, in India and Brunei.

DCI is continuing to expand internationally with innovative services, offering excellent value for money through the development of new partnerships, particularly in Asia and Latin America.



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3 x 30 mt. High Pressure Hoses



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Flow switch device

Don't miss this opportunity!



For the past 45 years JW Fishers has specialized in the design and manufacture of reasonably-priced, high-tech underwater search equipment. The product line includes diver-held and boat-towed metal detectors, marine magnetometers, underwater camera systems, ROVs, pipe and cable trackers, acoustic pingers, and sonar systems. Fishers equipment is in use by commercial diving companies, universities, marine archaeologists, law enforcement agencies, and military units. Fishers back their equipment with service and warranty that is second to none.

Underwater video systems are now widely used by both public and private sector dive operations. These systems consist of a video camera mounted in an underwater housing with a long cable connecting it to a monitor on the surface where the picture is viewed and recorded. There are numerous advantages to having a system that can send live video topside for support personnel to see. Many law enforcement agencies and public safety dive teams put down a camera instead of a diver in the initial stages of an underwater search to save time and increase safety. It also allows them to make a permanent record of a search operation, an underwater crime scene, or evidence.

The Tonawanda New York Sheriffs Department is one of the many agencies using this type of video system. Lt. Scott Sheehan, officer in charge of the 10 member volunteer squad, said last year was one of the busiest in his team's 40 year history. With so many navigable waterways around the Twin Cities the service they provide is indispensable. Private donations allowed the team add several pieces of much needed dive gear including a JW Fisher DHC-1 diver-held video system. This has helped improve the squad's ability to accomplish the many tasks they're called out for, including recovery of weapons, shell casings, and stolen property.

Utility companies have been laying pipes and

cables across the ocean floor for more than a century. Prior to the introduction of GPS, marking their position was a difficult and tedious task, fraught with error. It is extremely important to know the exact location of existing lines before undertaking dredging operations or when new pipes and cables are laid down. Regulations require they be buried from several feet to several meters under the bottom to prevent snagging by boat anchors and fishing trawls. The amount of overburden typically makes it impossible to find these lines with conventional metal detectors as the burial depth is beyond their detection range.

Two pieces of equipment that have proved most effective are the pinpointing magnetometer and the cable tracker. The pinpointing magnetometer is a very sensitive instrument that locates iron and steel pipes buried up to 16 feet in the bottom, and the cable tracker is powerful enough to detect a power or communications cable at more than 30 feet away.

New Jersey based Castle Group is employing both of these devices in their operations. The group consists of three firms; WJ Castle and Associates with marine engineering expertise, Hydro Marine Construction offering a complete range of commercial diving services, and Simplified Bridge Systems specializing in bridge construction. Founder William Castle has been providing marine construction and engineering services for over 30 years, and served on a number of industry boards including the International Association of Diving Contractors (IADC).

On a recent job the cable tracker proved an essential piece of equipment. Steve Gardner, dive supervisor and engineer for Castle reported, "We received an emergency call from a contractor working in Jersey City. A section of a privately owned pier was in danger of collapse. It needed immediate rehabilitation to prevent further deterioration and it becoming a hazard to navigation. The work included driving new steel sheeting into the bottom in an area with two high voltage underwater power lines. My team was tasked with locating and marking the cables to ensure they would not be disturbed while driving in the sheeting. For this job we employed our JW Fishers CT-1 cable tracking system. A diver with the CT-1 probe was deployed and he quickly located and marked their exact position. We had also brought along our JW Fishers PT-1 pipe tracker just in case the two high voltage lines were buried in one trench making it difficult to get a good reading on them. If this happened, our plan was to use the PT-1 to detect the steel armor on the cables. But as it turned out, the cable tracker worked perfectly."

UNDERWATER CAMERAS HELP POLICE AND COMMERCIAL DIVERS

Trying to locate subsea power and communications cables has always been a difficult job. Regulations require cables be buried from several feet to several meters under the ocean bottom to prevent snagging by boat anchors and fishing trawls. The amount of overburden on a cable often means it's too deep to be

JW FISHERS MANUFACTURING SPECIALIST EQUIPMENT FOR UNDERWATER SEARCHES



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...continued from page 17

located with conventional metal detection equipment. The device that has proved most effective in finding them is a cable tracker. This system has two parts, a signal injector and a probe. The injector is attached to the shore end of a line and induces a signal into one of the conductors. The probe is carried by a diver, or used from a boat in shallow water, and detects the electrical pulse transmitted through the wire.

One company that recently completed a job with help from this tool is WJ Castle and Associates, based in Philadelphia and serving the entire US. Founder William Castle has been providing marine construction and structural engineering services for over 35 years, and has served on a number of industry boards including the International Association of Diving Contractors (IADC). Steve Gardner, a diver and engineer for the firm reports, "We were contracted by the Long Island Railroad (LIR) to find 15 subsea cables in Long Island Sound after a previous attempt by another contractor had failed to locate them. The cables ranged in diameter from 1 to 3 inches, and included power, signal and communications lines. Working closely with railroad electricians and a survey company our team utilized JW Fishers CT-1 cable tracking system to precisely pinpoint the location of all cables and tracked them with a high degree of accuracy along a portion of the bridge and through the main navigation channel under the bridge. The speed at which we were able to complete the job helped minimize channel restrictions and closures for the general public, and allowed us to provide LIR with timely information they needed to arrange future operations."

The US Navy's Underwater Construction Teams (UCT) are also using cable trackers in their projects. These construction teams were formed in 1974 when two detachments of Seabee divers were commissioned as UCT 1 and UCT 2. Their responsibilities include construction and installation of fleet moorings, pier/wharf damage assessment and repair, underwater blasting and demolition, pipeline inspection and repair, and cable laying. Both teams have purchased a quantity of Fishers CT-1 cable trackers to identifying the position of existing cables before new lines are laid down. The CT-1 also helps in pinpointing faults or breaks in the wires.

CABLE TRACKERS HELP DIVING COMPANIES AND MILITARY

Many commercial diving companies and law enforcement agencies are acquiring underwater metal detectors to help in their search and recovery operations. Designed for use in the subsea environment, these detectors have a minimal number of controls making them extremely easy for divers to operate. They are an essential piece of equipment for locating and tracking pipelines, searching for lost tools and equipment, pinpointing the position of anchors and moorings, as well as finding weapons, evidence, and explosives.

New Jersey based Randive is one of the diving companies employing underwater metal detectors in their operations. In the five decades since its founding in 1959 by Randor Erlandson, Randive has continuously expanded their capabilities,

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and today its clients include some of the largest shipping companies in the world.

They perform ship maintenance and repair, salvage and survey work, inspection and repair of dry docks, piers and a variety of other tasks. The company is affiliated with a number of professional organizations including the Association of Diving Contractors International and the Society of Maritime Port Engineers.



In a recent cable laying project across New York harbor, Randive's divers used their JW Fishers Pulse 8X detector to locate metal obstructions and mark them for removal. For this job, the 16 inch search coil was attached to the detector's electronics unit providing greater penetration into the muddy bottom. In another project, the 8X proved beneficial in the search for a 8 foot wide stainless steel propeller lost from a towboat. Although buried deep in silt, Randive's Keith Michalski reports their experienced divers were able to quickly find and recover it. When the target of interest is buried down more than 6 feet, Randive puts their Fisher PT-1 pinpointing magnetometer to work. This powerful detector finds iron and steel objects up to 16 feet under the bottom. It proved indispensable in locating and tracking a deeply buried natural gas pipeline running under the Hudson River near Manhattan.

U/W METAL DETECTORS FOR LAW ENFORCEMENT AND COMMERCIAL DIVING

Underwater video systems are now widely used by both public and private sector dive operations. These systems consist of video camera mounted in an underwater housing with a long

cable connecting it to a monitor on the surface where the picture is viewed and recorded.

There are numerous advantages to having a system that can send live video topside for support personnel to see. Many law enforcement agencies and public safety dive teams put down a camera instead of a diver in the initial stages of an underwater search to save time and increase safety. It also allows them to make a permanent record of a search operation, an underwater crime scene, or evidence. Commercial diving companies employ these systems so topside staff can see what the diver is doing and also to produce a record of the work being done for their client.

Commercial divers are not the only ones using underwater detectors, a number of law enforcement and public safety dive teams are putting these devices to work in their search operations. State Police dive teams in New York, New Jersey, and throughout New England are using the Pulse 8X to locate weapons used in the commission of crimes and disposed of in a waterway. Criminals mistakenly believe that by throwing a gun or knife into a river or lake, it will be lost forever. In reality, law enforcement divers equipped with an underwater metal detector easily find these weapons. Detectors can also assist in the recovery of evidence as witnessed by Lt. Joshua Gibbs of Daphne County Search and Rescue in Alabama. Daphne S&R is an all volunteer first responder team providing water search and rescue missions on Mobile Bay and the Five Rivers Delta, an area encompassing more than 300 square miles. The group works and trains with the US Coast Guard, Baldwin County Sheriff Flotilla, Alabama Marine Police, and local fire departments.

According to Lt. Gibbs, the team used a metal detector to locate industrial tools that were

taken in a burglary at a commercial construction business, and then dumped in a pond. "The robbers assumed the tools would never be found due to the remote location of the site, and the fact they would be covered by water and sediment. With the help of our Pulse 8X we were able to locate and recover more than two dozen pieces of stolen property, which became the evidence used in the prosecution of several robbery suspects."

For more information on Fishers complete line of underwater search systems go to . Marine Service Companies Successfully Track Pipes and Cables





DIVERS FROM CAP TREBEURDEN VISIT THE TBM (TUNNEL BORING MACHINE) FOR RENNES' NEW METRO LINE B AND ITS HYPERBARIC CHAMBER

By Mark van der Esch



A TBM, CALLED "ELAINE"

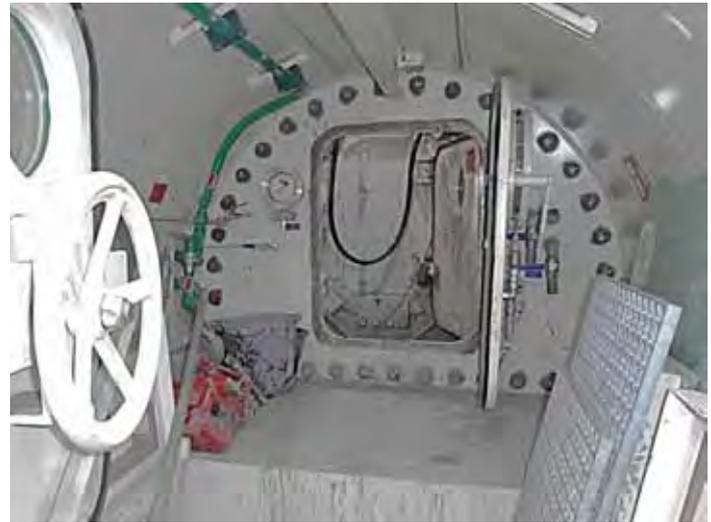
The Tunnel Boring Machine has been dubbed 'Elaine' by Rennes metro workers. However, when we arrived in Rennes 'Elaine' was idle because maintenance and repair work was being carried out on the automated transport systems. Thanks to this 'pit stop' it was possible to make an extensive visit to the tunnel-boring machine with 10 students of the second group of CAP divers.

The city of Rennes underground rail network is being extended with the construction of a new east-west line. It will connect with the existing north-south line in the centre of the town. The tunnel which will be 8 km long also has a number of shafts for ventilation, entry-exit and escape. The diameter of the boring head (the "borer" or cutterhead) is 9.44 m. Three crews of fifteen workers in three shifts of eight hours a day are working around the clock. When in action, the tunneling machine bores at a speed of two meters per hour, cutting through a mainly brioverian schist bedrock. The TBM is 82 m. long and weighs 1450 tons. It began in the start pit (photo1) and is expected to finish in the arrival pit some 30 months later. The first few meters were dug out in december 2014 and the arrival date is estimated to be the end of 2017.

Elaine is equipped with powerful hydraulic cylinders placed in a circle around the bore head that thrust her forwards under 400 tons of pressure. When excavating the machine rotates at the very slow speed of 1,6 to 5 rpm depending on the nature of the soil or rocks. As she is propelled forwards concrete rings forming the tunnels outer shell are put into place, bolted together then fixed into the soil.

WHY USE DIVERS?

But why are divers needed to go down there in the first place? In fact, it is quite common for divers to be employed in tunneling when compressed air work is involved. Right behind the cutter head there is a small decompression chamber with a capacity of up to four men and two smaller chambers for tools, equipment and materials. When the cutting tools on the borer need to be changed or maintained, the cutter shield is retracted from the face by the distance of the width of one line of concrete rings. The space that is evacuated is then pumped full of drilling mud (thixotropic or bentonite mud) which helps to solidify the material and will thus create a sort of pressurized insulation while the compressors maintain an even pressure inside to prevent the walls from collapsing. The usual pressure range for tunnel works is between one and four bar. Once having gone through the chamber and collected the tools and equipment in the two smaller chambers, the workers use power driven tools, either pneumatic, hydraulic or electric. High pressure water jets are used to



clean the cutter tools and rollers. When sharpening the cutter tools, the use of carbon electrodes is possible under a strict control of ventilation regulations.

The compression times are logged by a crew outside, who are in charge of the decompression procedures, which are laid out in charts like any diving decompression tables. Intervention times are much longer than in-water dive times, because it is considered that the absorption of CO₂ by all the tissues in a dry hyperbaric environment are more critical than in the water. On the other hand the decompression facilities are easier to implement with oxygen inhalers than in-water decompressions. While long decompression times

are spent under the best possible conditions, it should be noted that the medical advice is that a seated position is not the best procedure to follow, as the strain put on the hips, knee bones and squeezed bloodvessels do not allow a good flow of air bubbles in the bloodstream to the lungs.

A few of the European diving companies specialising in TBM work are: HYDROKARST (France), PELLEGRIMS (Belgium), NORDSEETAUCHER (Germany), DCN (Holland).

more info @: <https://www.youtube.com/watch?v=MJP5qia9Py4>: HERRENKNECHT illustration



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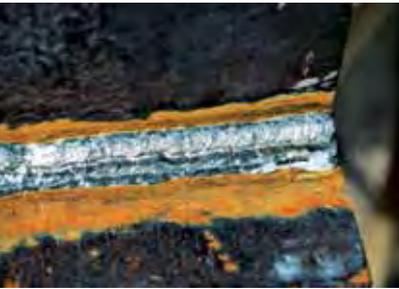


Remote operated vehicle (ROV) PRODUCTION, SALE AND SERVICE:

 <p>RB 150 Working depth till 70 meters. Tether length 120 m (up to 150 m). Color camera 600 TVL. 4 thrusters: One vertical; Two horizontal; One lateral.</p>	 <p>RB 300 Working depth till 120 meters. Tether length 220 m (up to 300 m). Color camera 600 TVL. 5 thrusters: Two vertical; Two horizontal; One lateral.</p>	 <p>RB 600 Working depth till 200 meters. Tether length 300 m (up to 1200 m). Full HD, Zoom, Autofocus color camera. 7 Thrusters: Two vertical; Four horizontal; One lateral.</p>	 <p>RB Mirage Working depth till 300 meters. Tether length 300 m (up to 1200 m). Full HD, Zoom, Autofocus color camera. 11 thrusters: Three vertical; Six horizontal; Two lateral.</p>
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COMMERCIAL DIVING SERVICES:

Inland/Onshore diving • Ship Husbandry



Ship repair.
Stabilizer fins, rudders and chimes
Fabricator: A US ship repair operations.
Alloys: Base metal HY80 and up to HY100 (non hull and pressure piping)
Conditions: Underwater down to 15 meters (50 feet) in depth. Qualified at 12m (40 feet) depth +/- 3 m (10 feet)
Why Aquasan Ni50? Needed good mechanical properties tensile strength and yield and X-ray quality. Carbon equivalent (CE) is >0.40.



New York city power plant: Intake screens
Alloys: AISI316L
Conditions: Stainless screen exhibited MIC corrosion in welds.
Why Aquasan Ni50 ? Microbiologically influenced corrosion (MIC). The electrode worked so well it was used for all welds on the project.



Decommissioning of a steam generator in North America
Fabricator: UESI performed installation of bracing inside the steam generator.
Base Metal alloys: Grade 2048 high strength steel to A36 carbon steel.
Condition Qualified 6m. (20 feet) of fresh water.
Why Aquasan Ni50 ? Unable to pass qualification procedure with next best alternative materials (carbon steel and stainless waterproofed electrodes)

SANDVIK SMT LAUNCH A NEW ELECTRODE FOR UNDERWATER WELDING

As part of the Swedish based Sandvik Group, Sandvik Materials Technology (SMT) works primarily with advanced, high added-value products such as advanced stainless steels and specialty alloys products. SMT focuses largely on developing and delivering solutions through its metallurgy expertise, which is the group's core competence.

Its customers are found in the most demanding industries, including oil and gas, nuclear, aerospace, chemical, and petrochemical. The company's activities are strongly correlated to energy efficiency and the global drive for sources of energy that are cleaner and more efficient in energy production and use. This trend continues to offer SMT opportunities to develop new solutions in co-operation with its customers.

PRODUCT DEVELOPMENT.

The SMT product development team is consistently working to both develop new grades and improve on existing ones. Product development is one of the key components in our strategy. Research and development remains one of the key activities of Sandvik.

Sandvik invest about SEK 3 Billion each year in research and development and more than 2,700 employees are active in this area. The Group has about 5,500 active patents. R&D is an essential part of our strategy.

Metallurgy expertise is a core competence, this expertise finds solutions for customers in the most demanding applications around the world. Increasing demand from end users for products that improve safety and reliability while at the same time minimizing environmental impact is helping to drive development. Working directly with end user's to develop efficient solutions therefore remains one of Sandvik's strategies.

The increasing demand for high quality underwater welding offers an opportunity to explore a new field for our metallurgists. We have succeed in adding to our range of welding products a new concept in underwater welding electrodes with specific and ideally balanced chemical analysis which takes into account the underwater welding conditions.

The result was the launch of the new AquaSan Ni50, a high-performing welding electrode developed specifically for underwater welding. This unique welding product offers new possibilities for cost-effective maintenance work on, e.g., ocean vessels, offshore platforms and submerged equipment in nuclear plants.

In situ underwater welding is an attractive alternative to building habitats around struc-

tures or dams on the side of vessels. A licensed diver with minimum equipment can do the job quicker, safer and more cost effectively.

Newer designs for deep water offshore oil production and ocean vessels are moving towards the use of high strength steels, which make this product even more attractive. Following years of successful marine use, as well as underwater welding in nuclear steam generator decommissioning and nuclear class 3 constructions, the product is now being introduced on the global market.

APPROVED BY THE NAVY

AquaSan Ni50 was originally developed to fulfil the needs of the U.S. Navy. The product was chosen for underwater repair work on applications like stabilizer fins, rudders and chimes at depths up to 15m (50 feet). The alloys are base metal HY80 up to HY100. The Sandvik electrode meets or exceeds the mechanical properties required, such as tensile strength, yield strength, bends and x-rays.

WELDABILITY AND MECHANICAL PERFORMANCE

AquaSan Ni50 is specified for welding base materials with a carbon equivalent >0.40, which are susceptible to hydrogen embrittlement. Nickel has a high affinity for hydrogen and this composition allows hydrogen to diffuse into the weld metal and away from the high strength steel.

This product is available in Ø 2.4 mm (3/32 inches) and 350 mm (14 inches) lengths. It comes with a proprietary waterproof coating, which enhances the weldability and mechanical properties.

CHEMICAL COMPOSITION (NOMINAL), WT%:

C	Si	Mn	Cr	Ni	Mo
0.08	0.3	2.4	12	64	6.5

MECHANICAL PROPERTIES (NOMINAL), AT 20°C (68°F):

Yield strength RP0.2	Ksi (MPa)	76 (524)
Tensile strength RM	Ksi (Mpa)	94 (648)
Elongation A5	%	14

A MANUFACTURER WITH CONTROL

Sandvik is a specialty steel company and offers a complete program of products for welding austenitic stainless steels, duplex stainless steels, super-austenitic and nickel base alloys. For most standard grades there are variants with both normal and high silicon content to suit different welding methods.

Sandvik controls the entire steel making process from melt to finished product. This is why all Sandvik welding products are characterized by chemical composition within close tolerances, mechanical control and consistency between heats and batches, contributing to trouble-free welding and high-quality welding joints.

The Norwegian State Diving School in Bergen has changed its name to 'The Diver Education' and merged with Bergen University College. The College has put a great deal of effort into launching their new Campus at Kronstad in Bergen and have finally been developing our diving school in Skålevik. The need for conformity of design has resulted in upgrading of our buildings, and this is still ongoing with Statsbygg as the owner.

On the shoreline, the concrete quay will be extended to 650 square meters of quay giving space for four diving stations. From the new pier, we can reach depths of up to 40 meters. The intention is to complete all the shallow and midwater diving from the pier and leave the deep diving to our diving vessel.

Near the new quay front, we have an on-going student project to clear and level a space to allow the installation of training equipment. The students here will undertake typical tasks using lifting bags, inspection and fitting heavy objects at working depths around 15 meters.

The new quay should be completed in September this year, and to meet new standards it will be 60 cm higher than the old one. We are presently in the market for buying a new wet bell with LARS, as well as a control station and hot water machine. This equipment together with a containerised chamber will be part of the new facility on the pier. In addition, we will build our own nitrox dive station with a flexible system to fulfill both international and national standards for diving. Compared to our current 24 student occupational class, the new 'Diver Education' will have increased capacity, and our intention is to be more efficient in our training methods



without any increased risk. This is reflected in the layout of the new diving facility. All together, we will have 11 diving stations available: two indoors, seven outdoors, one mobile on a truck and one on our diving vessel. We will be capable of starting two simultaneous classes in the autumn or we can start a new class each semester. As well as our own training activities, we can host special courses based on customer's request.

Our relationship with NUI AS in Gravdalsveien 245 is very good and we join forces on various projects within diving and support. We also have a good relationship with The Norwegian Centre of Diving Medicine and The Norwegian Navy Diver School in Bergen.

The Diver Education was a full member of the IDSA back in 2007 and it is our intention to become a full member again this year when our Campus in Skålevikveien 60 is complete.

UNIVERSITY OF BERGEN'S NEW DIVING FACILITY



The Magazine for Underwater Professionals

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The LAW LENTINI (L.R. 07/2016) and the equivalence of the Italian educational path for INSHORE and OFFSHORE DIVERS with the APPROVED LIST of HSE UK

(di Manos Kouvakis
Director CEDIFOP)

After more than 35 years of waiting, a law (Reference LR 07/2016 – known as the 'Lentini Law') formalizing the training of divers operating in the inshore and offshore sector has been approved by the Regional assembly of Sicily. The law is titled :

“Discipline of the educational content for the exercise of activities of commercial diving”

It sets out the levels of training necessary to operate in both inshore and offshore waters Starting from the existing qualification of OTS (Technical Diver Operator) valid for activities in ports, the law then introduces a first level of 'INSHORE AIR DIVER', which is followed by the second and third levels of which are 'OFFSHORE DIVER (air)' and 'OFFSHORE DIVER (saturation)', all these new levels meet the educational standards of the International Diving Schools Association (IDSA), which are an integral part of the law Lentini.

We have stressed several times in previous editions of the magazine, the fact that at the international level there are three types of standard :

1. Educational standards established by the International Diving Schools Association (IDSA), which is the only educational association for commercial divers, unlike recreational diving which has several different Associations

i.e. PADI, CMAS, SSI and others.

2. Operational standards such as those in use by the International Marine Contractors Association (IMCA) - they also include the UNI (European Committee for Standardisation) 11366 on health and safety in professional diving and hyperbaric activities serving industry – operational procedures.

3. Health and Safety Standards, for example, those of the United Kingdom. Only the correct application of these standards can ensure the maintenance of a competent and safe Italian diver qualifications which will enable them to meet the requirements of the Diving Industry Internationally,

For the smooth operation of an offshore projects it is important that the three standards must co-exist and the law just promulgated defines clearly the first: i.e. those concerned with the training of divers serving industry, according to precise rules established by IDSA.

The Lentini law approved by the Sicilian Regional Assembly gives the rules to regulate the training of operators in a sector where there is no national legislation.

The absence of legislation by the State in this regard has, to date, been a major hurdle for the Italian Diving Contractors. A paradox which has long been apparent to the Regional Assembly of an insular region like Sicily, where there are several plants for the extraction, transport and refining of hydrocarbons, port facilities and many other underwater activities.

Article 3 of the Lentini Law is the most important, because it tells how training courses should be conducted, training in accordance with the Internationally recognised standards with respect to the dive time and activities etc of the International Diving Schools Association (IDSA) Respecting the obligations and general requirements for health, safety and the environment (HSE, and following the Guidelines of the International Marine Contractors Association (IMCA). Three types of standard (Safety Training and Operational) are mentioned in these few lines, but they are very important, especially as recognized under the Directive 2005/36 / EC the free movement of labour within the European Community.

The Lentini Law will initiate the issue of an Italian Divers Qualification Card, which will be available to divers who register with a regional department of Labour and whose training is accepted as being in accordance with the standard training courses of IDSA

Everyone who has run professional training according to the IDSA by registering with the regional department of Labour, may use the CARD according to the level of qualification (Inshore Air Diver, Offshore Air Diver-TOP UP and Offshore Sat Diver) recognizable within the meaning of Directive 2005/36/EC throughout the community.

Following the statements by Mr Lentini: “The measure governs the training activities for the achievement of internationally recognised qualifications (without intervening in any way the pursuit of professional activities under State jurisdiction) of inshore diver (diver inter-

ventions enabled up to 30 meters deep), offshore air diver (“ Top Up “, up to 50 meters) offshore and sat diver (“altofondalista”, up to 200 meters with saturation system support). All training must be conducted in strict compliance with the standards laid down at international level by IDSA (the International Association of schools for commercial divers) and regulations to protect the safety, health and the environment (HSE). At the end of the training the Students will be able to join the appropriate directory and receive a special Region’s website electronic card, which will allow diving companies to determine the skills, promoting the encounter between demand and supply of labour. The qualifications obtained will also be usable on the EU labour market (recognition under Directive 2005/36). Moreover, the new legislation does not provide any new burden for the region: the courses may possibly be financed with Community funds (ESF) or otherwise operate under free market, subject to the control of the region on the effectiveness of the diving training. I am extremely pleased with the approval of a measure that opens to young Sicilians new job opportunities in an area of high qualification and dynamic. Without spending public funds we offer the possibility, in a land in the middle of the Mediterranean, concrete job opportunities well remunerated in Sicily and elsewhere in the oil sector, ports and maritime installations in General. The region has finally used well its autonomy to help the Sicilians to enter and compete in practice throughout Europe and the world. “

It would also be important to compare with the standard of English and Italian standards HSE, given that until now the Italian legislation was limited only in disciplining the underwater work in the Harbor area and, more specifically, the “establishment of the category of divers in local service.” Referring only to port services, that legislation does not deal with the offshore and inshore levels which provide a superior education in terms of depth.

Below, the comparison between Italian and English levels:

ITALIAN LEVEL	CORRESPONDENT LEVEL IN UK
OTS (Operatore Tecnico Subacqueo) D.M. 13/01/79	Not present in UK – very basic level
Letter a) First level as per Law 21/04/2016 n. 7 - Inshore Diver	Schedule 2 – Inland/ Inshore Diving
Letter b) Second level as per Law 21/04/2016 n. 7- Offshore Air Diver	Schedule 1.2 – Offshore Diving – For Surface-Orientated Diving techniques to a maximum depth of 50 metres
Letter c) third level as per Law 21/04/2016 n. 7 – Offshore Sat Diver	Schedule 1.1 – Closed Bell Diving or Saturation Diving Techniques

This law will also standardise the levels of competence, as required by the provisions of paragraph 11 of Directive 2005/36 / EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications, which stresses that “It is desirable to provide that any host Member State regulating a profession is obliged to take account of qualifications acquired in another Member State and see if they match those which it requires.”

THE LAST DIVE

By Roger Meecham

Recently I contemplated my first attempt at getting under water as a proper diver, which because of my lack of knowledge of the physics of delving into the depths could have ended in my premature demise at the age of eight. Fortunately I was saved from my folly and eventually achieved my childhood dream of becoming a Navy Frogman which led me on to a lifelong love affair with the sea, both above and below the surface.

However, after spending so much of my life under water it was very hard to decide that at some stage of my now mature life I would have to give it up and try to retire gracefully. My wife thought that perhaps when I retired at 65 and hung up my Fire Fighter's helmet, I would also hang up my flippers, but I thought I was still good for quite a few years more.

I have to admit that after I passed 70 I was finding some aspects of diving very tiring, but it wasn't the actual diving, it was getting into the tight fitting dive suit, pulling on the heavy breathing set and weight-belt and getting my fins on that wore me out. I had stopped going out in boats to dive in deep water and did all of my diving from the shore, usually with my anxious wife sitting on a rock following my bubbles closely with binoculars.

On this particular day I was diving inside Wellington harbour (New Zealand) in modestly deep waters to collect scallops. I swam out a little way on the surface then putting my regulator in and waving to my wife, I duck dived down and following my compass, quickly located the scallops. Immediately it became apparent that word had got around and plenty of other divers were out before collecting up the sea's rich bounty.

I was obliged to move to a deeper area at a depth of 30 metres. It took me quite a while to collect up my quota of 20 scallops, but eventually getting low on air I looked at my compass and turned for shore. What I didn't know, but which my wife had observed, was that whilst I was under water, a man in a rowing boat had come along and laid quite a long, almost invisible mono-filament fish net, parallel with the shore and right across my path.

Swimming along on the bottom, concentrating on my compass, depth gauge and air contents gauge I swam full speed into the net and became entangled. For a moment I didn't understand what had happened, then almost at once my Navy training kicked in and I could just hear my instructor's voice saying "if you get in trouble down there, stop, breathe deeply and think." Well I was stopped, and I could breathe and when I engaged my brain I realized I had swum into a fish net and was caught up in it, so I hoped, all I had to do was back out. Easier said than done, as I tried to back out I became aware that my regulator was properly entangled in the net and I couldn't reach back to untangle it. I looked at my air supply, not a lot left whatever I decided to do, needed to done quickly, or I would run out of air. I decided to use some of my precious air supply to inflate my buoyancy compensator which would allow me to become buoyant enough to reach the surface where I could deal with the net problem while breathing God's free air.

But then as I started to rise there was a great commotion to my left on the sea floor, the mud was swirling and rising up and out of the mud cloud came into view a large anchor used to keep that end of the net in position. I knew at once that even with my buoyancy compensator fully inflated, I still wouldn't have enough buoyancy to get me and the anchor to the surface. Reluctantly I vented off the air in my compensator to make me heavier and I sank down to lie somewhat exhausted on the sea floor.

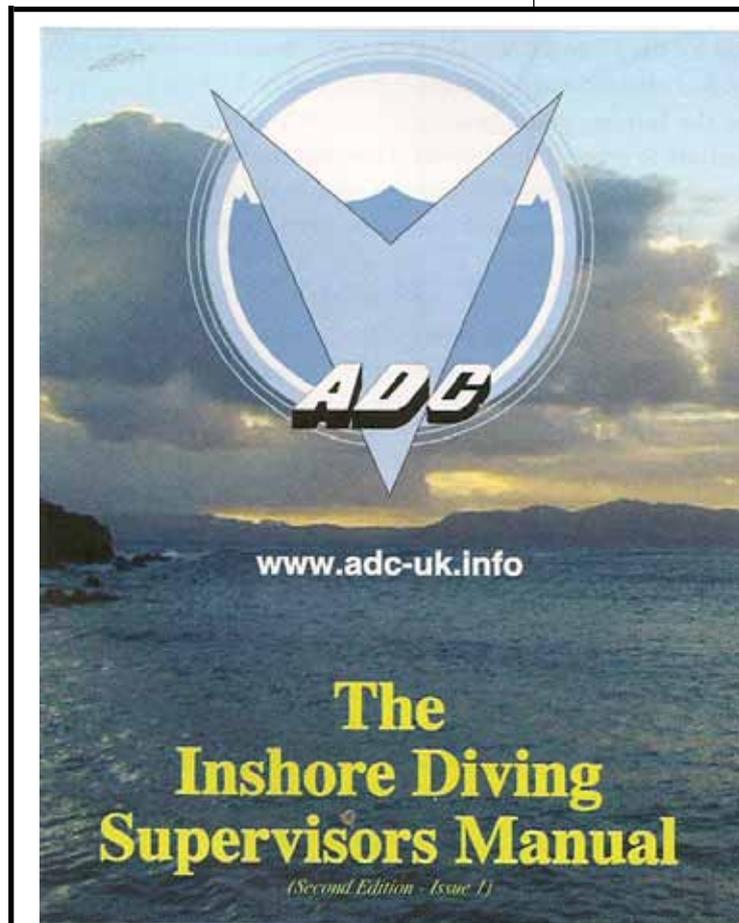
My next plan was to get out of my diving set in order to see and asses how bad the tangle really was. I was painfully aware that I should have taken this action at the very beginning when I realized I was tangled in a net. I had been caught in a double walled Crayfish net in Cornwall years before, then I had slipped out of my set whilst still breathing from the regulator, drew my knife, cut my set free and carried on with the dive. But back then I had been in my early twenties and super fit. What I was also painfully aware of was that I'd known all along what action I needed to take, but hadn't taken it simply because of all the energy it took me to get out of the set. I was thinking lazy, I was thinking old man.

Keeping my eye on the air contents gauge, which had been in the red for a while now, I struggled and squirmed out of the dive set and knelt on the sea floor to survey the tangle. I drew out my knife and cut out a piece of the net and dragged the set away from net, I slung one strap over my shoulder, grabbed my bag of scallops, which I was determined not to lose and headed for the surface. Once I reached the surface I still had to clamber over the top line of the net with all its floats and snags. When I was finally free of the accursed net, I still had a long swim against the tide to reach the shore and

my ever vigilant wife. When I got into the shallows, I had trouble standing up, my body seemed drained of energy necessitating me to make a very undignified exit from the sea on my hands and knees.

My darling wife knew that something serious had gone wrong and pumped me for details, but I did my best not to worry her by trying to explain it all away as just me being tired. However she said disarmingly "when we get home I think we should have a little discussion about how long you're going to go on diving." and then she added quietly, "at your age."

Well we did have a good discussion about how long I intended to carry on diving, I put my point of view and my wife put hers and in the end my wife said it was my life and my selfish and dangerous obsession to keep on risking life and limb but that I was a grown man and should make the final decision. So after carefully considering all the angles, I decided, that I should sell all of my diving gear and use the money to buy some new curtains for the lounge.



ONLY

**FULL MEMBERS (DIVER TRAINING)
are authorised to award
IDSA Diver Qualifications;
they do so having successfully completed
an
On-site audit to IDSA Standards.**

ABOUT IDSA

The Association was formed in 1982 as a result of a meeting between Schools attending the American Diving Contractors Conference (Now 'Underwater Intervention') in New Orleans.

The aims of the Association were then, and are now

- To implement common International Standards of Diver Training
- To provide a means of effective communication between schools.
- To improve the quality of commercial diving education
- To work towards improved standards of safety, emergency drills and procedures.
- To provide a common and collective voice to government industrial agencies on any matter affecting members.
- To co-operate on matters which may improve placement opportunities for graduates from member schools.
- To promote any activity, idea or subject which furthers the international operations of the Association.

The Association is concerned with all divers - Offshore, Inshore and Inland - as well as non diving qualifications e.g. Supervisor, DMT and LST. The Association has established International Diver Training Standards based on the consensus opinion of its many

members, they are available in a separate publication. The Standards provide both a yardstick for those responsible for either administering existing National Standards or creating new ones, and a guide for Clients, Diving Contractors and Divers themselves. It is considered that the introduction of these Internationally agreed diver training standard will have the effect of;

- Equating Standards Internationally.
- Providing Guidance to Organisations setting Standards for the first time.
- Improving Safety.
- Providing Contractors with a direct input to the Diver Training Syllabus.
- Enabling Contractors to bid across National Borders on a more even playing field.
- Improving Diver quality.
- Providing Divers with greater Job Opportunities.

Some governments have and will, set their own National Diver Training Standards. The IDSA programme provides a means of equating them by maintaining a Table of Equivalence - see the Publications section of the Association's Website.

THE INTERNATIONAL DIVING SCHOOLS ASSOCIATION (IDSA) LIST OF MEMBERS

FULL MEMBERS: DIVER TRAINING

Royal Danish Navy Diving School	Denmark
Luksia Sukellusala	Finland
Ecole Nationale des Scaphandriers (ENS)	France
Irish Navy Diving School	Ireland
Centro Studi CEDIFOP	Italy
Netherlands Diving Centre (NDC)	Netherlands
Norwegian Commercial Diving School, Oslo (NYD)	Norway
Oceanos Escuela de Buceo Profesional SL	Spain
Swedish Armed Forces Diving and Naval Medicine Centre	Sweden
Yrigo-Commercial Diving School of Gothenburg	Sweden
The Ocean Corporation	U.S.A.

FULL MEMBERS: SPECIALIST TRAINING

KB Associates	Singapore
Interdive Services Ltd.	UK
The National Hyperbaric Centre	UK

ASSOCIATE MEMBERS

University of Southern Denmark	Denmark
Arab Academy for Science, Technology and Maritime Transport (AASTMT)	Egypt
National Institute for Commercial Diving (NCID)	Egypt
Egyptian International Diving School(EIDS)	Egypt
Middle East for Commercial Diving	Egypt
GT Corporation SE	Estonia
Faroe Dive	Faroe Islands
Institut National de Plongee Professionnelle (INPP)	France
Centre Activities Plongee de Trebeurden	France
Aegean Diving Services Ltd	Greece
Diver Ltd	Hungary
Dolphin Dive Academy	India
Daryakav Jonoub Co	Iran
Israeli Professional Diving Academy	Israel
Nahshon Marine Construction Ltd.	Israel
IDEA Contracting	Kuwait
TechnoSub	Mexico
Regional Centre For Underwater Demolition (RCUD)	Montenegro

Centre Mediterranee De Plongee Professionnelle (CMPP)	Morocco
Mieka Dive Training Institute Ltd	Nigeria
Seanergy Ocean Indien	Reunion Island
Forespro	Spain
PROfessional Diving Services	Switzerland
MZ Plongee	Switzerland
Caribbean Diving & Marine Ltd	Trinidad
Gulf Marine Contracting	UAE
Atlantis Marine Services	UAE
Santa Barbara City College	USA
Divers Institute of Technology (DIT)	USA

RECIPROCAL MEMBERS

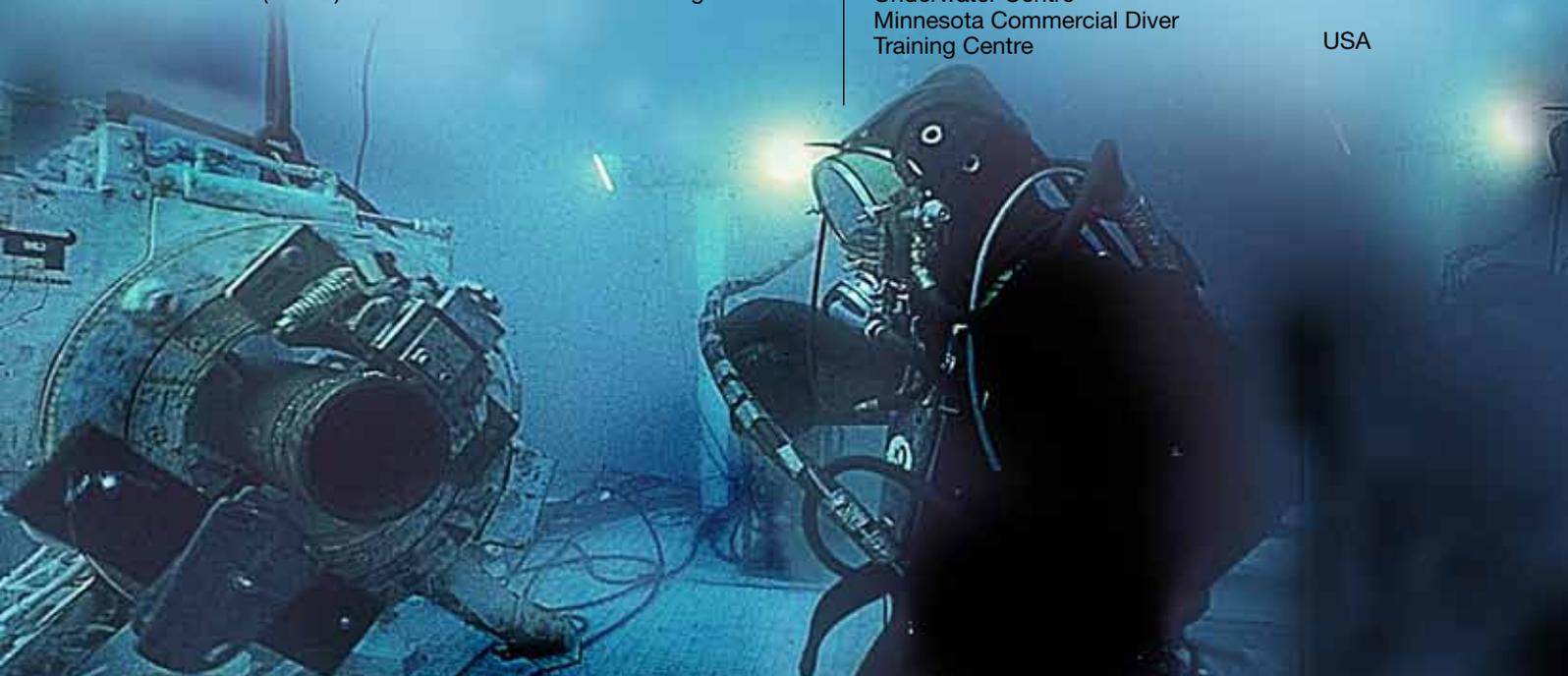
National Association of Hungarian Commercial Divers (BOSZ)	Hungary
Alliance of Russian Diving Schools	Russia
Association of Diving Contractors (ADC UK)	UK
Association of Commercial Diving Educators (ACDE)	USA
Association of Diving Contractors International (ADC I)	USA

INDUSTRIAL MEMBERS

Alpe SUB Srl	Italy
Drafinsub S.R.L.	Italy
InOut Security Service	Italy
Palumbarus Diving Works	Italy
Cavit Cleaner Limited	Malta
IHC Hytech BV	Netherlands
Norwegian Association of Underwater Entrepreneurs (NBU)	Norway
Svensk Sjoentreprenad	Sweden
Submarine Manufacturing & Products Ltd.	UK

AFFILIATE MEMBERS

Aqua Dream SCUBA Academy	Cyprus
NAVFCO Military Diving School	France
Neel Diving Institute	India
SCAN Srl	Italy
Eprons Ltd	Latvia
Nautiek	Netherlands
Bergen University College	Norway
BPN Explorer	Poland
Deep Dive Est	Saudi Arabia
Composite-Beat Engel	Switzerland
Underwater Centre	U.K.
Minnesota Commercial Diver Training Centre	USA





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