

# 300





# Stern tube seal repairs



**U**sing our flexible mobdock method to create a dry underwater environment, we have carried out stern tube seal repairs and replacements underwater for some years now in cooperation with OEMs.

This technology brings drydock

conditions to the ship rather than having to take the ship to drydock, saving a considerable amount of time and money in doing so.

This class accepted method is performed by our diving teams under our warranty. It can be used while the ship is carrying out its

usual cargo or other commercial operations in port.

Visit the special stern tube seal repair section on our website for more information and examples of the many seal repairs we have performed in recent years.

**+ 32 3 213 5300 (24/7)**  
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**www.hydrex.be**

**HYDREX**  
UNDERWATER TECHNOLOGY

## Reminiscences



**T**he first Hydrex magazine was published in 1975, just a year after the company was founded. It was always my intention to create a dedicated publication because we were working on so many new ideas.

This first issue was more of a leaflet than a real magazine. In the early years publication was very sporadic. The means we had at that time were limited and we didn't have a separate promo division then. We created a newsletter when we had something really important to share.

At the end of the eighties we started to write more regular magazines. We wanted to increase our impact on the shipping industry in general and help the industry to become more ecological. To do this we needed to strengthen our position. The magazine was a key factor in achieving this. We increased the frequency from a quarterly publication to a monthly one by the end of the nineties. It has been published every month ever since.

Hydrex founder  
Boud Van Rompay  
bvr@hydrex.be  
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## The very first magazines

**T**he early issues of the Hydrex magazine are unfortunately lost, but the pictures used remain. One of the very first operations that was written about was the prefabricated cofferdam repair on m/v *Lunar Venture*.

The ship had suffered a very large gash in its double bottom and Hydrex was asked to find an on-site

solution. Because the available options were not good enough a revolutionary new technique needed to be used: a prefabricated cofferdam.

In 1979 it might have looked like youthful arrogance to people in the shipping business but as with most ideas introduced by Hydrex, it led to the development of a repair technique still in general use today. ■



*The cofferdam filled with water, allowing it to sink. Later it was dewatered with compressed air and gained positive buoyancy.*



*Diver in hard hat diving suit.*



*Hydrex headquarters in the early days.*



*In the 1980's this diving tank was installed in Hydrex premises for training purposes.*



# From black and white to color



NEWS N° 14/90

No 14/september  
A quarterly publication of  
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A newsletter for shipowners, their technical managers and superintendents on the economics of underwater ship maintenance

## Hydrex Flying Squads

Hydrex is famed for its speed of reaction and intervention - anywhere in the world, and at very short notice.  
Cameroun, Rio de Janeiro, Santa Cruz de Tenerife, U.K., West-Germany - Hydrex flying squads service ships throughout the world.

Over the past few months, Hydrex has been able to prove again and again its ability to mobilise personnel and equipment at very short notice to tackle underwater hull repair and maintenance operations a long way from home.

### FEBRUARY : CLEANING AND NDT INSPECTION IN DOUALA, CAMEROUN.

In February, an underwater cleaning operation was carried out on the 142 806 dwt storage tanker "ACE ONE", off the Cameroun coast. The cleaning intervention was required prior to underwater thickness measurement and NDT inspection. More details of this work are mentioned in our June newsletter.



Hydrex mobilised personnel and equipment Rio de Janeiro

### MAY: DAMAGE ASSESSMENT IN RIO DE JANEIRO.

In May, a team of divers flew over Rio de Janeiro for an extended inspection of major hull damage on boat 66 350 dwt bulk carrier.

### MAY: BREMERHAVEN, WEST GERMANY.

Also in May, Hydrex repaired a crack in the shell plating on the flat bottom of a 3 022 dwt general cargo vessel. The crack was located in area of engine room and repaired by weld a doubler plate on the damaged area.

### JUNE: HULL SURVEY IN SANTA CRUZ DE TENERIFE.

From June 16th to June 22nd, divers carried out an underwater survey of the damaged hull of a 22 800 cargo vessel in Santa Cruz. A

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## UNDERWATER FLASHLIGHTS

We are happy to inform our readers that our forwarding department is busy sending the Mitylite underwater flashlights to 100 readers of our Newsletter. Answering cards have been received from all over the world. We wish to thank you for the numerous forms which have been sent back. They allow us to keep you informed on the subjects which are of interest to you. In the present Newsletter, we focus on the subject underwater repairs which seems to be of particular interest to our readers.

## NEW COMPUTER LINKED VIDEO UNIT

In September 1989, Hydrex acquired a sophisticated mobile video/computer installation for use with major surveys. The installation consists of a fully mobile unit comprising video recorder, television screens, computer and power generator for the TV camera unit. This installation permits the TV technician to type the comments of the diver immediately onto the video tape. After an inspection, the screen will simultaneously present the inspected areas, the oral information and the written comments.



NEWS N° 22/93

No 22/October 1993  
A quarterly publication edited by  
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Haven 29  
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A newsletter for shipowners, their technical managers and superintendents on the economics of underwater ship maintenance

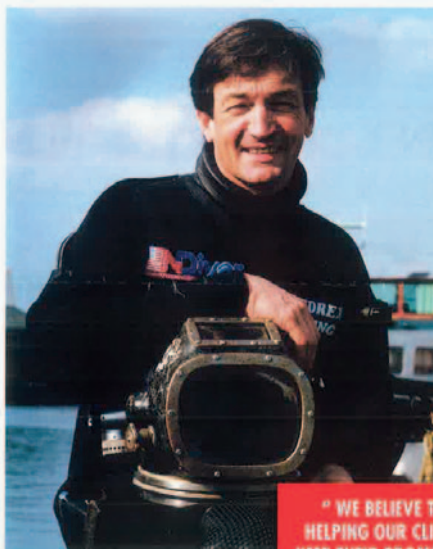
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## HYDREX N.V. - AN OVERVIEW

During his time at University Boud Van Rompay, the founder of Hydrex was introduced to cave diving and rapidly developed a life long love affair with the water. His diving activities rapidly led to an introduction to the world of commercial diving which was, at that time, in its infancy.

During the oil crisis of the early seventies he recognized the need for an effective industrial solution for the cleaning of vessels afloat in order to save fuel. Few options existed at that time and, armed with the knowledge and viewpoints that he had gained working offshore, Boud Van Rompay formed Hydrex NV.

Hydrex started trading in 1974 and every year has seen the introduction of new innovations. Hydrex were the



"WE BELIEVE THAT HELPING OUR CLIENTS KEEP THEIR PROMISES IS WORTH WORKING FOR".

first to use inwater CCTV on the continent, a fender system was designed and built that allows the cleaning of the inboard side of vessels in port. Improved techniques for the safe blanking of seawater intake grids were introduced. Hydrex designed, perfected and built a cofferdam system that allows dry repairs to be completed to vessels afloat. Hydrex were the first to introduce inwater coded welding repairs. The equipment and methods for the inwater repair of propellers were invented by Hydrex, the list is endless.

Since 1974 many changes and advancements have been seen within the diving industry in general, many of them instigated by the pioneering attitude of Hydrex. One thing, however, has not changed, the philosophy and prime policy of Hydrex has always been, and always will be "We Always Deliver What We Promise" and Hydrex promises quality, cost effective solutions for the maintenance and repair of vessels afloat.

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During the eighties the Hydrex magazine was printed only once a year, but by the time the nineties arrived it had changed into a quarterly publication. In 1993 color was introduced, first only now and then but soon the magazine was in full color.

The purpose remained the same: To inform our customers and prospects of the operations our teams performed around the world and to share with them all the latest news. ■



# Celebrating 20 years of Hydrex and the magazine

In 1994 Hydrex celebrated its twentieth birthday. The magazine followed a year later. By then we had established ourselves as a world leader in underwater ship repair and maintenance services. Despite sending dive teams across the globe, we were never just a diving company.


This was once again clearly demonstrated by this article in the October 1994 issue of the magazine. In it we wrote about a very complex repair performed in Dunkirk. At that time, this was the biggest underwater welding operation of its kind that had ever been done. ■

**editorial**

**I**n an efficient manner to our readers in the "big" magazine concept for the "big" magazine. The magazine is a monthly publication, published by Hydrex International Underwater Contractors. The magazine is a monthly publication, published by Hydrex International Underwater Contractors. The magazine is a monthly publication, published by Hydrex International Underwater Contractors.

## Hydrexnews

October 1994 N° 26 A newsletter for shipowners, their technical managers and superintendents on the economics of underwater ship maintenance



### Hydrex repairs severely damaged bulbous bow of the Ademontasa

On January 6th 1992, Hydrex set to work. Det Norske Veritas was responsible for supervision. The Hydrex solution involved fitting a bulb doubler over the damaged bulbous bow of the Ademontasa and welding it into position. To ensure that this bulb doubler would fit perfectly, a temporary structure was set up inside the ship. The divers built a rigid cage, which was completely welded underwater in way of the damage (figure 2). This template was then taken to the shipyard in Dunkirk where the bulb doubler was constructed. The building process took about six days. Meanwhile the Hydrex divers were not idle. Temporary seals were applied and everything was made ready for the plate to be fitted. At the same time the damage inside the ship was assessed.

**Excellent results**

The new bow is made of 8mm thick steel and fits perfectly. It is fitted with flaps (figure 3), which increases the flexibility and length of the welded seams. Thanks to extra welding gaps in the flaps, the bulb doubler could be attached even more securely to the bow. Four teams worked in shifts for 12 days and nights. First the plate was welded until the ship was completely watertight, whereby all welding was done according to code AWS D3.6, type A (American Welding Society). This specification covers underwater coded welding of a type which is comparable to

**Experience**

It was impossible to repair the ship in dry dock. The ship was loaded with 60,000 tonnes of grain and the port of Dunkirk did not have the capacity to unload such large quantities. Moreover, the ship was not being allowed to sail to another port. Thus, the only solution was underwater repair work. Hydrex had some experience with the method it proposed, having already repaired the Staudillo and the Otav Itamama in the same way.

**Quality welding!**

Underwater counterparts by virtue of specifying comparable properties and testing requirements. Then a special concrete mixture was applied between the damaged bow and the bulb doubler. This provided an even stronger adhesion with the ship (figures 4 and 5). Additional reinforcement beams were welded into place inside the ship. In early February the ship was fully repaired and able to continue its voyage.

**Figure 2: Making the template**

**Figure 4: Applying a special concrete mixture between the damaged bow and the doubler plate**

**Figure 5: the bulbous bow after repairs**

**U.S. Department of Transportation**

**United States Coast Guard**

Commander  
U. S. Coast Guard Activities

2401 Hawkins Point Road  
Baltimore, MD 21226-1791  
Staff Symbol: C-5  
Phone: 410-576-2661

16711

**HYDREX International Underwater Contractors**  
Attn: Sonja De Bruyne  
Haven 29  
Noorderlaan 9  
2030 Antwerpen  
Belgium

Dear Ms. De Bruyne:

We have received your facsimile letter dated March 13, 1998 requesting some type of Coast Guard endorsement for the work recently done on the M/V IOLCOS PIONEER. As a regulatory agency within the international maritime community, we are not able to issue any recommendations concerning the merits of individual companies.

However, we do not hesitate to commend the approach and method used to insert the hull bottom plating. This expertise, combined with the knowledge, workmanship, and professionalism of the individuals performing the work, enabled the vessel to proceed to sea without going to dry dock for repairs.

If you have any questions, please feel free to contact Lieutenant John Nadeau of my staff at (410)-576-2661.

Sincerely,

  
**F. L. SHELLEY**  
 Commander, U.S. Coast Guard  
 Chief, Operations Prevention Division  
 By direction of the Captain of the Port

Over the years we have received many recommendation letters from shipowners, classification societies and even the U.S. Coast Guard. The one on this page was sent to us in 1998 after a complex welding repair on a bulk carrier in Baltimore.

No one believed the operation could be done afloat, but after its successful completion they were more than willing to admit they had been wrong. ■



# Big operations, big articles at the end of the century

## Inwater assistance to the Sea Launch Platform "Odyssey"



A photographic and CCTV survey on the 46,000-ton displacement launch platform - formerly one of the world's largest oil rigs - confirmed that two blades of the starboard side propeller showed damage. The tip of one of the blades was bent and had a small crack.

The damaged part was ground off and the propeller was balanced by cropping an equal part off the opposite blade as well. Another blade had suffered a 30mm crack and this was



ground off too. Only 14 working hours after the job had started, our team returned to Austwerp.

On Sunday night five days later, Hydrex was contacted through its 24 hour service system by the representative of the ship manager, Barber Kværner Marine Management

in Norway, to investigate the possibility of afloat repair thruster units, so as to avoid scheduled drydock.

Our engineering department proposed a proposition where technicians could perform repairs, this being the

Home Port for "Odyssey", a 15-acre site within the Port of Long Beach.



On July 1st, a Hydrex underwater repair team went to Kristiansand, Norway to attend to the self-propelled, semi-submersible Sea Launch platform "Odyssey". On its way to the Port of Long Beach for the first-ever ocean launch of a commercial satellite later this year, it encountered some trouble with its propeller and Hydrex was called in for professional help.



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**HYDREX**  
Magazine

September '98



Inwater assistance to the Sea Launch Platform - Odyssey Page 2-5

Fast intervention stops propeller from further causing damage Page 7

Hydrex Cargo Care intervention to pump chemical cargo ashore Page 7

Bulk carrier maintained operational after CCTV survey and fast rudder repairs Page 8

## Breaking new boundaries – solutions to problems

**HYDREX**  
Magazine

Number 72



led in to work on the proposed solutions for (Our technical team got the damage and repair work that would be worked out ways and could be done. Repair procedures were drawn up and approvals from well as coast guards.

on to the ship managers it was some trepidation which work could be done - they were finally convinced could do the job.

An 8 man-team was sent over to Boston to start the work in liaison with a local company who provided backup, equipment and consumables. Just to challenge our team further, there were blizzards and freezing weather conditions.

The work required 5 different patches to be welded to the flat of bottom. The biggest one was 14.5 metres long by 1.3 metres wide and weighed around 2 tons. To get this one into position heavy-duty rigging equipment was necessary and an expert procedure needed to be worked out in order that the plate



Working at very low temperatures



On the ship

could be placed in a safe and secure way under the ship. The technical work of how to securely attach this to the ship had been worked out in advance and the first idea was to use explosive bolts as part of the system of attachment. However, due to security problems of exporting such a tool into the USA, it was not possible to get them through customs in time and so our resourceful team worked out another means of attaching the plates to the ship - this time it was done by using a total of 170 screws dogs - an alternative procedure we have for a long time tested and utilized around the world.



Special design of the boat

To get all the plates securely attached it was estimated that a total of 2 kilometres of underwater weld seams were done by our divers - all of those on site were qualified and certified underwater welders. These welds were all above head welds as they were made on the flat of bottom.

The plates themselves, whilst flat on the outside, were designed with 2 concave surfaces on the inside meeting in the middle. This method meant that the inside of the plate would press against the damaged area and increase the surface contact and pressure with the flat of bottom, thus ensuring a better contact. Seals were of course placed all around the contact area and the empty space behind the plates were filled with concrete in order to stabilize it, prevent vibrations, create an additional seal and, in one case, to prevent the liquids in the fuel tank and the ballast tank mixing as the tank had ruptured the bulkhead between the two spaces.

Completed on page 10



One of the smaller plates



Positioning the concrete plate



Bottom of process to be filled with concrete placement

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# A growing company constantly looking for new opportunities

**A**t the start of the new century Hydrex had grown too big for the existing warehouse. A state-of-the-art fast response center was constructed to allow us to keep providing our customers with the best possible service.

This new warehouse included a dedicated location for our R&D division. One of the new technologies developed here is our cold propeller blade straightening machine. First introduced in our magazine in 2001, this method has gone through many iterations since then and is still in use twenty years later.

Throughout the years there has also regularly been room for a less serious moment in our magazine, as is illustrated by this cartoon from 2002. By then the magazine had become a monthly publication. ■

## Our new fast response centre



**D**ue to increased demand we have launched a new phase of expansion, planning and started the construction of a completely new building next to our existing fast-response headquarters. You can see in the photographs our existing building along with those of the new one currently under construction.

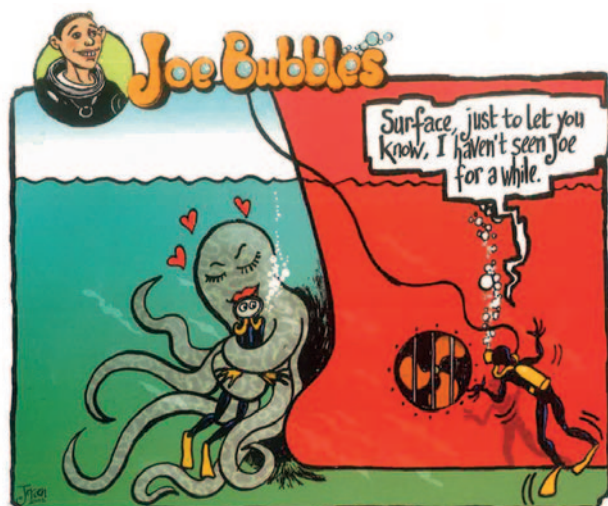
Hydrex is continuously situated alongside the waterline in Antwerp with easy access to the main waterways as well as numerous ferry from the main railway network, servicing Belgium. The total distance from port to field is less than 10 minutes, which is an excellent aspect in Belgium in just 30 minutes drive. This enables us to react to deal with an imminent work load. Additional space is also needed for storing equipment. The building will contain a central crane running the length of the building and the other important feature will be the inclusion of two large water tanks for carrying out essential maintenance jobs on-site while ensuring the waterline is not out of service.

The large of the water has already been with new in ground and reaches a total depth of 12 metres. The tanks will be large enough to carry out jobs on-site such as oil rigging and other difficult underwater tasks. The new building will also be used as a training ground for underwater work and the development of other skills needed in the ship repair business.

The existing building will then be developed as a mobile water administration space as well as being used for storage.

Hydrex continues to be open for business, as customer throughout the construction in ship repairing services will not be affected by the building work.

Hydrex continues to be open for business, as customer throughout the construction in ship repairing services will not be affected by the building work.



## HYDREX Magazine

Number 81



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# Thruster repairs



# Seal repairs





# Complex steel repairs



## Writing about a wide range of operations

In the last twenty years the Hydrex magazine has arrived on our customers' desks every month. In this period we have written about many new technologies developed by our R&D department. Some have been tailor-made solutions for a specific problem, others are still used by our divers on a regular basis.

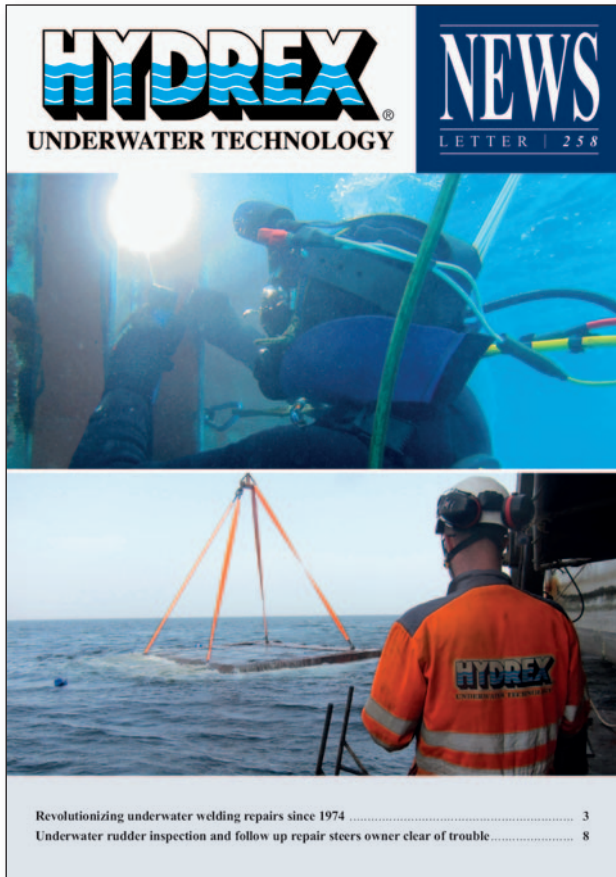
A very good example of this is our flexible mobdock used to replace stern tube seals underwater. Introduced in 2002, this technology has been used on hundreds of seal assemblies since then. The image of one of our divers working inside the mobdock (bottom right on previous page) is well known to regular readers of our magazine.

The two covers at the top of this page are both from 2011. Two tailor-made, complex hull repairs were carried out almost back-to-back. One of them was the replacement of an entire hull section – a feat never done before. ■





# New welding techniques



In 2018 we wrote an article about the history of underwater welding and the part Hydrex has played in this. We have been at the forefront of wet welding since 1974. In this period we have regularly introduced new welding techniques. We have also developed new equipment that makes it much easier to monitor and test the weld seams.

This has been done by our in-house R&D department who cooperate closely with our diving teams. Together they help us carry out the research required to keep evolving the available welding techniques.

This led to a new breakthrough in 2020 when we received a grade A wet welding certificate. The certificate was given for carrying out grade A groove welding underwater. Most companies with a wet welding certificate can only carry out fillet welds and this often only to grade B or C. ■

## On to the next 300 magazines

It has been 46 years since the first Hydrex magazine was published, but 300 issues later it is still going strong. A lot has changed from the early days when it was a black and white leaflet until the fully fledged magazine it is today, but for us the goal is still the same: To inform our customers, the market and everyone involved in a neutral way on the latest technological advances.

The photographs are all taken with a digital camera now and the entire process of creating the magazine is done with a computer, but once the final approval has been given the magazine is still sent to a printer.

It is always nice to see our magazine lying around when we visit customers, whether it is in Hamburg, Hong Kong, Tokyo or New York. It means that it is being read all over the world.

We really hope you enjoyed this journey through the history of our magazine as much as we enjoyed going through the archives and putting it together. ■





# In-water bow thruster repairs



**O**ur lightweight flexible mobdocks are designed to be easily transported around the world and are used to close off the thruster tunnel on both sides, allowing divers to perform repairs and other operations in a dry environment around the bow thruster unit.

This technique enables to reinstall the propeller blades of an overhauled thruster inside the thruster tunnel after the unit has been secured or replace the blades or seals and perform repair work on a specific part without removing the unit.

Since the development of this flexible mobdock technique, numerous thruster repairs have been carried

out by Hydrex diver/technicians around the world.

There is no need to send the vessel to drydock as all operations can be carried out in port or while the vessel is stationary at sea. Normal commercial activities can therefore continue without disruption.

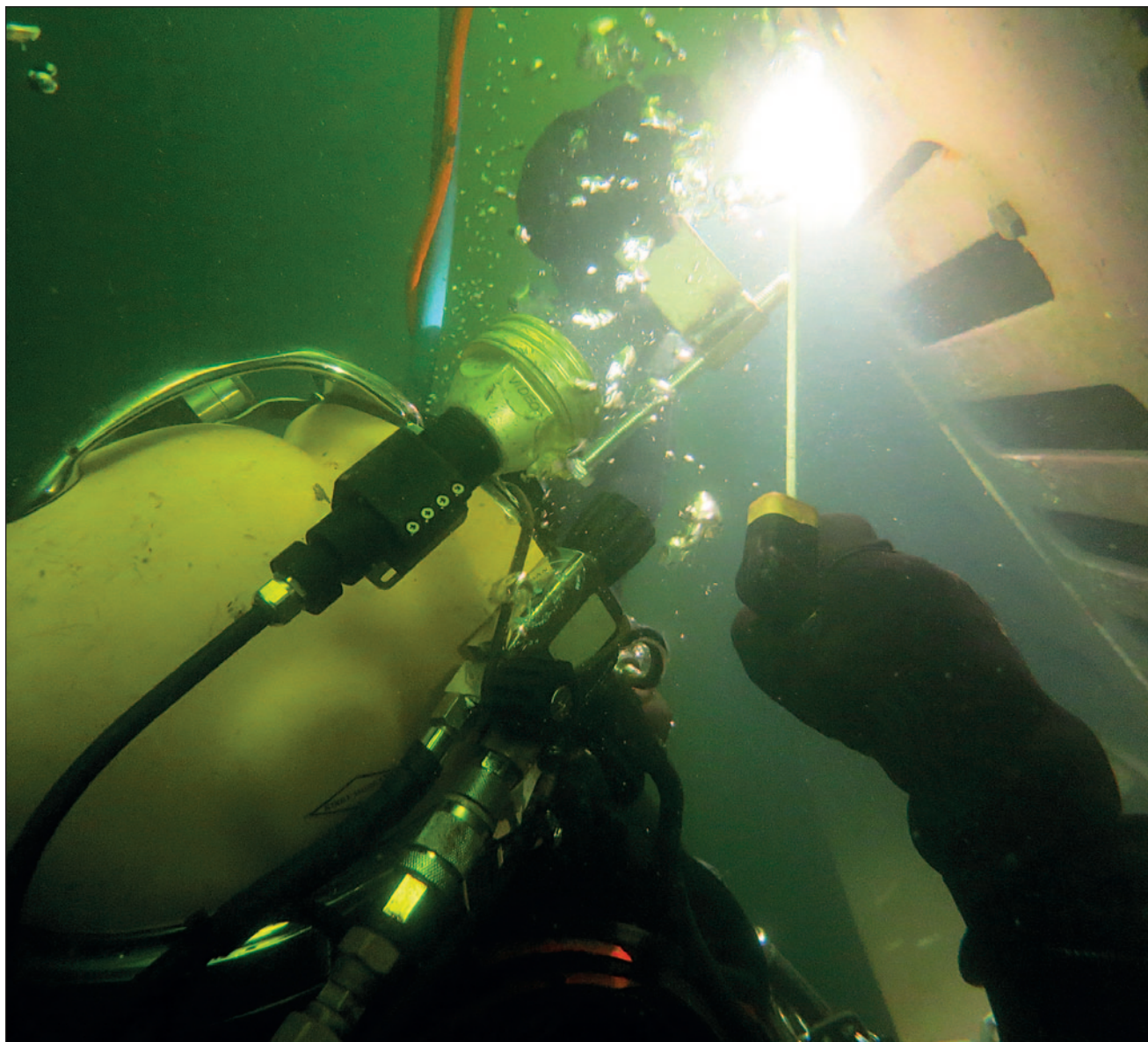
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