HYDREX®

UNDERWATER TECHNOLOGY

Magazine

Number *317*

Scrubber pipe repairs and lasting protection

Exhaust scrubbers filter out all harmful toxins from exhaust gases of marine diesel engines. These hazardous pollutants can severely corrode the pipes of the scrubber. Using the experience we have accumulated over the years allows us to assist you at moment's notice if this happens.

We offer a full package to owners that are experiencing similar damage. Not only can we replace the corroded exhaust pipe while your vessel stays on schedule, but we can make sure that you will not have to call us again in a few months time for the same problem. This is done by coating the pipes with a highly corrosion resistant coating called Ecospeed.

Contact us for more information on scrubber pipe replacements or other underwater repairs. We are at your disposal 24/7.

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Editorial

Our flexible mobdocks can be deployed worldwide to carry out a wide variety of operations. Our teams have been performing mobdock repairs for the last 20 years, but the scope of what we can do underwater still surprises many customers.

The first article deals with a stern tube seal operation in Algeciras. During this repair we worked closely with the OEM involved to prevent a costly unplanned drydock visit.

This is just one of the many underwater services we offer to our customers. If you have a problem with your ship which you are not sure can be solved afloat, please give us a call. We will evaluate the problem and can let you know whether an underwater solution is possible. Many solutions are available without the need for drydocking. We do not charge for this initial consultation.

We can assist you with routine maintenance operations as well as complex repairs. Very simply put: We fix ships.

Hydrex founder
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ISO 9001 certified

Underwater services and technology approved by:

BUREAU VERITAS · ABS SERVICE SUPPLIER · LRQA CERTIFIED ISO 9001 · LRQA CERTIFIED · APPROVED SERVICE SUPPLIER DNV DNV.COM/AF · ADC International · ClassNK · RINA · LR

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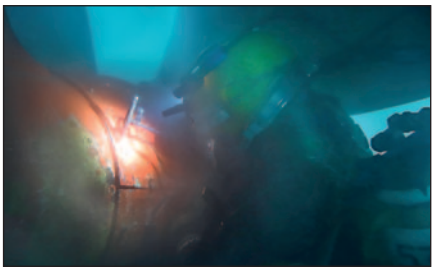

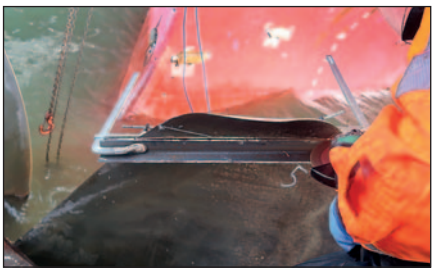

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Underwater stern tube seal repair on container ship in Algeciras

Last month, one of our diver/technician teams carried out an underwater stern tube seal repair on a ro-ro ship berthed in Algeciras. The ship was suffering from an oil leak, making an on-site repair necessary. Using a Hydrex flexible mobdock, the team was able to carry out the entire operation on-site and underwater, saving the owner an expensive and time-consuming trip to drydock.

Hydrex night shift in Algeciras.

Once the operation was approved all preparations were handled swiftly and the lightweight equipment was mobilized almost immediately from our fast response center.

The operation started with a thorough underwater inspection of the stern tube seal assembly, and removal of the rope guard.

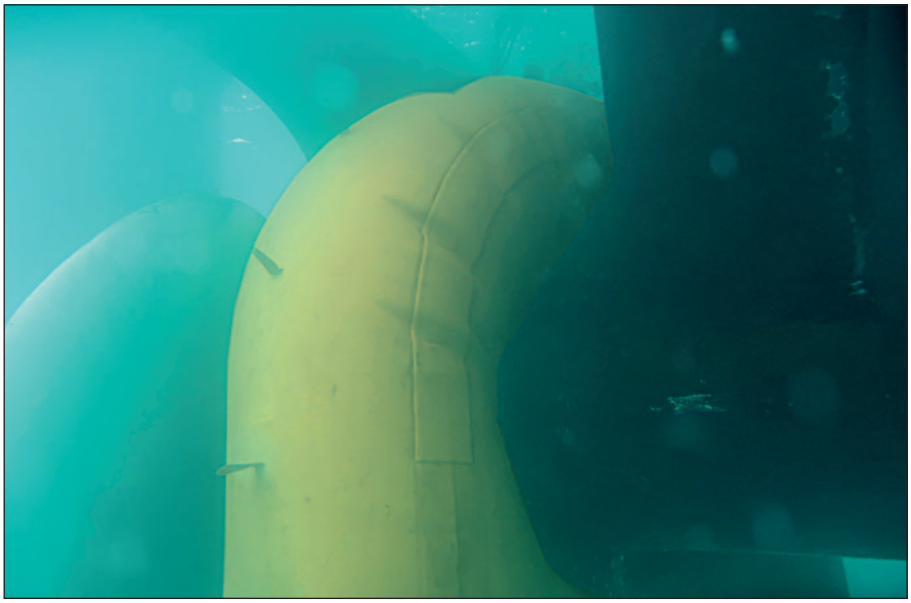
Our divers then cleaned the assembly and installed the flexible mobdock, thus creating a dry underwater environment where they could work in drydock-like conditions.

The split ring was removed and brought to the surface to be cleaned. After cleaning the entire assembly, the divers removed the first seal and replaced it with a new one which

Oil leak prior to cleaning the assembly and replacing the seals.

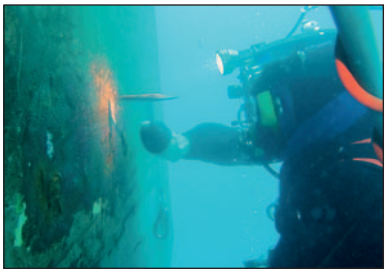
Algeciras is an ideal location for seal repairs and other underwater operations. We have an office in the Port. Contact us for more information.

Assembly after cleaning, ready for the operation.



Hydrex flexible mobdock used to create a dry working environment underwater.

Hydrex under-water inspections



Underwater inspections are an essential aspect of ship repairs. Building upon conventional technical skills and know-how while also taking advantage of the latest technology, Hydrex offers a unique hull monitoring service to its customers. This gives ship owners total control of the underwater hull and the underwater gear of their vessels. An informed decision can then be made concerning any required follow-up action. Catching problems early can save you much money in the long run.

Hydrex diver/technicians can carry out inspections underwater and on-site very swiftly without disturbing the vessel's sailing schedule.

With fuel costs amounting to 40% of operational expenses and continuing to rise, reducing fuel consumption is a vital concern of ship owners. This is the reason why hull monitoring pays for itself. Underwater hull roughness, marine fouling, bent propellers and poor paint condition are all factors that will increase fuel usage due to the drag or inefficiency created by the damaged or affected area. The data gathered can then be used to see if actions are required.

Our diver/technicians are trained for a wide range of operations and they can carry out the inspections in port or at anchor anywhere in the world.

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Hydrex diver/technician taking shaft weardown reading.

was then bonded. Next they did the same for the other seals.

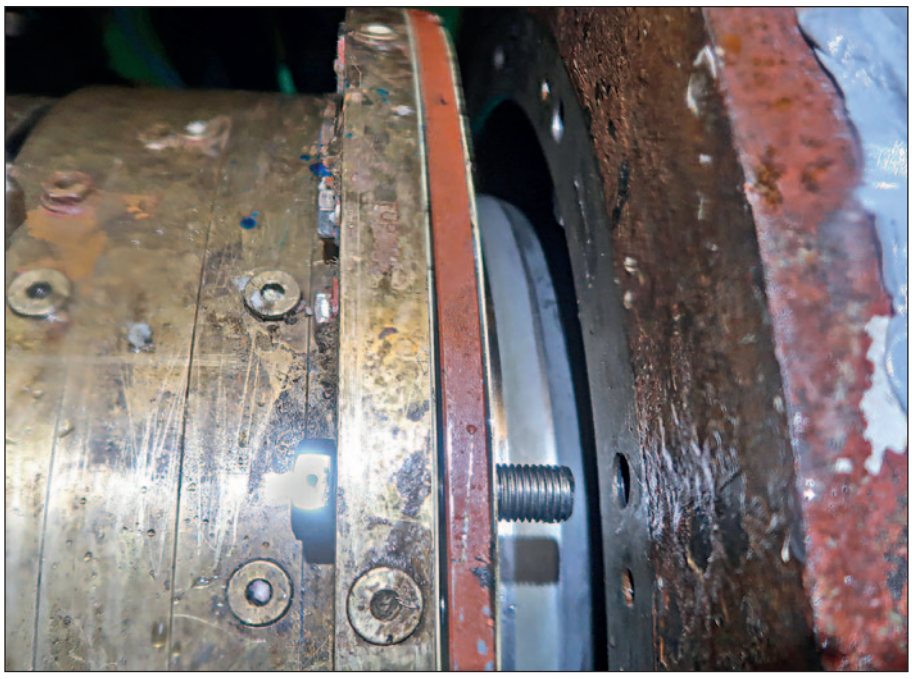
A successful operation was concluded with leakage tests, the removal of the flexible mobdock and the reinstallation of the rope guard.

Working in drydock like conditions on-site

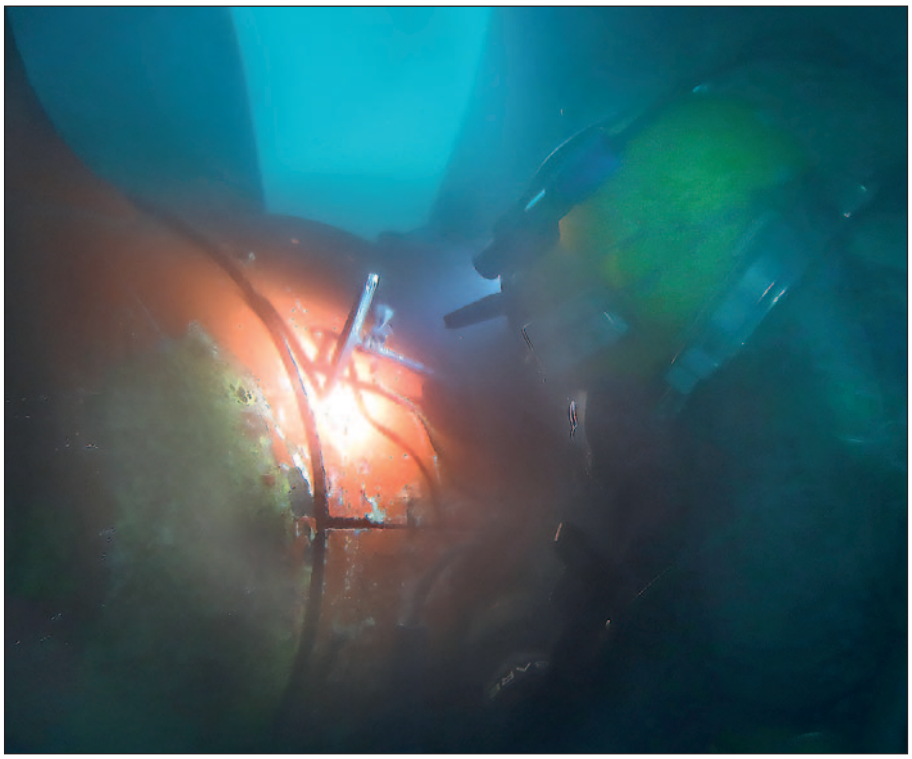
Working together with the OEM allowed us to provide our customer with original spare parts which guarantees the best quality material. A technician from the seal manufacturer was present during the operation.

Taking advantage of the Hydrex flexible mobdock technique, the entire operation could be completed with the ship afloat and carrying out

Bonding one of the new seals.



Stern tube seal assembly ready to be closed up again.



Reinstalling the rope guard.

Fully reinstalled assembly.

normal operations. Because all the required equipment is ready to be transported at all times, no time was lost making preparations.

Hydrex organizing everything from start to finish meant the owner did not have to worry about making any arrangements for the repair. After the seals had been successfully replaced he was able to sail his vessel to its next stop free of oil leaks.

All our offices are equipped with the latest facilities, lightweight equipment and tools. This allowed for a timely arrival of our team in Algeciras with everything they needed to successfully complete the job. ■

If you have any questions regarding a possible seal repair, do not hesitate to contact us. We are at your disposal 24/7 and ready to mobilize almost immediately.

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The same high quality, close to home or faraway

We have developed a flexible mobdock repair method that enables the underwater replacement of all types and sizes of shaft seals. It allows ship owners to keep their vessels sailing, saving precious time and money.

Damaged stern tube seals will cause oil leaks or an ingress of water. By replacing the seals as soon as possible, we can keep the down time low.

Because seal repairs can be performed during cargo operations the ship can keep its schedule.

It is not always straightforward to replace seals. There can be quite a bit of variation in the size of the stern tube itself and for instance the liners can be worn down and show ruts. However, all this is routinely handled by our experienced teams.

If you have received this magazine at the wrong address or if your company is going to move, please let us know.

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KEEPING SHIPS IN BUSINESS

High quality in-water ship re

Permanent insert repairs
Specialist class approved insert repair work carried out on a permanent basis. Providing a real alternative to drydock.

Emergency repairs
Fast response emergency repairs worldwide.

Inwater video inspections
Professional video surveys provide a reality of the problem and enable owners and classification surveyors to directly diagnose any problems.

Echo sounder inspection and replacement

Speed log
Checks for damage, marine fouling and replacement.

Bow thruster and propellers
Permanent on-site repair, maintenance and replacement with the award winning flexible mobdock technique.

Hull cleaning on suitable coatings

Bilge keel
Check and repair broken welds, renewal of sacrificial anodes.

pair and fuel saving services

Propeller blade repair in Latvia restores efficiency

Recently one of our diver/technician teams performed a successful propeller blade cropping operation on a 175-meter bulker while the vessel was in Klaipeda, Latvia. Because of the severity of the damage, cropping was the only option.

When the propeller blades of the bulker were damaged as a result of impact with ice, a fast on-site solution was needed to restore the propeller's balance with a minimal loss of efficiency. This would avoid an extended off-hire period to go to drydock.

One of the five bent propeller blades of the bulker.

Because of the severity of the bend, cropping was the only option.

One of our teams was therefore rapidly mobilized to the ship's location in Latvia. After they arrived at the vessel's location they started the operation with a detailed survey of the affected propeller blades. Because the ship could be trimmed by the bow, the entire operation could be performed above water.

The inspection revealed that three blades were bent over an angle of 90°, one blade was bent slightly less while that last one was bent even further. Cropping was unfortunately the only option.

This kind of repair is carried out with the propeller blade cutting equipment developed by our research department. The equipment is lightweight and can be mobilized together with the divers.

The team used the information acquired during the inspection to

Cropping one of the blades.

Blade before…and after cropping.

Permanent in-water rudder repairs now possible without drydocking

Hydrex has developed an entirely new method enabling permanent repairs of rudders without drydocking the ship. Permanent repairs were hitherto not possible and ships had to drydock in case a major defect was found. The newly designed equipment is light-weight and can be mobilized very rapidly in our special flight containers. Therefore this new service is now available world-wide.

Major defects on rudders very often cause unscheduled drydocking of ships. The new method designed by our technical department allows engineers, welders and inspectors to perform their tasks in dry conditions. Class approved permanent repairs on-site, without moving the ship, are now possible and commercial operations can continue. Steel repairs and replacements can be performed and pintle and bushing defects can be solved without the loss of time and money associated with drydocking.

The equipment can be mobilized within hours to any port in the world and is available for rapid mobilization from the Hydrex headquarters in Antwerp.

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One of the cropped blades after grinding the edges. This is done for maximum efficiency.

Dye check to make sure there are no cracks in the blade.

calculate and determine the ideal cutting lines. They then cropped the damaged blades and ground the edges to give them the correct shape.

When the cropping was complete, the blades were polished to make sure that any remaining loss of efficiency would be minimal.

During the operation a class surveyor was present. He gave his approval on the repair after a final inspection.

Conclusion

Damaged propeller blades will have a reduced performance and cause vibrations. The engine will have a higher workload. This results in increased fuel consumption and added stress. If straightening is not an option because the bend is too severe, the affected area of the blade will be cropped. By doing this the greatest possible efficiency is achieved for the vessel. This type of repair can be performed on-site and above or below water, allowing a ship to continue commercial operations without the need to drydock.

Contact us for more information on underwater propeller repairs. We are at your disposal 24/7. ■

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Underwater propeller cone fin installation offers immediate fuel saving

We regularly install propeller cone fins on different types of vessels. We can carry out these operations all over the world.

A direct result of this underwater operation is that an owner can instantly start benefitting from the fuel savings a propeller cone fin brings. He does not have to wait until the next scheduled drydocking for the installation.

Propeller caps like these can recover energy loss of a propeller hub vortex in the propeller's slipstream. This decreases fuel consumption from 3% up to 5% according to the manufacturers and reduces cavitation on rudders and hulls. Hydrex can install propeller cone fins underwater on any size and make of propeller, on both new build or in-service vessels.

Propeller cone fine brought into position.

Preparing a propeller cone fin for installation.

Installation afloat prevents a long wait for fuel savings

We carry out these operations following the specific procedures required by the involved OEM, adapted for an underwater installation.

After a preliminary inspection the divers remove the propeller cap and clean the flange where the device is to be installed. They then lower the propeller cone into the water and position it on the propeller. The bolts are put on the correct torque and secured. Hydrex teams can work in shifts around the clock to finish the operation as quickly as possible.

Hydrex workboat next to container vessel during propeller cone fin installation.

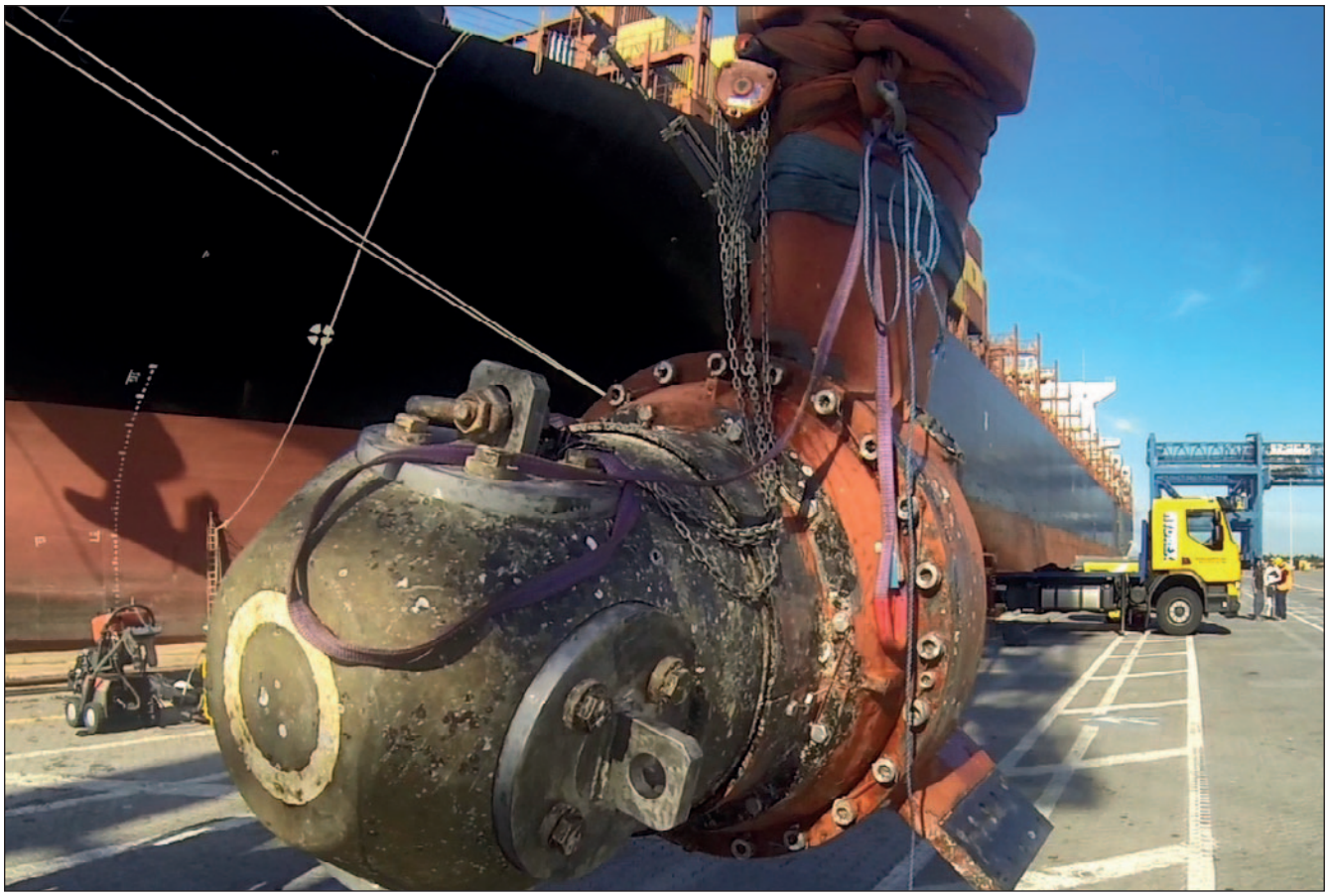
Propeller cone fine ready for installation after removal of old propeller cap.

Lowering the new propeller cone fin into the water.

The owner of the vessel can start enjoying the fuel savings the propulsion improving device creates right away. Not having to wait for the next scheduled drydocking to have the propeller cone fin installed can win him up to four years of fuel savings. In contrast, he will have earned back the cost of the underwater installation in only a few months. The savings are considerable. ■

Hydrex truck and equipment during underwater operation.

In-water bow thruster repairs



Our 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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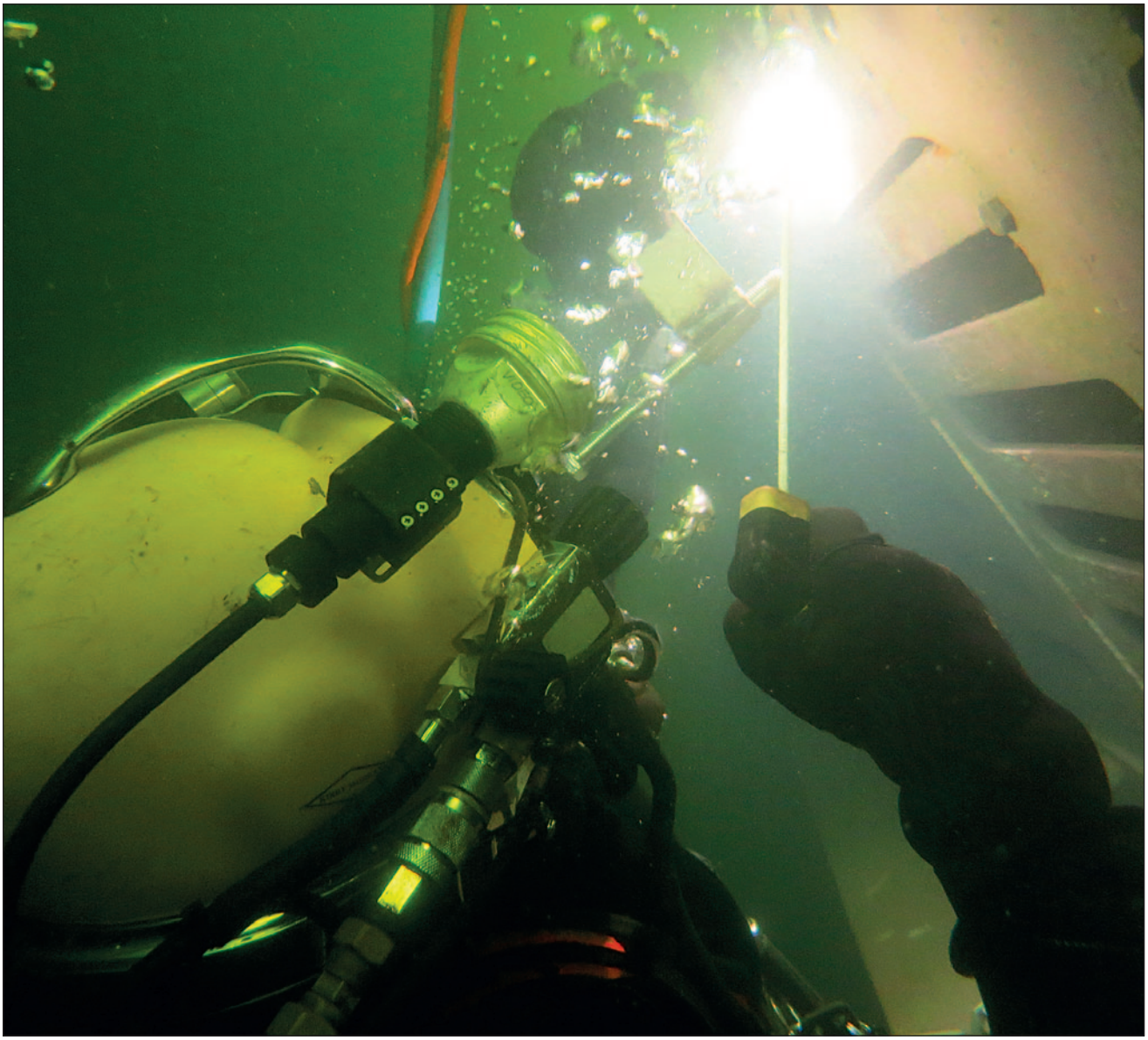

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