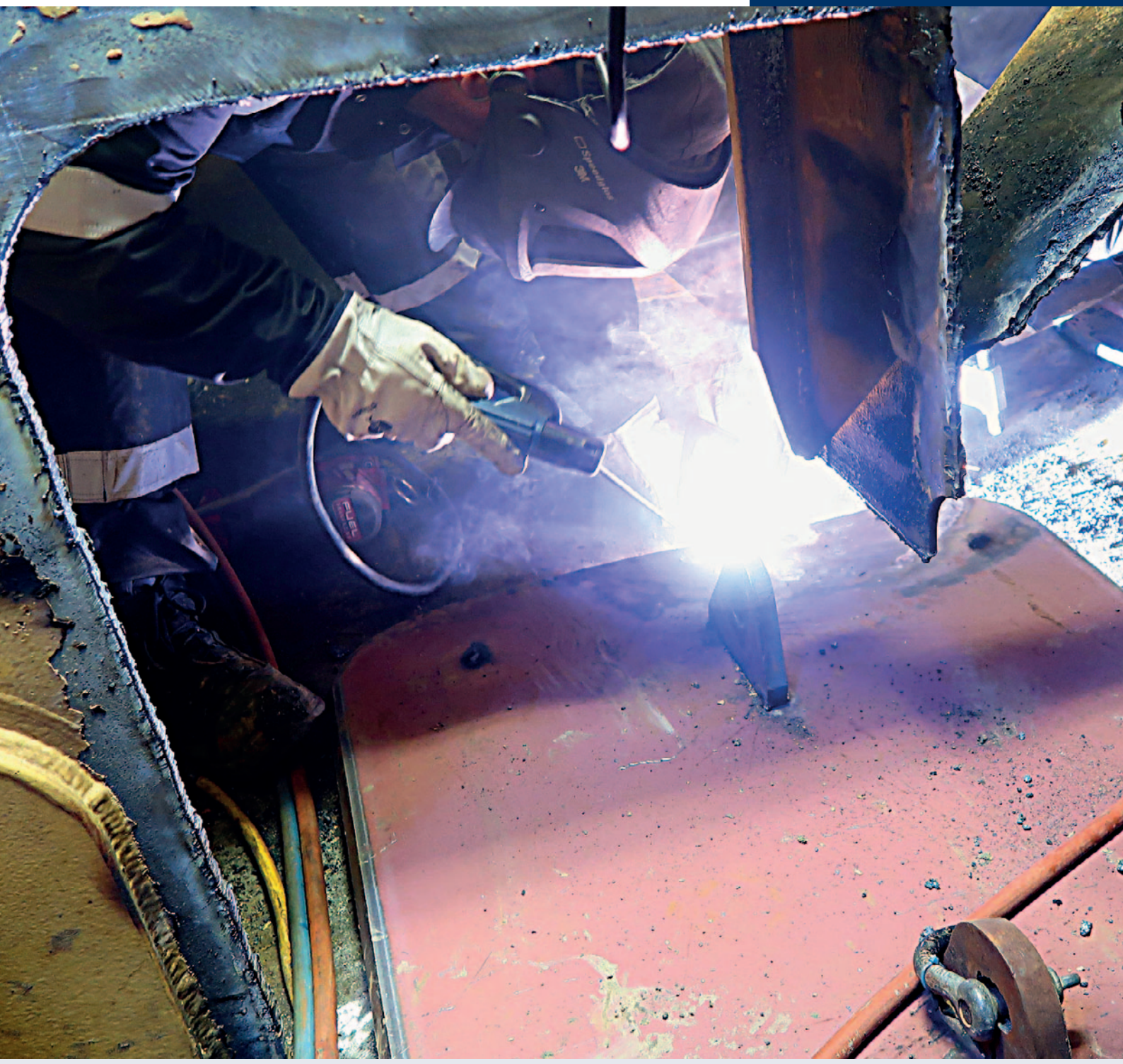
HYDREX®
UNDERWATER TECHNOLOGY

NEWS
LETTER | 314



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KEEPING SHIPS IN BUSINESS

ISO 9001 certified

Underwater services and technology approved by:

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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Permanent underwater insert repair on bulker in France

We were contacted by the owner of a 200 meter bulker which had grounded. The ship had suffered a crack in the bottom plating of one of its ballast water tanks. We were asked if we could provide an underwater solution that would keep the vessel out of drydock. A team of our diver/technicians therefore mobilized to Fos-sur-Mer, France, to perform on-site repairs.

After arriving on site, the team first performed an on-board and underwater inspection of the damaged area. This revealed a large L-shaped crack in the ballast water tank of cargo hold 2. In close communication with the superintendent of the vessel and the attending class surveyor, it was decided that a 1000 x 820 mm insert would need to be installed.

The new insert plate, and a mobdock measuring 1500 x 1300 mm were fabricated at the Hydrex headquarters in Antwerp. Because our fast-response center is fully stocked at all times, both were ready and at the ship's location very quickly.

Crack in bottom plating after grounding.

Cutting away part of the bilge hopper covering the damage.

The divers started the operation by installing the cofferdam on the waterside of the affected plating. To be able to access the crack in the ballast water tank from the inside, the team made an opening in the bilge hopper covering the crack. A frame and support brackets were also removed.

Hydrex welder securing the new insert plate.

This allowed our diver/technicians to cut away the crack and the surrounding area. The new plate was then inserted into the hull and secured using full penetration welding following our class-approved procedure.

The next step was the reinstallation of the frame and support brackets. A new insert was then positioned in the bilge hopper. This plate was welded following the same class-approved procedure.

An independent NDT inspector approved the insert repair and the classification surveyor who was present during the operation gave it a green light.

Conclusion

We offer class-approved permanent repairs for this type of damage. These combine underwater cofferdam installation and inside dry welding. We have a wide range of cofferdams at our disposal as well as certified plating which we can mobilize immediately to any location.

All our welders are certified for class-approved welding.

Insert measuring 1000 x 820 mm ready for full penetration weld.

Both parts of such an operation are performed by the same team of in-house trained diver/welders working to the highest quality standards. In most cases normal commercial activities can continue without disruption.

If you have any questions regarding a possible hull repair, do not hesitate to contact us. We are at your disposal 24/7 and ready to mobilize at very short notice. ■

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Welding seams on the new insert.

Independent non-destructive testing (NDT).

Completed insert repair with frames, brackets and split hopper plate repositioned.

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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Emergency repair in Dubai keeps vessel on long drydock interval

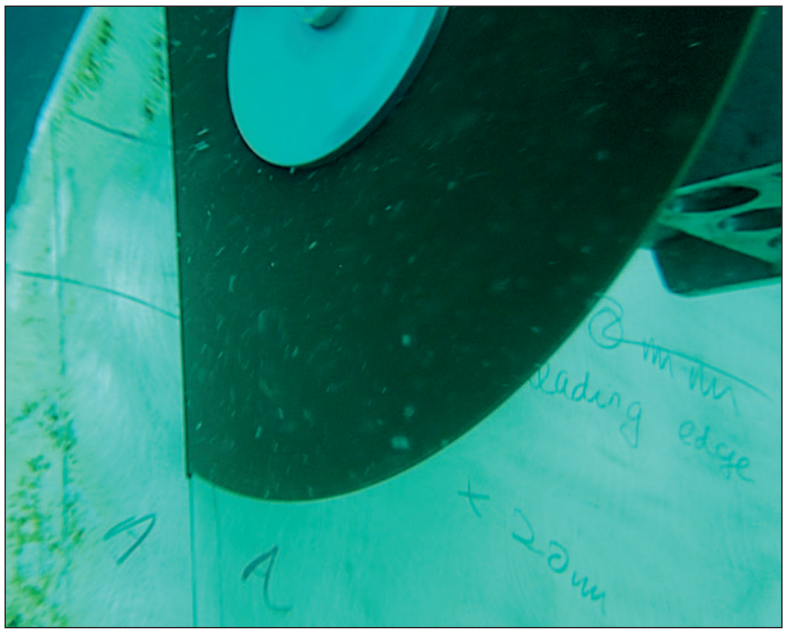
A 184-meter, 50.885 DWT chemical tanker had hit a buoy. A full underwater inspection and repair was needed. The vessel was only launched a year earlier and was on a long drydock interval. Coming in for repairs now would have been a financial disaster for the owner. We therefore immediately mobilized an emergency team to Dubai to perform the inspection and any required follow up repair afloat.

Workboat with equipment in Dubai.

After the equipment arrived at the vessel's location the team started the operation with a detailed survey of the underwater ship. Fortunately this revealed that only a single blade of the propeller had been damaged. Because the damage to the blade was minimal only a small part of the blade needed to be cropped.

The team used the information acquired during the inspection to calculate and determine the correct measurements needed to modify the tip of the propeller blade. The repair proposal was then discussed with the class and the owner. After it was approved, the divers cropped the blade and ground its edge to give it the correct radius and shape. Some small nicks and cracks along the trailing edge were also repaired.

One of the blades was damaged by a buoy.



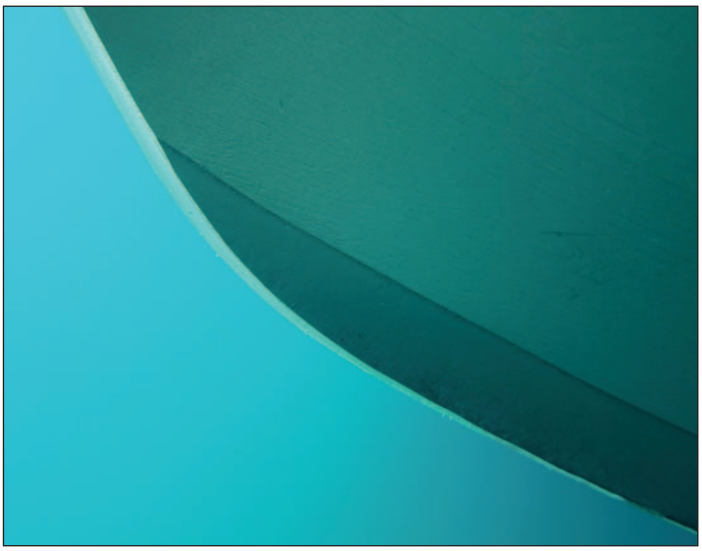
Cropping the blade.

Smoothing the edge of the cropped area.

One of the repaired nicks along the trailing edge.

When the cropping was complete, the Hydrex technicians polished the blade to make sure that any remaining loss of efficiency would be minimal. No rebalancing of the propeller would be needed in this case as the part of the blade that was removed was within the acceptable range.

The operation took less than a day. Thanks to the emergency repair the ship could keep its schedule instead of having to go off-hire. No further actions will be needed until the vessel docks in four years. ■



The edge of the cropped and ground blade.

Hydrex custom solutions

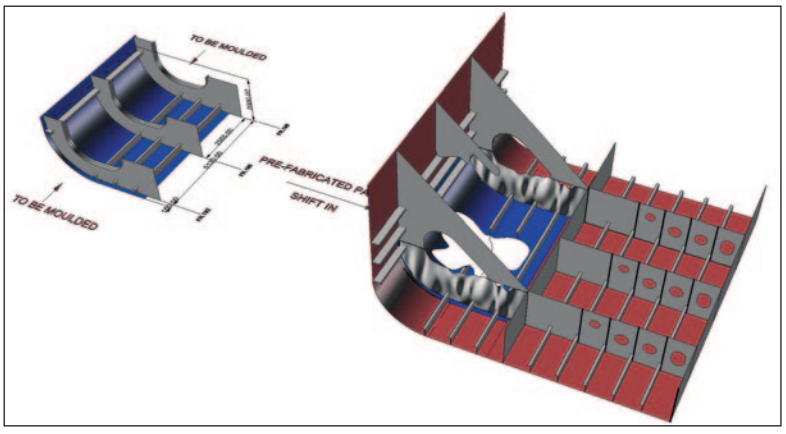
There is a little-known service Hydrex offers shipowners, ship operators, technical departments, ship superintendents and others who have a need for underwater repair and maintenance: custom solutions to vexing problems. The only trouble is that people often don't come to us for these solutions because it never occurred to them that an out of drydock solution was possible.

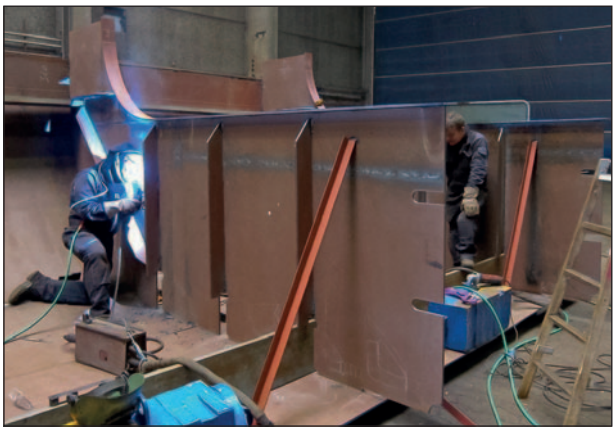
Hydrex certified technician during a complex underwater operation in Greece.

Hydrex offers custom solutions which require know-how, experience, engineering skill, R & D and a certainty of what can and what cannot be done with or to a ship out of drydock. Think of Hydrex as an underwater technology company, not a diving company. Although we certainly know how to dive! We also do customized solutions for ships and underwater structures.

Here are some examples:

- One OEM delivered some ships with the wrong spinner cone bolts. These then had to be replaced under warranty but this could only be done in a dry environment. Drydock right? Wrong. Hydrex developed a cofferdam based solution which made it possible to replace the cone bolts without the huge extra expense and hassle of drydocking the ships. Once developed for one ship, the same system could be used on others which had the same problem.
- A ship builder delivered a new vessel to a navy but found during an inspection that there was a possible problem with the propeller blades. The ship was under warranty. The manufacturer needed to do a dry inspection, preferably without going to drydock. Hydrex designed and engineered a dry underwater repair technique which permitted the inspection to be done.





A custom solution was designed in cooperation with naval architects to perform the replacement of an entire section of an underwater hull.

A special cofferdam was constructed to replace spinner cone bolts without going to drydock.

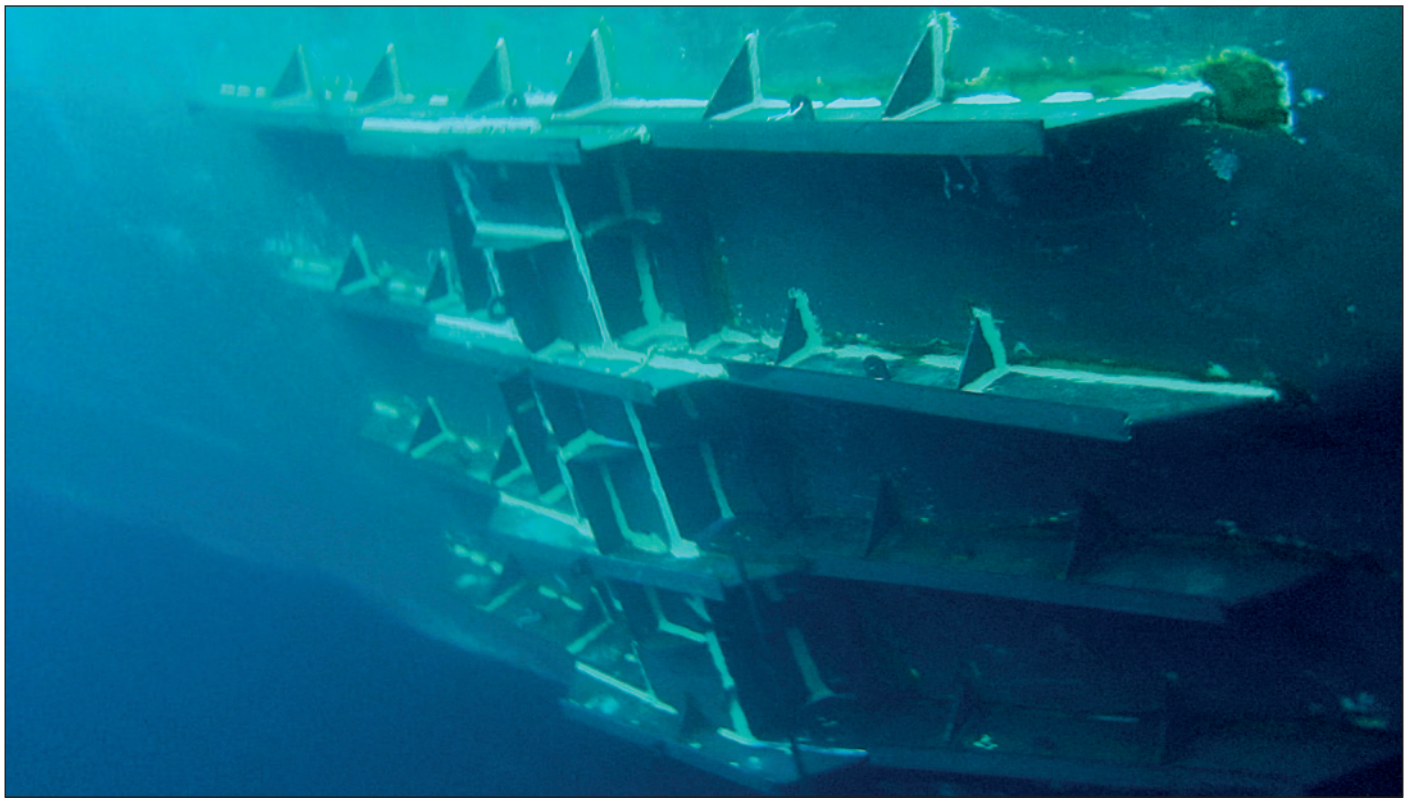
- A ship was grounded with major damage which made it look like it would have to go into drydock locally in the Persian Gulf. Hydrex worked with naval architects and in-house engineering to come up with a solution which would repair the damage and provide enough strength for the ship to sail on to its Chinese destination where it was due to drydock. This was done and saved enormous expense and delay.

There are many, many more examples. In some cases a problem with a specific vessel, once solved, opens the door to remedying the situation in a whole fleet or at least a number of vessels. In all cases the solution found requires knowledgeable engineering and advanced underwater technology and techniques which only a very few companies can deliver. Hydrex is at the fore-front of such solutions.

So, where is this leading? If you have a problem with a ship or a fleet, or any underwater structure for that matter, which you are not sure can be solved out of drydock, give us a call. We will evaluate the problem and let you know whether an underwater solution is feasible and, if it is, how much it would cost and how rapidly it can be carried out.

You'd be amazed at what can be solved without the need for drydocking.

If you have any problem with your ship or fleet that you feel might be resolved with a custom solution without drydocking, our Technical Department would be happy to discuss it with you and let you know if we can help with it. ■



Even for very severe grounding damage Hydrex can create a tailor-made solution for you.

Stern tube seal repairs

Using 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.

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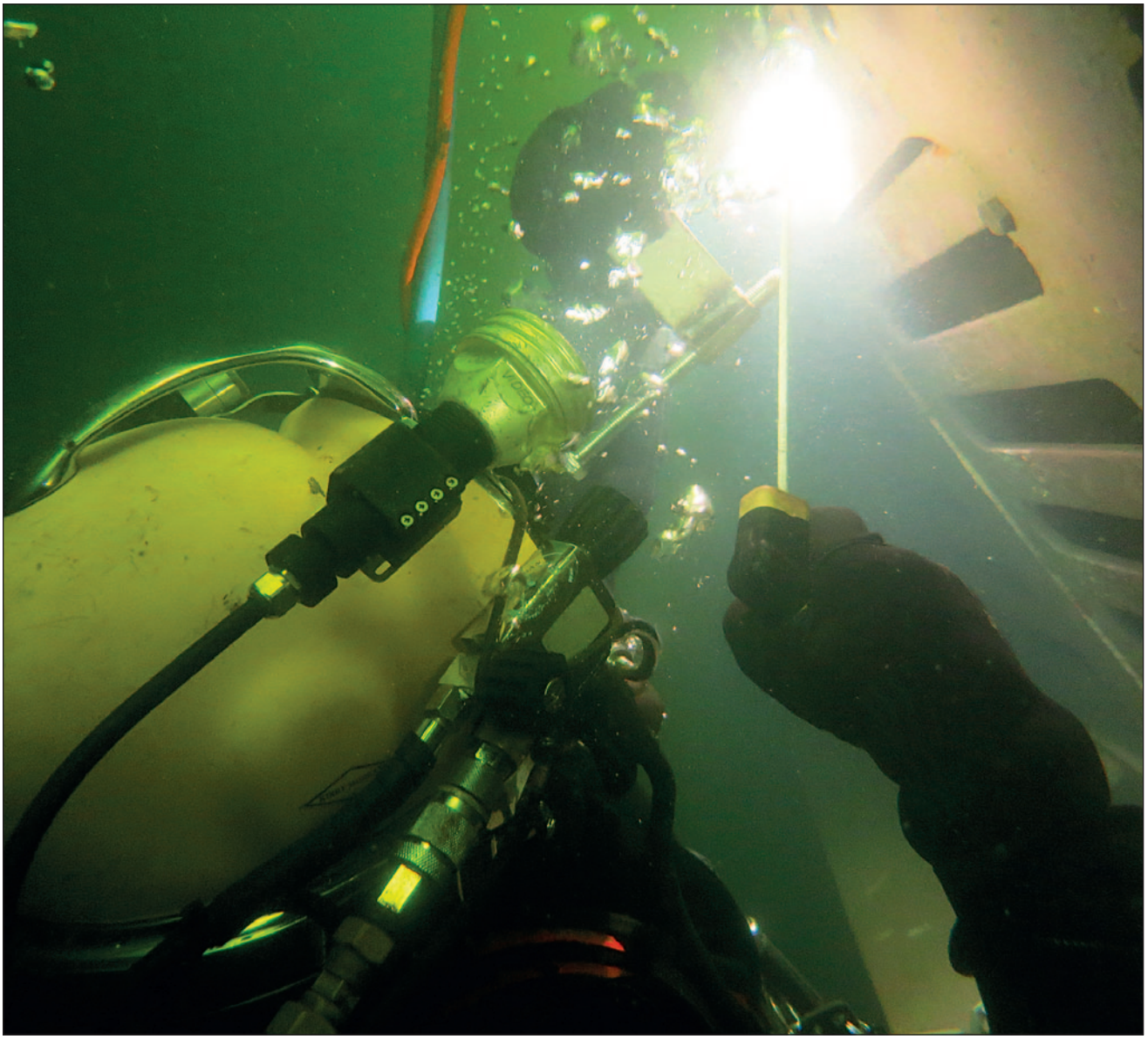

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