HYDREX®

UNDERWATER TECHNOLOGY

NEWS

LETTER | 262

Underwater bow thruster removal adapted to the vessel's schedule **3**

Hydrex performs propeller repairs around the world as winter arrives **7**

Contents

Page 3 - 6

Underwater bow thruster removal adapted to the vessel's schedule

Page 7 - 10

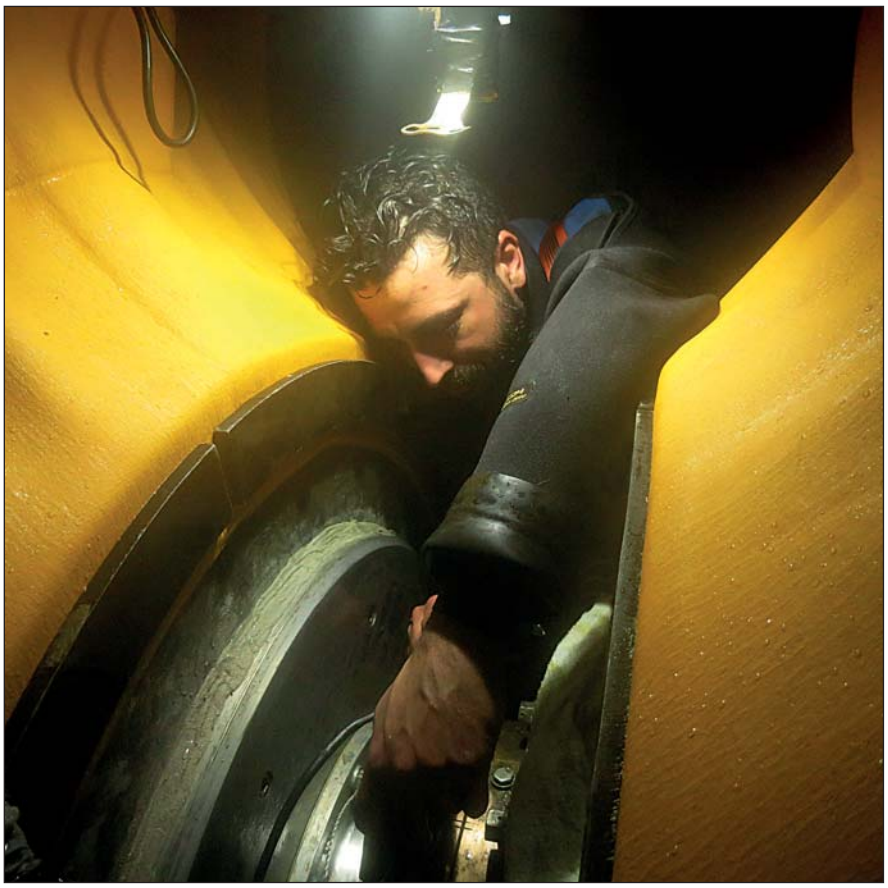
Hydrex performs propeller repairs around the world as winter arrives

KEEPING SHIPS IN BUSINESS

ISO 9001 certified

Underwater services and technology approved by:

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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Underwater bow thruster removal adapted to the vessel's schedule

Last month one of our teams removed a bow thruster from a 300-meter container ship. This was done during a stop in Italy. The unit needed to be overhauled and the operation had to be carried out within a very short window that would fit the tight schedule available to the vessel's charterer.

Hydrex truck and equipment next to container vessel.

Together with all the necessary equipment, our team mobilized from the Antwerp fast response center to the vessel's location. After they set up a monitoring station, the divers started the operation with a detailed inspection of the bow thruster unit and tunnel.

The diver/technicians then detached the blades one by one. In the meantime, initial preparations were made in the bow thruster engine room for the removal of the unit so that there would be no ingress of water once it was taken out.

The next step was to secure the gearbox with hoisting equipment. The team then disconnected the unit from the bow thruster engine room and lowered it onto a cradle. This

Our team flew in to perform a fast underwater thruster removal in Italy.

Hydrex underwater 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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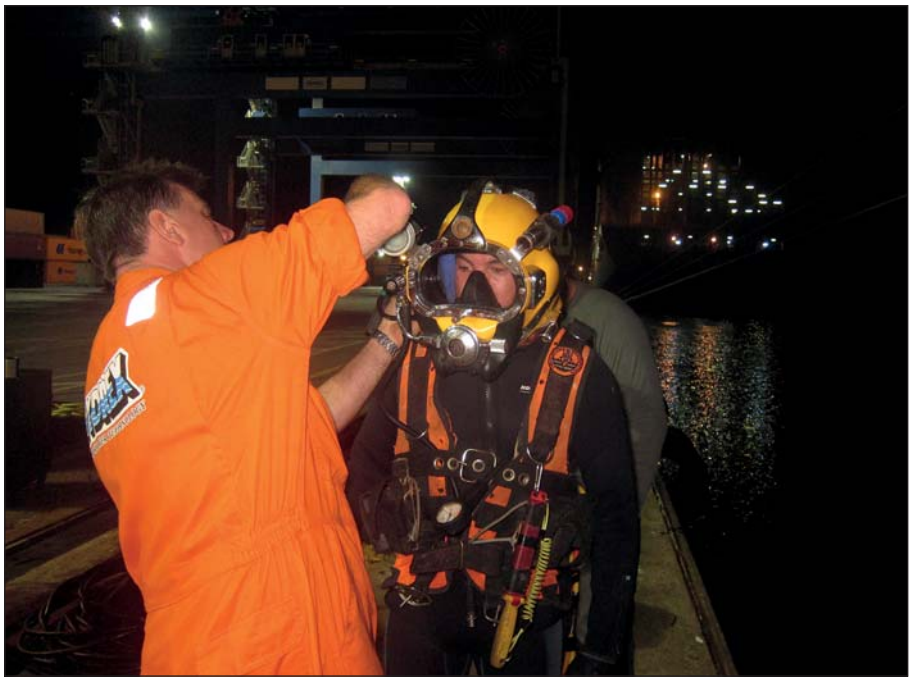
Preparing the bow thruster room for the removal of the unit.



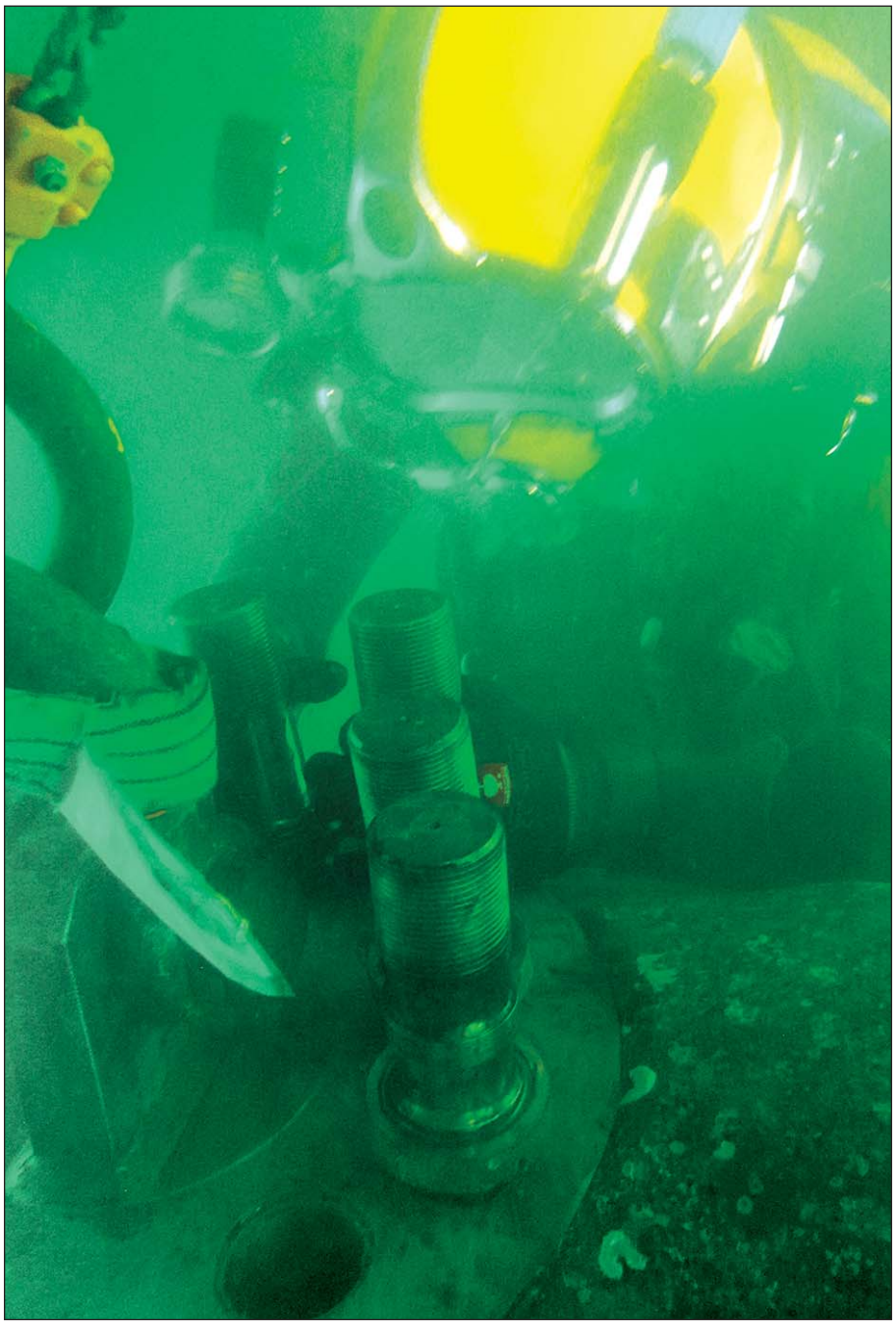
One of our divers getting ready during the night shift.

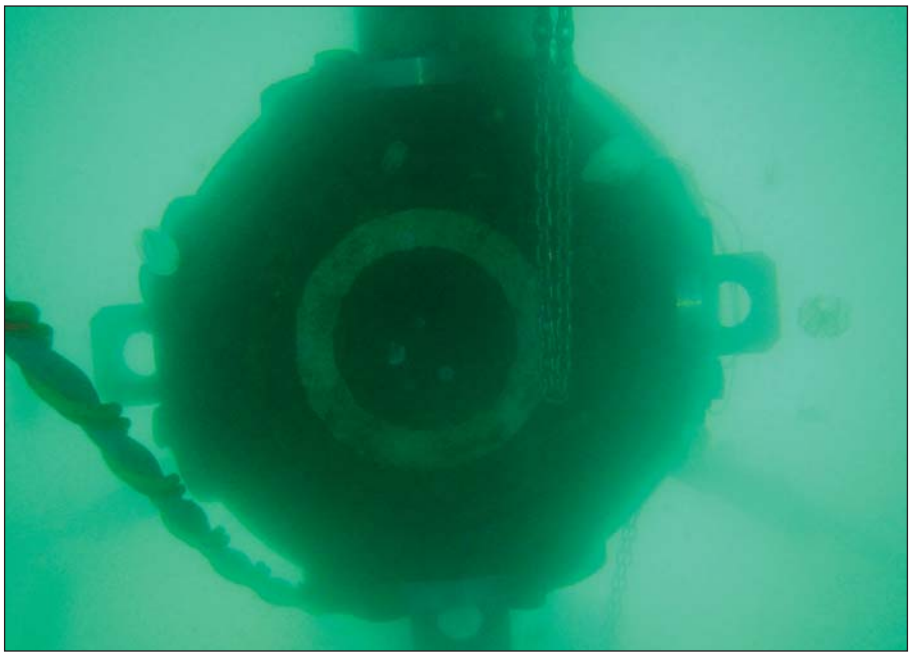
cradle was designed especially for such thruster operations.

Simultaneously the team sealed off the tunnel from the bow thruster room. Once the unit was lifted onto the quay, it was prepared for transport to the workshop.

Performing a job like this on a tight schedule takes a lot of planning. This can only be done successfully by staff who have familiarity with such operations and have the relevant know-how and equipment.

Off-hire time causes a substantial loss of money. The teams therefore worked in shifts to perform the bow thruster removal within the shortest possible time frame. This saved the owner the time and money which going to drydock would have entailed.





The bow thruster was prepared for removal by our divers.

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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Fulfilling the needs of all parties involved

By performing the operation on-site and underwater our divers made it possible for the owner to keep the vessel out of drydock.

The Hydrex team worked in shifts around the clock. They finished the job well within the available time frame. This allowed the ship to sail perfectly on schedule, which was a key benefit for the charterer. ■

One of our divers guiding the unit to the surface.

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

You can contact us at:
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or at
+ 32 3 213 53 00

Bow thruster being brought to the shore.

The unit after the removal, ready to be overhauled.

Hydrex performs propeller repairs around the world as winter arrives

Our teams regularly carry out cold straightenings, croppings and other propeller blade modifications on vessels around the world.

Returning bent blades to their original form

For instance, we sent a team to Taranto, Italy, to inspect a 27,500dwt general cargo ship. Its engineers had reported excessive vibration from its five blade, 5m diameter propeller as the vessel returned from operations. The cause of the vibration was two bent propeller blades.

We deployed our in-house developed cold straightening equipment and a dive team to repair the blades. This was done without disruption to cargo operations and the vessel's ongoing schedule.

After correctly positioning the cold straightening press over the propeller blades, they were bent back into shape. While our divers were repairing the propeller underwater, the team leader ashore monitored video links from underwater cameras on the divers' equipment. This allowed us to communicate the exact dimensions and position of the damage between the divers and the technical team supervising the operation. This is essential because the calculations need to be perfectly accurate to achieve the best results in terms of propulsion efficiency.

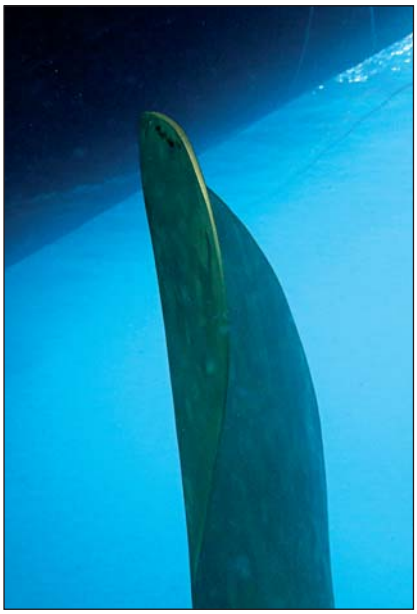
Hydrex van and equipment on the road to Italy for a propeller straightening.

No sooner had the propeller been repaired or the dive team and cold straightener deployed to Togo, West Africa, to carry out a similar operation on a tanker whose propeller was vibrating due to a bent blade.

Cropping severely damaged blades

These two call outs involved the repair of bent propeller blades. If straightening however is not an

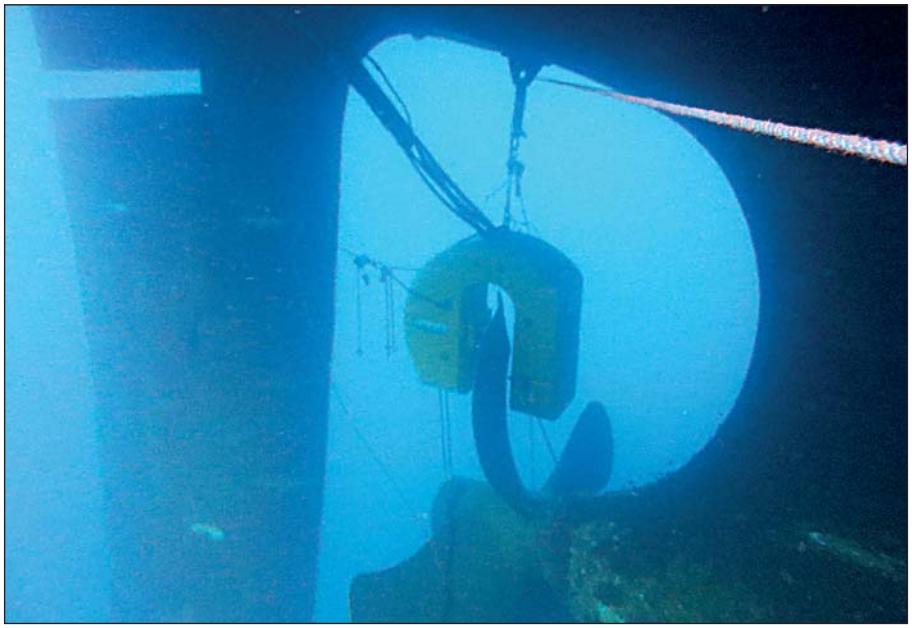
Hydrex team members setting up equipment next to general cargo vessel in Taranto.



One of the bent propeller blades of a tanker berthed in Togo.

The bent blades were restored underwater with our cold-straightening machine.

Workboat with divers and equipment next to tanker in Togo.



Cold-straightening equipment positioned over bent blade.

option, the damaged area of the blade can be cropped and grinded to restore hydrodynamic balance.

This was done during an emergency operation on a tanker berthed in Antwerp. A doubler plate installed on the inside of the propeller nozzle had partially detached itself and had severely damaged the four blades. First a detailed underwater inspection was carried out by our divers to assess the extent of the damage and to calculate the ideal cutting line. The doubler plate was then removed to prevent it from causing further damage. Next the four blades were cut underwater, grinded and polished using our patented blade repair tool.

If five-bladed propellers are damaged, the repair is more complex as extensive calculations have to be made to take the right amount off each blade to restore balance and prevent vibration.

An operation of this kind was carried out by one of our teams on a 184-meter container vessel in Singapore. Balance was restored to the propeller after all five damaged blades had been cropped.

The bent blades of the tanker were restored to their original form.

Detached stainless steel belt that damaged the propeller blades of a tanker.

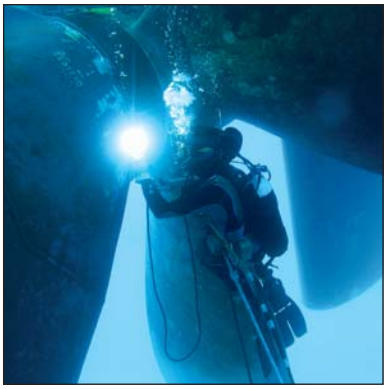
Polished blade of tanker after cropping in Antwerp.

The five equally cropped blade pieces of container vessel in Singapore.

The edges of the cropped blades were polished to optimize efficiency.

Nicked propeller blade of tanker in Tenerife.

Hydrex US ready to mobilize immediately



Hydrex has an office located in Clearwater in the Tampa Bay area that is ready to mobilize immediately. The office has a fast response center that is equipped with an extensive range of state of the art logistics, trucks, tools and diving support equipment. This enables Hydrex US to efficiently service vessels and offshore units calling on ports in Canada, North, Central and South America as well as the Caribbean.

All staff members of the Hydrex office in Clearwater undergo stringent training at the Hydrex headquarters in Antwerp. They can carry out both simple and complex high quality jobs even in the harshest of circumstances.

Repairs to thrusters, propellers, rudders, stern tube seals, damaged or corroded hulls and all other underwater repair as well as maintenance services are done while the vessel is afloat. This eliminates the need to drydock.

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The cracks and nicks were grinded out and the edges polished.

We often encounter blades that have been severely damaged, chipped or almost completely broken off during ice navigation. In most instances, they can still be repaired on-site by grinding and cropping the blades.

Wide range of propeller modifications

Luckily, the damage to the propeller blades is not always so extensive and a less comprehensive repair is required, as was the case for a 183-meter tanker in Tenerife.

An underwater inspection revealed that two of its propeller blades had suffered smaller cracks and dents along their trailing edges. Because the damage to the blades was limited, the ship experienced no vibrations and only a small loss of performance. Our divers therefore grinded away the cracks and polished the edges of the blades. This gave the propeller back its original efficiency and prevented further cracking.

Our teams can also provide prescriptive propeller maintenance. When a container ship suffered propeller damage after a particularly severe winter, the owner wanted to find a way of preventing ice-damage to propellers on other vessels in the fleet.

We strengthened the blades with modifications based on a specific design developed in cooperation with the original equipment manufacturer. The strengthening made them significantly less susceptible to ice-impact and debris, without decreasing the propellers' performance.

Conclusion

Over forty years of experience with propeller repairs have given us the tools and know how to offer fast repair and modification services to vessels around the world. All types of operations can be carried out fast, fluently and efficiently and this afloat and underwater.

Please contact us if you need more information on propeller or other underwater operations. We are ready to assist you 24/7. ■

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Underwater scrubber sea chest installation

On-site scrubber system installation

Our wide range of maintenance and repair services includes the installation of additional sea chests required for the intakes and outlets of scrubber systems. These afloat installations are performed by installing a cofferdam on the hull.

We can help you when going to drydock is not an option, if the scrubber equipment is not available yet during docking or if the scrubber system needs to be installed before the next scheduled docking. We are able to carry out the installation of sea chests while your vessel stays afloat and in most cases during cargo operations.

If you would like to discuss this possibility of in-water scrubber system installation, please contact us at +32 3 213 53 00 or hydrex@hydrex.be

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Always on time

Hydrex offers turnkey underwater repair solutions to shipowners wherever and whenever they are needed. Hydrex's multidisciplinary team will help you find the best solution for any problem encountered with your ship below the water line. We will immediately mobilize our diver/technicians to carry out necessary repair work without the need to drydock.

Hydrex performs complex permanent underwater repairs to thrusters, propellers, rudders, stern tube seals and damaged or corroded hulls. By creating drydock-like conditions around the affected area we can carry out these operations in port or at anchor.

All the projects we undertake are engineered and carried out in close cooperation with the customer and any third party suppliers, relieving the customer of all the hassle of coordination, planning and supervision.

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