

# Extensive damage repairs to container ship in extreme conditions in Boston in 2001

**L**ike the previous months, we are revisiting a key operation from Hydrex' rich past. We do this by republishing an article from our vault. These jobs have one thing in common: they showcase how we have always found ways to help our customers, even when an on-site solution seemed impossible at first.

This time we go back to the Winter of 2001. When a container ship ran aground in Boston it suffered a large number of tears to her flat bottom. The owners wanted the vessel back in Europe to do the repairs – but how to sail it safely across the Atlantic?

Hydrex came to the rescue. We sent an 8-man team to Boston to carry out major underwater engineering work. Our R&D department designed unique patches. These were then manufactured and made ready to be welded underwater to the flat bottom . This was done while blizzards and freezing weather conditions did their best to hamper the operation. Needless to say, our men were not fazed and successfully completed the repair. ■



*This article was first published in 2001.*

## Breaking new boundaries: finding solutions to problems

**I**n Boston, USA, a 269-meter container ship had an unfortunate run-in with some rocks and ended up with large damage to her flat bottom.

This of course created a major problem for the ship owner. What temporary solution could be provided

that would allow the ship to get across the Atlantic safely to their home repair base in Antwerp where they wanted the permanent repairs to be done?

Hydrex was called in to work on the problem and propose solutions for this major repair. Our technical team got together to assess the damage

and the extent of repair work that would be needed. We then worked out ways and means in which it could be done. Repair proposals and procedures were drawn up in order to obtain approvals from the classification society as well as the coast guard.

These were sent on to the ship managers. While



*Lifting one of the large plates.*

there was some trepidation about whether such work could be completed by anyone, they were finally convinced that Hydrex 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 and equipment. Just to challenge our team further, there were blizzards and freezing weather conditions.

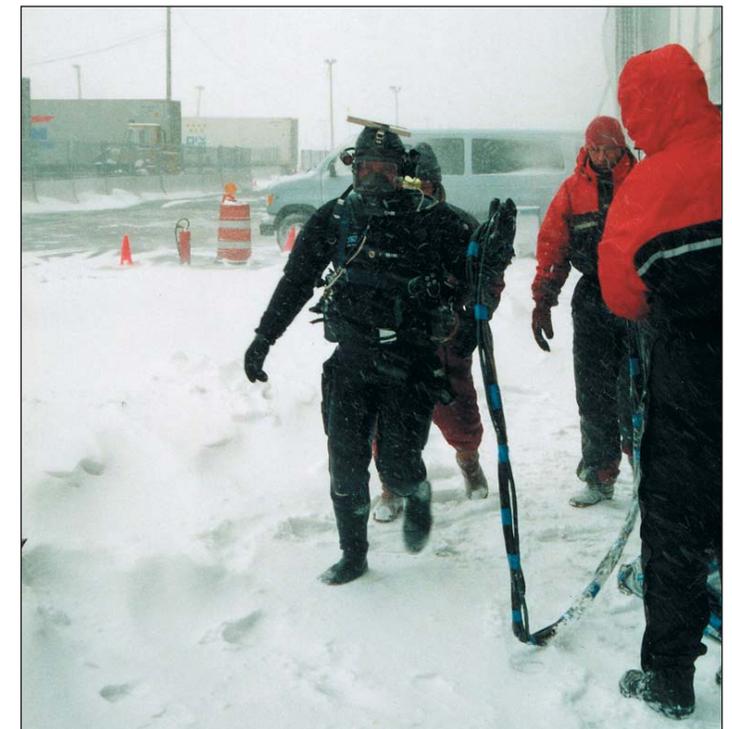
The work required 5 different patches to be welded to the flat bottom. The biggest one was 14.5 meters long by 1.3 meters wide and weighed around 2 tons. To get this one into position heavy-duty rigging equipment was necessary and an expert procedure needed to be worked out so that the

plates could be placed in a safe and secure way under the ship. The technical work of how to securely attach these to the ship had been worked out in advance. 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 been testing and utilizing around the world for a long time.

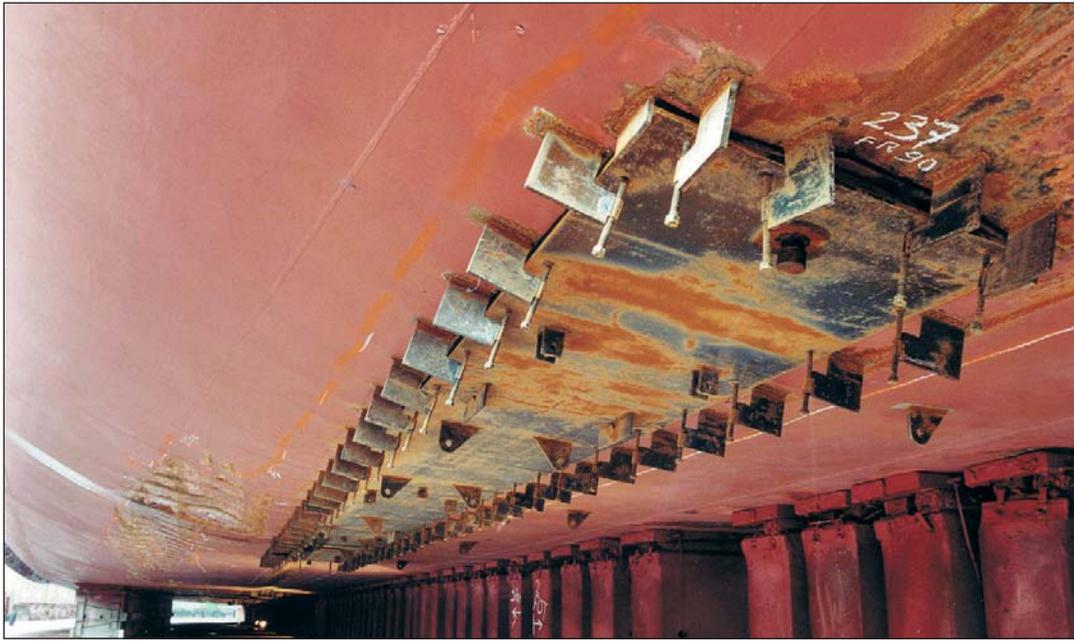
To get all the plates securely attached it was estimated that a total of 2 kilometers of underwater



*Lifting one of the large plates.*



*There were blizzard conditions during the entire operation.*



*One of the patches seen in drydock after crossing the Atlantic Ocean.*



*Technical precision was needed to coordinate the placement of the patches.*



*Our divers worked at very low temperatures.*



*One of the larger doubler plates.*

weld seams were done by our divers, all of which are qualified and certified underwater welders. These welds were all above head welds as they were made on the flat bottom.

The plates themselves, while 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 bottom, thus ensuring a better contact.

Due to the extent of the damage, requirements for repairs set by class and coastguard were unusually high. After the operation they did not only give authorization for the ship to sail back to Europe but also allowed it to be loaded up again making it possible to take container cargo back to Europe.

Under the circumstances this was an added bonus. It made the return journey at least pay its way. In one of the biggest jobs of this kind ever carried out underwater it was shown that a well-trained underwater welder team can safely and reliably carry out major jobs. In this case we provided the ship owner with a real solution. ■