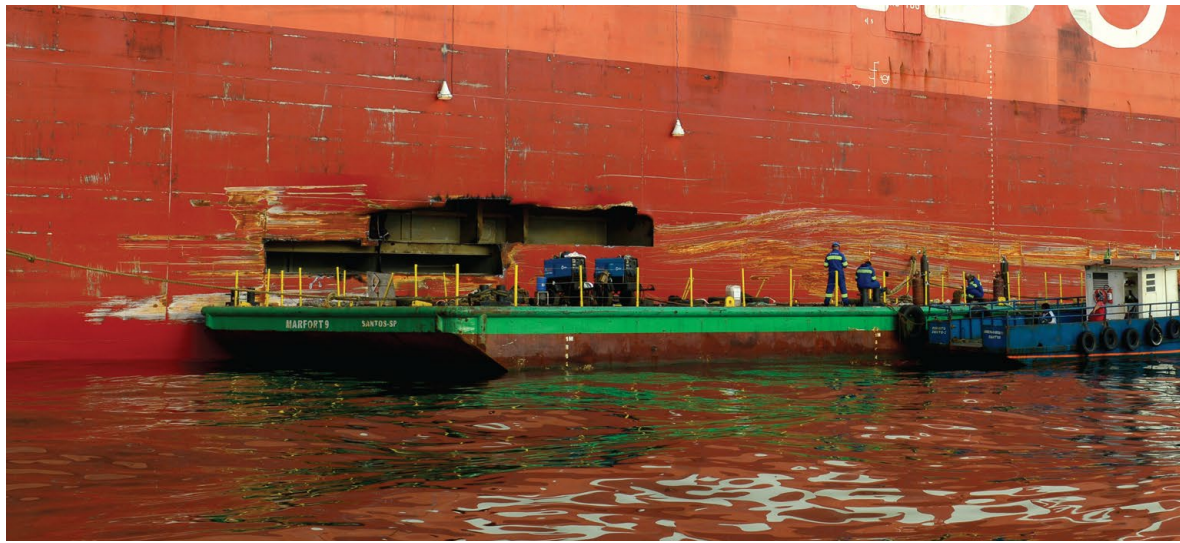


STRUCTURAL REPAIRS ON A LARGE CONTAINER VESSEL



THE CLIENT

A large container vessel certified by the American Bureau of Shipping (ABS). The unit reported significant damage (a collision with a ferry terminal), that directly impacted its structural integrity and operational capacity, requiring urgent repairs to meet class requirements and ensure safety.

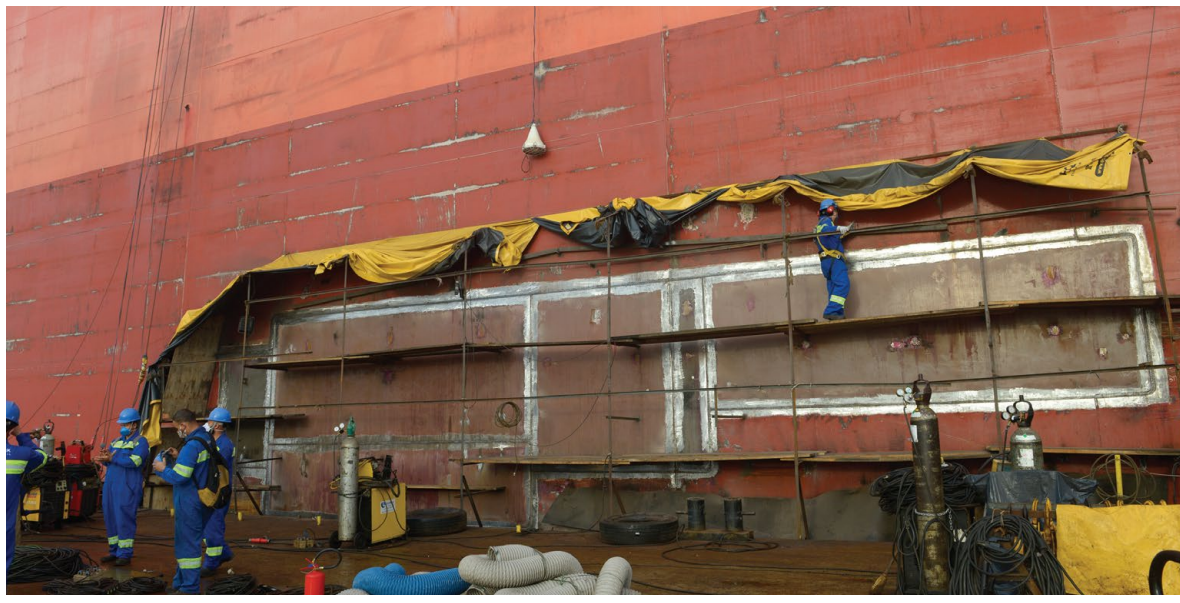
THE SITUATION

The client identified severe damages in two critical areas of the vessel:

- **Engine room void:** Structures between frames 30 and 47 showed twisted and damaged hull plates, including stringers and structural frames.
- **Ballast tank #4:** Between frames 79 and 83, the hull plates and internal reinforcements were also significantly compromised.

Additional challenges:

- The repair had to be carried out while the vessel remained docked at the Port of Santos (São Paulo, Brazil), with operational and environmental restrictions.
- The schedule was tight, requiring a fast completion to avoid operational delays.
- Compliance with the stringent technical and inspection requirements of the ABS at each stage.



THE SERVICE

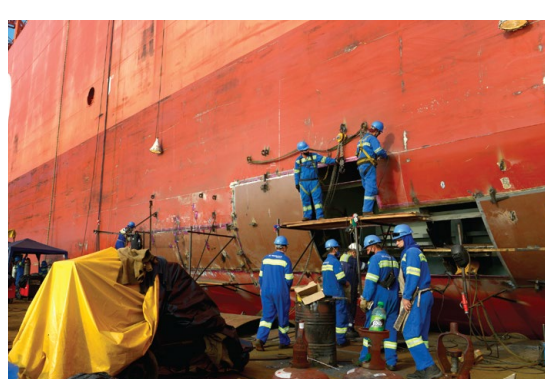
The permanent repairs involved an extensive scope of technical, environmental and quality control activities, including:

1. Planning and preparation

- Provision of high-quality materials, AH36 and DH36 steel plates with thicknesses ranging from 12 mm to 22 mm, certified according to ABS requirements. The certification was done by Metalock, with laboratory tests of chemical composition and mechanical strength.
- Mobilization of a technical team consisting of certified welders, supervisors and specialized technicians.
- Development of jigs and specific tools for molding and cutting the replaced parts.

2. Repair Execution

- **Removal of damaged areas:**
Twisted and deformed parts were cut out and replaced with new sections.
- **Edge preparation:**
Edges of the parts were shaped and prepared for welding, following the Welding Procedure Specifications (WPS).
- **Specialized welding:**
SMAW and FCAW processes were used, with high-quality electrodes and consumables. All welds were made in compliance with ASME IX and DIN EN-287-1 standards.
- **Continuous inspections:**
Ultrasonic, vacuum box and penetrant tests were conducted during and after execution to ensure structural quality.



3. Environmental and safety management

- Implementation of containment between the vessel and the barge to prevent waste from falling into the sea during cutting and welding.
- Regular inspections by port and environmental authorities to ensure operational compliance.
- Conducting safety briefings before the start of work to meet the client's and ABS's requirements.

4. Monitoring and Approval

- Active participation of the ABS class inspector to approve each repair phase before proceeding.
- Detailed documentation of the entire process, including NDT inspection results, material certificates and laboratory analyses.



THE RESULTS

Technical and operational:

- **Full Compliance:** All repairs were approved by ABS, ensuring that the vessel met technical requirements and was fit for operation.
- **Efficiency:** The repairs were completed within the stipulated 19-day timeframe, minimizing the impact on the client's operational schedule.
- **Guaranteed quality:** The use of certified materials and advanced techniques ensured the durability and safety of the repaired areas.

Environmental and safety:

- No environmental incidents were recorded during the process.
- Robust safety measures ensured that the team worked in a controlled, risk-free environment.

Financial:

- The client avoided additional costs associated with operational delays and potential progressive damage that could have occurred without the proper repairs.