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MCGS BARRACUDA
OFFSHORE PATROL VESSEL - STERN TUBE REFURBISHMENT WITH LIGNUM VITAE

PROJECT OVERVIEW

Client:	Yeoman Marine Services Pvt Ltd.
Location:	Mumbai, India
Start:	September 2025
Finished:	Mid 2026
Bearing Size:	Ø330 x 1040mm
Class of ship:	Kora-Class

Hydro Tech Inc. successfully aided with the refurbishment of the stern tube bearings on the MCGS Barracuda, delivering a focused scope aimed at improving shaft alignment and extending overall asset life.

The MCGS Barracuda is a Kora-class offshore patrol vessel operated by the Mauritius Coast Guard. Built by Garden Reach Shipbuilders & Engineers (GRSE) in India and launched in 2013, the vessel measures 74 metres, displaces 1,350 tonnes, and is designed for patrol, anti-piracy, and EEZ protection.

According to the client, persistent shaft misalignment had contributed to premature wear across all four “stern tube” bearings-an issue central to the scope we were asked to address.
Work performed included both recommendations and implementation related to optimizing bearing design to improve performance and reliability.

In addition to correct the actual shaft misalignment, Hydro Tech proposed upgrading the original synthetic material with a highly wear-resistant material called Lignum Vitae.
This material is well recognized in the Marine and Hydro Electricity Industries. The main characteristics of Lignum Vitae are its resistance to wear, low friction, self-lubricating and the important aspect of being certified as PFAS free as per ASTM D7359-23.

During the bearing analysis and study, Hydro Tech identified some specific shaft rotational speeds where the bearings were running out of hydrodynamic film boundaries. Even if this is not suitable, it is the reality that the ships must operate in these ranges and even maintain that speed for prolonged periods of time. Hydro Tech identified the main three phases of the hydro dynamic films while bearings operate and added them to the technical report shared with the ship, so the opportunity of optimizing the suitable operating condition can be considered.

Being received the approval for Product Design Assessment by ABS, Hydro Tech has:

- Designed new custom bearings for the MC Barracuda ship that should last equal duration during optimal operation, but more than twice the lifetime under unsuitable conditions (low speed, low lubricant flow), where the material properties become the most important factor.
- The assembly was completed on the field by the owner ship drydock’s contractor “Yeoman Marine Services” under the supervision of our Lignum Vitae North America partner.
- The final field machining and quality check was performed and reviewed as per QA instructions provided by Hydro Tech’s engineering.

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Through continued support, this project was executed with quality jointly monitored by our partners and Hydro Tech Inc. The vessel is now progressing through sea trials.



Figure 1: MCGS Barracuda at sea

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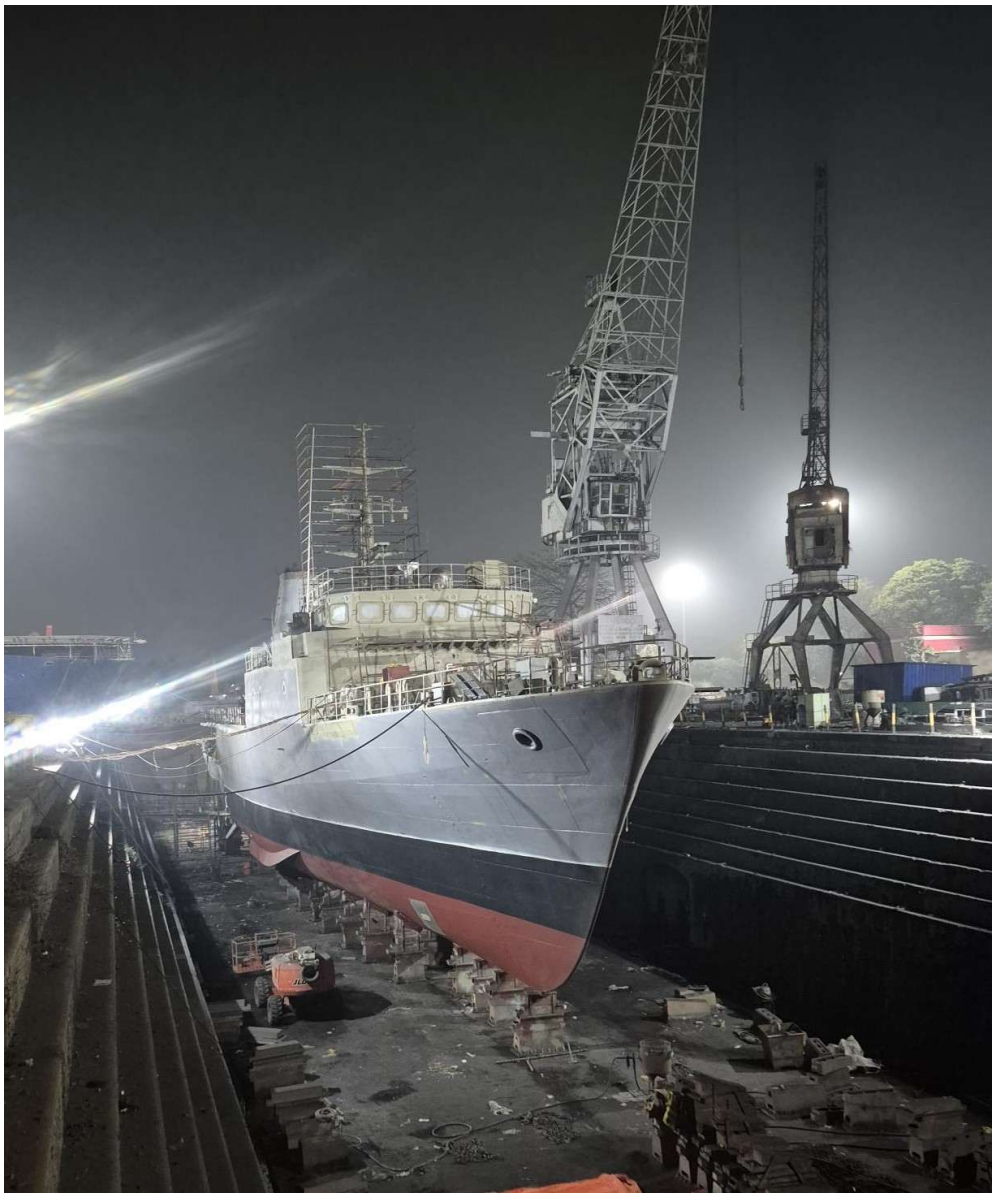

Figure 2: Drydocked MCGS Barracuda

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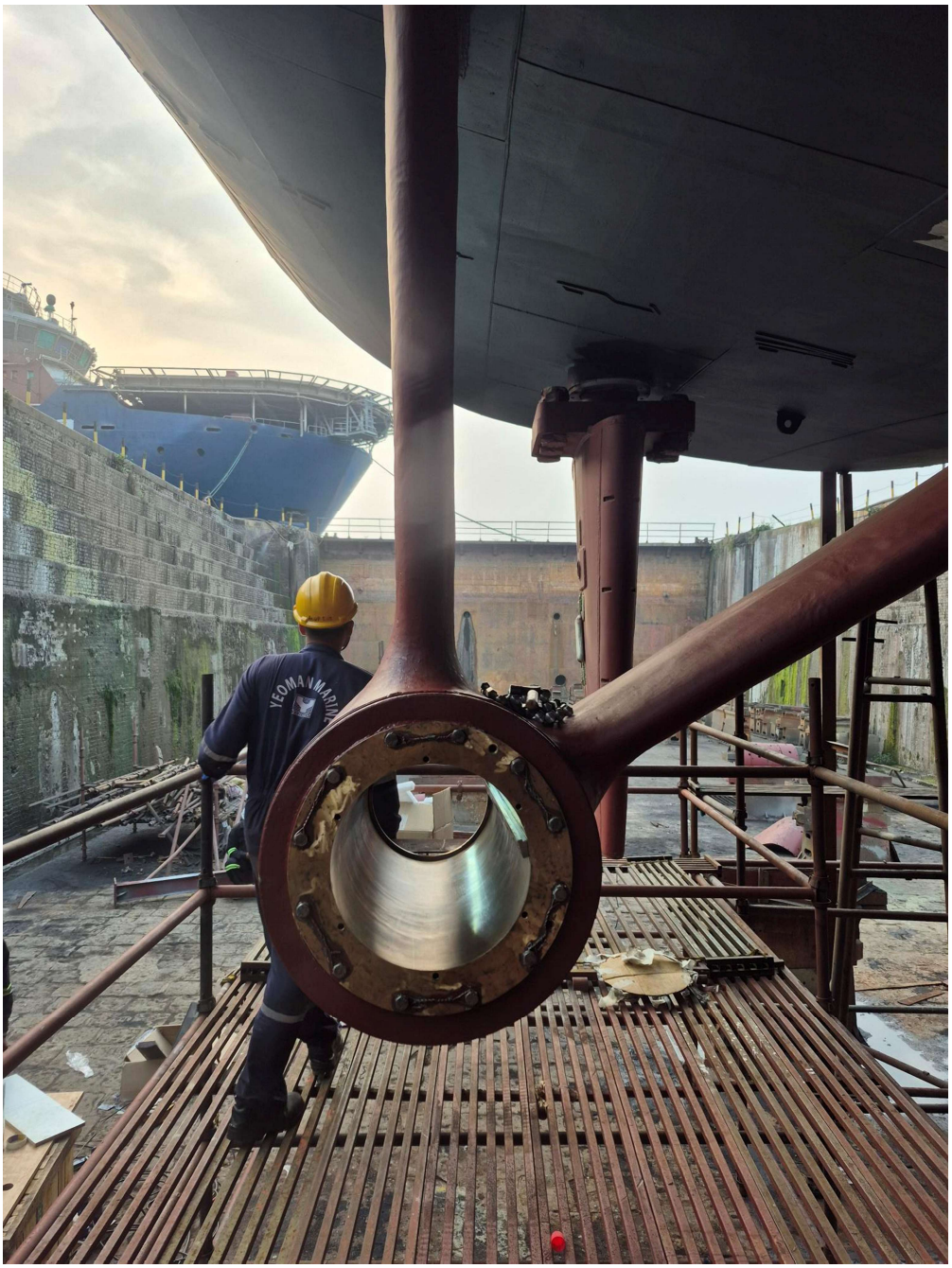

Figure 3: Stern tube, shaft and bearing removed



Figure 4: Installation of bearing material

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Figure 5: In-situ line boring

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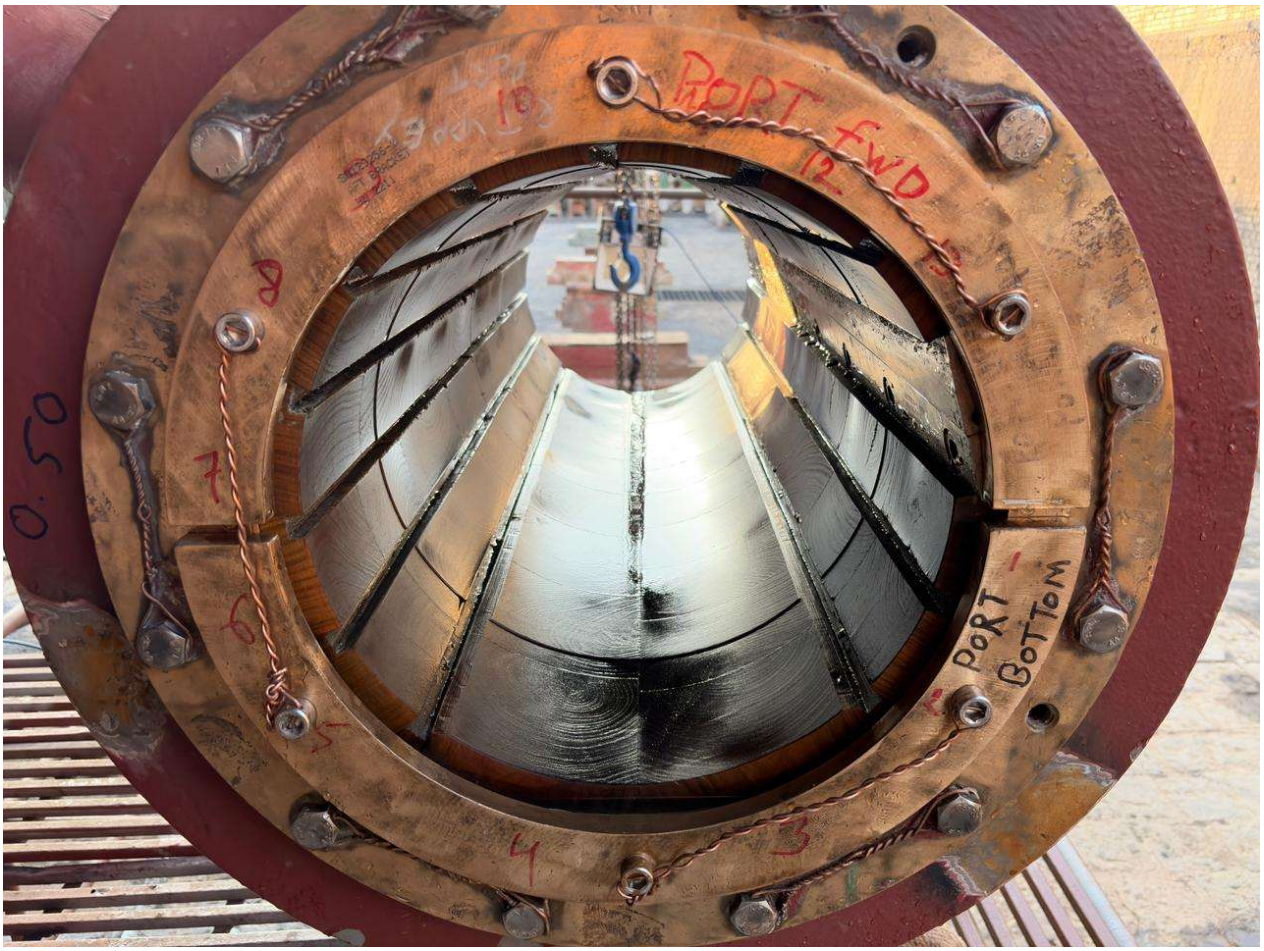

Figure 6: Final Machining of Inside Diameter of Lignum Vitae Bearing

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Hydro Tech Inc.