MS MAGAZINE

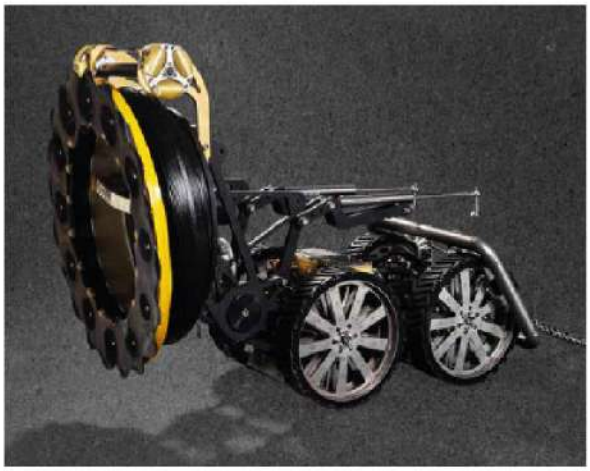
BIGGEST AFLOAT PROPULSION REPAIR EVER MADE
PAGES 4 - 7

TANK CLEANING ON A FUEL STORAGE FACILITY
PAGES 11 - 12

TALLERES KEEPS INVESTING
PAGE 15

TABLE OF CONTENTS

ROV TECHNOLOGY



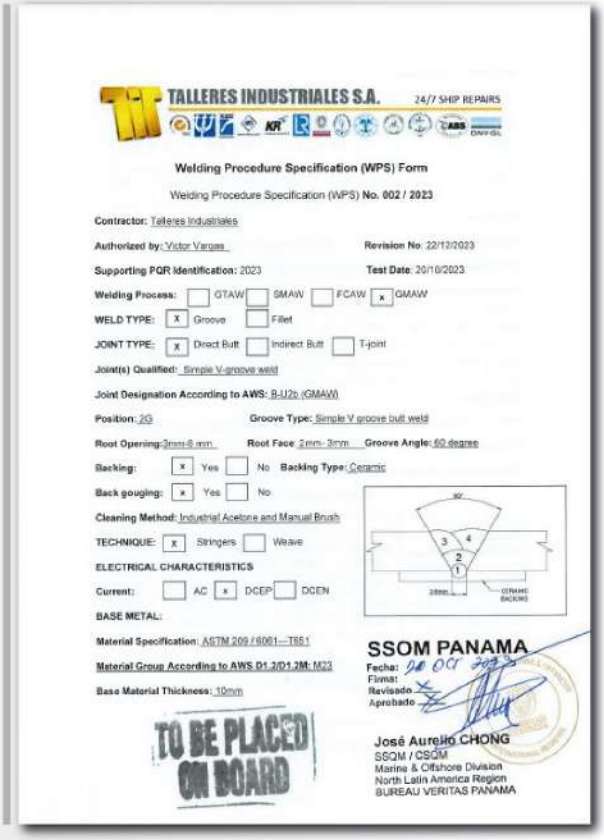
Talleres keeps investing in the latest technologies on all its departments. This time our cleaning and painting department has acquired the MagTrack ROV crawler. Below are some of the applications our new ROV will be capable of performing:

- Surface preparation
- Oil storage tank cleaning
- Industrial cleaning and washing
- Cargo hold cleaning
- Abrasive blasting
- Inspection
- Waterjet cutting

This ROV is designed to be used on flat and slightly curved steel surfaces. Depending on the application, the carrier can easily be fitted with a full range of modular tools, based on either water jetting or sandblasting. All the water jetting tools work with high pressure jets up to 3000 bar.

Talleres Industriales, S.A.
Av. Central Cl. 16, Colón, Panamá.
+(507)4339500
talleres@talleresindustriales.com

CLASS APPROVED ALUMINUM WELDING



TALLERES INDUSTRIALES S.A. 24/7 SHIP REPAIRS

Welding Procedure Specification (WPS) Form

Welding Procedure Specification (WPS) **No. 002 / 2023**

Contractor: Talleres Industriales

Authorized by: Victor Vargas **Revision No**: 22/12/2023

Supporting PQR Identification: 2023 **Test Date**: 20/10/2023

Welding Process: [ ] GTAW [ ] SMAW [ ] FCAW [x] GMAW

WELD TYPE: [x] Groove [ ] Fillet

JOINT TYPE: [x] Direct Butt [ ] Indirect Butt [ ] T-joint

Joint(s) Qualified: Simple V-groove weld

Joint Designation According to AWS: B-U2b (GMAW)

Position: 2G **Groove Type:** Simple V groove butt weld

Root Opening: 3mm-6 mm **Root Face**: 2mm- 3mm **Groove Angle:** 60 degree

Backing: [x] Yes [ ] No **Backing Type:** Ceramic

Back gouging: [x] Yes [ ] No

Cleaning Method: Industrial Acetone and Manual Brush

TECHNIQUE: [x] Stringers [ ] Weave

ELECTRICAL CHARACTERISTICS

Current: [ ] AC [x] DCEP [ ] DCEN

BASE METAL:

Material Specification: ASTM 209 / 6061—T651

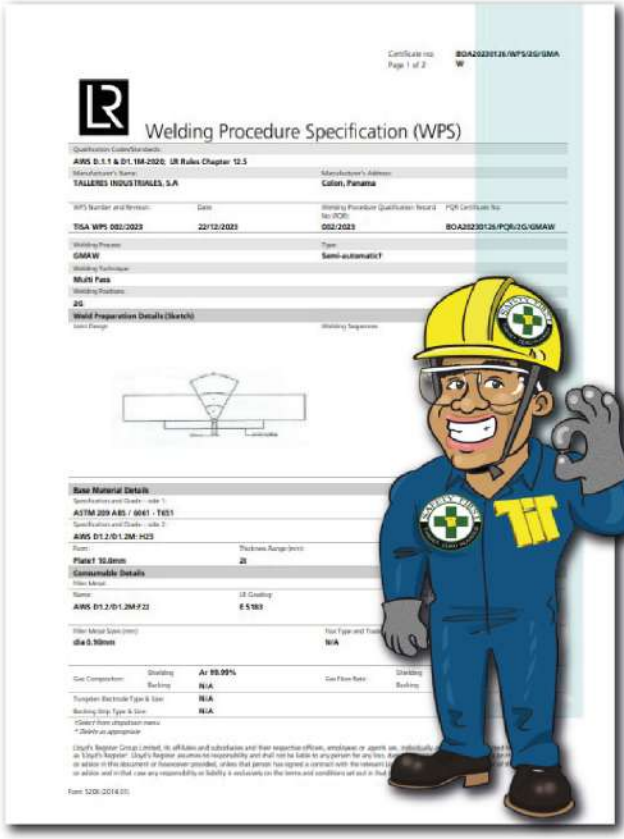
Material Group According to AWS D1.2/D1.2M: M23

Base Material Thickness: 10mm

TO BE PLACED ON BOARD

SSOM PANAMA
Fecha: 26 OCT 2023
Firma:
Revisado
Aprobado

José Aurelio CHONG
SSQM / CSQM
Marine & Offshore Division
North Latin America Region
BUREAU VERITAS PANAMA



Welding Procedure Specification (WPS)

AWS D.1.1 & D1.1M:2020; LR Rules Chapter 12.5

TALLERES INDUSTRIALES, S.A — Colon, Panama

WPS Number and Revision	Date	Welding Procedure Qualification Record No (PQR)	PQR Certificate No
TISA WPS 002/2023	22/12/2023	002/2023	BOA20230126/PQR/2G/GMAW

Welding Process: GMAW — Type: Semi-automatic?

Welding Technique: Multi Pass

Welding Positions: 2G

Weld Preparation Details (Sketch)

Joint Design — Welding Sequences

Base Material Details

ASTM 209 AIS / 6061 - T651

AWS D1.2/D1.2M: H23

Plate1 10.0mm — 25

Consumable Details

Filler Metal — Name: AWS D1.2/D1.2M:F22 — LR Grading: E 5183

Filler Metal Sizes (mm): dia 0.10mm — Flux Type and Trade Name: N/A

Gas Composition: Shielding: Ar 99.99% — Backing: N/A — Gas Flow Rate: Shielding / Backing

Tungsten Electrode Type & Size: N/A

Backing Strip Type & Size: N/A

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Form 5208-2014 (E)

Talleres has just got approval to perform permanent aluminum welding repairs and construction on any ship aluminum profiles and structures. We got our welders certified by Bureau Veritas and Lloyds on both butt and fillet welding. Now Talleres can perform class approved repairs from any of the typical and common gangway damages up to special repairs on parts and structures on the deck and the engine room structure of a vessel.

Aluminum alloys are employed in marine construction and shipbuilding due to their high strength-to-weight ratios and corrosion resistance characteristics. Talleres is always investing on procedures and certifications to assist the needs of our clients in Panama and all over the American Continent.

Please feel free to call us 24/7

BIGGEST AFLOAT PROPULSION REPAIR EVER MADE

Talleres completed a major repair on the propulsion system on a Post Panamax Crude Oil Tanker with a Deadweight of 150000 tons, a length overall (LOA) of 276.2 meters, and a width of 50.04 meters. A 42000 kg propeller had to be removed to allow the completion of a damaged propulsion system. Owners and Managers chose Panama as their preferred repair destination after the vessel suffered a tail shaft damage in the Gulf of Mexico.

Removal of Propeller

The first mission in this out-of-the-box repair which is always done at the dry dock was to trim the vessel with a Talleres pumping system and prepare the aft area for work.

Our team approached the vessel with a supply boat and barge loaded with equipment and installed a pair of 50-ton pneumatic chain hoists required to handle the 42-ton propeller.

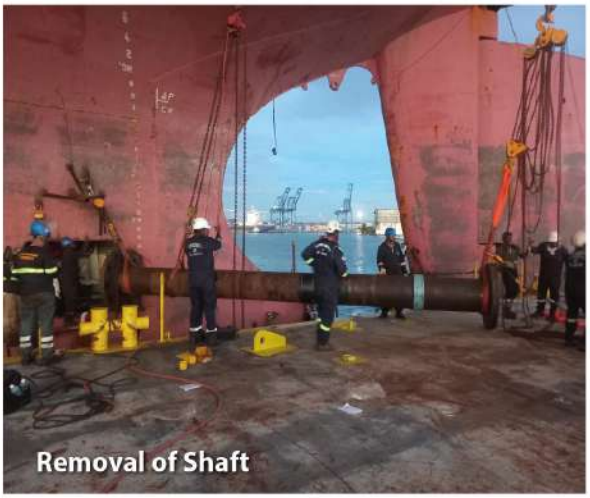
We then, proceeded to remove the nut cap, released the nut, removed the propeller, and left hanging alongside.

Inside the engine room, we removed the intermediate shaft and bearing, and attempted to remove the tail shaft but then we realized it was jammed. Then identified that the tail shaft was damaged and could not come easily in any direction.

The client ordered a new tail shaft and a new set of connecting bolts 12 pieces and 4 spares for the flywheel connection.

Removal of Stern Tube

Talleres fabricated a structure to pull the forward end of the tail shaft with 2 jacks of 500 tons but is was not possible to remove the shaft, we concluded that the forward end of the tail shaft was seized to the stern tube so we decided to cut the forward end of the shaft with the flange to take the complete stern tube with the forward end of the damage tail shaft pulled aft through the stern casting.



Removal of Shaft

We investigated the delivery time of a new stern tube and found that it was going to be more than 12 weeks so it was decided to proceed with tail shaft machining by cold work in the machining shop. We removed the complete stern tube with a combination of hydraulic jacks and hardware transported to the machining shop and started the removal of the shaft by in situ machining.

Blue Fitting


Shaft on Lathe

The stern tube was skimmed cut in the aft bearing bore section, then the bearing was installed in the stern tube.

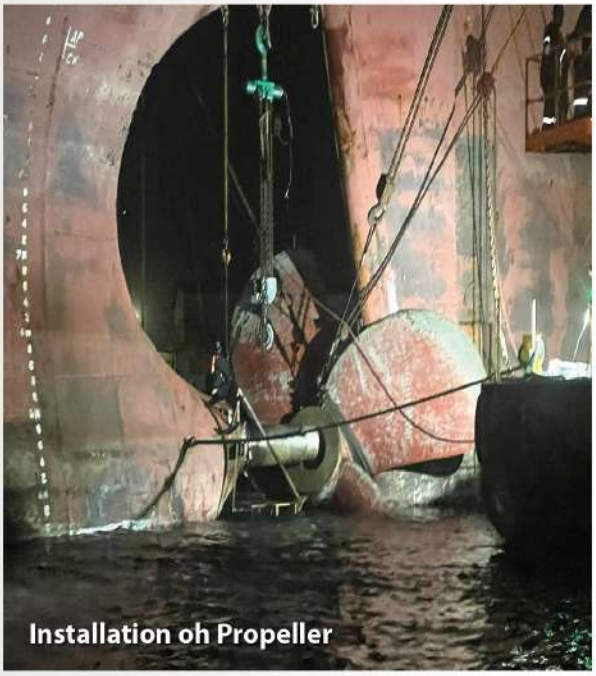
In parallel with the stern tube jobs the new shaft was received from the makers, then the propeller and the shaft were transferred to a pier where two cranes were hired.


Installation of Shafts


Installation of Stern Tube

The propeller was placed in an elevated stand where the blue fit contact between the propulsion shaft and the propeller tapered cone were checked and adjusted. We inserted the Intermediate shaft and propeller shaft in the engine room. At the same time, we reinstalled the cover of the access cut, welded by class-certified welders, and performed the nondestructive test to the satisfaction of the attending class surveyors. We then installed, aligned, and secured with shocking resin the stern tube, and propulsion shaft, with the forward seal at the anchorage, positioned the intermediate shaft between the tail shaft and the main engine, connected the intermediate shaft to the flywheel and propulsion shaft with prefabricated dummy bolts 4 on each end.

Finally, we installed the propeller, and the hydraulic nut performed the propeller push-up adjustment. The vessel was moved back to the anchorage to installation of the rope guard and the nut cap on the propeller and the inside continued the installation of the connecting bolts between the main engine flywheel, intermediate shaft, and propulsion shaft. We Installed all the hardware that was removed in the engine room to gain workspace.



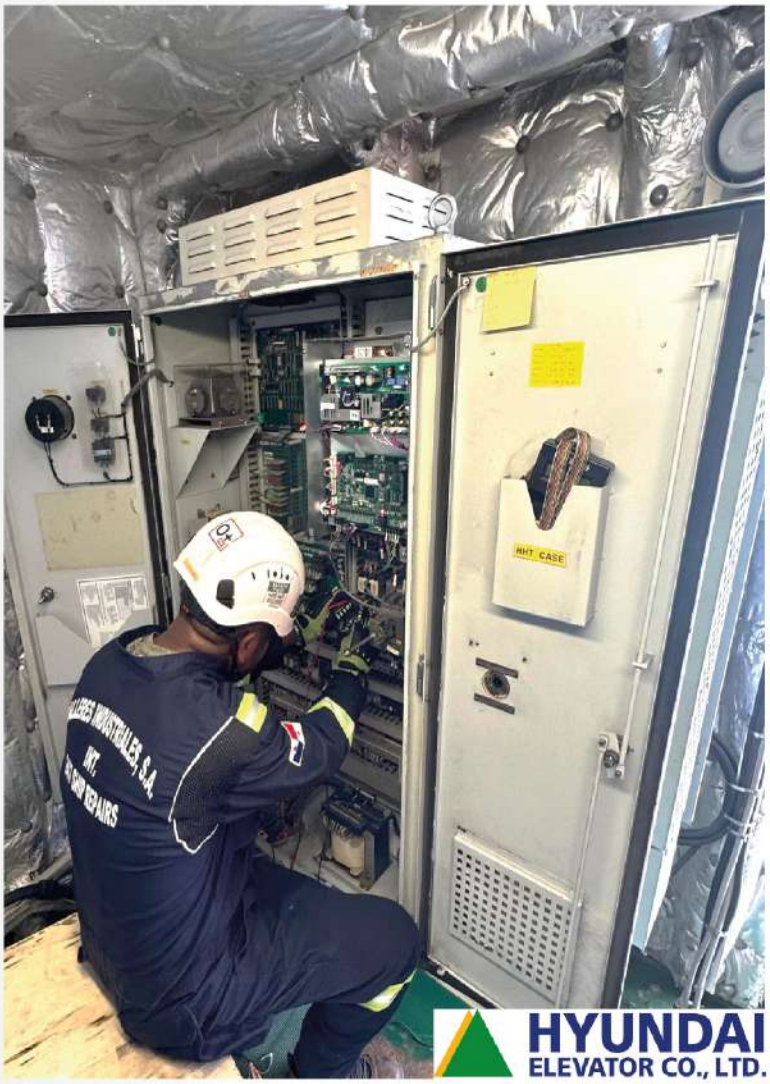
Installation oh Propeller

Our team of engineers and mechanics performed sea trials along with the crew which was completed satisfactorily and put an end to this amazing job.

Panama is a friendly place to bring your vessel for major and complex repairs since we have the technical know-how, we are in the hub of the Americas with a good connection to all flights coming from around the world.

We have a friendly custom that expedites your spare arrivals and is friendly for experts and ship managers to attend to their vessels without delays.

MARINE ELEVATOR SERVICES



TALLERES INDUSTRIALES now offers reliable, and client centered marine elevator services worldwide. TISA provides services such as Annual and 5-year inspections, repairs, and general maintenances on marine elevators.

We are also part of the HYUNDAI Global Network and can assist with any spares that are required under urgent basis. Our technicians have vast experience in different elevator brands, and we are available 24/7 to attend our clients' needs throughout all ports in Panama and abroad.

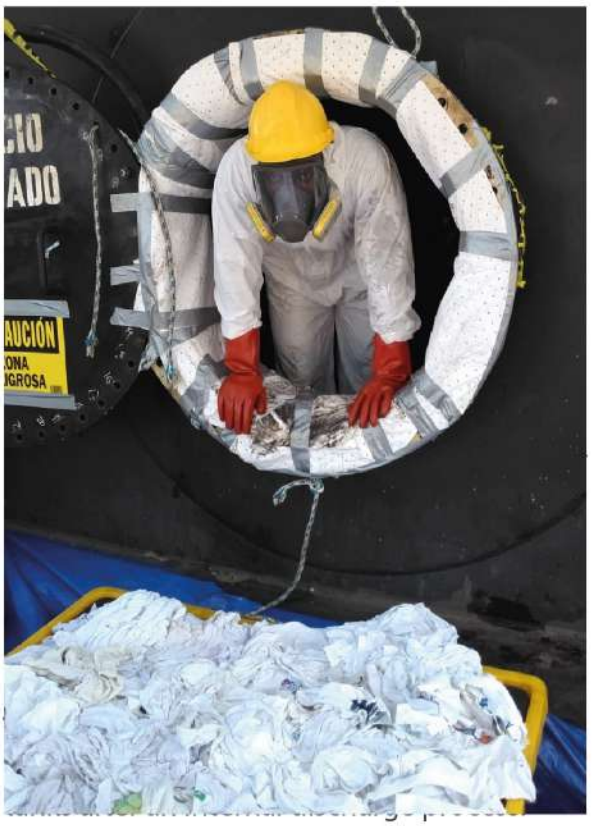
LIFEBOAT INSPECTIONS AT THE PANAMA CANAL

The purpose of the annual inspection of lifeboats is to ensure that the lifeboats and rescue boats are in good condition and functioning properly. The inspection helps to identify any defects or deficiencies in the lifeboat equipment, and the necessary corrective measures are taken to ensure that the lifeboat is following SOLAS regulations. This particular job was done to a Panamax tanker vessel at Chiriquí Grande, Bocas del Toro, on the Atlantic Sea of the Republic of Panama.

Established in 2007, TISA LIFEBOAT & LA SERVICES is a subsidiary company of Talleres Industriales created to offer specialized services for lifeboat safety and launching appliances. We perform annual as well as five-year onboard inspections to lifeboat gears 24/7. Furthermore, we are certified to execute repairs to lifeboats, davits, and gears by manufacturers at anchorage or lay berth. Talleres group of companies is your one stop solution provider at the Panama Canal.

TANK CLEANING ON A FUEL STORAGE FACILITY

At Talleres Industriales, S.A. (TISA), a fuel oil storage facility client on the Caribbean side of Panama, requested our tank cleaning services for the general maintenance and inspection of their on-site tanks. We were hired to start with two tanks, of which the first had a capacity of 50,000 barrels, and the second a capacity of 100,000 barrels. The scope of the job was to clean the inner walls up to 2.5 meters and remove all the liquids and heavy sediments remaining on the bottom of two tanks after an internal discharge process.



The large capacity storage tanks required them to be ventilated with forced air for over 48 hours before the safe entry of our inspection team and cleaning personnel. This was accomplished by installing our industrial ventilators at a safe distance and placing air ducts in each of the tanks. Forced air had to be continuously pumped into the tanks. Once the tanks were properly ventilated, our safety officer took oxygen and gas level readings, followed by the permits to enter the tank and start the job. Our safety officer continued, at all times, to monitor the tank oxygen levels with a portable multi-gas detector and to check every worker who entered and exited the tanks.

The cleaning team worked on the internal perimeter of the floors, performing their way from the outer rim to the center of the tank using hand-held industrial squeegees and plastic shovels to push the heavy sediments to the center. The next procedure was to pump out all the liquids by pneumatic pumps. The other areas that required special cleaning were the center tank drain and the surrounding pipes. The team also thoroughly cleaned all the weld seams in the inner floor perimeter of the tanks. The storage facility client requested us to complete phase one of the job in a stipulated time frame with no safety issues at all. TISA was able to accomplish this tank cleaning on time with the planned schedule. The tank cleaning team will always be ready to perform these difficult jobs with the highest safety standards that the business demands.

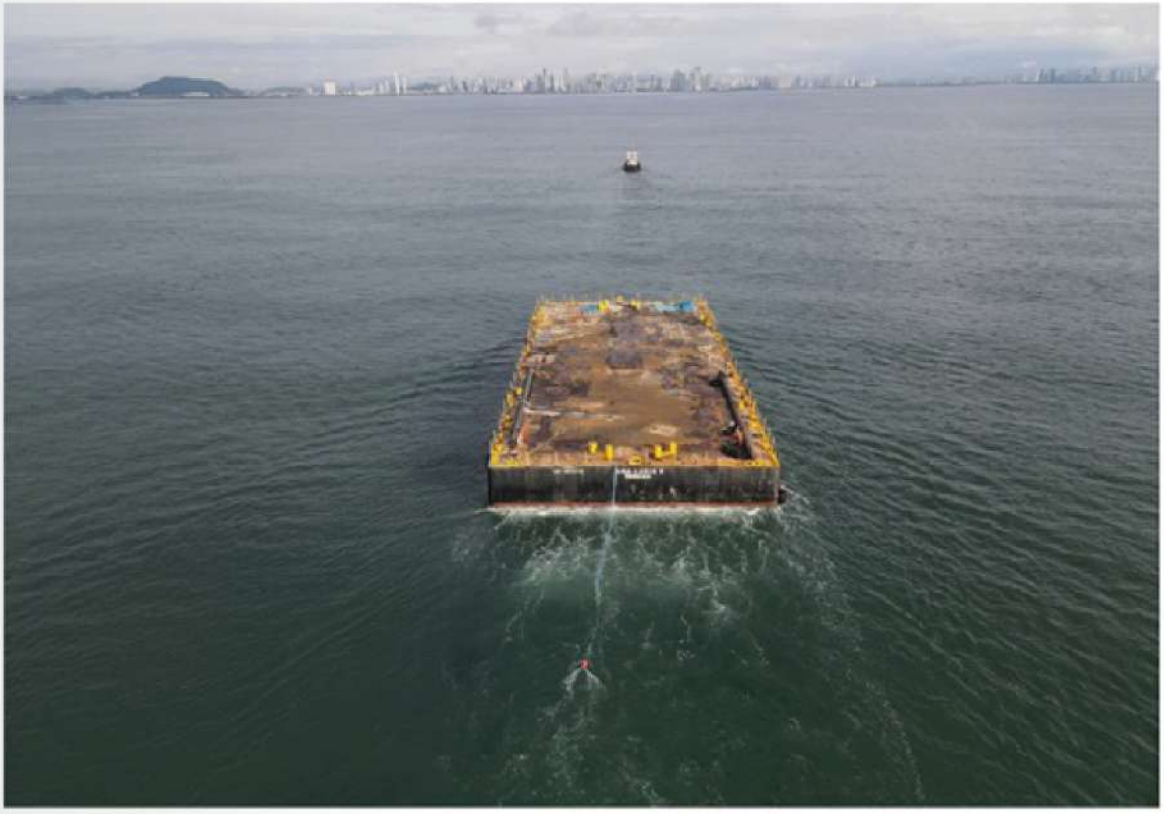
INSTALLATION OF PROPELLER BOSS CAP FIN

The PBCF is an energy-saving device attached to the propeller of a vessel. It breaks up the hub vortex generated behind the rotating propeller, resulting in a 35% reduction in fuel consumption and a corresponding reduction in CO2 emissions.

Panama is the perfect place to perform these types of repairs and maintenance services.

We are ready to assist YOU 24/7, 365

CANAL BARGE AND CRANES PANAMA



Canal Barge & Cranes, sister company of Talleres Industriales, offers different types and sizes of deck barges. Equipment is based at the Panama Canal but can be mobilized on short notice to any country in the Americas.

We offer from 500 tons capacity barge up to 4500 tons to assist on any of your upcoming projects. Our barges are ideal and reinforced to take special cargo or to build marine infrastructures. Talleres Industriales, as floating equipment owners, really understands the needs of its clients!

CANAL BARGES & CRANES PANAMA S.A.

WWW.CANALBARGES.COM.PA
@CANALBARGESPANAMA

TALLERES KEEPS INVESTING IN HEAVY DUTY MACHINERY TO KEEP SUPPORTING THE MARINE INDUSTRY

Talleres has invested in a new Davi 3-roll variable-axis plate rolling machine, an accurate tool for plate bending. It features motorized rolls, precise positioning, and a sturdy frame for enhanced performance.

DAVI MAV 3 Roll with Variable Axis is the ideal solution when a client needs to roll plates thicker than 50/60mm to very tight diameters, sometimes up to the point where the plate is wrapped around the top roll.

In these machines, the top roll works like a press brake, while the side rolls independently move from right to left and vice versa, giving the machine the chance to work with endless geometries.

We always think differently, unconventionally and from a fresh perspective to provide brilliant solutions to our clients.