Docking and dismantling of the former CT Pernambuco (D30)

Also known as USS Bradley DE/FF 1041

Ex-CT Pernambuco at the BNRJ, photographed on June 13, 2012. Photo: Nunão

Brief History

The Pernambuco Destroyer (D30) was released in 1964, then as the USS Bradley (FF-1041), who served in the Vietnam War. He arrived in the city of Rio de Janeiro on December 13, 1989, accompanied by CT Pará (D27), CT Paraná (D29) and CT Paraíba (D28), which formed, at the time, the Pará Class of the Destroyer Force of our Station They stood out for their unprecedented single-axis propulsion systems, with steam plants working at 1200psi and also by the powerful sonar AN / SQS-26 of 240 Kw, whose transducers weighed 27t. The aforementioned Class served the Brazilian Navy from 1989 to 2004. In May 2006, Ordinance No. 126/2006 destined the former D30 to be used as the target of the Fleet.

At the request of CASOP, in April 2010, the company Qualytech Inspecção e Serviços Ltda. presented a report in which he classified hulls and live hull construction as "unsatisfactory" for his trailer as a target. At the request of DSAM, DEN inspected the hull and found it unworkable as a target as it stood and suggested a series of structural works required to tow the hull safely to the exercise area. Based on the report, CASOP suggested that the hull be disposed of, which was ratified by ComemCh in June 2010. Its inspection, evaluation and destination process was completed in April 2011.

In July 2012, EMGEPRON held the first auction of the hull, which was sold by Mafra Comércio de Equipamentos Automotores Ltda, for R $ 300,000.00. The said company, after taking possession of the property, did not meet the deadline for the removal of the hull - October 29, 2012 - having agreed to pay R $ 42,000.00 for the period of use of the dock. After a series of pending administrative and judicial issues, in April 2013, EMGEPRON applied the administrative

penalty of loss of ownership of the hull to Mafra and, in May 2013, held a new auction for sale, but was unsuccessful.

The trailer

The state of structural degradation of the hull, together with the partial dismantling of the hull, with the complete removal of hulls, dies and horns of the decks (photo1), entailed enormous difficulties and risks for the execution of unmanning maneuvers and its safe trailer up to the Alte dam. White.

Picture 1 - Situation of the hull moored in Pier 3 internal, already partially undone

Thus, in order to execute the necessary towing, with the minimum of risks, BNRJ hired a specialized company - PICOLO E ASSOCIADOS LTDA. - to assess the structural condition of the hull (vessel beam) and to draw up a towing plan for the condition in which it was.

On October 14, 2014, the aforementioned company presented the aforementioned work, which, after being analyzed and ratified by DEN, pointed out the need in a series of actions, by the Industrial Department of the BNRJ, to reinforce the points of the hull which presented structural fragility and also to install devices of fortune, replacing the bollards, horns and balustrades, which were removed during the partial dismantling on the quay.

It was incumbent upon CASOP to place concrete coffins in the fragile locations of the Bravos plating, as well as the installation and operation of motor-pumps for eventual emergency sewage, during the hull towing of the internal Pier 3 to the dike (photos 2 and 3).

Photo 2: Hull being unhooked from Pier 3 and starting towing to the Alte dam. White

Photo 3 - Hull reaching the Alte dam. White

The Docking

Due to the considerable navigation draft and the dimensional characteristics of the appendages of their hulls (sonar, rudder and propeller), the Pará Class was never certified in the BNRJ. Thus, to make feasible its docking would be sine qua non the reduction of its navigation draft. Consequently, the first difficulty to be overcome would be to avoid that during the passage of the hull along the dyke, its gigantic sonar dome (16 x 6 m) would not overturn the dozens of riding stables and cots to support the hull.

This obstacle was circumvented, literally, by the type of maneuver adopted, moving the hull along the dyke, always diagonally to the center line of the dyke, to ensure that its dome passed between the line of lateral cradles and the side wall of the dam, where the maximum clearance was 0.30m. Because of this critical play, in order to maintain the correct positioning of the dome, the device was used to strike its bow to the chassis of the crane, which accompanied it, in parallel, during its displacement to safe area for it to return to the center of the dam, without the risk of the dome overturning the cribs and stables (photo 4).

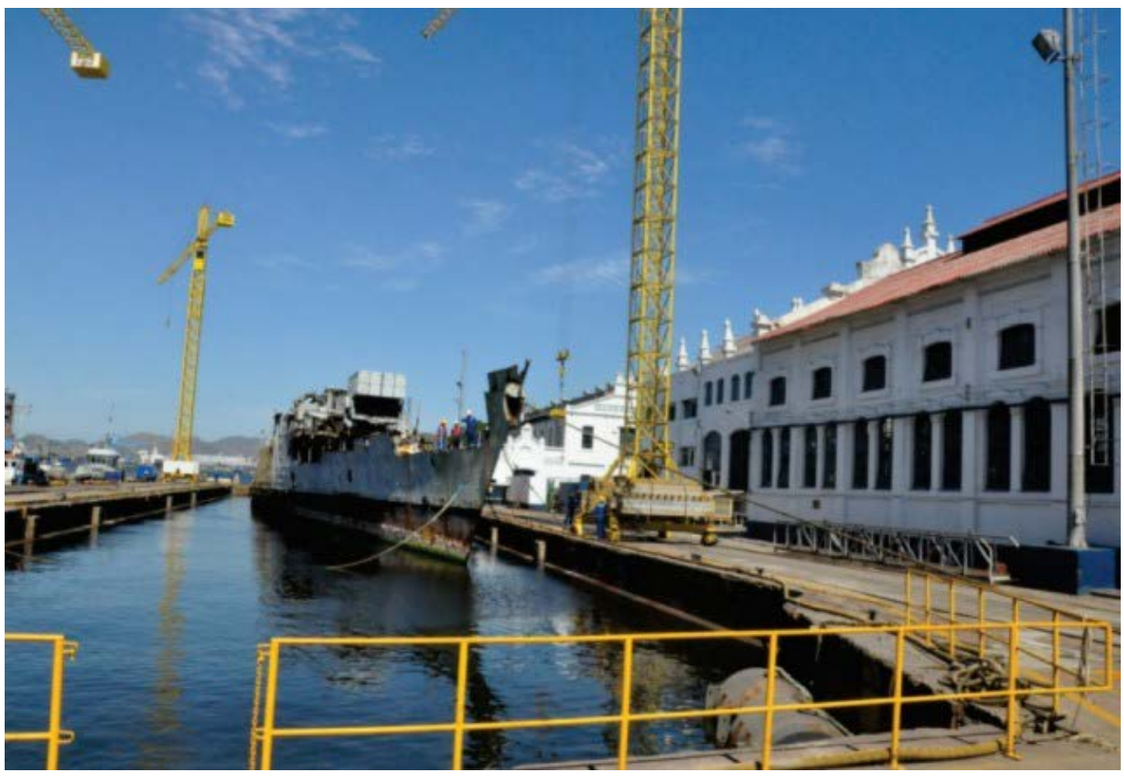

Photo 4 - Diagonal displacement along the dyke, with the protruding bow to the chassis of the crane

The second difficulty would be the need for the dock hull over an arrangement of riding stables and "ramp" berths, because, because the dome would drain 3.04m below the keel, even using one of the moats existing in that dam to accommodate it (photo 5), at the moment the bottom of the dome rested in the bottom of the pit, there would be a difference of 0.85m from its keel in relation to the horizontality of the baseline of the original Pará Class docking plan. of a new plan of dockage, specially prepared for the unprecedented situation.

Photo 5: Dome housed in the moat, that is destined to the propellers of the Frigates Class Niterói

The last difficulty to be eliminated would be the reduction of the navigation draft to enable the entrance of the hull in the dike, even considering the prearms of sizígias. It occurs that, due to the fact that it presented, at the time, a marked stern trim, provoked by the expressive reduction of weight of its Alpha Section due to the partial dismantling of the bow, while it was moored, it was verified that, although its sonar was with a draft for entry into the dike, your rudder will not.

As a solution, it was decided to carry out the submerged cut of 0.80m from the door of its rudder, with the use of BACS divers. It should be emphasized that the accuracy of this service would be fundamental for the success of the docking operation, since, in addition to ensuring the passage of that appendix through the levee threshold, it would enable the use of the rudder itself as a "fortune" column to support all the section Charlie, which would be in balance, after the sewer of the dam (photo 6).

Finally, on November 20, 2014, successful docking was carried out, starting the unusual service of cutting a destroyer in an MB dam.

Photo 6 - Detail of the part of the rudder that was sectioned while the hull was still floating and also of the performance of the rudder as a "fortune column" supporting the stern

The Dismantling

The inexperience and lack of history of ship dismantling, under the MB, made this the most difficult, laborious and risky phase to be solved, within the short term of liberation of that dam to allow the important docking of the NE Brazil

Thus, starting November 21, 2014, the great challenge of dismantling and removing 2,243t from the dam, consisting of 1,596t of metal structures and equipment to be cut torch, 516t of non-metallic solid material (concrete, thermal insulation etc.), 75t of oily residues, 25t of remaining water shipped in the tanks, and approximately 30t of rubber that formed the giant dome and internally coated all steel bow structures.

Prioritizing the labor situation and, above all, the safety of the workers involved in carrying out the massive and risky service, as well as the legal guarantee for the inspection by the Industrial Department, the Commander of the BNRJ decided that the dismantling was carried out by SAND Serviços Ltda ., company with Continuous Nature Contract with BNRJ to provide boiler services. Since the rubble, as it is mostly composed of contaminating material (asbestos, asbestos, glass wool, oil lees and greases, etc.), was removed by TRANSUNIVERSAL Pinturas e Anticorrosão Ltda., Another company with a Continuing Nature Contract environmental certification for the transportation and disposal of contaminating material.

Initially, the dismantling was scheduled to be completed by the end of January 2015, but the following complicators compromised that goal:

1. the novelty and inexperience of all - Navy and Companies - in the execution of this type of service, especially with regard to the unexpected interferences encountered during the cutting of steel structures, such as concreted decks and large areas covered with rubber and thermal insulation and difficult to remove;

2. lack of fluidity to remove material from the stripping out of the Mocanguê Complex, caused by the bottleneck of the Rio-Niterói Bridge, which limited the flow and load of the trucks and trucks carrying the scrap;

3. The lifting capacity of the dock cranes is limited to 3t;

4. The high temperatures occurred in the months of December and January, which greatly affected the income of the workers, who, besides working in a heat-generating activity (torches), were inside metallic structures under sun and not ventilated.

Noting that, due to the rhythm of the dismantling, the docking of the NE Brazil in the BNRJ would be threatened, the Commander of the BNRJ, on February 6, 2015, held a meeting with all the entities involved in the dismantling, to elaborate a strategy that would accelerate the release of the dam, stipulating as a deadline on March 12, 2015.

Thus, following the necessary adjustments in the cut plan elaborated by SAND to the new schedule stipulated by the BNRJ, the following actions were adopted aiming at the fulfillment of the goal:

- creation of the second shift of overtime by employees of the companies involved - including holidays and weekends;
- contracting of cranes with great capacity to remove large equipment and sections of the hull with larger weights and volumes (photo 7);
- requesting CavMec (mechanical horsepower) support from CFN Logistic Battalion to perform intra-Base displacements of large equipment and hull blocks (photo 8) to be dismantled later outside of the dam to shorten the critical path for its release (photo 9).

Photo 7 - Large capacity (up to 440t) contracted crane removing one of the boilers

Photo 8 - Joint operation of two cranes on wheels of the BNRJ to remove the missile launcher (20t) ASROC from above the CavMec of the CFN

Photo 9 - Large blocks and equipment removed from the ex-D30 and displaced by CFM's CavMec, so that they could later be dismantled outside the dike

Thus, thanks to the correct "correction of course" in the accomplishment of the ex-D30, on March 6, 2015, NE Brazil sold at the BNRJ, six days before the date stipulated as limit and without compromise for its PMG2015.

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CT Pernambuco (D30)

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