Boskalis
Dredging & Marine Experts

PROJECT SHEET

MARTIN GARCIA CHANNEL, URUGUAY
CONSTRUCTION AND LONG-TERM MAINTENANCE AND EXPLOITATION OF A WATERWAY

INTRODUCTION

The background to this project is the development of Nueva Palmira, Uruguay's second port. It serves an enormous hinterland and represents major potential for the mining industry and exports of citrus products and cellulose. The Argentine port of Parana also benefits from improved accessibility. So Argentina and Uruguay entered into a treaty for a traffic channel in the Rio de la Plata estuary that can cater to Panamax/Capesize bulk carrier dimensions – in other words about 100 m wide and 32 ft deep according to PIANC recommendations. The bi-national commission CARP granted the capital dredging work to a joint venture – Riova S.A. –that originally comprised seven partners. Boskalis International acquired 100% of the shares of this company in 2002. The capital project, which was completed on schedule in January 1999, included the installation of 122 navigation buoys. The second contract - which started in 1999 and is still ongoing – includes maintenance dredging and the exploitation of the channel, which amounts to the organization of toll collection.

FEATURES

Client	Comision Administradora del Rio de la Plata (CARP)
Location	Argentina / Uruguay
Period	1997 - 2006 - 2011
Contractor	Rioavia S.A.

A Location map
B (TSHD) Beachway, with a hopper capacitiy of 3,600 m³ at work

PROJECT SPECIFICATIONS

Riova started the USD 85 million capital project in1997 with a large, 13,500 hp powered, Cutter Suction Dredger (CSD). In 79 weeks she dredged large amounts of soft and stiff clay, alluvial material, sand, gravel and rock in a section with a total length of 50km. The rock had to be blasted at three locations to the prescribed safety margin of 2ft over the design depth. A medium class Trailing Suction Hopper Dredger (TSHD) of 3,600 m³ hopper capacity then dredged another 22 km of the channel. The 1998 El Niño caused a serious delay in the schedule, requiring the dredging of an additional 15 million m³ of sediment. The joint venture responded by deploying a second TSHD, the Beachway, to solve the problem. The works were accompanied by surveys with two of the company's own survey vessels. At the end of the capital stage, an administration and toll system for the channel was set up as a prelude to the maintenance contract. During the maintenance period Boskalis collects toll monies and transfers them to the authorities, who deduct them from the maintenance contract sum. To ensure payment, vessels are followed by AIS and payment is required before accessing the channel.The Beachway is executing the USD 65 million maintenance dredging contract. Settlement patterns in the Martin Garcia channel are irregular, so a TSHD will make many idle runs and

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can never maintain the whole channel on its own. To remedy this problem, Boskalis has deployed two ingenious pieces of auxiliary equipment. The first is a DOP® submersible pump operated from a workboat that handles smaller irregularities on the shallow slopes of the channel sides. The second is a plough tug, which smoothens medium quantities of sediment until an area is large and thick enough to be dredged efficiently by the Beachway. The method has proven effective: a single TSHD can now dredge the remaining large quantities of sediment and maintain the channel to the required depth. The project is still ongoing.

HIGHLIGHTS
The successful execution of this multi disciplinary project was backed up by a range of Boskalis subsidiaries and skills:

- The Boskalis engineering company Hydronamic specializes in a wide range of fields including feasibility studies, project studies, advice and design works on ports and waterways, shore protection, and geo-engineering. They provided the design &construct plans according to PIANC recommendations.

- Another specialism was indispensable in the fragmentation of the rocky locations. Once rock has been blasted wrongly, it is almost impossible to remove it. So rock drilling and blasting requires power and tenacity, but also precision and skilled engineering. The UK-based Boskalis subsidiary Rock Fall, which specializes in drilling, blasting and explosives engineering, particularly in the marine environment, did the job successfully.

- One of the strengths of Boskalis is its flexibility. This was particularly useful on this project, when El Niño deposited an additional 15 million m^3 of hyper-sedimentation in the dredging environment, nearly doubling the amount of sand to be removed. The measured response, including the deployment of the Beachway, ensured the work was completed according to schedule.

- The maintenance dredging approach with a TSHD accompanied by selected auxiliaries optimizes the costs and benefits of dredging, which would otherwise have been unaffordable within the contract limitations.

- The administration of shipping traffic and toll collection by a dredging contractor is a unique development. The careful approach by Boskalis to the design of this system has proven to be safe, efficient and rewarding. In turn, the efficiency of the system has helped to minimize the costs for all parties, including the client.

MARTIN GARCIA PROJECT SUMMARY
- Removed material, Capital Stage:
  CSD: 25 million m^3 - TSHD: 17 million m^3

- Extra El Niño sediment:
  TSHD: 15 million m^3

- Removed material, Maintenance Stage:
  TSHD: 55 million m^3 (end 2009)

C A DOP® submersible pump, operated from the workboat 'San Fransisco', handling small irregularities on the shallow slopes of the channel sides

D The plough tug, which was deployed in order to smoothen medium quantities of sediment, until the area was large and thick enough to be dredged efficiently by the TSHD Beachway

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