RECENT TRENDS BY PORT AUTHORITIES

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ABSTRACT

Port Authorities face many challenges and opportunities in the near future, mainly due to port and regional expansions, maintenance dredging cost and antiquated equipment and technology. The purpose of this paper is to case study the actions taken by Sociedad Porturaria Regional de Cartagena (SPRC) to overcome these challenges and turn them into opportunities.

Port of Cartagena has historically been dredged by contractors as the Port lacked expertise, time and equipment to fulfill dredging requirements. However, with the Port of Cartagena becoming a major distribution point for import/export commerce and tourism throughout Colombia as well as a major player in the Caribbean Basin, SPRC had the need to expand their port facilities to enable them to handle additional cargo and post Panamax cargo vessels. They also had the opportunity to expand a nearby container port known as Terminal de Contenedores de Cartagena S.A. (Contecar) that is also operated and managed by SPRC as well as perform dredging services for other Colombian ports while the dredge was idle. Their solution was to acquire a dredge.

Thus far the dredge has allowed SPRC to move in a positive direction with respect to accomplishing goals spelled out in their business plan. The dredging operation is relatively new, but the future for growth looks promising and promotes dredging.

Keywords: Ports, dredging, Port of Catragena, port development, Panamax cargo

INTRODUCTION

Sociedad Porturaria Regional de Cartagena (SPRC) is a privately owned company (established 1993) that was granted a concession by the Government of Colombia to manage and operate the Port of Cartagena and Contecar. Their vision to develop both terminals into regional and worldwide logistics platforms is evident by their actions.

Port of Cartagena and Contecar are ideal for development because they are located in protected waters and are not affected by Hurricanes, tides and currents. They are also close to the Magdalena River and Caribbean Sea; The Panama Canal is a regional neighbor.

SPRC executives made a decision to become a Stevedoring Company giving them the opportunity to become more involved in vessel loading and handling. This complemented SPRC's vision of expanding and operating more efficiently. Use of highly efficient terminal operation software allowed SPRC to increase container volume and throughput as well as reduce truck service time, re-handles, congestion and STS usage.

SPRC PORT AND MAGDALENA RIVER EXPANSIONS/DREDGING OPERATIONS

The Panama Canal Expansion is projected to be complete in 2014 and is driving the expansion of many surrounding Ports in the Caribbean basin. When complete the Canal will be able to accommodate 12,000 TEU vessels with lengths to 365 m (1200 ft), breaths to 49 m (160 ft) and draughts to 15.2 m (50 ft). Once this expansion is complete it will be essential for worldwide container ports to be able to support these vessels. Panama Canal container vessel traffic has increased while the US intermodal container segment has decreased. As the global economy grows, Caribbean based ports and others have an opportunity to grow. The paragraphs below highlight some of the expansion phases and equipment acquisitions by SPRC.

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Port of Cartagena Expansion

The Port of Cartegena (Figure 1) is a major Colombian multi purpose terminal that not only supports cargo containers, but also tobacco and leather products, sugar, textiles and many others. Tourism is a growing segment of port business.

Figure 1. Port of Cartagena

SPRC has planned multiple phase expansions to this port. Their goal was to not only increase dock berth, gate access and storage capacity, but also add much additional support equipment such as cranes and gantries. Additional civil work and land reclamation was required to support the berth extensions. The following statistics summarize final phase expansion:

- Terminal area increase from 39 Ha. To 41 Ha.
- 538 m berth to 700 m
- Vessel draft from 13.5 m to 15.2 m
- 4 STS to 7, 1 MHC to 2, 21 RTG to 30
- Additional trucks and storage slots

The overall expansion is expected to support 1.2 million TEU. Expected capacity constraints at this terminal led to the acquisition and development of Contecar.

Contecar Expansion

This expansion (Figure 2) will also be conducted in multiple phases and will make Contecar a world class container port terminal upon completion. The Contecar terminal is in close proximity to a large industrial park in Colombia, the final destination or origination of much container cargo. The Contecar expansion largely complements the Cartagena expansion. The overall expansion cost is expected to exceed ½ billion dollars US.

Figure 2. Contecar.

Unlike Cartagena, a large part of the Contecar site expansion will be accomplished by a rather large land acquisition allowing the terminal area to be nearly doubled by completion of the master plan. Because the property near the first berth expansion (Ensenada) requires fill, dredging operations will be significant. Silt removal will be required at this location first. Then fill sand will be pumped in to help build the dyke and make linear the coast for berth extension.

Master plan for Contecar terminal expansion includes the following:

- 380 m berth to 1000 m berth
- Vessel draft in three phases: 13.4 m, 15.5 m and 16.5 m contingent on vessel demand
- 12 STS and 60 RTG
- Additional trucks, storage slots and warehouse space

Terminal automation at Contecar will be state of the art. Multifaceted STS cranes will unload container vessels and load automated ground vehicles. These vehicles transport to RMG's that load containers for stowage or to trucks for transportation; they are also used to load containers for transportation via rail.

Phase 4 represents the final stage of the master plan and is expected to be completed in 2025. The overall expansion is expected to support 2.5 million TEU.

Magdalena River Expansion

SPRC acquired a 365 Ha property along the Magdalena River. The river entrance is close to Contecar terminal and provides SPRC a main river artery and strategic path into heavily populated Colombian cities such as Medellin and Bogota via railway or main Colombian roadway. This property also provided SPRC with a base closer to the Colombian capital.

Dredging

Excavation operations, in large part, will be accomplished by dredges. Because future port expansions rely on it, as does SPRC's vision to accommodate larger Post Panamax vessels, dredging operations are a key part of their master plan.

The availability of dredging contractors is unknown at any given time. So they may have to wait for a contractor to be available (local or elsewhere) in order to get the dredging work done. This time constraint would not fit well with their plan as they needed dredged materials as fill for the expansions - thus providing a secondary benefit to their plan.

SPRC acquired a new portable dredge (Figure 3) in 2008. It has allowed them to schedule dredging operations in accordance with their master plan. The new dredge is capable of 17 m depths and can operate in 1m seas.

Below are a few of the key features:

- Heavy duty spud carriage for accurate positioning and increased dredging time
- User friendly operator interface and production equipment
- Diesel powered with standby genset
- Added corrosion protection to dredge hull, water piping and submerged hydraulic hose fittings (zinc anodes were installed in the water piping system and on the hull; stainless steel hydraulic hose fittings were used to improve overall corrosion resistance due to harsh saltwater environment)
- Easily accessible wear parts

The Contecar site alone will require over 3.5 million m^3 of material removal to achieve 16.5 m depth.

Figure 3. Cutterhead suction dredge.

CONCLUSION

World container trade has more than doubled from 60 million TEU's in 2000 to 135 million TEU's in 2010. Forecasters predict this will be as high as 300 million TEU's by 2024. Commensurate with increase worldwide container trade are the cargo vessels transporting them. There is a trend in the ship building industry to build larger capacity vessels. The 3rd Panama Canal Lock will accommodate vessel capacity of 12,000 TEU's. Progressive

ports managers and operators like SPRC are moving hastily towards increasing infrastructure, automation and equipment capacity to facilitate these vessels and become major worldwide shipping hub.

Dredges serve to provide material transfer for both extraction of silty materials, addition of foundation materials and increasing waterway depths and are arguably a key element too many companies business plan. There has been an increase in request to build dredges for port authorities from 2007-2010. These companies have a vision of being able to facilitate their Port expansions as well as maintain their respective waterway docks and possibly the same for others as the cost of dredging continues to rise.

Legend

TEU – Twenty Foot Equivalent Unit is 6.1 m x 2.4 m x 2.4 m (20 ft x 8 ft x 8 ft) container
STS-Ship-to-Shore
RTG-Rubber Tire Gantry
RMG-Rail Mounted Gantry

REFERENCE

Franco, Mauricio (2008). *Contecar Development Plan*