



HIDROVIA PARANA-PARAGUAY INFRASTRUCTURE DEVELOPMENT OBSTACLES AND CHALLENGES

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Hidrovia Paraguay-Parana infrastructure development.

Obstacles and Challenges

The last Argentinean National meeting about Inland River Transportation was held in Rosario Exchange in May 2012. Long standing issues were discussed affecting the development of inland water transportation along the Hidrovia Paraguay-Parana, which is the main export Argentinean waterway, through which are shipped almost 80% of Argentinean exports.

The Hidrovia Paraguay-Parana was conceived as an strategic program to develop the inland river transportation. It flows from North to South from Puerto Caceres in the brazilian Mato Grosso to the Port of Nueva Palmira in Uruguay and it is used by five different countries, Brazil, Bolivia, Paraguay, Argentina and Uruguay.



Figure 1-Hidrovia Paraguay-Parana

The volume of trade and consequently the traffic within the Hidrovia has increased considerably over the last decade. In 2011, the Ports and Grain Terminals located between San Lorenzo and Timbues in Argentina received more than 4 ships per day. Similarly, those terminals located between Rosario and Arroyo Seco along the Parana River received about 2 ships per day. These statistics indicate that a deep sea vessel arrives every 4 hours to discharge to the

Terminals in this area. In fact, during August 2011, 160 deep sea vessels entered in San Lorenzo Port and 76 in Rosario (see table below). (1)

Number of Ships entered					Annual increase	
Year	San Lorenzo	Rosario	Total	Variation (%) from previous year	San Lorenzo	Rosario
2000	1066	491	1557			
2001	1177	407	1584	1.7	10.4	-17.1
2002	1092	430	1522	-3.9	-7.2	5.7
2003	1262	498	1760	15.6	15.6	15.8
2004	1303	519	1822	3.5	3.2	4.2
2005	1396	599	1995	9.5	7.1	15.4
2006	1350	556	1906	-4.5	-3.3	-7.2
2007	1663	698	2361	23.9	23.2	25.5
2008	1678	720	2398	1.6	0.9	3.2
2009	1390	556	1946	-18.8	-17.2	-22.8
2010	1582	739	2321	19.3	13.8	32.9
2011	1597	823	2420	4.3	0.9	11.4

Figure 2 – Ships entered and Annual Increase in San Lorenzo and Rosario Ports.

Studies from local agencies show that about 2100 ships transit the Hidrovia per year, 45% of which are Panamax size. It is expected an increase of 75% in the number of vessels transiting the Hidrovia for the next 10 years. (2)

More than 58 million tons of grain, oil and bio diesel were shipped during 2011. This figure represents 77% of Argentinean exports of these products.

The ports such as Santa Fe and Rosario have enjoyed important direct investments from Agro and Bio Diesel industries, which place their production in overseas markets. This has led to a rise in production which has driven an increase in the volume of trade.

However, a further development of inland waterway navigation is largely dependent on investment in dredging and installation of adequate navigational aids along the Lower Parana River in order to allow the transit of fully loaded Panamax bulk carriers with 12 metres draft and 32,2 metres breadth. At present,

the Occupation Factor of these vessels in some sectors is dangerously close to the safe limits and it is not uncommon to find vessels running aground under such conditions. In January 2011 for instance, the MV Aristeas P ran aground in the Km 390 of the Parana, blocking completely the transit of vessels upriver and downriver. In February 2011, the grounding of the MV Chesnut in the Km 406.5 of the Parana River again blocked the navigation to other ships. Finally in March, the MV Eirini K disrupted the normal transit of vessels along the River when she ran aground in the same area (see below charts). (3)

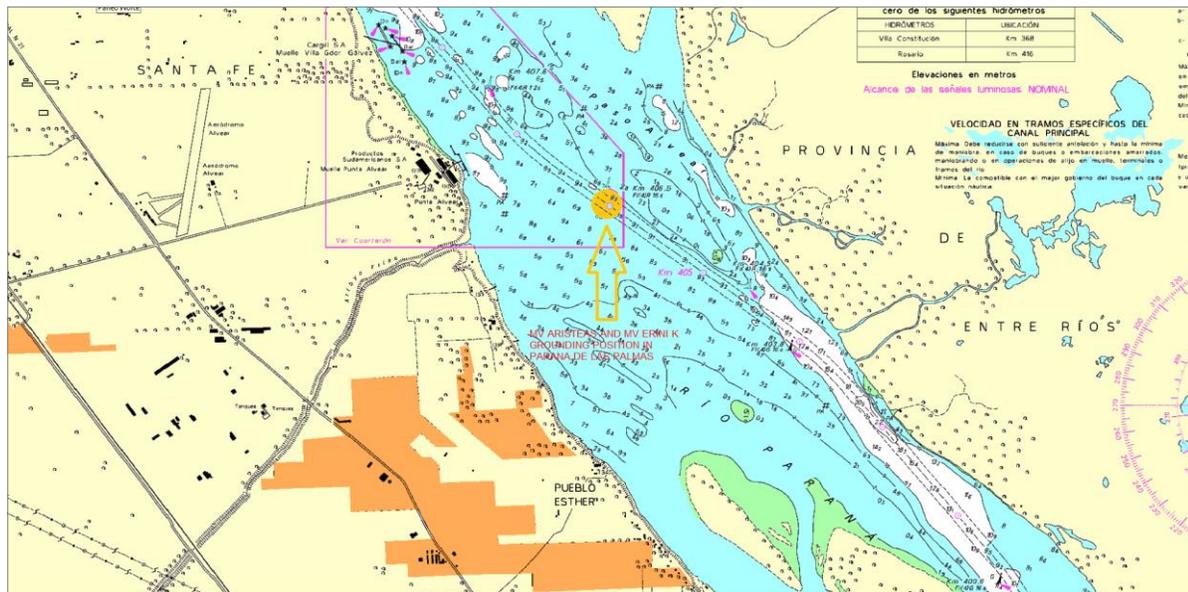


Figure 3 – Grounding Position of MV ARISTEAS P in KM 390 of the Parana de las Palmas

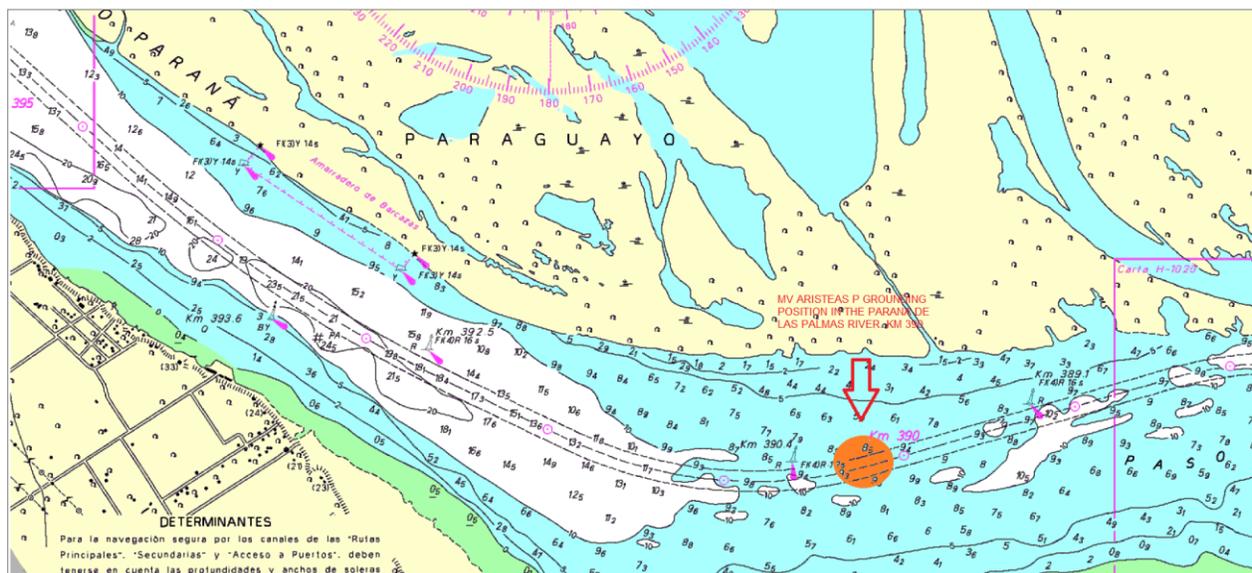


Figure 4 – Grounding Position of MV CHESNUT and MV EIRINI K in KM 406,5 of the Parana de las Palmas

Navigation in the Parana River and the River Plate estuary is strongly affected by the natural phenomena of quick clays, which has its origin in the sediments brought by the rivers along thousands of kilometers on their way south, thus a well organized dredging program is required. The sediments are suspended at different depth levels but they tend to deposit in the bottom bed due to their density. This layer of clay deposited in the River bottom affects the response of the ships and their maneuverability, especially in those areas with lesser depths, transited by fully loaded ships. River Pilots are however fully aware of these phenomena and have a full knowledge of the area. Squat and Sinkage phenomena and Ship interaction effects during crossings are also more accentuated in restricted waters. Loaded deep sea vessels are most of the time constrained by their draft when transiting the Hidrovia in loaded condition. These stringent conditions in conjunction with strong currents and seasonal reduction of River depth levels force the Pilots to give their best to navigate safely deep sea vessels and barge convoys through the Hidrovia. ⁽⁴⁾

Recently, a further potential risk arose with non IMO STCW certified personnel crewing mostly Paraguayan flagged ships in the Parana River and River Plate. These crews do not comply with minimum training and skills required to satisfy such demanding navigation and their direct involvement and responsibility in recent collisions and disasters in the Hidrovia have clearly demonstrated that improvisation and lack of controls can be catastrophic when the real risks are underestimated.

Parana River Pilot's expressed also their concern and they strongly recommend to re design the Hidrovia to ensure the safe transit of deep sea vessels. They alleged that the problem is not just the depth of the waterway but also it is the width, which they recommended to be extended to 200 metres at least in the critical areas due to the increasing breadth of the vessels transiting the Hidrovia.

The planned works in the Panama Canal to extend breadth limitations beyond 40 metres would add an extra factor to be considered since it would be no longer efficient for Bulk carrier owners to continue operating their 32.2 metres beam vessels engaged in deep see trade if they intend to take full advantage of economies of scale. Parana River Pilots claim in fact that it is surprising that further accidents are not taking place under these current unsafe conditions and they suggest urgent improvements for critical areas such as Parana Guazu, Pasaje Talavera, Parana Bravo and Martin Garcia. Similarly, Capt. Antonio Zuidwijk, who is an expert in marine transportation in the Hidrovia and a well

known published author in Argentina, suggests similar actions to ensure the safe and efficient transit of ships and goods through the Hidrovia.

The Navigation Aids services, particularly buoys and beacons installed upriver of Santa Fe port, were not designed to cope with the increasing long barge formations transiting the waterway. This area of the Hidrovia was recently dredged to 10 feet but the buoys and beacons were deployed based on a study which considered initially only 20 barge convoys (Mississippi type). The area is nowadays being transited by 30, 36 and even 42 barge convoys. The Hidrovia users and regional producers are also among those who are asking for additional anchorage areas and improvements in the waterway to cope with the increasing production and exports because of the extra transport costs that must be absorbed by the suppliers is in some ways an extra barrier to trade.



Figures 5 & 6. Nine and twelve Barge formations transiting Hidrovia

The above information shows clearly that transport infrastructure is under stress. This fact is a constant in most of the countries in Latin America, where the increasing volume of trade has exceeded the current capacity of ports and waterways. Unfortunately, it is also a well known fact that decision making in these countries is protracted and projects are usually late causing important losses and headaches to those who may benefit with their use and realization.

Technically speaking, Pilots, Vessel Traffic Services, tugs services operate competently and according to international standards. Positive responses have been observed from the Sub secretary of Ports and navigable waterways with the implementation of the so called “Plan Maestro” which includes the creation of a Central administration for the Main Navigation System (SNT-Sistema de Navegacion Troncal) and improvements to its infrastructure, the creation of suitable transferring areas, the training and specialization of River Pilots and the creation of an Accident Investigation Institute.

However, technical aspects are only part of the challenges that Hidrovia development is facing today. The development of an adequate legal framework to reflect the demands of modern multimodal transport is urgently required.

Politics have a major influence in Hidrovia prospects as well. Strong union pressure and contrary political interests slow down the development of this vital waterway and sometimes place personal interest before national economic development. Cargoes which flow to ports like Buenos Aires are moved mostly by truck from and into this huge metropolis of 12 million of people, disrupting vehicles traffic and compromising seriously the road accesses to the city.

The most reasonable solution to this problem should be aimed to exploring alternative flows of goods taking advantage of inland waterways such as Hidrovia or railroad transportation. This seems not to be convenient for some Unions which control practically all road transportation in the country and which are reluctant to agree to improvements in other areas of transport that may affect their current hegemonic role.



Figure 7. LNG Carrier discharging to FRSU in Escobar LNG Terminal

Nevertheless, the recent demand for gas in Argentina and the growing energy crisis that the country is facing has led to huge investments to build an LNG Terminal near to Escobar in the Parana River, where the river bank has been literally cut out to accommodate safely a Floating Storage and Regasification Unit without disrupting the traffic. Furthermore, some areas of the Channel have been modified to allow the transit of LNG carriers with more than 270 metres length (see figure 7).

The market pressures and commercial opportunities have managed to overcome the most insurmountable obstacles and if as the above example, the evidence shows the existence of new and profitable businesses, the Hidrovia as any other transport infrastructure will have to be upgraded and improved to take advantage of these favorable trade patterns, regardless the colors of those who may benefit from such decisions.

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- (1) Rosario Exchange Statistics 2012. (Rosario Maritime Centre and Alpemar Shipping Agency)
 - (2) Capt. Gustavo Deleersnyder. Parana River Pilot. Megatrade Magazine May 2012.
 - (3) Argentine Chamber of Port and Maritime Activities statistics. 2012
 - (4) Capt. Eduardo Gilardoni. Maneuver of Vessels in Restricted Waters, Quick clays phenomena and Ship's Interaction.