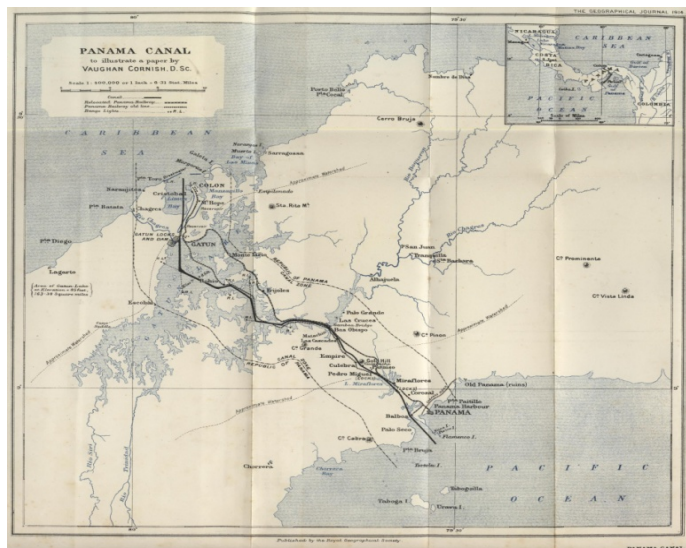




TANKERS

No. 15 - PANAMA CANAL

Located on a major isthmus in Central America, the Panama Canal is one of the most traversed artificial waterways in the world. It is on the narrowest landmass between the Atlantic and Pacific Oceans on either American continent, spanning roughly 50 miles. Panamanian trade has not only sped up travel times for ships, but also has increased safety by creating an alternate route to the dangerous Cape Horn. The canal accounts for 500,000 barrels of oil per day, and a significantly larger amount of bulk goods. According to recent remarks by Mr. Alberto Aleman Zubieta, CEO of the Panama Canal Authority (ACP), the Canal has seen 8 billion long tons of cargo in its life.



Thoughts of the Panama Canal can be dated back to 1534 when Charles V, Holy Roman Emperor and the King of Spain ordered a survey for a route through Panama. A cross-Panama canal faced many attempts for construction in the following centuries. In 1907, President Theodore Roosevelt appointed George Washington Goethals as chief engineer of the Panama Canal, and the canal was formally opened of August 15, 1914 (two years ahead of schedule). Then on December 31, 1999, the Panamanian Government gained complete control of the waterway.

Currently, the Panama Canal sees 64% of it transits bound for US destinations, and another 21% heading for China. Other major end-users of the Canal are Chile, Europe, and

Japan in decreasing order. Despite worries of bottlenecking or transit delays, vessels arriving on “reserved voyages” typically complete the transit in less than 18 hours.

Today the Panamanian government is faced with problems such as competitiveness, capacity, efficiency and maintenance. The ACP believes that by enlarging the canal they can solve these problems. Expansion of the locks will enable the canal to handle more tonnage, while innovative designs will net a 7% decrease to the water used thereby lowering costs. This extension will allow Aframaxes and some Suezmax tankers to utilize the canal saving the 8,000 additional miles by otherwise rounding Cape Horn on certain voyages.

On September 3, 2007 the Panamanian government began work on the project to expand the Panama Canal. The project includes dredging a third lane to entrances on the Pacific and Atlantic, as well as deepening channels in Gatun and Culebra Lakes--54.9 million m3 to be dredged in total; the dry excavation of the new access channel; and the construction of the two locks. The project is expected to be complete by 2014 at a cost of US \$5.25 billion, though Mr. Zubieta mentioned a carrot \$50 million bonus check if completed six months ahead of schedule.

The new canal will see larger ships in transit, allowing a maximum displacement of 170,000 Dwt, thereby more than doubling current thresholds on cargo-carrying capacities. Table 1 illustrates the particulars of present day and post-construction allowances, as well lock dimensions proposed.

Table 1 – Present and Future Vessel & Canal Particulars

Panamax Vessel	Post-Panamax	Increase	
Length	965 ft	1200 ft	236 ft
Beam	106 ft	160 ft	55 ft
Draft	39.5 ft	50 ft	10.5 ft
Dwt Displaced	55,000-75,000	150,000-170,000	95,000 dwt
Present Canal Locks		Post-Construction	Increase
Length	1000 ft	1400ft	400 ft
Width	110 ft	184'	74 ft
Depth	45ft	60ft	15 ft



Voyage Economics

While the distance saved is immediately apparent on given voyages, an owner utilizing the Panama Canal must take into account the transit tolls assessed his vessel according to its Panama Canal Universal Measurement System net tonnage (PC/UMS) as per Table 2. Additionally, following the expansion, transit tolls are expected to rise at a 3.5% annual rate over the next 20 years.

Table 2 – Panama Canal Transit Tolls

Current Toll Costs (Round Trip)	US \$ per PC/UMS ton
First 10,000 PC/UMS net ton	7.16
Next 10,000 PC/UMS net ton	7.03
Remaining PC/UMS tonnage	6.90

A vessel sailing from Puerto la Cruz in Venezuela to Los Angeles via the canal travels some 8,000 miles round trip, nearly a third of the 23,000 mile alternative route around Cape Horn; illustrating the huge impact the opening of the Canal has had on international trade. A vessel making this round trip voyage at 14 knots would take roughly 28 days via the canal, or 64 days rounding the cape. The bunker costs and canal tolls of each voyage are illustrated in Table 3. While an Aframax vessel would save roughly \$460,000 by utilizing the canal, a Suezmax can expect to save \$617,000—all savings atop these vessels cutting roughly 36 days from their voyage.

Table 3 – Round trip voyage economics, PLC/Los Angeles (US \$000)

Vessel	Bunkers via Cape	Bunkers via Canal	Canal Toll	Total Canal Cost	Savings via Canal
Aframax	1,227	435	331	763	461
Suezmax	1,689	602	470	1,069	617

Note: At US \$400/mt bunkers, 14 knot voyage speed, and 4 port days

While there still remains at least four years before larger tonnage may transit the canal, we derived approximate PC/UMS values for Aframax and Suezmax tankers basis the correlation of the PC/UMS to gross tonnage.

Already, US east coast ports are ramping up efforts to prepare for receipt of vessels with 50 foot drafts as charterers eagerly await the opportunity to increase the number of larger-sized ships they may utilize, thereby taking further advantage of the economies of scale. One can presume that the importance of the current Panamax tanker will largely diminish in 2014, and so too will overall tonne-mile demand as more and more vessels skip the Cape Horn routing.

The relative attractiveness of various crudes may change substantially for certain refineries, especially those located on the US west coast, under a large tanker routing assumption through the Panama Canal. It goes without doubt that the opening of the Panama Canal in 2014 to larger vessels will forever change the face of marine transport.