

Panama Canal – Yesterday, Today and Tomorrow

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- A ship traveling from New York to Los Angeles saves 7,872 miles by using the Panama Canal instead of sailing around South America
- The canal is 48 miles long and take, on average, 8 – 10 hours to transit
- Until 1995, Crown Princess® paid the highest toll for a transit of US \$141,350 on 5/2/93. The lowest toll paid was \$0.36 by Richard Halliburton who swam the canal in 1928. Tolls are determined primarily by the weight of ship with a measurement scale known as the Panama Canal/Universal Measurement System (PC/UMS); in 1994, in order to comply with a new, worldwide standard for measuring the weight of vessels, toll amounts changed.
- Each door of the locks weighs 750 tons
- Smallest dimensions of the locks are 110 ft (33.53 m) wide, 1,050 ft (320.04 m) long, and 85 ft (25.91 m) deep.
- The maximum size of the ships that can transit the canal is known as the Panamax. Cruises ships are often classified as pre-panamax (can transit), or post-panamax (cannot transit). Newer, Royal Caribbean ships are post-panamax like Mariner of the Seas which had to sail around South America to reposition from Port Canaveral to Los Angeles in 2009. The necessity for cruise ships to transit the canal is illustrated by the peculiarly narrow, top-heavy appearance of most modern large cruise ships.



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The need for a shorter shipping route between the Atlantic and Pacific Oceans dates back to the early 16th century when Charles V, Holy Roman Emperor and King of Spain ordered a survey for a route through Panama that would ease the voyage for ships traveling to and from Spain and Peru. It was not until the 1788-1793 voyage of Alessandro Malaspina that the feasibility of a canal was demonstrated and canal construction was outlined. Other over-land attempts to link the oceans were tried, and the Panama Railway, opening in 1855, proved the most successful and largely determined the later canal route.

A water route was still the most desired solution, and after the success of the Suez Canal, the French began construction on a sea-level canal (without locks) on January 1, 1880. The rush into the project without adequate study led to dismal results, with malaria and yellow fever killing vast numbers of employees. As many as 22,000 workers were estimated to have died

during the main period of French construction (1881-1889). Subsequently, the French abandoned their attempt.

President Teddy Roosevelt became a key proponent of the canal after reading the 1890 book "Influence of Sea Power upon History". Nicaragua was also considered feasible for a canal, and each, Panama and Nicaragua, had their supporters in Congress. With the passage of the Hepburn Bill, the President was authorized to acquire the French company's assets up to a maximum of \$40 million. Engineers finally convinced President Roosevelt that Panama, then a province of Columbia, was the best site for the canal. It was not until Panama declared independence (with U.S. military support) in November 3, 1903, that Congress passed the Hay-Bunau-Varilla Treaty granting the U.S. sovereignty to a canal zone 10 miles wide, 5 miles on either side. At about the same time, the connection between mosquitoes and malaria and yellow fever was made and solutions developed, paving the way for the canal construction. Chief engineer, John F. Stevens, convinced Roosevelt of the wisdom of the lock system rather than a sea-level canal. He estimated a sea-level canal would take 18 years – completion around 1924; the lock canal to take eight years or by January 1914.

Major design changes were made as work progressed. For example, the bottom width of the canal channel in Culebra Cut was widened from 200-300 feet. Lock chambers were enlarged from 95 to 110 feet to accommodate vessels then on drawing boards. It took 44,733 workers to complete the canal. The cargo ship Ancon was the first vessel to transit the Canal on August 15, 1914.

Since opening, the canal has been enormously successful, and continues to be a key conduit for international maritime trade. The canal can accommodate vessels from small private yachts up to large commercial vessels. In fiscal year 2008, 14,702 vessels passed through the waterway with a total 309.6 million Panama Canal/Universal Measurement System (PC/UMS) tons.

The Third Set of Locks Project will double the Panama Canal's capacity to accommodate today's larger post-panamax ships and allow more traffic. Panamanian citizens ratified the project on October 22, 2006. The project will create a new lane of traffic along the Canal with the construction of two sets lock complexes on both the Atlantic and Pacific sides with three chambers [1,400 ft (426.72 m) long, by 180 ft (54.86 m) wide, and 60 ft (18.29 m) deep]. The project also includes excavation of new access channels to the new locks and widening of existing navigation channels and deepening the navigation channels and the elevation of Gatun Lake's maximum operating level. The project is currently in progress and the new locks are expected to open for traffic in 2015.