



## Third Set of Locks Project

### Fact Sheet

## Relevant information on the third set of locks project

### 1 Project Components

- **Third set of locks project objectives.** The objectives of the Canal expansion are: (1) to make long term growing and sustainable contributions to the Panamanian society, through the payments that the Canal makes to the National Treasury; (2) to maintain Canal's competitiveness as well as the value of the Panama maritime route to the national economy; (3) to increase the Canal's capacity in order to capture the growing demand with the appropriate level of service for each market segment; (4) to increase Canal's productivity, safety and efficiency.
- **General description.** The third set of locks project is an integral Canal capacity expansion program with three main components, as follows: (1) the construction of two lock facilities – one in the Atlantic side and one in the Pacific side – each with water reutilization basins; (2) the construction of access channels for the new locks, as well as the widening of existing channels; and (3) the deepening of the existing navigation channels and the elevation of Gatun Lake's maximum operating level.
- **Locks location.** One new lock facilities will be located on the Pacific side, to the Southwest of Miraflores Locks. The other new lock facility will be located to the East of Gatun Locks. Both complexes will be within the ACP patrimonial areas.
- **Number of lock levels.** Each one of the two new lock facilities will have three levels or chambers, similar to the configuration of the existing Gatun locks.
- **Locks dimensions.** Lock chambers will be 427 m (1,400') long, by 55 m (180') wide, and 18.3 m (60') deep.



- **Maximum vessel dimensions.** The new locks will allow the transit of vessels with a beam of up to 49 m (160'), an overall length of up to 366m (1,200') and a draft of up to 15 m (50').
- **Number of water reutilization basins.** Each of the chambers of the new locks will have three water reutilization basins for a total of nine basins each lock facility and a total of 18 water reutilization basins for the entire project.
- **Dimensions of the water reutilization basins.** Each water reutilization basin will be approximately 70 m wide, 430 m long and 5.50 m deep.
- **Dimensions of the new locks' approach channels.** Two new channels will be built to connect the new locks on the Pacific side with the existing channels: (1) the north channel, which will connect the lock to the Gaillard Cut channel, circumventing Miraflores Lake, will be 6.2 Km. long and (2) the south channel that will connect the lock with the existing sea entrance on the Pacific Ocean, will be 1.8 Km. long. The new channels will be 218 m (715') wide, both on the Atlantic and Pacific sides, which will allow post-Panamax vessels to navigate those channels in one single direction at a time.
- **Dimensions of the widening and deepening of Gatun Lake and Gaillard Cut channels.** Gatun Lake and Gaillard Cut channels will be deepened by 1.20 m (4'), from level 10.4m (34') PLD to level 9.1 m (30') PLD<sup>1</sup>. Gatun Lake channels will be widened to no less than 280 m (920') on the straight portions and no less than 366 m (1,200') on the bends.
- **Dimensions of the widening and deepening of sea entrance channels.** The navigational channels at the sea entrances on the Canal's Atlantic and Pacific sides will be widened and deepened to no less than 225 m (740') wide and 15.5 m (51') deep, with the lowest tide.
- **Elevation of Gatun Lake's maximum operating level.** Gatun Lake's maximum operational level will be raised by approximately 0.45 m (1.5'), from the actual 26.7 m (87.5') PLD level to 27.1 m (89') PLD.
- **Gate types.** The new locks will use rolling gates instead of miter gates as the existing locks. For safety and redundancy, two rolling gates will be installed at each end of each lock chamber. Rolling gates maintenance will be performed inside the slot that they retract into, which also serves as a maintenance dry dock.
- **The three components of the third set of locks project's water program.** (1) Raising Gatun Lake's maximum operational level, (2) deepening Gatun Lake's navigational channel, and (3) three water reutilization basins per each lock chamber.

<sup>1</sup> PLD is the abbreviation of *Precise Level Datum*. It is the geodesic reference level used at the Canal.



- **Water reutilization basins' yield.** With the water reutilization basins, the third set of locks will reutilize 60% of water in each transit. The third set of locks will use 7% less water per transit than each of the existing lock lanes.
- **Gatun Lake's channel deepening's yield.** Deepening Gatun Lake's and Gaillard Cut's navigational channels will allow the use of greater lake storage capacity, which will increase the yield of the water supply system by 385 million gallons (1,457 million liters) of additional water per day. This will be enough water to perform approximately 2,550 additional lockages per year, or about 7 additional lockages per day.
- **Gatun Lake's elevation water yield.** Elevating Gatun Lake's maximum operating level will increase the lake storage capacity, which will increase the yield of the water supply system by 165 million gallons (625 million liters) of additional water per day. This will be enough water to perform an annual average of approximately 1,100 additional lockages, or about 3 additional lockages per day.
- **Combined water program yield.** The combination of the three components of the water program will allow the Canal's water system to provide 2,670 million gallons of additional water per day, an amount of water equivalent to approximately 48.5 daily lockages or 17,700 transits per year<sup>2</sup>.

## 2 Cost estimate for the third set of locks project.

- **Cost estimate for the third set of locks project.** The project will have an approximate estimated cost of \$5,250 million, which includes provisions for contingencies and inflation during the construction period. This estimate assumes 2% average annual inflation.

## 3 Canal market

- **Main Canal market segments.** During FY 2005, the containerships segment represented, with 98 million PCUMS tons<sup>3</sup>, a 35% of total PCUMS tonnage transiting the Canal and 40% of its revenues. That same year, the dry bulk segment represented a 55 million PCUMS tons volume and 19% of revenues, while the vehicle carriers segment generated 35 million PCUMS tons or 11% of revenues.
- **Key Canal route.** Within the containerized cargo segment, trade between Northeast Asia and the U.S. East Coast has the highest

<sup>2</sup> An equivalent lockage refers to the water required to transit a vessel from one ocean to the other through the existing Canal, or approximately 55 million gallons per transit.

<sup>3</sup> Cargo volume transiting the Canal is measured in PCUMS tons, PCUMS being the acronym for Panama Canal – Universal Measurement System. A PCUMS ton is the unit used by the Canal to establish tolls, and measures vessels volumetric cargo capacity. A PCUMS ton is equivalent to approximately 100 cubic feet of cargo space, and a 20-foot long container is equivalent to approximately 13 PCUMS tons.



potential for Canal traffic growth. At present, this route represents over 50% of PCUMS volume of containerized cargo transiting the Canal.

- **Projected traffic growth for the expanded Canal.** In the most probable scenario, Canal traffic will increase from the 280 million PCUMS tons that transited through the Canal during FY 2005 to nearly 510 million PCUMS tons in FY 2025, which represents an 82% growth. In the highest growth scenario, traffic will reach 585 million PCUMS tons in 2025, while in the lowest growth scenario demand will grow to almost 480 million PCUMS tons in FY 2025. This represents a growth of between 72% and 110%, considering the lowest and highest growth scenarios, respectively.
- **Growth forecast for containerized cargo transiting the Canal.** Most probably, containerized cargo traffic will increase at an average annual rate of approximately 5.6%, from 98 million PCUMS tons in 2005 to close to 296 million in 2025. In the optimistic scenario, containership demand would grow to reach 345 million PCUMS tons in 2025 and, in the pessimistic case, to 279 million.
- **The advantages of post-panamax containerships.** These ships offer scale economies that reduce shippers' operational cost per TEU<sup>4</sup> by 7% and 17%. Transcontinental routes where shippers may use post-Panamax vessels hold an advantage over routes where these may not be used, such as the Canal.
- **Other Canal segments' growth projections.** In terms of PCUMS volume, the vehicle carriers and cruise ships segments will have an average annual growth of between 2% and 3%. The dry bulk segment will grow at an average rate of about 1% per year during the next twenty years.
- **Canal competitors.** In the containerships market segment Canal competitors between Northeast Asia and the U.S. East Coast, are: (1) the transpacific route combined with the U.S. Intermodal system of the United States and (2) the Suez Canal route
- **Market share.** In the containerships route between Northeast Asia and the U.S. East Coast, the Canal holds a 38% market share, while the transpacific / Intermodal route holds 61% and the Suez Canal route, 1%. Should the Canal be expanded with a third set of locks, the Panama route will increase its market share to about 49%. Otherwise, Panama route's market share will decrease to about 23%; that of the Intermodal system will go up to 65%; and Suez's to 12%.
- **The post-Panamax containerships fleet.** By 2011, the entire post-Panamax containerships fleet will consist of approximately 670 vessels with a total capacity of about 4.6 million TEUs, twice the current capacity of the post-Panamax containership fleet. Therefore, by that same year, 37% of the world's containerships fleet capacity will be in vessels that cannot transit through the Canal due to their size.

<sup>4</sup> One TEU (*twenty-foot equivalent unit*) is the term used to identify a 20' long maritime container, or its equivalent.