

**1/9/13 - Day 4 - Panama Canal Transit:** Today's big event was passage through the Panama Canal from the Caribbean Sea to the Pacific Ocean. The whole trip takes about 12 hours. We moved across the nation of Panama from near the city of Colon in a southeasterly direction about 50 miles so that we ended up a few miles further East in the Pacific Ocean near Panama City. Travel always makes us wish we had paid more attention in our 9<sup>th</sup> grade geography classes. For example, it comes as a surprise when we relearn that you actually travel southeast through the Panama Canal and that the West Coast of South America is just about due south of the East Coast of the United States. Because of this arrangement it has not been necessary for us to change our clock settings since we left home in East Tennessee and traveled to the West Coast of South America.

**Panama Canal background:** Before launching in to a description of the day's events a little background information on the Canal may be of interest. In the few days since leaving Ft. Lauderdale there has been a couple of excellent lectures on Panama Canal history by Dan Ostler. He obviously knows his subject well and delivers it in an easy conversational style. For more info you can check out [www.ostler.com](http://www.ostler.com). There was also a professional Panama Canal tour guide on the ship's PA system as we went along and he provided a wealth of information on the passing scenes. The author, David McCullough, has also written an excellent book called "The Path Between the Seas" which we recommend to anyone with an interest in the Panama Canal. The following information was obtained from these speakers as well as from literature provided by the Amsterdam.

It turns out that early Spanish explorers recognized that a canal across the Isthmus of Panama would be a great way to shorten the trip from Europe to the lands of the Pacific Ocean. In 1513 King Charles I of Spain started the planning process for a canal that would use the Chagres River as a starting point. Subsequent surveys and exploration revealed monumental problems with jungle and swamps so those plans were abandoned.

Later, a Frenchman named Ferdinand de Lesseps, successfully promoted and built the Suez Canal in 1869. Based on the fame from that effort de Lesseps was able to get financial backing in 1881 to start a French business venture for building a canal up the Chagres River and across the continental divide to the Pacific Ocean. The French project envisioned a sea level canal and was eagerly backed by financial speculators. These early dreamers lost everything when work crews died of yellow fever and digging was stopped by endless landslides and jungle swamps.

Meanwhile, the military and commercial value of a canal connecting the Atlantic and Pacific Oceans was becoming apparent to the United States. Through various political, financial and covert military actions the US, under President Teddy Roosevelt, took over the Panama Canal project in 1904. Failure of the French effort was partially due to the deaths of tens of thousands of workers who were infected by yellow fever. In subsequent years Walter Reed identified the cause of yellow fever so that effective preventive measures could be taken to reduce exposure of workers to mosquitoes. Important components in the construction effort were the effective combat of yellow fever, modern digging equipment and the decision to use locks and Lake Gatun for much of the Panama Canal transit rather than a sea level canal. The project was successfully completed by the US and the Panama Canal was opened for military and commercial shipping in 1914.

Speaking of commercial aspect, the Panama Canal produces a significant income from the charges made for shipping that passes through continuously. While the calculation of the cost for any individual ship is a complex process, we were given some “ball park” estimates for the cost of a transit. For example, the average cost of a freighter passing through would be on the order of \$100,000 USD. On the other hand, the cost of the largest cruise ship would be around \$483,000 USD. One rule of thumb was that on the typical cruise ship the cost is calculated at \$134 USD per berth.

**Transit of the Panama Canal:** As shown on the right, the Panama Canal is located on sharply curved portion of the narrow isthmus occupied by the nation of Panama, a more detailed map of the Canal is shown below. Points of interest illustrated later with photos are pointed out in the map.



Today our Panama transit started near the city Colon on the Caribbean Sea. The Gatun Locks lifted the Amsterdam about 80 feet in a series of three locks. The jungle swamps of Panama were just one of the many challenges that faced the early builders of the sea level Canal. That obstacle was largely avoided by damming the Chagres River where it emptied into the Caribbean Sea. The dam backed up the river into the low swamps and created Lake Gatun. Lake Gatun then covered about 25 miles of the 50 mile long canal. The next challenge was the mountains of the continental divide.



These mountains are part of the mountain range including the Rocky Mountains of North America and the Andes Mountains of South America. Fortunately the continental divide in Panama was only 800 feet high so that digging a trench through them was difficult but eventually accomplished. What follows is a collection of photos we took along the Canal today with annotation where it might help to explain the scene.

It was still dark at 6:30am as the Amsterdam approached Gatun Locks of the Panama Canal. However, bright lights allow the locks to be operated 24 hours a day. The picture on the right shows the approach to the locks with our ship lined up to take the path on the right. The channel on the left would soon be taken by a large commercial container ship.



The Amsterdam was connected by lines to the electric locomotives on each side of the channel. The Amsterdam was slowly maneuvered

into the first lock with about 2 feet of clearance on either side.



The gates were closed behind the ship and the lock was filled with water to lift the Amsterdam about 30 feet. Then the gates in front would be opened and the ship would proceed forward into the next lock. The movement was guided by the electric locomotives on cog railways.

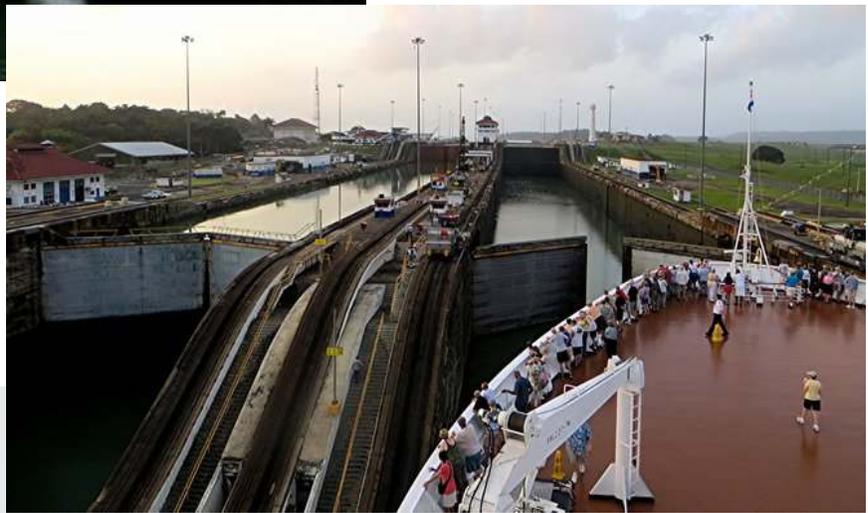
It was daylight by the time we were fully in the first lock. In these pictures eager passengers are lining the rails to view the action..





Meanwhile a large container ship was moving into the adjacent lock, as shown on the left.

After the Amsterdam was lifted by filling the first lock with water, the gates were opened and we proceeded to the second lock, as shown on the right.



This provided the perfect opportunity for Barbara's restless library card to show that it was now visiting the Panama Canal at the Gatun Locks.



Our cruising friend, Jeff, was roaming the decks with his camera and stopped by for a quick picture.

Finally we were in the third lock at Gatun. Looking back we could see our hulking container ship companion still by our side.



At this point Orlin took a quick stroll down to the bow of the ship and got this picture showing the people lining the rail way up on Deck 6 where Barbara was holding forth. The fact that the Amsterdam was on the 2013 Grand World Voyage was prominently displayed on the expansive superstructure below the people lining the Deck 6 railing.

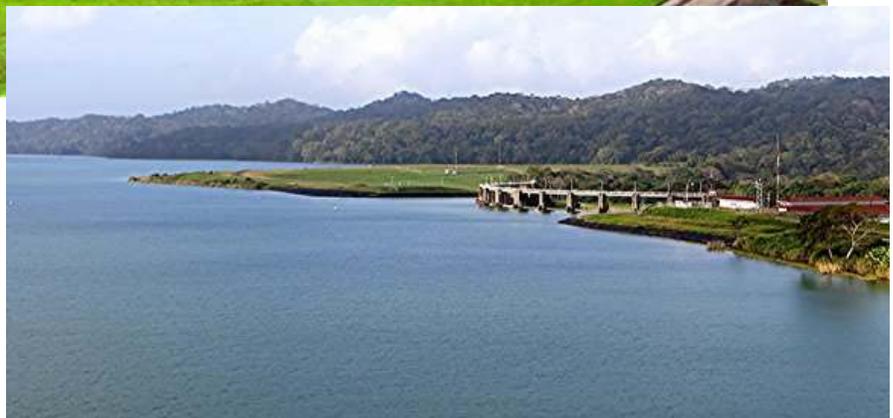
When the third lock was filled with water we were lifted to the level of Gatun Lake and were free to proceed under our own power.



It turns out that the Panamanians have not missed the opportunity to market the Panama Canal as a tourist attraction. Along the road adjacent to the Gatun Locks the picture below shows tour busses and vans lining up to see the various ships pass through. There would be more evidence of the tourist industry in action as we passed through the Canal.



Once out into Gatun Lake we could see the top of Gatun Dam, shown on the right. Gatun Dam blocks the Chagres River and forms the lake we would be traveling on. The hydro electric plant in the dam also produces power used in the Panama Canal operation.





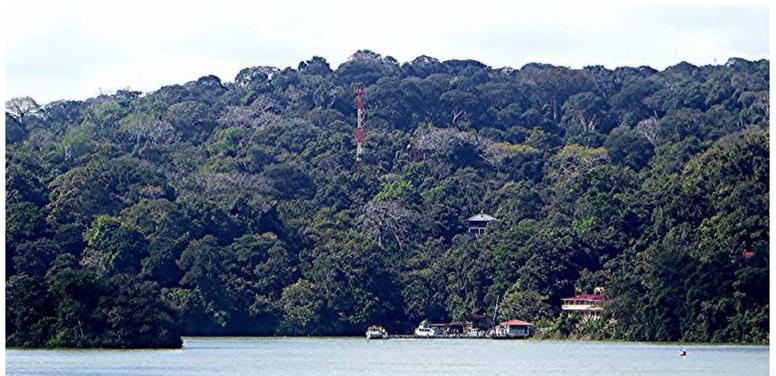
Just after leaving the Gatun Locks and looking to the south we could see the Panama Canal Expansion Project construction site, as shown on the left. This construction will create locks that will be in parallel with the current locks but will be much larger. Currently almost 10% of the world's ships

are too large to use the Panama Canal. This construction of new expanded locks, which is taking place at both ends of the Panama Canal, is scheduled for completion in June 2014.

After all the hustle and bustle of going through the Gatun Locks, cruising through the Canal on Gatun Lake seemed very serene. As shown on the right, there were numerous heavily forested islands dotting the lake. These, of course, were the tops of hills that got in the way and frustrated the original French canal workers.



No commercial activity or private dwellings are allowed on the islands. However, it was pointed out that on the island shown on the right, the Smithsonian Institution maintains a facility engaged in research on the diversity of plants and animals in the region.

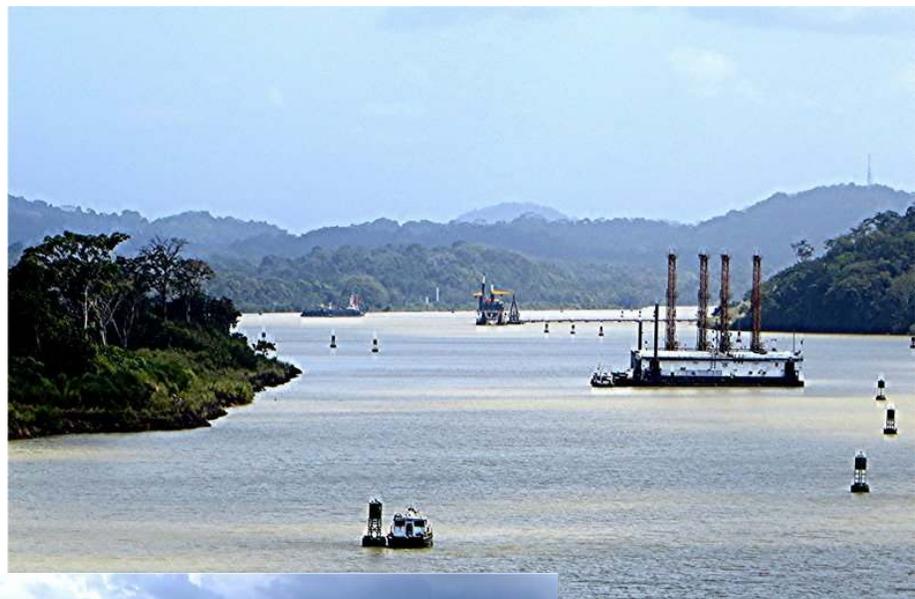




These nice looking boats with blue sun shades looked like part of the tourist industry offering guided tours along the Panama Canal.

All of the presentations about the Panama Canal emphasized how the soil is continually sliding downhill into the canal. Part of the erosion is a result of rain but part is due to the volcanic nature of

the soil that results in this creep even on hills with very gradual slopes. As a result of this soil condition there is a need to constantly dredge the canal to keep it deep enough for the largest ships to pass through. We saw many different types of dredging going on, as shown in the following pictures.





This crane on the right was reported to be one of the largest floating cranes in the world. It is part of the dredging operation on the Panama Canal.





Shown on the left is an example of how terracing and ground cover is used along the shore of Lake Gatun to reduce the inevitable sliding of soil into the Panama Canal.

We passed the mouth of the Chagres River where it empties into Lake Gatun. A railroad and automobile bridge crosses the Chagres at this point. The railroad runs parallel to the Panama Canal over most of its path. A shipment of goods by the railroad takes about 1 hour to travel from coast to coast and it carries a significant amount of cargo for container ships and other commercial shipping operations.



We came to the part of the Canal called the Gailiard Cut, as shown in the picture on the left. This is the location of the continental divide in Panama and represented another huge challenge to the canal builders. The terraced feature on the left of the canal is called Gold Hill. It is called that because when de Lesseps was selling his idea of the Panama Canal to French investors in 1881 he claimed this hill was rich in gold and they would profit handsomely by digging through it. Of course, there was no trace of gold in the hill, only the huge expense of removing the rock and dirt to create the channel. Beyond

Gailiard Cut and Gold Hill is the Centennial Bridge which carries one of the two main North-South roads in Panama.



Beyond Gailiard Cut we soon came to the Pedro Miguel Locks. Here the Amsterdam would exit Lake Gatun and be lowered about 30 feet to Miraflores Lake.

On the approach to Pedro Miguel Locks the huge construction site for the new Canal Expansion Project was visible , as shown below.

We passed through the Pedro Miguel Locks and proceeded across Miraflores Lake to the Miraflores Locks where we would be lowered through two locks and exit the Panama Canal into the Pacific Ocean. The approach to the Miraflores Locks is shown below.



Near the center of the picture on the left is a tan colored multi-story building that contains two restaurants and a school for training restaurant chefs. The restaurants support the local

tourist industry and they promote the idea the coming to the restaurant to view ships passing through the Miraflores Locks is a great way to spend some time and entertain guests.

As we passed through the locks the view of the restaurant building became clearer and we could see hundreds of people lining the upper balcony rails to see us pass by.



It's hard to imagine all these people came out just to see the Amsterdam pass by, but if they did we were highly honored. Everyone was enthusiastically waving back and forth.

After passing through the Miraflores Locks we were once again at sea level but this time in the Pacific Ocean. The Amsterdam

glided smoothly down the channel toward the open sea. Along the way on the right side we got another good view of the construction site for the Panama Canal Expansion Project, as shown in the photos below. There is a lot remaining to be accomplished before the scheduled opening day in June of 2014.



Shortly after passing through the Miraflores Locks we passed under the Bridge of the Americas which carries one of the two major North-South highways in Panama.



We proceeded out of the Panama Canal channel through the Panama City harbor. Gradually a beautiful view of the skyline of Panama City came into view as shown below.



With a nice selection of sailboats in the foreground and the gleaming skyline of Panama City in the background this made for a beautiful way to end the day.