

CDSG PANAMA SPECIAL TOUR TRIP REPORT

by

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Significant contributions to this trip report were provided by CDSG members Elliot L. Deutsch and Bolling W. Smith.

Success of this tour was due largely to the support of Major General Richard F. Timmons, Commanding General, U.S. Army South, Fort Clayton, and to the organizational ability and energetic guidance of the Command Historian, U.S. Army South, Mrs. Dolores De Mena.

The endorsement of Brigadier General Harold W. Nelson, Chief of Military History, Center of Military History, U.S. Army, Washington, D.C., for the CDSG tour came at a critical juncture and was important to the success of the tour.

Appreciation is extended also to the early assistance and advice of Ms. Lerna Llerna, Press and Cultural Attache, Embassy of Panama, Washington, D.C., to Mrs. Angelica Guinard and staff of the Instituto Panamino de Turismo (IPAT), Panama City, Republic of Panama, and to the staff of the Panama Canal Commission, Ancon, Republic of Panama, and its headquarters in Washington, D.C.

Inception of the special Panama tour must be credited to the then CDSG board chairman Michael Kea; his interest and support was ably followed by his successor, Terry McGovern. Thanks likewise is extended to LTC John T. Stobie, U.S. Army Retired, a resident of Panama, who provided helpful advice and information.

Introduction: Nineteen Coast Defense Study Group (CDSG) members and guests participated in the Panama Special Tour, 01 - 04 March 1993 inclusive. Our base during the stay in Panama was the Marriott Caesar Park Hotel, Calle 77, Panama City. Attendees assembled at the hotel over the weekend of 27 - 28 February. On the first evening, Mrs. De Mena, who rapidly became known to the group as Dolores, visited the hotel and provided the new arrivals with a briefing on the tour schedule and general social conditions in Panama City.

U.S. Army South provided the tour group with two air-conditioned vans with military drivers, E-4 (Spc) Henry Bryant James, Jr. (from Chicago) and E-4 (Spc) Thomas E. Lucas (from New Orleans). Both drivers will be remembered for their general competence, driving skills and unfailing good humor despite the long days they put in with the group. CDSG was fortunate in having Dolores as guide and mentor full-time for the four days of the tour. Her local knowledge and Spanish language competence were invaluable. Even the weather co-operated, as in the extended dry season we were blessed with excellent weather for travel and photography for the period of the tour. The vans were loaded with chests of bottled water and soft drinks, and we were frequently in the vicinity of excellent local drinking water so the daily drives, even across the isthmus, were conducted in comfort.

A typical day's outing was from 0700 to 1730 Hours. Breakfast and dinner

generally was enjoyed at the hotel's Cafe Las Hamacas, which offered a good selection of tasty American and Panamanian food.

Some idea of the complexity in making the tour arrangements can be judged by the fact that ex-U.S. coast defense sites of the former Canal Zone, today are properties whose control is scattered among various agencies of the Panamanian government, various command elements of the U.S. Army and private hands. The CDSG was lucky that coordination for securing permission to visit the disparate sites was centralized in the able hands of the Command Historian, U.S. Army South. Consequently, the tour was able to visit every major coast defense battery emplacement.

Day One, Monday, 01 March 1993

After an early departure from the hotel, the group proceeded through the streets of Panama City to the former fortified islands. There was a brief stop at the buried sites of former Batteries Smith and Birney (each originally holding two 6-inch Model 1908 guns on Model 1905MII disappearing carriages), located adjacent to the Fort Amador Officers Club parking lot. All that can be seen of the battery positions are grass covered slopes of a housing area and a historical marker erected by the U.S. Army in 1965.

Our convoy of two vans drove along the causeway to Naos Island, once a part of Fort Grant. This causeway today comfortably carries a two-lane roadway. The causeway has been widened several times over the years since its completion circa 1912. No vestige was visible of the military railroad which once tracked along this route from the time of the causeway completion.

All battery positions on Naos were fenced off and entrance to the sites was controlled by the Smithsonian Institution facility for marine research. Their offices were located in the old coast artillery mine storehouse, completed 1914. Through the courtesy of Sr. Arcadio Rodaniche, in charge of the facility, the group was escorted through the old mine building and the gates opened to the battery locations. The soft drink vending machine in the office building provided cold colas at the welcome price of 25¢ each, to thirsty tour members.

Trudging on foot along the deteriorated narrow roadway leading to Battery Parke (vintage 1916 emplacements for two 6-inch Model 1908 guns on Model 1905 disappearing carriages) we initially encountered the vandalized private club that was under construction for the former Panamanian chief of state, General Manuel Noriega. Overlooking the channel leading to the entrance of the Panama Canal, a stone's throw from Battery Parke, this lavish building was not quite completed at the time of the December 1989 invasion that ended Noriega's regime. The building proved a fine vantage point for CDSG photographers.

Battery Parke was low lying, designed for defending minefields. Now overgrown with high grass and jungle vegetation, particularly at Gun #2 emplacement, access was attained nevertheless. At Gun #1 the remains of a mechanical indicator display was observed. In plan, this battery closely resembles the other five 6-inch batteries constructed in Panama.

From the roadway near water's edge in the rear of Battery Parke a good view was obtained of the former Mine Wharf leading from the causeway. It was in good

condition. Three canal pilot boats tied up at the wharf suggest present activity of the facility.

The main armament on Naos Island consisted of four 14-inch Model 1910 rifles mounted on Model 1907M1 disappearing carriages, equally divided between Batteries Burnside and Buell. A steep tunnel climb of more than 120 steps, punctuated by several landings, from the rear entrance to the level of a wide tunnel passing in the rear between the two batteries left more than one participant puffing and mumbling. On the right flank of Burnside, a stairway led up and forward to fire control stations.

While there was some debris in the main battery tunnels, it was possible to gain access to the gun emplacements with the exception of Burnside #2 Gun. All emplacements were relatively free from jungle growth and in fairly good condition. At these batteries several 25-KW gasoline driven generators and power panels were still in place. At Burnside an electric powered double-drum hoist, still in place, operated a tramway to haul supplies and ammunition uphill into the battery tunnel. One 14-inch shot tongs was still lying on a loading table in the Buell shell room. Numbered data slides were lying in some plotting rooms or in data tunnels.

We then proceeded to adjacent Culebra Island which, for the period 1930-46, had open emplacements and ammunition storage bunkers for two 14-inch Model 1920 railway guns on Model 1920 carriages. At #1 Gun position there was limited evidence of railway track and emplacement concrete, and nearby ammunition bunkers. For #2 Gun emplacement, no concrete nor rails were visible, although the general site was identifiable. A shoreline tree loaded with roosting pelicans provided an interesting backdrop.

For lunch we drove to the Quarry Heights Officers Club, since the officers club at Fort Amador was closed on Mondays. A small army post nestled against Ancon Hill, Quarry Heights has a number of old wooden construction officers quarters with galvanized iron roofs dating back to circa 1911; several of these houses lined the streets around the Officers Club. These old buildings with a surrounding of heavy tropical vegetation gave some indication of the appearance of the old army posts in the Canal Zone prior to World War II.

We returned to Fort Grant after lunch, going to Perico Island. It was with relief that we rode up to the summit, the roadway following the former track of the railroad which once climbed to the top of the island. Battery Newton once possessed a single 16-inch Model 1895 rifle on a Model 1912 disappearing carriage. The gun well has been filled, but the battery position was in good condition and well-kept. At present, the battery is the site of a facility of the Panamanian Civil Aeronautics Authority, and the battery loading platform now carries a large radar antenna. The magazine and supporting structures are relatively intact and generally accessible.

From Perico we drove along the causeway to Flamenco, the outermost of the fortified islands which made up Fort Grant. In its day as a coast artillery site, the armament consisted of Battery Warren on the summit, comprising two 14-inch Model 1910 rifles on Model 1907M1 disappearing carriages, and three mortar batteries on the reverse slope. The latter, Merritt, Prince and Carr, each dis-

posing of four 12-inch Model 1912 mortars on Model 1896III carriages. The island is now a Panamanian naval training facility (Service Maritime Nacional Panama), and a number of recruits were observed undergoing training.

Our arrival was not expected by the naval authorities on duty, but Dolores successfully negotiated our entry with Teniente de Navio S. Gutierrez, Alfredo de Navio C. Mendez S. and one or two unidentified officers. An initially reluctant naval command became increasingly enthusiastic as CDSG members explained the functions of individual structures and histories of the batteries now occupied as offices and classrooms by the Panamanian naval training facility. As none of the Panamanian naval officers appeared to speak English, Dolores functioned as interpreter explaining the meaning of various battery sketch entries, and translating questions and answers to questions asked by the naval officers as we walked through the tunnels and rooms of the various batteries.

We drove first to Battery Warren. One of the vans was unable to carry its full load up the steep road to the battery, so the occupants walked the last part of the way, which the intense sun and steep grade made a memorable experience. Once at the top of the island, the group enjoyed a tour of Battery Warren with its complex of fire control and command stations. The battery, with service magazines on the gun level and a storage magazine below that, appeared mostly unoccupied.

Both gun emplacements at Battery Warren have been filled and that of #1 Gun is now a parking lot; the upper portion of the parapet wall is still visible in both emplacements. In general, rooms and tunnels were in excellent condition.

Of particular interest at Warren was the elevator lift for personnel, supplies and ammunition from a horizontal tunnel on the mortar battery level, rising about 280 feet to a gallery in Warren. The elevator mechanism, in poor condition, is still in place at the bottom of the shaft. This shaft terminal is at the end of the horizontal tunnel, which itself is an interesting engineering object. Extending possibly 200 feet from its entrance, the tunnel has a smooth concrete finished surface on the walls and ceiling for perhaps two-thirds its distance. But the last portion shows the rough rock original condition after blasting; perhaps the lack of funding is responsible for the absence of final surfacing. The height and width of this tunnel normally would make for easy walking, but progress was impeded by some debris. The area, particularly near the tunnel entrance, seems to be used as a storage and discard site by the Panamanian naval command, and is not well-kept.

The three mortar batteries are in good condition, well-maintained, and appear to be used for various administrative functions by the naval facility. CDSG members were allowed to move about freely and take photographs, as was the case earlier at Warren. The group much appreciated the hospitality and interest of the Panamanian naval officers, who were obliging and helpful.

A happy and satisfied tour group returned to our hotel for showers and good food.

Day Two, Tuesday, 02 March 1993

Early departure from the hotel in our two vans enabled us to traverse the morning rush hour traffic of Panama City. A two hour road trip across the 50-mile isthmus to Margarita Island and ex-Fort Randolph on the Atlantic side enabled the group to

see something of the Panamanian countryside.

The former army post of Fort Randolph has disappeared, as far as buildings and roads are concerned. Only the fortifications along the seafront remain, and perhaps not for long in their present condition. The whole island is under development by an Asian consortium, the Isla Margarita Group, consisting of Isla Margarita Development Inc. and Atlantic Development Inc. Financed by Hong Kong, Taiwanese and Macau investors, the island is in process of being developed into a commercial and tourist center. Bulldozers and heavy construction equipment were observed busily grading and moving the landscape. Two new warehouses were already erected, bearing Chinese company names.

Our group was expected and was greeted by representatives of the development company at a temporary office building. We were escorted to a conference room where we were given an excellent briefing on plans for developing the island over a fifteen year period, of which four have passed, by Ms. Berta Alicia Chen. She remarked that the concrete batteries will be incorporated into the contemplated construction. Battery Weed, for example, will be a part of a 200 room hotel and mall.

Following the briefing our vans drove us to an accessible open area in the general vicinity of Batteries Webb and Weed. We were escorted by a company employee, Ms. de la Guardia (?). Here tour members were able to explore the battery sites as their interests guided them.

On the right flank of the fortifications line were the two circular open emplacements for the railway battery (the same two 1920 Model railway guns that serviced the emplacements on Culebra island visited the previous day). After a search, #1 Gun emplacement was found nearly overgrown in a mangrove swamp and was practically intact. The emplacement for #2 Gun was more easily located in the open sandy stretch near the mortar batteries. This circular concrete platform already had been bulldozed loose and flat from the ground, and its thick base partially exposed, but it was still in its original place. The center platform and circular rail had been torn out and are lying in pieces at the edge of the swamp to the right of the position. It seems doubtful that either concrete emplacement will survive for long, and members who photographed the remnants are fortunate to record this piece of history.

The mortar position of Batteries Tidball and Zalinsky was locked at the entrance gate. But ingenuity on the part of CDSG enthusiasts soon gained entry, apparently to the consternation of the local Panamanian caretaker who appeared from one of the battery structures. While in disuse and littered with debris, the structures and emplacements of the two batteries (each four 12-inch Model 1912 Mortars on Model 1896MIII carriages) were in relatively fair shape. The corpse of a race horse, found in one of the structures and apparently having died of starvation, perhaps illustrated the isolated status of these batteries in recent years.

Battery Webb (built for two 14-inch Model 1910 rifles on Model 1907M1 disappearing carriages) was accessible, but approach from the rear was hampered by high grass. Considering the passage of time and general neglect for some years, the battery was in fair condition though deterioration was evident. There was some grass and shrubbery on the parapet, but insufficient to impede exploration.

Webb was a two-story battery, with service magazines on the gun level and storage magazines on the lower level. There were powder and shell hoists from the storage (reserve) magazines to the upper (service) magazines. The balanced platform powder hoist - each car about 6 feet high - contained an angle frame in the middle which may have supported a divider between upper and lower compartments. Projectiles were raised by Yale & Towne electric chain hoists through T-shaped floor openings to shell tables on the upper level. The parallel rails on each table contained a moveable section, hinged at the rear. The rising shell lifted the hinged sections which then dropped back into place and the shell was then lowered on to the rails and rolled to the front of the table.

An overhead monorail, some sections in good condition, was visible on the ceiling leading from the lower projectile rooms. It appears to have been installed to transfer projectiles from/to railcars on tracks at the rear of the battery.

A later modification to Webb was the storage magazine for the nearby 14-inch railway battery position, which was added to the lower level at Battery Webb. The munitions were transferred from the magazine to the railroad battery via the connecting track which ran parallel to the rear of the battery. (The deficiency of this system is described in: Charles S. Small, Military Railroads on the Panama Canal Zone, Cos Cob (Connecticut): Railroad Monographs, 1982, pages 38 and 45).

Battery Weed (for two 6-inch Model 1908 guns on Model 1905M1 disappearing carriages) was situated on the left flank of the fortifications line, overlooking the juncture of the East breakwater with Margarita Island. It was in fair condition. At the data booth on the gun platform there was space for a 4-wheel indicator - used for elevation. A question arises as to how azimuth transmitted?

For lunch, we took a fifteen minute drive to the newly re-opened Hotel Washington in Colon. An excellent lunch was obtained in the new cafeteria at the back of the ground floor. This hotel, basically in its present configuration, was constructed pre-1914, and was operated for many years by the Panama Canal Company. It was a center of social gatherings for Panama Canal employees and military officers for more than half a century, and was well known to coast artillery personnel and their families. It recently re-opened in private hands after some renovation. Land filling the old hotel swimming pool which lay adjacent to Battery Morgan apparently was part of the new look.

After lunch we drove next door a few hundred feet to Battery Morgan, Fort De Lesseps. This small ex-army post is now a private Panamanian housing area behind a security guard at the entrance gate; the dozen or so individual houses in the compound appear modern and well kept.

Battery Morgan (emplacements for two 6-inch Model 1908MIII guns on Model 1910 barbette carriages) was completed in December 1916 for minefield defense. Overall, the battery was observed to be clean and in good condition. The CDSG "official" group photo for the Panama tour was taken at this time, in #1 Gun emplacement.

At Morgan, data transmission displays were mounted in concrete "boxes" located on the rear edge of the platform behind each gun. We could not see any mechanical path to the plotting rooms. But however it worked, there appears to have been

right-angle connections through rectangular ports in the rear wall of the battery displays and about 1 foot to the rear.

A point of interest visible from Battery Morgan was the depression position finder pedestal mounted atop the roof of the nearby Hotel Washington. This fire control position was visited by several tour members during our lunch period at the hotel.

From Battery Morgan the tour departed on a 20-mile trek up the coast to Portobelo on a surfaced road that became badly deteriorated in spots and was bone rattling bumpy on occasion. The hour's stressful drive was skilfully handled by our drivers, James and Lucas.

In the 17th and 18th centuries, colonial Spain constructed a dozen stone forts around the bay at Portobelo for the protection of its gold shipments from Latin America destined for trans-shipment to Spain. Some of these forts have not survived and others are difficult of access. The last Spanish garrison departed in 1821.

We were able to first visit Fort Santiago (1753-60) - the year 1758 was engraved over the gateway - and then Fort San Jeronimo (also built 1753-60). Those members interested in old armament were able to examine a number of examples of 18th century 24 and 32 pounders.

The other item of historical interest seen was the former Spanish customs house (built 1630) close by Fort Santiago. This building is currently undergoing reconstruction with a financial grant from the Government of Spain. Otherwise the present-day town of Portobelo appeared to be existing on a marginal economic basis. - Within the American construction period of the Panama Canal, 1904-1914, a quarry on the bay at Portobelo^{provided} crushed stone for the vast quantities of concrete needed on the Atlantic construction side. It seems possible that some of this stone was used in the concrete utilized in the construction of the early Panama coastal fortifications.

Day Two of the tour was completed by a two-and-a-half hour uneventful drive back to our hotel in Panama City.

Day Three, Wednesday, 03 March 1993

We made another early start for the drive across the isthmus, this time to Fort Sherman at Toro Point. The Panama Canal was crossed via the narrow swing bridge through the walls at the Gatun Locks. The short wait before crossing enabled tour members to watch ships transiting the locks and to take photographs. It was here that we saw a coatimundi, a local wild animal, running through the brush grass at roadside.

Fort Sherman was established in 1911 and quickly became a coast artillery post. Today, it is still an active U.S. Army post and the home of the U.S. Army Jungle Warfare Center. We were fortunate to receive a briefing, complete with an army orientation film, on the mission and activities of the Center by LtColonel Teston, Special Forces, U.S. Army, commanding officer of the Jungle Warfare Training Center

Battalion. He certainly held the group's attention with his excellent and informative presentation.

Battery Kilpatrick, just off the old parade ground, was constructed for two 6-inch Model 1908 guns on Model 1905MI disappearing carriages. Within sight of the barrack area, the battery is generally clean and in good condition. There is minimum evidence of the tropical animal zoo that occupied the premises in the 1960s. The mine casemate and powerhouse were open for inspection, but bare of equipment.

We made a short, quick drive to the Toro Point Light House at the junction with the West breakwater. A famous local landmark, this light house is fully automated.

It was a short drive into the jungle to Batteries Stanley and Mower, each a single-gun battery for a 14-inch Model 1910 gun on a Model 1907MI disappearing carriage. Both batteries were heavily covered with vegetation, particularly the loading platforms. Entrance, nevertheless, was gained to the magazines and auxiliary rooms of both. In general, these batteries were in poor condition and both have been used for training exercises by the Jungle Warfare Center. Battery Mower, for example, still had booby trap training devices in place in the instruction area to the immediate rear of the battery. We benefited from the presence of several military personnel who accompanied our group from the Jungle Warfare Center, and who were able to answer questions and provide directions. One of these NCOs accompanied us to the mortar batteries subsequently.

Batteries Howard-Baird (built 1913-15, each with four 12-inch Model 1912 Mortars on Model 1896MIII carriages) came as a pleasant surprise after Stanley and Mower; they were clean, well-kept and in current use by the U.S. Army as storage facilities for small arms ammunition, training supplies and equipment. The railway tracks behind the pits were in place still, and also in good condition.

At Batteries Howard-Baird the plotting room structure behind Battery Howard was missing. The remaining one, behind Baird, had a unique feature in the data display box on the roof. Normally, there are 5 wheels for "Azimuth" and 4 to display "Elevation". Here there were two additional wheels, 1 each for "Zone" and "Projectile". There was also a complete - and rare - set of zone lights in the powder magazine, labeled from right to left: 1, 2, 3, 4, 5, 6, 7, 8A, 8B, 9 and 10.

Another unusual feature of the mortar position was a poured-concrete infantry defense wall behind the batteries with rifle embrasure about $4\frac{1}{2}$ feet above the ground. Just outside the gate entrance in the infantry wall is the present tropical animal zoo, used for troop instruction. It appeared well-designed with clean wire-net cages of various sizes, thatched huts for protection of some cages from the sun, small palm and banana trees, tropical shrubs and plants attractively arranged, all providing a shady and comfortable appearance. Military "keepers" were observed moving about the premises carrying out various tasks.

We returned to the barracks area at Fort Sherman for lunch. This repast consisted of sandwiches brought along from Panama City, with soft drinks. We ate under a thatch hut in the recreation area near the shore, across the street from the barracks. For scenery, one could watch shipping anchored close-by in Limon

Bay waiting to transit the Panama Canal.

Following lunch, we drove to Battery Pratt, which is a relatively standard casemated battery of the World War I type, originally built 1916-23. Overhead casemate protection was provided 1942-43. Armament consisted of two 12-inch Model 1895M1A4 guns mounted on Model 1917 barbettes.

We were able to visit both casemates, which are in good condition. Gun #2 casement is now used as a communications center by the American Telephone and Telegraph Company in connection with their oceanic cable service. We were given a tour of the premises, but were not allowed to bring in cameras.

Enroute to the old Spanish fort of San Lorenzo, on the edge of the Fort Sherman reservation, we stopped at Battery Mackenzie. Built at the same time as Pratt, and armed similarly, Battery Mackenzie was never casemated. It retains its open back design. We were able to walk around on the parapet and explore all the exterior features and the two open concrete emplacement pads for the 12-inch guns on the front flanks of the battery. But we were unable to enter the battery structure because of training exercises underway there for Special Forces troops.

The day concluded with a visit to San Lorenzo, a 17th Century Spanish colonial fort on a beautiful point overlooking the mouth of the Chagres River as it empties into the Caribbean. The ruins are not so extensive as those visited previously at Portobelo but are of historical interest. An incongruity was a concrete block platform with twelve large bolts still embedded therein for a pedestal mount. This platform suggests that a U.S. Army gun was emplaced here during World War II, possibly a 4.7-inch.

Afterwards, we made a long drive across the isthmus to the Marriott Hotel in Panama City, which was reached after dark.

Day Four, Thursday, 04 March 1993

The final day of our tour opened with a visit to Fort Kobbe, Bruja Point on some older pre-World War II maps. This is still an active U.S. Army post with a garrison of infantry, aviation, engineer, possible field artillery, and supporting arms and services. Located on the West side of the Panama Canal at the Pacific terminus, remnants of the pre-war coast artillery presence at Fort Kobbe can be found in various surviving structures associated largely with Batteries Murray and Haan.

Battery Murray, built 1925-26 with two 16-inch MkIIM1 guns on M1919M1 bar-bette carriages, was casemated 1942-43. Both casemates presently are used for storage purposes by the U.S. Army; in fact, in the vicinity of #2 Gun emplacement there was considerable heavy construction underway in the form of bulldozing and ground clearing. We were able to explore and photograph in and around both casemates. Magazine #1 near #1 Gun, only slightly modified on the exterior, was found to be in use as a medical support building. The old railway bed connecting the magazine with the gun emplacement is now covered by a narrow macadamized road for vehicles.

The #1 Gun casemate still has a motor generator in place. This equipment

translated signals from an analog computer to operate the gun elevation motor on the carriage.

We then proceeded to the area of Battery Haan, whose precise location was not quite clear. Prior map reconnaissance and astute questioning by CDSG members of military personnel at Battery Murray focused our attention on what proved to be the correct location in a signals communication antenna field, visible in the distance from Murray. The Battery Haan sites are located in what is now open field. The two 16-inch MkMIIML guns were never casemated, but the discolored grass overlay soon revealed the specific location of the circular concrete pad of #1 Gun. Once this was pinpointed it was easy to find the #2 Gun pad, similarly hidden under a dirt and grass cover. Some prodding in the earth, perhaps $4\frac{1}{2}$ inches in depth, revealed a railroad frog on the edge of #2 Gun concrete emplacement. A probable generator building and three former magazines were visible in the distance from the rear of the Battery Haan location.

From one of the magazines, probably No. 7, now used as part of the signal communications complex, there emerged an Air Force non-commissioned officer, Sgt. Freeze, who took a friendly interest in the activities of the unexpected guests who were messing around in his antenna field. He proved to be an agreeable "host" and provided confirming information about the location of Battery Haan.

As lunch time approached, we drove back across the Thatcher Ferry Bridge over the Panama Canal to lunch at the Fort Amador Officers Club. The occasion gave participants another opportunity to photograph the former locations of adjacent Batteries Smith and Birney and other objects of interest at Fort Amador.

After lunch we took the half hour drive to Miraflores Locks, which were completed circa 1913. There we received a special briefing on the construction and operation of the Panama Canal by a staff member in the visitors bureau. Afterwards we were able to watch from the covered visitors stand the transit of the Greek tanker Antipolis from the Atlantic to the Pacific. The rapidity with which massive quantities of water could be drained from a lock to lower the vessel to an appropriate level was impressive.

The final event of the day was a visit to the Panama Canal Administration Building on Ancon Hill. This building was completed in 1914 and was the center of government for the Canal Zone during the latter's existence. It currently houses the Panama Canal Commission, which operates the Canal. There we received an excellent overview of the technical aspects of the construction of the Panama Canal by a Panama Canal Commission employee and viewed a number of pertinent exhibits.

On return to the Hotel Marriott, the tour official ended. But several people stayed on for additional days. Two of the group returned to Naos Island on Friday for a more exhaustive scrutiny of Batteries Buell and Burnside. They were able to gain access to the #2 emplacement of Burnside this time, as well as to the Battery Commander's stations on top of the batteries. Also the mine buildings were re-visited, where the Smithsonian employees were extremely gracious. Other members visited the Instituto Grafico Nacional located in one of the less safe areas of Panama City, where they purchased quantities of official maps of Panama printed to various scales. The few remaining people used Saturday for general sightseeing

and to re-visit the Canal at Contractor's Hill at the Gaillard Cut. The last tour holdout departed Panama on Monday, 08 March. All participants agreed that the tour was a substantial success, for which we all owe a vote of thanks to Dolores and U.S. Army South.

In addition to the daily tour handouts, a valuable reference was prepared by Glen Williford and distributed to the tour attendees: Tour Notes for the Special Tour of the Coast Defense Study Group: The Harbor Defenses of Balboa and Cristobal (Canal Zone) Panama March 1 - March 4, 1993. -- Mark Henkiel provided a helpful handout on Battery Newton.

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