

Panama Canal Management

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Abstract

Two major components of the Panamanian economy are its maritime sector and the Canal. The author covered the analysis of the former in a previous paper. For a rigorous study on the future capacity of the Canal, it is required, on the one hand, that an analysis of its management be done and, on the other hand, of its operation, modernisation and future scope. This paper focuses on the Canal management since its creation, reviewing its historical background, legal foundations, as well as its management and toll system currently in place—which is the responsibility of Panama nationals, once the Canal was transferred by the USA. Present management indicates optimum performance and outstanding improvements. It is successfully facing the challenge of maintaining the operating capacity to accommodate future world traffic. Its operation, traffic and modernisation will be the subject of our next paper.

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1. Introduction

In 1501, Rodrigo de Bastida was the first European to sight Panamanian land on its Caribbean coast. One year later, Christopher Columbus would arrive at that coast in search of a natural passage to the Far East. In 1513 Vasco Núñez de Balboa crossed the river Darién and discovered the South Sea, which he would later call 'the Pacific'. A year later, the King of Spain would order Panama's Governor, Pedrarias Dávila, to find a passage to the South Sea. Although he did not succeed in his attempt to do so, he managed to create a land transisthmian route called 'Camino Real' which, following the meridian, connected the cities of Nombre de Dios—a port on the Caribbean Sea—and Panama City, on the Pacific, both founded in 1519. Seventy km of mountain ranges and rain forests separate these two cities in a straight line [1,2].

In 1527 two Spanish seafarers, Hernando de la Serna and Pablo Corzo, explored the fast-flowing river Chagrés, 195 km long, thus establishing a new route. In the same year, Cruces was founded, a fluvial port 50 km

upstream from the mouth river on the Caribbean coast. The "Camino de Cruces", some 30 km long, departs from that point through hills and plains reaching Panama City. Shortly after the idea of constructing a canal between the Atlantic and the Pacific by means of the river Chagrés arose. In 1529, Álvaro Saavedra drew the first maps of the interoceanic waterway. Later on, in 1534, King Charles I of Spain orders the Governor of Castilla de Oro by Royal Charter

'that having been informed that the Chagrés river, which flows into the North Sea, can be navigated for four of five leagues with sailing ships, and a further three or four by boats, and that from there to the South Sea it may be four leagues by land, and that if these four leagues could be opened up so that the South Sea flowed into the river in order that sailing ship... go forth and survey the aforementioned land from the Chagrés river to the South Sea and see in what shape and form that land could be opened up so that, once opened, it would join the South Sea with the aforementioned river, thus making it navigable, and see what difficulties are posed by both the ebbing of the sea and the height of the land and what expenditures in money and men are needed and in how much time it may be done...' [3].

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This concern would continue until the beginning of the 17th century, period in which Felipe III was King of Spain.

Revisiting the old dream of constructing a canal which would join both oceans through the isthmus, in 1779 King Carlos III of Spain ordered Spanish engineers to explore Nicaragua's route, rival to the Panamanian one. A project for the construction of a canal was presented to the Paris Academy of Sciences in 1785. This same project was presented later on to the Spanish government, which rejected it. Throughout the 19th century, a number of scientists, engineers, explorers, diplomats and politicians from Panama, Colombia, the West Indies, France, England and the USA would strive to create a passage between both oceans in Central America. The idea of drawing a map with nine different possible routes—recommending that of Nicaragua, and placing Panama as the fourth choice [4]—was promoted by the eminent German geographer and explorer, Alexander Von Humboldt.

After having experienced the success of Suez, Ferdinand de Lesseps chaired the newly created *Société Civile Internationale du Canal Interocéanique de Darién* in 1876. This company, supported by the Paris Geographic Society, was entrusted to complete a survey in Central America in order to find out the most convenient place to construct an interoceanic canal.¹ The International Geographic Congress of Paris, held in 1879, was the scenery in which Lesseps presented his project of a sea-level canal, which was opposed by eminent engineers such as Eiffel or Lépinay, the latter being the one who developed a project based upon a lock canal. Nevertheless, the Congress passed a resolution in favour of Lesseps. The *Compagnie Universelle du Canal Interocéanique de Panama* was established on 17th August 1879, chaired by Lesseps, who on 1st January 1880, officially inaugurated the project at the Mouth of Río Grande opposite the Bay of Panama, although the construction began two years later. On the eve of *Compagnie Universelle's* bankruptcy, the lock system proposed by Lépinay was adopted. Most of the 17,436 people the French employed (1884) were natives from the West Indies, Jamaica and other nearby islands. Employment rate fell abruptly in 1889, as a result of the construction being stopped due to recurrent corruption accusations.² As a result, the company went bankrupt. In 1894 the *Compagnie Nouvelle* was created, which would carry one last effort prior to the definite handover to the USA on 4th March 1904. The French completed

the navigable canals at the entrances, and left Culebra Cut uncut, a hard rock and limestone mountain some 177 m high in the Central Range.

The *Isthmian Canal Commission* was established by the USA in 1904, and chaired by John Walter. A governor for the Canal Zone (CZ) was designated, and Stevens was appointed head engineer, being replaced later by eminent Goethals in 1907. Dr. Gorgas began his activity as chief physician, who would eventually eradicate the yellow fever that had cost the French so many lives. Nearly 32,000 people were employed in 1913, and the Canal was inaugurated on 15th August 1914 with the passage of the steamship Ancón. This project was completed in ten years at a cost of 387 million dollars in expenditures and more than 6000 human lives [5,6].

Nowadays, the Canal, at some 82.4 km in length, is a key element for maritime transportation, given its strategic position as compared to other alternatives. A vessel sailing from the east coast of Colombia to Hong Kong can save 2740 nautical miles; from Kobe to New York, 2846 nautical miles; and from Guayaquil to New York, almost 7400 nautical miles (Fig. 1). At present, the Canal is capable of operating 92% of the world fleet, being transited by some 11,725 vessels with 191.3 million metric tons in 2003, approximately 4% of world maritime trade.

2. Panama Canal treaties: a background

The Canal's turnover to Panama became effective through the signing of the Torrijos–Carter Treaty, although it goes without saying the Treaty's background goes back to Panama's independence from Colombia on 3rd November 1903, achieved with the support of the USA [5]. On the one hand, the birth of Panama as a state was due to the country's will to self-govern; on the other hand, it coincided historically with the interest of the USA, in a period in which worldwide powers required the construction of an interoceanic passage to help develop their trading interests.³ From a technical and geopolitical viewpoint, the final achievement of all these efforts was expressed by the predominance of the newly formed American empire, which exceeded the rest of nations by far, thus beginning its consolidation as a world maritime power [7].

The *Compagnie Nouvelle's* fiasco and its sale, the choice of Panama's route instead of Nicaragua's, the intercession in favour of recovering some of the French firm's investment by the lawyer William Cromwell and the French engineer Philippe Bunau Varilla made it

¹ Lucien N.B. Wyse, Napoleon Bonaparte's grandson, was in charge of finding an ideal route between Puerto Limón and Panama. He also negotiated an exclusive concession with Great Colombia for the construction of the canal.

² Ferdinand and Charles De Lesseps were charged of fraud and corruption, found guilty and sentenced to serve 5 years in prison, which they finally did not as actions prescribed.

³ On 19th April 1850, the Clayton–Bulwer Treaty was signed by both Great Britain and the USA, agreeing not to hold exclusive predominance over an interoceanic waterway.

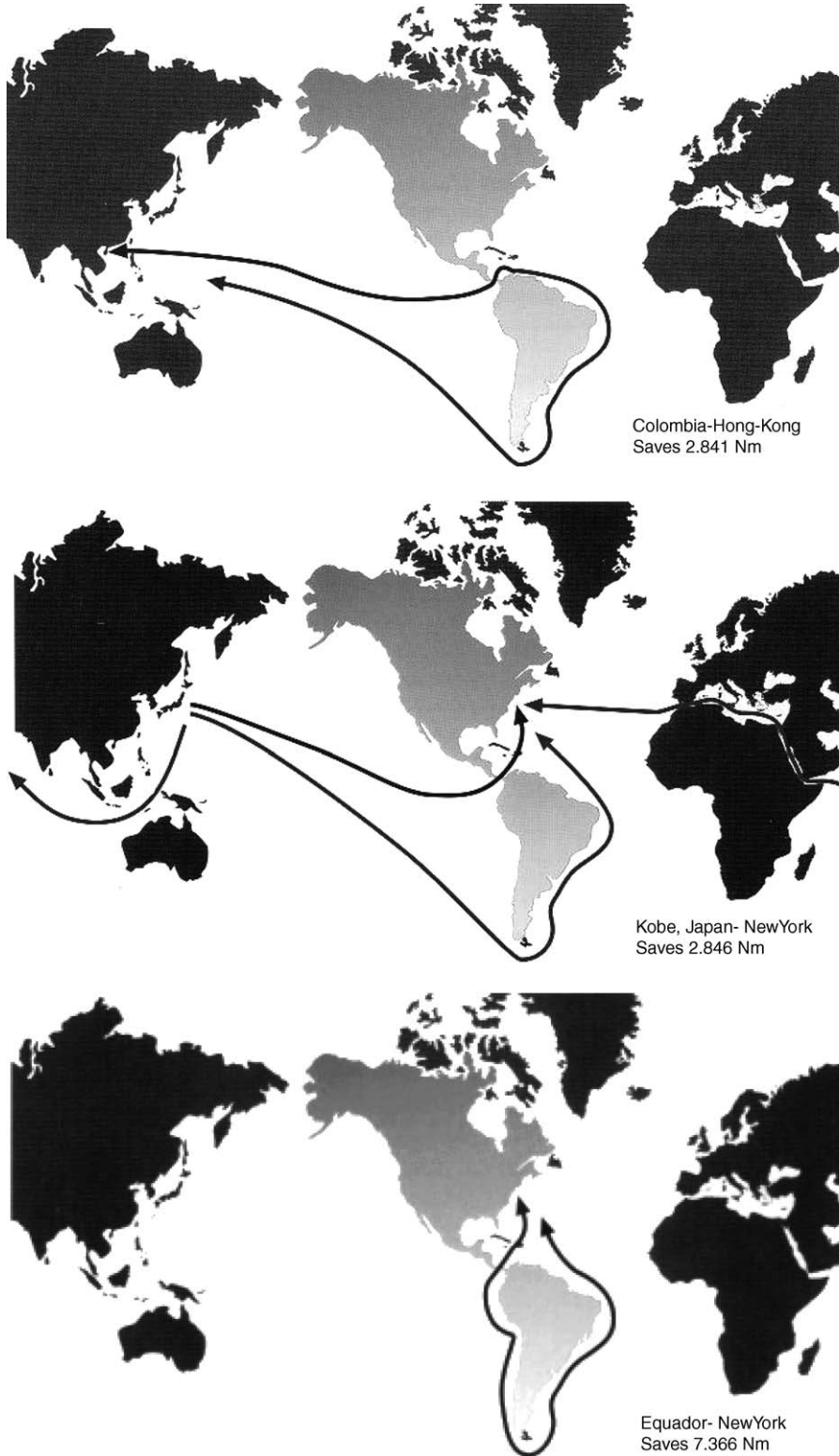


Fig. 1. Saved distances using Panama Canal. *Source:* Fairplay Worldshipping Encyclopedia and [3].

easier for the USA to initiate negotiations for the construction of the interoceanic waterway.⁴

It was no surprise that President Roosevelt ordered the Navy to keep free and continuous transit across the Isthmus of Panama on 2nd November 1903, in view of Colombia's reaction arisen from Panama's separatist uprising. This was possible for the USA on the grounds of the Mallarino–Bidlack Treaty, signed with Colombia in 1846, whereby it was bestowed the right of pass through the Isthmus, provided the USA guaranteed the neutrality of the area [8].

Bunau Varilla demanded as a reward for having served Panama's uprising to be appointed Minister of Panama before the USA government and so it was done on 6th November. He began his duties as soon as the new Republic was accepted as such by the USA⁵ and the rest of countries of the world.⁶ Bunau Varilla acted promptly in order to conclude a treaty with Washington. Before the Panamanian nationals were able to react, due to the elation of the moment, as a result of their newly declared independence, the Hay–Bunau Varilla Treaty was signed. It was created on the basis of the former Herrán–Hay Treaty between the USA and Colombia, though considerably modified, working against Panamanian interests. It was signed on 18th November 1903 in Washington by both the American Secretary of State, John Hay, and Bunau Varilla, diplomatic representative of Panama. Accordingly, Panama's Government ratified the convention on 2nd December 1903. The approval by the US Senate came on 23rd February 1904. The essential legal requirements of the Treaty are as follows:

- The USA agreed to guarantee and maintain the independence of the Republic of Panama (Article I).
- The Republic of Panama granted to the USA in perpetuity the use, occupation and control of a zone of land and land under water for the construction maintenance, operation, sanitation and protection of said Canal of the width of ten miles extending to the distance of five miles on each side of the centre line of the route of the Canal to be constructed (Article II).

⁴ Spooner Act gave the President of the USA authority to acquire the French company for 40 million dollars, after Walker Commission had recommended Panama's route for technical and financial reasons. Negotiations with Colombia were initiated through the signing of the Herrán–Hay Treaty on 22nd January 1903, although rejected by the Colombian Senate.

⁵ The USA and Great Britain signed the Hay–Pauncefote Treaty in 1901 whereby the former was licensed to negotiate a treaty for the construction and management of their own canal in Panama.

⁶ The USA gave their recognition on 13th November 1903, followed by France on 16th November, as well as China, Austria, Hungary and Germany. The rest of the nations recognised it during December and January, except for Colombia, which did not recognise it, and struggled persistently during 3 months after the secession in order to regain it by force.

- Panama granted to the USA all the rights, power and authority within the zone mentioned and described in Article 2 of this agreement and within the limits of all auxiliary lands and waters mentioned and described in said Article II which the USA would possess and exercise if it were the sovereign of the territory within which said lands and waters are located to the entire exclusion of the exercise by the Republic of Panama of any such sovereign rights, power or authority (Article III).
- Right and authority were granted to the USA for the maintenance of public order in the cities of Panama and Colón and the territories and harbours adjacent thereto in case the Republic of Panama should not be, in the judgment of the USA, able to maintain such order (Article VII).
- As the price or compensation for the rights, powers and privileges granted in the convention by Panama to the USA, the Government of this country agreed to pay to the Republic of Panama the sum of 10 million dollars on the exchange of the ratification of the convention and also an annual payment during the life of the convention of 250,000 dollars (Article XIV).

This treaty resulted in a total failure, giving way to the Taft Agreement, in December 1904. President Roosevelt stated that

‘the United States had no interest in establishing an independent colony in the centre of Panama State’.

It was agreed for a twenty-year term, and established itself as a ‘*modus vivendi*’ between the governments of Panama and the USA, the latter exercising sovereignty over the Isthmus [9]. A national consciousness and a feeling of popular resentment against the American government grew as a result of the political and economic structure the 1903 Treaty gave rise to, and the outrages committed under the authority to intervene.

Once the Taft Agreement ceased to be in force, negotiations were initiated with Washington in order to get a revision of 1903 Treaty. This concluded with the signing of the Kellogg–Alfaro Treaty on 28th July 1926, ‘*whereby the United States committed itself to foster the construction of roads and restrict the commissariat's sales to the Canal and railway company employees and their relatives, while Panama was committed to declare war to any State which the United States was to come into conflict*’ [5], among other regulations which were detrimental to Panamanian interests. The National Panamanian Legislative Assembly rejected it in January 1927. With the signing of the Arias–Roosevelt Treaty in 1936, during Roosevelt's ‘good vicinity’ administration, Panama managed to go one step forward in the 1903 Treaty. The Arias–Roosevelt Treaty, though not

abolishing the latter, allowed Panama to regain its whole independence, without any kind of restriction imposed upon its sovereignty. The Hull–Alfaro Treaty, as it was known in the USA, was signed on 2nd March 1936. Accordingly, it was passed by Panama in December of the same year. The US Senate did not ratify it until 25th July 1939,⁷ being enacted 2 days later. This Treaty, which is also known as the Treaty of Friendship and Cooperation, had the following guidelines:

- It removed the interventionist clause as it recognised that the Republic of Panama was a complete independent state, and the CZ a Republic of Panama's strip of land under US jurisdiction.
- It subrogated Article I of the Hay–Bunau Varilla Treaties, therefore the USA ceased to guarantee the independence of the Republic of Panama.
- It was recognised that the Canal was built and that the USA relinquished the use they have been granted in perpetuity in Article II of the abovementioned treaty, agreeing both governments to guarantee the effective and continuous operation of the Canal.
- The annual payment for Canal use was increased to 430,000 dollars backdated to 1934.
- It provided both economic and commercial benefits, allowing Panama to use CZ ports and berths for cargo and passenger loading and landing.

The agreement for the concession of defence sieges in the Republic of Panama, signed in Panama City on 18th May 1942, was based upon the 1936 Treaty which bestowed upon both countries the joint obligation of cooperating and taking the necessary steps to guarantee the effective protection of the Canal [8]. This accord was born during the Second World War in view of the USA need to reinforce its defences. This country is endowed with 15,000 ha of land to deploy military bases all over the country [10]. This accord was temporary, being understood in light of the text which would end 1 year after the peace accord entered into force. Nevertheless, as a result of a new American request, the Panamanian executive signed a new agreement with the USA on 10th December 1947, the so-called Filós–Hines Accord. This accord, whereby it was expected that the permanence of the US military bases in Panama was extended, was unanimously rejected by Panama Legislative Assembly on 22nd December of the same year, as a result of the struggle commenced by the Panamanian people. The USA had to reintegrate those conceded defence sieges during the world war.

⁷Article 10 was the main cause, as it set forth that the USA and Panama would decide upon protective actions in the event of an enemy attack threat. In an official exchange of notes, both nations specified that the USA could take the military steps they regarded as necessary without previous consulting, in case of extreme emergency, and when it was appropriate, solving the problem.

The Remón–Eisenhower Treaty, a Mutual Understanding and Cooperation Treaty, was signed in Panama City on 25th January 1955 by Seldon Chapin, Ambassador of the USA, and Panama Ministry of Foreign Affairs, Octavio Fábrega. It went into force in 1958. It allowed increasing to a considerable extent the Canal annuity to 1.93 million dollars. Through it, CZ employment discrimination's coming to an end was achieved, with uniform wage scales. Furthermore, the USA agreed to transfer title deeds to Panama, specified in Section 2 of the Memorandum of Understanding between both countries, annex to the 1955 Treaty, in which it was specified they were not necessary for the operation, maintenance or protection of the Canal. Despite the goals that were achieved through this agreement, it is clear enough it neither satisfied the USA, nor Panama. Panama was the less satisfied party of both, as it did not obtain sovereignty over the CZ, despite its multiple attempts to fly its flag and speak Spanish.

Panamanian attempts to obtain a clear recognition of its sovereignty over CZ reached a crucial point on 9th January 1964. Since 1958, groups of students had been going into CZ to display Panamanian flags. This movement was repressed, resulting in the loss of many Panamanian lives. On 1st December 1959 President Eisenhower declared that '*it showed a visual evidence of Panama's sovereignty over the CZ*'. Because of this declaration, presidents Chiari and Kennedy agreed later on to fly the Panamanian flag in all CZ public places where the USA flag was to be hoisted, so that both flags would be flown side by side. On 7th January 1964, a group of American students raised the USA flag at Balboa High School—reluctant to abide by CZ Governor's orders—refusing to let it fly next to the Panamanian flag. Two days later, the Panamanian students of the 'Instituto Nacional' decided to do the same, resulting injured in their attempt by the American students and their relatives, supported by the American police, who drove the Panamanian students violently off the CZ. A few hours later thousands of Panamanian nationals gathered at the border fence, trying to set flags throughout the alienated territory. The same was to take place in Colón. The American army intercession resulted in a total of 21 human losses and more than 300 Panamanian were seriously injured. The American closed normal traffic to the De las Américas Bridge, cutting off land communication between Panama City and Colón [11]. As a result of these events, a day after President Chiari severed relations with the USA, and appealed to the Organisation of American States (OAS) and the UNO [10].

After these serious events had taken place, the Panamanian government resolved that only a complete abrogation of 1903 Canal convention could make it possible to restore diplomatic relations between both

states, though on 3rd April 1964 they agreed in a Joint Declaration to:

- Restore diplomatic relations.
- Appoint Special Ambassadors without delay, with enough powers and authority so as to eradicate the causes of the conflict between both countries immediately.
- The appointed Ambassadors would initiate the necessary proceedings immediately, with the aim of reaching a fair and equitable agreement [12].

The immediate result of the abovementioned actions was the drawing up of the Treaty Project known as the Johnson–Robles in 1967, on defence and neutrality, which received an adverse Panamanian public reaction.

The Guardia Nacional's coup d'état on 11th October 1968 overthrew Arnulfo Arias' Government only ten days after its proclamation. Thereafter, it established a military government headed by General Torrijos, leading to essential changes regarding the Canal. The new government faced the Canal's affairs through new tactics to get the USA to negotiate, turning its bilateral compromise into a universal one. The whole international community was to become involved in the Canal issues, as well as both regional and international bodies, which supported Panama in its aim to get benefits out of its own natural resources.

Fully authorised by 1972⁸ Panamanian Constitution, General Torrijos proceeded to lead the negotiations with the USA in order to come to an agreement on a new treaty with the main goal of getting Panama's sovereignty back over the CZ, focusing especially on spreading Panama's cause to get supporters from other countries, especially from the Third World. These countries regarded the USA presence in the CZ as a humiliating colonialism bastion.

On 15th March 1973, upon Panama's requirement, the UN Security Council meets in Panama. General Torrijos makes an appeal on his opening speech:

'We are asking the world, present here today, for their moral support, as the fight of the weak can only be won when the world's moral support is present, because our countrymen are at the limit of their patience'.⁹

Furthermore, he set relevant approaches on Panama's right to exploit its natural resources in its own benefit, as well as on the defence of its territorial integrity. The

result of this meeting was of much historical significance. The Security Council demanded respect for Panama's sovereignty and the abrogation of 1903 Treaty in order to agree upon a new treaty which allowed CZ to return to Panama's hands and guaranteed the Canal's neutrality. This was possible through a resolution voted in favour of by 13 members of the Council. Great Britain abstained, while the USA vetoed it.

One year later, on 7th February 1974, the Tack–Kissinger Declaration was signed in Panama, the so-called Eight-Point Declaration, which served as the basis for the negotiations on the new treaty. To put it briefly, it set forth the USA acceptance of the future treaty to be finished at a given time; that the USA would not keep their sovereignty and jurisdiction rights over the CZ, and that the 1903 Treaty and the so-controversial perpetuity clause would be abrogated. A heated debate began within the Senate and among the American people, who were not psychologically prepared to lose control of the Canal, as they understood the CZ was a property they had paid for.¹⁰

When Carter assumed the presidency of the USA on 20th January 1977, a new era began as regards relationships with Panama. Thanks to his humanistic policy,¹¹ he echoed the Panamanian clamour. He immediately appointed a commission which recommended the Canal Treaties renegotiations, cancelled because of the American elections. On 7th September 1977, the Panama Canal Treaty and the Permanent Neutrality and Operation of the Canal Treaty were signed at OAS headquarters by General Torrijos and President Carter, in a ceremony assisted by 21 heads of government. Both heads of state signed in Panama the means for the ratification of those Treaties on 16th June 1978. This served to conclude the long process of negotiations initiated on 3rd April 1964, which came to an end when a plebiscite was held in which the Panamanian people approved the Treaties on 23rd October 1977 [12].

2.1. *Torrijos–Carter Treaties*

Given the target of this paper is the Panama Canal, research will only focus on the Panama Canal Treaties, excluding the analysis on the Treaty concerning the Permanent Neutrality and Operation of the Panama Canal.

The Canal Treaties entered into force on 1st October 1979, and are made up of a Preamble, fourteen articles

⁸ Article 277 recognises Brigadier General Omar Torrijos Herrera as the Maximum Leader of the Panamanian Revolution, Commander in Chief of the National Guard. Accordingly, and to assure the fulfillment of the goals of the revolutionary process, for 6 years he is given the exercise of the following attributions: reach contract agreements, ... and lead exterior relations...

⁹ The UN Security Council 1965 Session held in Panama City.

¹⁰ The Canal expenditures, including the acquisition of lands of private owners and the Panama Government, amounted to nearly 378 million dollars.

¹¹ On his opening speech on 20th January 1977, Carter promised to work for a fairer world and deal with human aspirations.

and an Annex on the proceedings for the creation or transfer of the activities carried out by the *Panama Canal Company* and CZ Government. Furthermore, two agreements for the implementation of Articles III and IV on the Canal Operation and Management, as well as on its protection and defence were also created [13].

When the treaty (Article I) went into effect, all the previous treaties, agreements, conventions, exchange of notes and stipulations regarding the Panama Canal which were in force on that date became abrogated and substituted. Very specifically it replaced the Hay–Bunau Varilla Treaty, acknowledging Panama’s sovereignty over its entire territory, gaining jurisdiction over the former CZ. Accordingly, Article IX ‘Applicable Laws and Law Enforcement’, as well as Article XI, ‘Provisions for the Transition Period’, referred to the implementation of the Panamanian law in recognition of its jurisdiction, both regarding the civil and the criminal branches. All of the aforementioned implied the setting up of courts of justice, and the highly pertinent enacting of Law 8 of 30th March 1982, whereby the Panamanian Maritime Courts were created with the aim of partly replacing the maritime jurisdiction exercised by the USA [14]. A much important fact was the establishment that Panama would have an increasing role over the Canal administration, protection and defence, which implied labour achievements, clearly stated on Article X ‘Employment with the Canal Commission’. This fact allowed an increase in the employment of Panamanian nationals within the Panama Canal Commission (PCC) permanent labour pool. In this sense, a training programme was developed regarding all the different maritime specialities, particularly pilots, as well as other programmes on cooperative education, focused on the development of Panamanian human resources working within PCC. Encouraged was also an increase on the employment of nationals, preference being given to Panamanian applicants who had the skills and qualifications required to work with PCC [15].

Undoubtedly, the most important achievement for Panamanians was that this Treaty (Article II) established that the Canal be reverted into Panama’s hands ‘at noon—Panamanian local time—on 31st December 1999’. It seems clear that after the Canal’s handover, it was Panama’s full responsibility to administer, operate and maintain the Canal, although under the terms and conditions set out in the Neutrality Treaty.

It was established that the USA—in exercising the right the Treaty conferred them—would do their duty through an American government agency, PCC, for the Canal’s operation and management. The commission would be supervised by a board of five members from the USA and four from Panama. Thus, Panamanian participation on decisive levels became effective, and more specifically when it was clear that there would be a Panamanian national acting as Deputy Adminis-

trator,¹² from 1979 to 1989, and as Administrator from 1990 onwards¹³ (Article III).

Payments to Panama from the commission included 0.30 dollars per each Panama Canal net ton transited through the canal; a fixed annuity of 10 million dollars payable from transits and an annual contingency payment of up to 10 million dollars to be paid out in the event that revenues exceeded PCC expenditures in a given year (set forth in Article XIII). All the above-mentioned was completed with what was set forth in Article III. 3:

‘The Panama Canal Commission shall pay the Republic of Panama the sum of ten million dollars per annum for the costs incurred by the Republic of Panama in providing the following public services in the Canal operation areas and in housing areas’.

On the other hand, the reversion of land, water, buildings, infrastructure, Railway, the ports of Balboa and Cristóbal, and rendering of public services such as telecommunications, street lighting, distribution of drinking water, recollection of waste waters, street maintenance, etc. among other services, were important achievements obtained through Article XIII of the Agreement for the Implementation of Article III of the treaty and its Annex.

In Article V of the Panama Canal Treaty it was established the reaffirmation of the Principle of Non-Intervention, whereby ‘the nationals of the USA should abstain from any political activity in the Republic of Panama as well as from any intervention in the internal affairs of the Republic of Panama’. This principle was also set out in Article II of the Agreement for the Implementation of Article IV of the Treaty, as well as in Article IV of the 1977 Treaty concerning the Canal Permanent Neutrality and Panama Canal Operation and its amendment No. 1, which set forth the prohibition that the USA could intervene in any internal affairs of the Republic of Panama.¹⁴

Of crucial importance within the Treaty was to set up the possibility of creating a Sea-level Canal or a Third Lane of Locks, recognising that ‘*a sea-level canal may be important for international navigation in the future. Consequently, during the duration of this Treaty, both Parties were committed to study jointly the feasibility of a sea-level canal in the Republic of Panama, and in the event they determine that such a waterway is necessary, they*

¹²The first Administrator was General McAuliffe, and the Deputy Administrator was Fernando Manfredo.

¹³The post of first Panamanian administrator went to engineer Gilberto Guardia, appointed by President Endara’s government. The proposed candidate by the former government, Tomás Altamirano Duque, was never accepted by the USA.

¹⁴It is clear enough these premises have never been fulfilled by the USA, creating several conflicts apart from the American invasion of Panama on 20th December 1989.

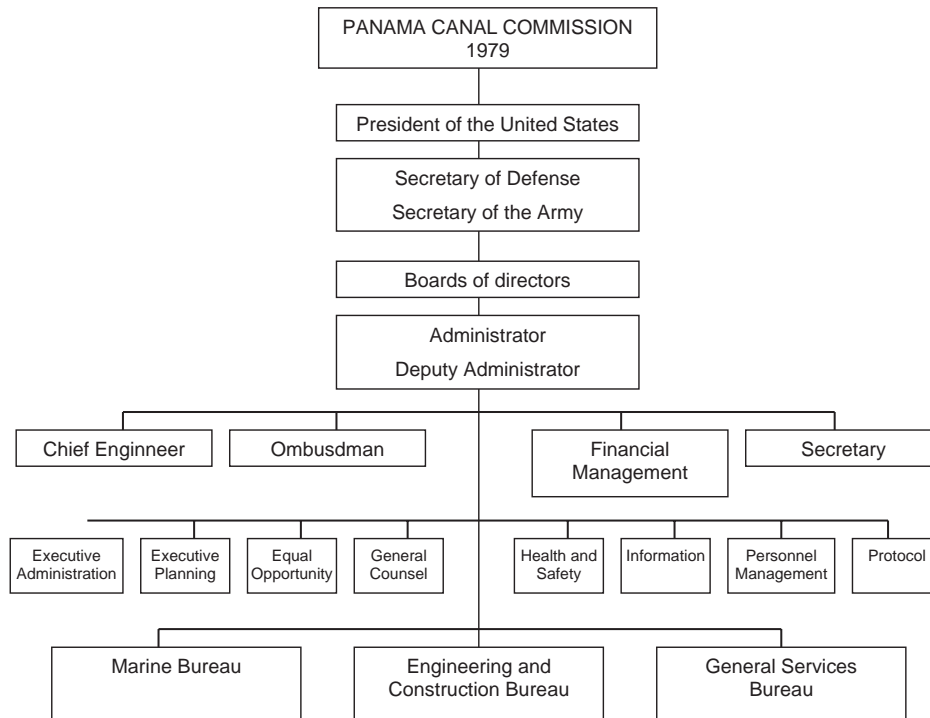


Fig. 2. PCC organisational chart 1979. Source: [25].

shall negotiate terms, agreeable to both Parties, for its construction'. However, it was clearly set forth that no new interoceanic waterway should be constructed neither in Panama nor in any other route during the duration of the treaty, granting the USA the right to add a third lane of locks to the existing canal, being available for this country such other areas as the two parties might agree upon (Article XII).

Ten years after the Torrijos–Carter Treaties became effective, it was established a Tripartite Panama Canal Alternatives Study Commission, composed of Panama, the USA and Japan,¹⁵ with the aim of reviewing both short- and long-term alternatives for canal expansion [16,17].

As regards the Canal protection and defence, it was set forth (Article IV) that 'the United States of America and the Republic of Panama commit themselves to protect and defend the Panama Canal', making reference to the constitutional processes and leaving primary responsibility to protect and defend the Canal in the hands of the USA, stating that their rights to station, train, and move military forces within the Republic of Panama were described in the Agreement in Implementation of Article IV, as well as the use of areas and

installations and the legal status of the US Armed Forces in Panama. A Combined Board was established, comprised of an equal number of high ranking military representatives in each party. After the invasion of Panama on 20th December 1989, all installations, equipment and the Panamanian Armed Forces (FF.DD.) became destroyed. The new Panamanian Government dismantled the FF.DD. replacing them by the Public Force, a new civilian body, created in 1990.

At this point, it should be stressed the deep interest with which Panama discussed the future of the Canal. In 1991 they created a commission approved by the President of the Republic in order to analyse future alternatives for the Canal administration and operation. Between 1992 and 1993 the Panamanian government assumed full responsibility for proposing a management model for the Canal for the year 2000, emphasising the determination of type of institution, setting up some models, which we were able to work on within the supporting programmes under the auspices of UNDP and IMO [18,19].

For over 20 years, PCC has administered the interoceanic waterway, initially by means of an organisation chart (Fig. 2), chaired by the President of the USA [20], with a Board of Directors, supervised by the US Government and Congress, as regards to budget authority and operations [21]. Under orders of the Administrator, PCC initially performed their duties being supported by three large managing bodies:

¹⁵ Japan came to develop a deep interest in taking part in the Canal's future development. Thus, it developed a broad programme on officers and pilots training through the improvement of the Panama Nautical School (ENP).

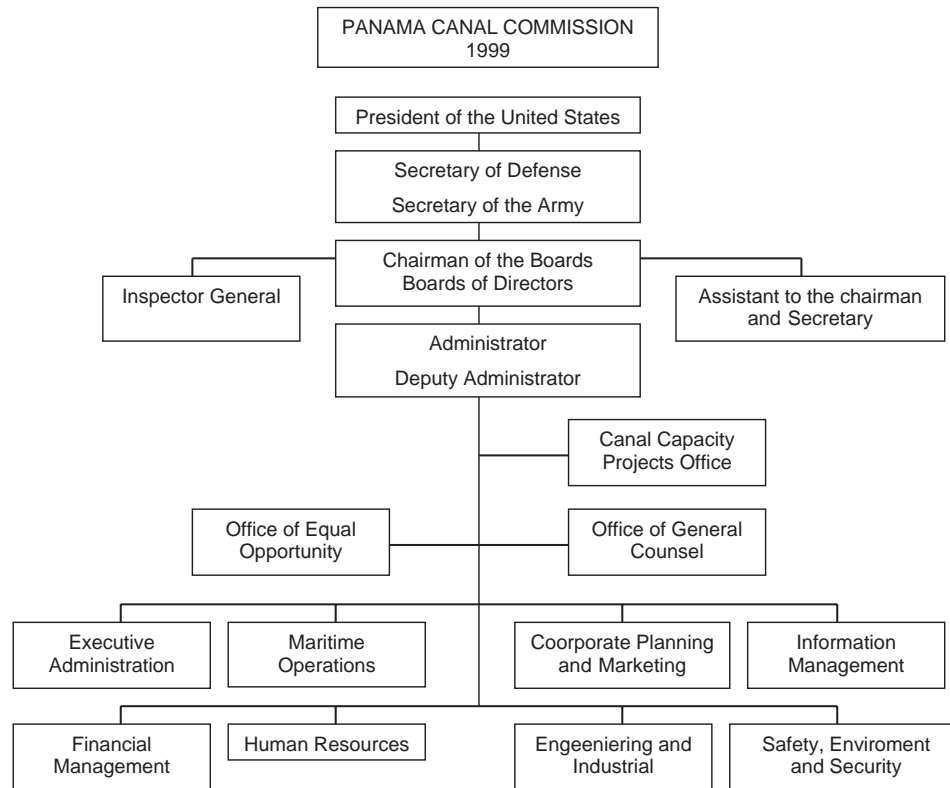


Fig. 3. PCC organisational chart 1999. Source: [25].

Marine Bureau, being in charge of the Canal transits and the ports of Balboa and Cristóbal. Furthermore, it was their duty to implement the laws and regulations related to navigation and transits by the Canal, terminal ports and adjacent sea; to implement tonnage rules, and head salvage operations and rescue management, as well as maritime training programmes. They were to coordinate the rules related to maritime safety, survey and certificate the PCC's floating equipment; they were also in charge of the operation of the Board of Local Inspectors and their competencies on the coordination of official casualty investigations, and of issuing official maritime documents to PCC employees, as well as of operating and maintaining the locks and adjacent facilities [22].

Engineering and Construction Bureau, in charge of controlling the level of lakes Gatún and Alajuela, of the dredging operations on the Canal banks and the adjacent sea; of engineering surveys, locks maintenance, hydrographical studies, electricity and drinking water services, ship and floating equipment repair; administration and control of the pollution programme; of the removal of obnoxious vegetation from the Canal banks; of breakwater maintenance, landslide control and Canal banks and dams stability, among other duties [23].

General Services Bureau, dealing with diverse supporting activities, such as logistics, transportation, the

maintenance of premises, community service, printing and Canal protection.

Before the treaties had come into force, the Canal work force was over 12,000 employees, going to 8000, both permanent and temporary [24]. With the aim of smoothing the turnover, President Clinton signed a law in February 1996 whereby PCC became a governmental corporation which allowed it to operate as an enterprise rather than as a government agency [25]. In the same year, the Panamanian engineer Alberto Alemán was appointed new Administrator, who would submit in 1997 PCC reorganisation to the Board of Directors in order to modernise it and make easier its ulterior handover. Thus, functions were reassigned, and it was endowed with a commercial scope, as it can be observed in the organisation chart (Fig. 3). Finally, the Canal's turnover from American to Panamanian stewardship became effective at noon on 31st December 1999.

3. Panama Canal Authority (ACP)

A turning point in the handover process was the approval of a Constitutional Title, No. XIV, on the Canal by the Panamanian Legislative Assembly. The Panamanian Government passed their Executive Decree 95/1995, and a Transition Commission for the Canal's turnover was appointed. It was aimed to lay the suitable

basis for the handover and to set forth ACP's Organic Law and those regulations related to ACP's Board of Directors. The submitted project, widely discussed by all the country's social strata, was passed by the Legislative Assembly by Law 19/1997. The ACP was created as the entity of the Government of Panama with exclusive charge of the operation, administration, running, maintenance, improvement and modernisation of the Canal, as well as the Canal's activities and related services, pursuant to legal regulations, so that it can be operated in a safe, uninterrupted, efficient and profitable way. The ACP, public law autonomous legal entity, is financially autonomous, and has its own patrimony, and the right to administer it [26]. Although it is specifically set forth by the Law itself that the Canal must be integrated to the national maritime strategy, we have always supported the thought that this is not true in practice, as it coexists with another body, the Panama Maritime Authority (AMP), in charge of developing the same maritime strategy. About this controversial issue we had the opportunity to refer to in a former paper [27].

The ACP presents a similar organisation chart to that of PCC. The Administrator is appointed for a 7-year term, and may be re-elected for an additional term. Both the Administrator and the Deputy Administrator work under the supervision of an 11-member Board of Directors. One of them chairs the Board of Directors and is appointed Minister of State for Canal Affairs; nine of them are appointed by the President of the Republic of Panama, with the consent of the Cabinet Council and ratification by an absolute majority of the Legislative Assembly. One of them is appointed by the Legislative Branch. It was very appropriate that the first Board of Directors was appointed for overlapping terms to ensure their independence from the country's administrations, although future appointments shall be for 9-year periods [25]. It is a function of the Board of Directors to define the policies on operation, improvement and modernisation of the Canal, as well as the supervision of its management, appointing an Administrator, laying down the tonnage system, Canal tolls policy, etc.

To all intents and purposes, the Canal's patrimony is made up of its installations, infrastructures, toll and contracts income, dealerships and selling of assets. Remarkably, the Canal's funds are not part of the State budget. These funds are submitted to the Cabinet Council for their approval and subsequent bringing of them before the Legislative Assembly which must pass them, or, if it were the case, defeat them by absolute majority. The payment mechanism to the National Treasury is yearly established according to the rights per transited net ton [26].

Operatively speaking, ACP provides the legal framework for navigation through the Canal [28], transit,

inspection and vessel control, including maritime safety, pilotage and licensing, as well as polluting disasters prevention. Transiting ships must keep insurance, and must be at the orders of the ACP Traffic Control. It is important to bear in mind that pilots are in command of ships in Panama Canal, which was the case before the turnover. Hence, it is ACP's responsibility to face their personnel deeds in the event of any harm made to ships, their personnel or cargo while transiting the Canal.

ACP's organic-functional structure, under the Administrator and Deputy Administrator's heading, is based upon two main offices, namely the Office of Executive Administration and Office of the General Counsel, and eight departments: Human Resources; Finance; Information and Technology; Industrial Services; Security and Environment; Corporate Planning and Marketing; Engineering and Projects; and Maritime Operations. As it can be seen it consists of an organisation chart very similar to the one of PCC in 1999 and almost with the same persons in charge.

4. Panama Canal Toll System

Since 1914 the Canal has been using its own tonnage rules. Under the system dating from that time, tolls were assessed on the basis of the 'net register tons' (PC/NRT), being applied the old Moorson system,¹⁶ based upon the belief that tax, charges and payment for service rendered to ships should be directly related to their productive capacity, so that the more the capacity of the profitable premises, the bigger the taxes to be paid. In order to get the PC/NRT, the corresponding volume of the 'deductible spaces' should be subtracted from the ship total capacity—'gross register' (PC/GRT). As regards payment, a classification was made for: cargo merchant ships; in ballast merchant ships (without passengers or cargo); as well as for other floating crafts such as warships, whose toll rate was calculated by their displacement in long tons. Regulation applied by PCC, according to the 'Table for use of Canal' [20], laid down that all vessels should be in possession of the 'Tonnage Official Certificate for the Panama Canal', and guarantee toll payment before transiting the Canal.

The Moorson system has been virtually used worldwide, although it has taken different criteria into account when considering the condition of given spaces as 'exempt' or 'deductible', which would result in very different values depending on the administration by which tonnage was calculated. Constantinople Rules were improved by Oslo Rules in 1947 [29–32].

¹⁶This system was named after 1849 Secretary of the Royal Commission on tonnage rules, and after the International Tonnage Conference of Constantinople in 1873. The Moorson ton is equivalent to 100 cubic feet, or 2.832 m³.

In an attempt to end with all controversy arising from the peculiar way the NRT calculus was done, and what all different administrations understood by ‘deductible spaces’, the IMO held an international conference in London in 1969 which led to the international convention Tonnage’69.¹⁷ The system suggested by the convention is known as universal tonnage system. It represents a straightforward way—made up of independent logarithmic mathematical formulae—of determining directly gross tonnage (GT) and net tonnage (NT) of vessels over 24 m in length, without having to make any deduction. Through this system measurements can be obtained to determine volumes on ship plans, and Moorson system can therefore be stamped out [29].

During 1970 and 1974, the PCC authorities did some research on the impact the application of Tonnage’69 had over the Canal. The effects over some 3700 vessels were analysed in 1980. In 1982, upon PCC’s requirement, an international consultancy firm¹⁸ set out three hypotheses to determine a method which, taking into account the principles of the convention and the Canal’s particular features, would define a formula for toll establishment. The first hypothesis considered using NT; the second, GT; and the third one an alternative formula, by analytic recession, based upon the degree of correlation between GT and NT, as well as two coefficients. We had the opportunity of doing some research on and verify the proposed methods, making use of a databank comprised of some different 300 vessels. We found that: using NT, values were a 27% lower than the PC/NRT ones in force at the time; tolls should be increased a 42% to keep them the same. Using GT, values were 20% higher than PC/GRT values, although they would not be uniform as regards the types of vessel to be considered. When applying the third hypothesis, the biggest differences were found on general cargo ships (+14%) and container ships (−4.4%). But applying it would allow to use Tonnage’69 parameters and the Canal would be able to keep the control of the method of calculation, regardless of the amendments the IMO convention might undergo [29–32].

In November 1989 the PCC Board of Directors made a decision to modify the tonnage system to adopt the principles as set forth in the Tonnage’69 convention, taking a new method in October 1994, PC/UMS Net Tonnage, similar to the aforesaid on the third hypothesis, although including a factor to consider maximum capacity of containers [33].

The Canal toll rates, per net ton, were established at a rate of 0.90 dollars for loaded ships and 0.72 if in ballast, until July 1974, when the first increase was to take place. Some years later, in 1998, these rates increased until they were established as 2.57 dollars for loaded ships and 2.04 in ballast. The abovementioned figures show the strategic character which the USA conferred to the Canal, if they are to be compared to data related to the Suez Canal. As aforesaid, we tested different models which could serve to determine a toll system, of a commercial rather than strategic nature, in a future [19]. Data referring to 1989 were quite significant: Suez had 18,190 transits, meaning an amount of 259.5 million of transited cargo expressed in metric tons; Panama kept 12,234 transits, 154 million metric tons of transited cargo. These data yield that 48% more vessels and 66% more cargo transited the Suez Canal. Nevertheless, the most remarkable fact was the comparison of toll income: in that year, Suez got 1300 million dollars, and the Panama Canal only 337.8, i.e. almost 400% less than Suez, what made it essential to look for a system appropriate to the Panama Canal commercial function [34].

The ACP Board of Directors passed the Tonnage Rules in 1998 which entered into force at noon, 31st December 1999 [35]. We had the opportunity of working with it in collaboration with the personnel in charge of the turnover [36]. It was subsequently amended in order to take into account those ancillary services and activities which could arise, such as dredging operations, electric power generation, water processing and telecommunications [37]. It was also amended to consider as additional charges to those related to tolls, the towing, line handlers and locomotive services [38].

A new toll structure was adopted in October 2002 [39–40]. It was set up in an attempt to make the most of the system and market it beyond the single-price-per-vessel model, looking for a type and size segmentation; and separating the concepts by equipment use and employed locomotives, according to the needs of every vessel [41]. The system establishes a rate structure which decreases according to the ship tonnage. There is a rate for the first 10,000 PC/UMS, slightly smaller for the next 10,000 PC/UMS, and the smallest for the remaining tonnage. Likewise, it varies depending on whether the vessel is loaded or in ballast. Ships are classified as follows: general cargo, refrigerated cargo, dry bulk carriers, tankers, container carriers, ro-ro ships, passenger ships and others. The new system has been widely spread and discussed with users in various public hearings,¹⁹ and it has been supported by the Panamanian authorities as an efficient means to support

¹⁷ It came into force on 18th July 1982, and it has been ratified by 137 States so far, representing 98.14% of world tonnage. It was not applied to the Canal until 1994, the year in which it had to be applied on every existing vessel, according to the IMO.

¹⁸ Arthur Andersen & Co. gave a report on a new method for toll calculation.

¹⁹ They began in 2000, holding meetings in Europe, Asia and the United States, receiving communication from more than 70 interested parties.

Table 1
PCC—ACP historical reports Panama Canal traffic—Oceangoing commercial

Year	No. of transits	Million metric tons	US\$ million tolls
1915	1,058	4.81	4.3
1920	2,393	9.22	8.5
1930	6,027	29.55	27.1
1940	5,370	26.87	21.1
1950	5,448	28.42	24.4
1960	10,795	58.32	50.9
1970	13,658	112.46	94.6
1980	13,614	170.30	293.4
1990	12,052	159.80	329.8
2000	12,303	196.80	573.0
2003	11,725	191.30	664.7

Source: PCC Office of executive Planning and [33,40].

modernisation and improvement programmes which allow setting up a fully competitive interoceanic route in the future. The new rates were applied in two steps: on 1st October 2002 and on 1st July 2003, with average increases of 8% and 4.5%, respectively. In this sense, a loaded general cargo ship will be charged 2.96 dollars for each of the first 10,000 PC/UMS; 2.90 for the next 10,000 PC/UMS, and 2.85 for the remaining ones. If the vessel is in ballast, rates will be 2.35, 2.30 and 2.26 dollars, respectively [40]. Table 1 comprises the historical list of the collected tolls since the first activities took place in the Canal.

5. Conclusions

In the 16th century, the idea of constructing a canal between the Atlantic and the Pacific was born. Throughout the ongoing centuries, especially during the 18th century, the old dream was retaken. Although Lesseps' adventure would turn into a complete failure, there is no doubt that his perseverance and courage let the future American project to be successfully accomplished. It goes without saying that Panama's birth as an independent nation was to a great extent made possible due to the USA interest to keep both coasts strategically linked.

Since 1903 and until 31st December 1999, the USA has undertaken the handling of the Canal's issues. Many have been the Treaties signed by both countries on a continuous basis—almost always with a negative repercussion for Panama—since the signing of the so-called Hay–Bunau Varilla Treaty, which was regarded as 'perpetual', resulting in decades of permanent crisis. Until the Torrijos–Carter Treaty became effective in 1979, an anomalous and colonial situation was held within the Panamanian state: the existence of the CZ, an uneasy situation for most of the Panamanian nationals,

who could not even exert control over the Ports of Crist bal and Balboa. Throughout its short period as a republic, fixing 31st December 1999 at noon as the date for the beginning of Panama's full sovereignty over the Canal, has meant a tremendous achievement for the country.

The Canal management through PCC allowed a professional handling which led to a progressive participation of the Panamanian nationals in both the operation and management of the Canal affairs, and to the remarkable turning point of being a Panamanian the first one to be the Administrator of the interoceanic route since 1990, with a view to laying the basis for a pacific handover. The actions taken over the last ten years while the Torrijos–Carter Treaty was still in force, can be regarded as vital, for they allowed to initiate some surveys on the Canal's alternatives for the future, which will be covered in detail in our next paper. PCC Panamanian employers have played an extraordinary role as regards the eventual and successful turnover.

The haste with which the rules and procedures for the canal's handover and future management, and ACP's setting up itself, were established, have helped to count on the confidence and respect of the international maritime community in the persons responsible for the interoceanic waterway. This has been favourable in order to dispel all sorts of reservations arisen during the political crisis in 1989 which ended up with the USA invasion. An essential point has been to establish ACP's businesslike nature, based upon the principle of self-management. It has been intended to look for the best profitability in comparison to the services offered. There is no doubt that it has been much pertinent to maintain the highest responsible managers of the last PCC period within the highest ACP's positions.

The new toll calculation system established by ACP has allowed for the modernisation of an obsolete procedure which did not base itself on commercial criteria. Now they are offering a system in keeping with the current international maritime traffic and a far more realistic tax establishment for ships such as container ships. All in all, it has been possible to achieve the IMO's international convention guidelines, although applying a specific calculus method which will always allow the ACP to control toll policies regardless of possible changes in Tonnage'69.

Undoubtedly, legal, structural and organisational foundations have been laid in order to face future challenges. In this sense, it is very important to keep the ACP away from political conflicts. It will be essential for the ACP to keep a suitable capacity so that they can satisfy international maritime traffic demands for the ongoing decades, and stay competitive. In our next paper we will make an analysis of these issues, dealing with operation and maintenance, cargo traffic and future scope, as well as the Canal's modernisation needs.

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