

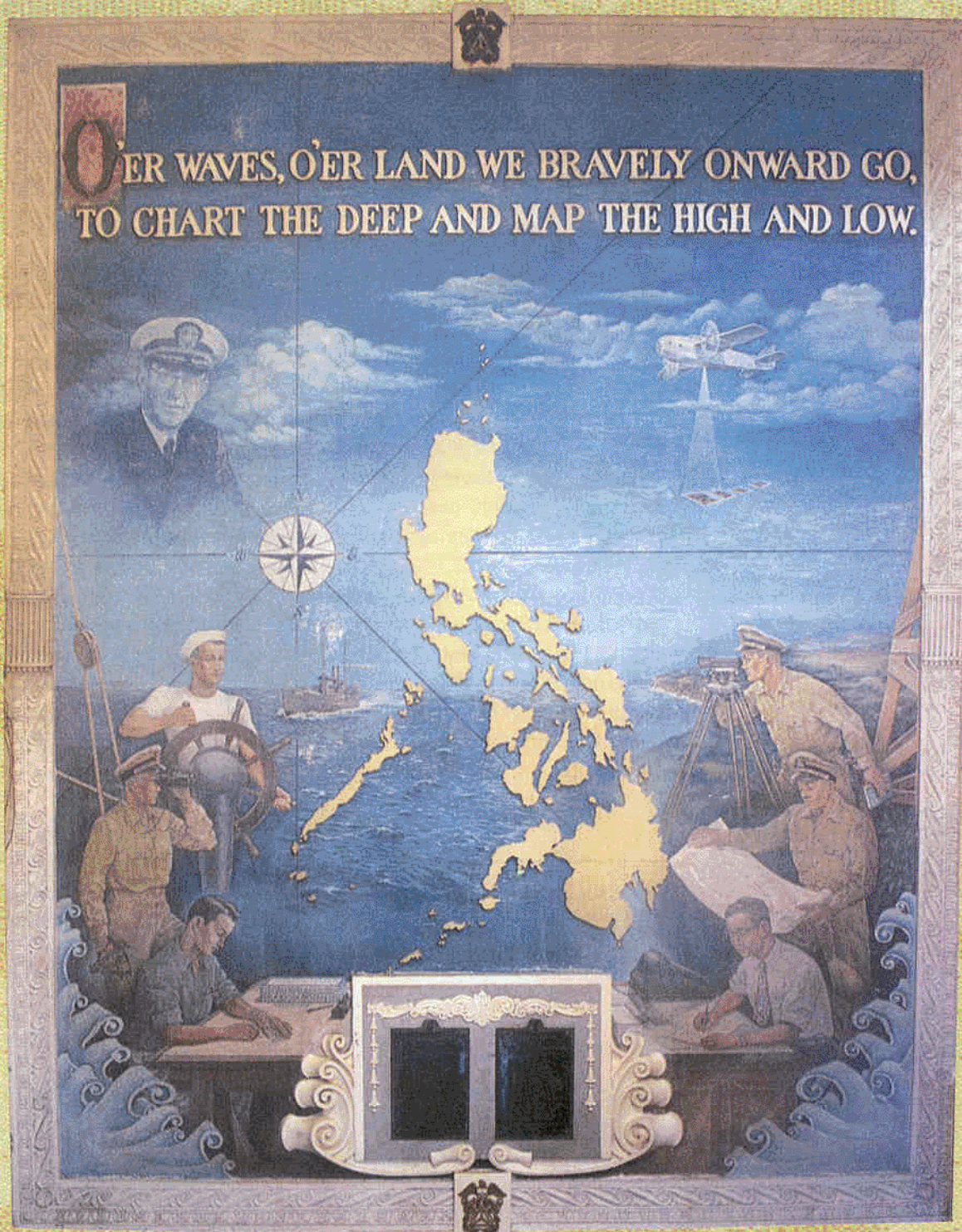
Inf mapper

A Publication on Surveys, Mapping and Resource Information Technology

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*A Century of Surveying and Mapping,
A Hundredfold Opportunity for the Country*

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Contributions

The *Infomapper* is accepting contributions for its forthcoming issues. Manuscripts should be typed and double-spaced. Please include the author's name, position and office/home address. Photographs and illustrations with captions are also welcome. The editors reserve the right to edit materials submitted.

Editorial

One hundred years of surveying and mapping in the Philippines is indeed an epochal achievement in our history, a reason why all Filipinos should celebrate. There is no doubt that the surveying and mapping sector or industry has carved a niche in and contributed a name to our country's rich cultural history. This alone warrants us to beam with pride as our forbearer-surveyors and mappers who were part of this history do surely brim now with happiness in the high heavens. NAMRIA (and its precursors) is certainly honored to be an integral component of this sector, having been a major industry player all throughout history. Being the government's central mapping and resource information body, NAMRIA is virtually synonymous with the Philippine surveying and mapping industry and recognized by the international community. It therefore practically represents the local industry and much is expected of this agency.

Indisputably, NAMRIA can claim professional expertise in surveying and mapping due to its vast experience and good education in both fields. The same is true in capacity building, with our two state-of-the-art survey vessels and mapping equipment; and dataholdings, with

our inventory of digital data. In this fast-paced age of computer and communications technology, it is interesting to note where the Philippines is positioned in the regional industry map relative to, at least, its ASEAN neighbors.

Since its birth 14 years ago, NAMRIA has been looked up to as the forerunner in base mapping and geographic information. Because of this mandate, many private and government offices run to NAMRIA as the authoritative provider of analog and digital base maps.

Where we are now is the product of where we have been as the centennial theme strongly imparts, "*A century of surveying and mapping, a hundredfold opportunity for the country.*" Indeed, we can savor the many opportunities right before us and believe they could bring us to where we want to be. It may entail some painful radical changes in us but that's the way it is—the value we place on our goals will determine the strength of our persistence. We cannot afford to be complacent at this time for complacency is the enemy of progress!

Enjoy the celebration, after all, there can only be one such centennial in our lifetime. Happy Centennial!

Editors' Note: Due to space constraints, we cannot publish the references consulted for the articles for this issue. Interested individuals may avail of the lists from the authors or the editors of this publication.

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The BCGS Mural

by Benjamin T. de Leon

"O'er waves, o'er land we bravely onward go, to chart the deep and map the high and low" goes the couplet on the mural located above the landing, near the ground floor entrance of the old Bureau of Coast and Geodetic Survey (BCGS) building in Binondo, Manila. What a providential reference for one of the country's earliest government entities ascribing to the accurate and comprehensive survey of the Philippine archipelago. It does not only exude the subliminal consciousness of dedication, commitment and responsibility befitting the task the BCGS performed, but likewise is inveigling enough to inspire the men and women of the service.

The mural is described in the accompanying bronze marker as depicting "the important phases of the field and office operations conducted" by the Bureau. The likeness of the lone officer in the upper part is identified as that of American Captain Henry C. Warwick, "first instructor of the Filipino officer corps" of the service. What follows are historical highlights of the office, starting with its original organization in 1900 as a field station of the United States Coast and Geodetic Survey (USCGS) up to its key accomplishments in the early 1950s. The other half of the marker lists the USCGS directors who were responsible for the stewardship of the BCGS during its formative stage.

Then US Ambassador to the Philippines Raymond A. Spruance and Executive Secretary Fred Ruiz Castro, with Captain Andres O. Hizon, BCGS director, officiated at the unveiling of the mural which was held on 21 August 1954.

The mural was done under the supervision of Felix Ampon, chief of the photolithographic division, and Captain Hizon by Faustino D. Navarro, Jr. and Emmanuel T. Favorito, cartographic draftsman and assistant cartographic draftsman, respectively, of the BCGS cartographic division.

With its present condition, the mural will hopefully survive long into the future to perpetuate the ideals and memory of the men and women who dedicatedly served the BCGS, and for what it is today.



Director Hizon with Ambassador Spruance during the open house of the bureau, following the unveiling ceremony for the mural.

"It is hereby proclaimed..." for Philippine Surveying and Mapping

by Maria Romina dR. Pe Benito

The decree is the key. The establishment and development of Philippine surveying and mapping would not have been made possible, without the crucial, relevant edicts, which this article attempts to define.

Forming, Guiding the BCGS

The foremost seminal document for Philippine surveying and mapping would be the *Treaty of Peace* commonly known as the *Treaty of Paris* between the United States and Spain which was concluded on 10 December 1898. Through it the Philippine Islands were ceded by Spain to its new colonizer, the United States. The USCGS was brought into the picture for the making of preliminary studies concerned with the execution of territorial surveys of the Philippine Islands. The USCGS established its sub-office, the Manila Field Station (MFS), in 1900 which in the following year became the Bureau of Coast and Geodetic Survey (BCGS).¹

The earliest reference to the BCGS in Philippine legal history is found in one of the "Public Laws" or "Acts," which were enacted from the establishment of the Philippine Commission on 01 September 1900, up to the inauguration of the Philippine Commonwealth on 15 November 1935.

The Act of the Philippine Commission numbered 222 which was enacted on 06 September 1901 provided for the organization of the four executive departments of government: the Departments of the Interior, of Commerce and Police,² of Finance and Justice, and of Public Instruction. As stipulated under Section 2, the BCGS among other offices was placed under the executive control of the Department of Commerce and Police. Included in the provisions of the US Congressional Act of 01 July 1902, otherwise known as the Philippine Bill,³ were the approval, ratification and confirmation of this particular Act of the Philippine Commission.

Act number 2657 of the Philippine Legislature, constituting the Administrative Code of 1916, was the nation's first legal document with provisions under sections 1150-1152 of Chapter 34 having to do with the chief official and functions of the BCGS, and supervision over it. This would be superseded, however, by the Legislature's Act number 2711, better known as the Revised Administrative Code of 1917.⁴

Under the Department of Commerce and Police, the BCGS served as the Philippine Government's hydrographic and topographic surveying arm for the "harbors, gulfs, bays, channels, approaches, seas, navigable rivers and lakes, and other waters adjacent to the Philippine Islands or pertaining thereto." Section 2063 of the Act number 2711 stipulated this and other functions.

Other sections listed under Chapter 55 of the Administrative Code of 1917 identified the Director of Coast Surveys as the chief official of the BCGS (Section 2062) and called for the USCGS to have supervision over it in terms of administration and work performance, with the Director of the Bureau "accountable to the Government of the Philippine Islands" as regards expenditure of "funds furnished by said Government" (Section 2064). In Section 1152 of the omitted Administrative Code, it is stated that the Director of the Bureau "shall report to the Governor-General of the Philippine Islands" with respect to expenditure of "funds furnished by the Philippine Government." This happens to be the only marked difference concerning the BCGS between the two codes.

Under the Department of Commerce and Police, the primary purpose of the BCGS of charting the country's territorial waters and mapping land areas can be said to have been in support of continuous economic development for the country, and its defense through the use of technical surveys and maps.

Later there would appear to be a shift to the latter area of concern for the agency with its placement, via Executive Order (EO) number 230 of President Manuel L. Quezon, with other bureaus, offices and services under executive supervision of the Department of National Defense (DND). The DND was created, along with the then Department of Health and Public Welfare, by Commonwealth Act number 430, approved on 31 May 1939. President Quezon effected the formal organization of these departments by EO number 230 on 01 November 1939, the day following the order's promulgation. The foremost duty of the DND was supervising the national defense program of the country.

The DND ceased to function during World War II (1941-1945) along with other Executive

Departments of the Commonwealth Government under EO number 15-W, series of 1944. After the War, the reestablishment of the seat of the Government of the Philippine Commonwealth in the City of Manila necessitated the restoration of the departments "as they existed before the Japanese invasion." This was done through EO number 27, dated 27 February 1945 of President Sergio Osmeña.

The BCGS continued to remain under the DND even with the promulgation of EO number 94 of President Manuel A. Roxas which reorganized the different executive departments, bureaus, offices and agencies of the Philippine Government. EO 94, which took effect on 01 July 1947, also created the commissioned service of the BCGS.⁵

Under the DND in this period, the BCGS had its policies and activities in accordance with the over-all national defense policy of the Government. The BCGS also remained guided by the provisions of Sections 2062 and 2063, except for Section 2064 of the same Code, which according to the *Government Manual* for the Philippines published in 1950 "has become obsolete."

The Coming of the Boards

Surveying and mapping activities were not a monopoly of the BCGS. The basic network of geodetic control points established by the BCGS was also utilized by other government agencies assuming relevant functions of the bureau. Legislative measures from the government had to be undertaken to ensure coordination of such activities. Thus were created the earliest of boards for surveying and mapping, which had the common goal of standardizing and integrating surveying and mapping activities to curb duplication of efforts and consequently bring about speed and economy in map and survey data production. These include the Board of Surveys and Maps of the Philippine Government created through EO number 278 of American Governor-General Dwight F. Davis (date unknown); the National Board of Surveys and Maps created through EO number 90 of Commonwealth President Quezon (date unknown); the Board of Surveys created through EO number 11 of President Roxas, dated 31 July 1946; and the National

... continued on page 11

¹ Interested readers may refer to pages 4-7 of *Infomapper* Volume VII, number 1 (November 2000) for the article "The Role of the Bureau of Coast and Geodetic Survey in the 100 Years of Mapping and Surveying by the Philippine Government."

² The Department of Commerce and Police would later be the Department of Commerce and Industry (formerly the Department of Commerce and Communications) and the Department of National Defense.

³ "An Act Temporarily to Provide for the Administration of the Affairs of Civil Government in the Philippine Islands, and for other Purposes."

⁴ Version used here: as amended and in force January 1, 1956.

⁵ For an account on the commissioned service in the BCGS and later in NAMRIA, please refer to the article "Sailing through Rough, Smooth Waters: The BCGS Commissioned Service" in this issue.

Sailing through Rough, Smooth Waters: the BCGS Commissioned Service

by Chester C. Nicolas

The Encyclopedia Americana defines "commission" mainly as a certificate issued by authority by which a military officer is appointed. In general, commissions are granted by the head of a government after the completion of training courses, which are supplemented by systems of examinations whereby qualified non-commissioned officers or warrant officers may acquire commissions.

The commissioned service of the BCGS in the Philippines was established in 1947 through EO 94. The service was distributed in the grades of captain, commander, lieutenant-commander, lieutenant, lieutenant (junior grade), and ensign. The said law also provided that the officers of the corps should be natural-born male citizens of the Philippines. They should moreover rank with and after officers of corresponding grades in the Armed Forces of the Philippines (AFP) of the same length of service in grade, as follows: captain with colonel; commander with lieutenant-colonel; lieutenant-commander with major; lieutenant with captain; lieutenant (junior grade) with first lieutenant; and ensign with second lieutenant.

Republic Act (RA) 2057 updated the commissioned service and provided for the appointment and promotion of commissioned officers of the BCGS. The President of the Republic of the Philippines appointed the commissioned officers of BCGS, provided that all appointments and promotions to the rank of captain were made with the approval of the Congress' Commission on Appointments. The Secretary of National Defense, upon the recommendation of the BCGS Director, appointed cadets from a list of eligibles established under the regulations prescribed by him. Eligibles had to be natural-born male citizens of the Philippines and with at least a bachelor of science degree in any of the following fields: geodetic, civil, mechanical, electrical, mining and chemical engineering. They could also be graduates of a naval or military academy recognized by the government with at least a bachelor of science degree.

The American officers who directed BCGS in its early years were all engineers, with additional technical training required in the specialized work of the Bureau. They were assisted by Filipino enlisted men. Under the American regime, the Bureau also had civil service personnel such as cartographers, mathematicians, draftsmen and clerks. The BCGS commissioned officers and enlisted personnel conducted all survey operations while the civil service employees processed survey data and printed the maps and charts.

The commissioned service of the BCGS was also composed of engineers and professionals who had undergone highly technical and spe-

cialized training in the field of charting and mapping locally and abroad. These officers were engaged in the charting of Philippine waters to ensure the safe navigation of our territorial and internal waters, as well as in mapping and surveying activities for various infrastructure projects.

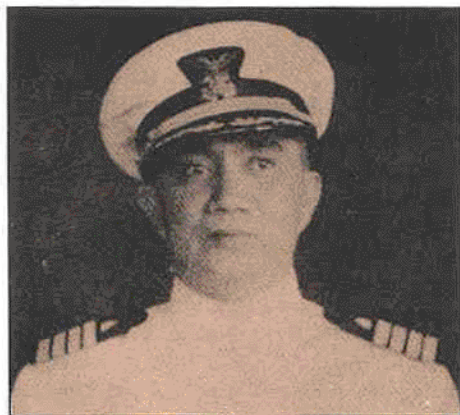
WAPCO's Proposed "Decommissioning"

A critical moment in the history of the BCGS commissioned service came in 1955 when the defunct Wage and Position Classification Office (WAPCO), now the Organization of Positions, Compensation and Classification Bureau of the Department of Budget and Management (DBM), made a proposal to "decommission" the commissioned and enlisted personnel of the BCGS and subsequently classify them as civil service employees. Mr. Charles Dodd, Mr. Cesar Llobera, Mr. Delfin Santos and Ms. Josefina Gutierrez, all from WAPCO, came to see then BCGS Director Andres O. Hizon and presented him WAPCO Circular No. 1 and WAPCO Allocation List.

It was not too long until the authorities realized that reverting the commissioned and enlisted personnel to civilian status would affect the coast and geodetic work and processes. The proposed "decommissioning" was traced by the group of Director Hizon two years after to a contract entered into by and between the Philippine Government and the American Advisory Group. A careful perusal of the contract revealed that WAPCO was bound to classify all government positions *except* some higher categories and those pertaining to the commissioned and enlisted personnel of the AFP.

In his 1956 memorandum to Mr. Ladislao Yap, Project Director of WAPCO, Captain Hizon expressed that the BCGS commissioned service had already gained the respect and esteem of foremost hydrographic services in the world and that there should be no change in the present commissioned service as the bureau was efficiently doing the work it was commissioned to do.

In turn, then Senator and former Defense Secretary Ruperto K. Kangleon wrote a letter in the same year to Chairman Dominador B. Aytona of the Commission of Budget. He said that the proposal to "decommission" the commissioned and enlisted service of BCGS was unnecessary, impractical and unsound. Moreover, the suggestion to transform the BCGS commissioned service to a civil service group would produce consequences destructive to national and international maritime commerce and to all its ramifications. He pointed out that by the nature of the services performed by BCGS, the element of discipline formed the cohesive force by which the necessary and essential operating procedures



BCGS Director Andres O. Hizon

required in coast and geodetic survey work, such as depth soundings, determination of terrain elevations, and mapping of uncharted jungles, were maintained. In addition, civil service requirements and regulations were not found to be adequate, compatible and satisfactory in relation to the needed strict discipline and continuity of effort and attention in the performance of such hazardous but essential public service.

The civilianization by the WAPCO of commissioned service and enlisted personnel pushed through in 1957. Due to the ineffectiveness of the setup, RA 2057 was passed in 1958, restoring the commissioned service in the BCGS.

In 1987, in view of another "proposed decommissioning of the Officer Service" of the BCGS, Director Hizon, then already retired from service, made a recommendation to President Corazon C. Aquino for the retention of the commissioned service and enlisted personnel "in its present form and ministry." Fortunately, as history would prove, the feared decommissioning proposal did not materialize.

Firm Foundations

The BCGS was continually plagued with resignations and transfers of its commissioned officers. Their technical skills in handling highly sensitive instruments and equipment and their specialized training qualified them for higher paying positions in prestigious government and private agencies here and abroad. Realizing the need to strengthen and maintain at a high level the morale and efficiency of the BCGS commissioned service, the Philippine Congress enacted several laws to update the commissioned service and expand the privileges of its members commensurate to the technical services it has been rendering to the public and to the country as a whole.

One of these laws is RA 5534 or "An Act Raising the Ranks of Director and Assistant Director of the BCGS, Amending for the Purpose

... continued on page 15

The Survey Vessels of NAMRIA: Cruising through History, Sailing with the Times

by Xenia R. Andres

Equipment and facilities are essential in the performance of any office's functions. Without their help, nothing can be easily accomplished. Survey vessels are the indispensable platforms in gathering hydrographic data needed on matters of navigation, national security, ports and harbor development, and coastal environmental studies. Various activities are likewise carried out with the use of these vessels. These include, among others, magnetic surveys, gathering of coast pilot information, tide and current observations, and other physical oceanographic activities. As surveying and mapping by the Philippine government marks a milestone in history, NAMRIA recollects the story of its small but distinguished survey fleet and its remarkable transformation to keep up with the demands of time.

In the Beginning: 1901 to 1910

One of the factors with a huge limiting effect on the surveying activities of the pioneering officials and technicians of the USCGS in the Philippines was the lack of suitable boats for hydrographic work. A request was made to purchase a vessel for the survey parties to utilize and this was granted on 08 March 1901. The United States Philippine Commission made an allotment to procure a small steamer as well as for expenses in fueling, refitting and repairing. The small wooden steamer S.S. VITALIANA (renamed RESEARCH) was the first survey vessel of the MFS, the Philippine office of the USCGS in Washington. In November of the same year, the 875-ton steamer named PATHFINDER, which was then the newest and largest survey unit in the US, arrived in the Philippines from its assignment in Alaska. The joint operations of the vessels beefed up the survey work of the MFS, which due to its increasing workload, was made into a bureau of the Philippine government on 01 July 1902.

Work prospered with the addition of more vessels to perform surveying activities classified into triangulation, topography, hydrography, leveling, tide and current observations, and coast pilot work. In 1903, a plan to expand the number of survey vessels was drafted and in 1904, a contract was signed to construct a ship at the Whampoa Dock Company in Hong Kong. In 19 January 1905, the 550-ton steel-hull ship FATHOMER was finally delivered and commissioned. Subsequently, two twin-screw composite steamers built in Japan were authorized to be transferred from the Philippine Coast Guard. MARINDUQUE and ROMBLON were commissioned in November of 1905.



Picket Boat HORNET

From 1902 to 1910, surveys of ports and important passages as well as coastal surveys of principal islands excluding Palawan and Sulu Archipelago were given priority. Also during the first decade of the bureau, hired steam launches were used by the surveying parties.

Before the Outbreak of War: 1911 to 1940

From 1906 to 1918, the five survey vessels continuously operated, except RESEARCH which was sold in 1917. At the close of fiscal year 1918, shoreline survey of the Philippines had been 75 percent completed and around 50 percent of the water areas had been surveyed. During that year, however, only PATHFINDER, FATHOMER and ROMBLON were in use. With the entry of the US in the first World War, survey work in the Philippines was gravely affected. On the seventh of July 1919, MARINDUQUE was put into service again. The four ships continued working but only PATHFINDER and FATHOMER operated in 1921 with the sale of ROMBLON in 1920. MARINDUQUE joined the survey work once more in 1922 up to 1930. The number of vessels diminished owing to the shortage of funds, officers and personnel and the difficulty in making repairs.

After operating almost entirely among the southern islands and in the Sulu Sea, MARINDUQUE was decommissioned and sold on 20 September 1932. The decommissioning of PATHFINDER (renamed RESEARCH in 1938) at the US Quartermaster Depot followed on 30 June 1933. FATHOMER continued the survey work till she was also laid up in 1938, the year RESEARCH was recommissioned. Fieldwork greatly declined due to the unavailability of survey vessels.

The activity of the survey vessels during the fiscal year 1918 to 1930 included the conduct of surveys in the Sulu Archipelago, Palawan, the

south coast of Mindanao, the east coast of Luzon, and to the north of Luzon. The triangulation of the east and south coasts of Mindanao was also completed in these years, resulting in a perimeter control net of the island. Triangulation was extended along the Sulu Archipelago, from Basilan Island to Sibutu Island, and on the east coast of Luzon from the vicinity of Pollilo Island to a point north of Casiguran, as well as from the north coast of Luzon through the northern islands to Y'Ami Island, and the northernmost of the Batan Group. A connection was likewise made between the Babuyan Islands and the northwest coast of Luzon. FATHOMER, in a current survey performed in San Bernardino Strait in 1926, made possible predictions of unusual types of currents in the area.

From 1930 to 1941, survey vessel operations generally involved triangulation, hydrography and topography chiefly in the east, northeast, north and northwest coasts of Luzon; the west coast of Palawan; around Balabac Island, the Sulu Archipelago and Sulu Sea, Mindanao, Verde Island Passage; and in the vicinity of Cagayan Sulu Island and Alice Channel. Within the period, RESEARCH conducted the first taut wire survey to be made in the Philippines. The survey was made between Balabac Island and Cagayan Sulu Island thereby furnishing a buoy control for hydrographic surveys offshore and increasing the location accuracy of the Cagayan Sulu Island.

World War II and its Aftermath: 1941 to 1950

Before the onset of war, RESEARCH and FATHOMER (recommissioned in 1939) were operating in the proximity of Cagayan Sulu. They were conducting surveys in Coron Passage, north of Palawan, and off Bataan when the war started. They were in Manila after the Pearl Harbor was attacked and helped in equipping the armed

forces with materials for war operations. RESEARCH served as a temporary hospital ship before she was badly damaged in bombing attacks firstly in Manila then in Corregidor. She was scuttled in Bataan and on 30 January 1942, she was finally beached in a sinking condition. With the fall of Bataan, FATHOMER was captured by the Japanese troops and was used as a transport. She was destroyed in a bomb attack during the American recapture of the islands. All vessels and small boats, aside from other properties of the BCGS, reached their end in World War II.

Through the initiative of the surviving pre-war employees, operations of the bureau resumed following the Philippine liberation in 1945. In its effort to help in the restoration activities, the 79th US Congress passed Public Law 370, otherwise known as the Philippine Rehabilitation Act of 1946. In line with this act, the two countries forged an agreement regarding coast and geodetic survey work and a training program on 12 May 1947.

In view of the short time span of the rehabilitation program and the insurmountable demands for chart revision, all efforts focused on hydrographic surveying. The USCGS used the survey vessel TULIP (former WAGL-249), commanded by Lt. Cmdr. Kenneth S. Ulm, in its operations. A 190-foot, 1,050-ton lighthouse tender with two 24-foot open launches powered with diesel engines, the vessel was utilized to conduct combined operations in Manila Bay starting 01 July 1948 to 30 April 1949. Her work involved launch hydrography and wire drag examination of channels and obstructions. Special surveys off the mouth of Pasig River, Pampanga Bay as well as various surveys for Sangley Naval Air Station were likewise undertaken. In May 1949, TULIP sailed to the port of Cebu to conduct revision surveys. On the way, revision work was undertaken at Batangas. The TULIP also served as the training center for all of the Philippine trainees until their departure for the US in January 1950.

Attached to the survey vessel TULIP was a 36-foot spoon bill power boat, equipped with 125 gray marine diesel engine and a 26-foot MT type power boat, with 35 horsepower (HP) gasoline marine engine. These wire drag units were adapted for hydrographic surveying. In March 1950, the units completed investigation of all obstructions reported or found during depth recorder hydrography for the entire area of Chart 4243 covering Manila to Cavite.

With the departure of TULIP, a 45-foot picket boat powered by twin 225 HP gray marine diesel engines was placed into operation. The boat HORNET was acknowledged to be the most efficient unit in handling hydrographic investigations, principally in Manila Harbor. Equipped with a standard 808-J Depth Recorder and inboard and outboard projectors, the boat was used in surveying restricted and open waters, checking floating aids to navigation, verifying the

buoyancy of obstructions, transporting personnel, and others. In the survey of Subic Bay, she had the most accomplishments among other units that were attached to TULIP.

On the part of the Philippines, the available equipment included the survey ship ORCHID and RESEARCH, which functioned as a division consisting of the smaller ALBER TL-3 and COWIE C-456 units and two launching craft machines (LCMs). The ship ORCHID (former WAGL-240), a lighthouse tender type and a sister ship to the TULIP (although TULIP carried only two power launches compared to ORCHID's four), was received by the bureau from the Philippine Naval Patrol in July 1948. She was oil-fueled and had two triple-expansion steam engines. The vessel needed thorough repair to serve as a survey vessel before assuming sea duty the following year. On 09 July 1949, she sailed from Manila to start combined operations in Iloilo Harbor and vicinity, including hydrography, triangulation, precise leveling, and plane table topography. In March and April of 1950, the ship completed hydrographic investigations off Dayang Point in Panay. Shoal investigation off Zamboanga Harbor and tagline surveys in the vicinity of piers and wharves were also accomplished. Revision topography, coast pilot notes, landmarks for charts, magnetic declination observations, and recovery and description of pre-war triangulation stations were undertaken for the Cagayan Sulu and Turtle Island projects.

COWIE C-456, a 60-foot diesel-powered crash boat and ALBER TL-3, a 72-foot light army-type tug, remained based in Manila in 1948. They conducted current observations in Guimaras Strait between Panay and Negros Islands from August to December 1949 resulting in the occupation of three 30-day stations and 10 seven-day stations. The units were allocated to the bureau through the Military Assistance and Bases Agreement. On the other hand, the LCM 328 and 1907, 50-foot landing crafts, were used in the tagline survey of Piers 5, 7 and 9 in Manila South Harbor and for general purposes such as serving as bases for detached shore parties, securing fuel, and transporting supplies for other vessels.

Despite the availability of these four vessels, there was a scant supply of hydrographic launches and landing boats 16 to 20 feet in length. Thus, small landing boats were purchased using the rehabilitation funds in San Francisco.

Half a Century and Onwards: 1951 to 1986

The year 1950 marked the complete autonomy of the BCGS. With the conclusion of the rehabilitation program, USCGS material assistance and technical supervision were withdrawn. Nevertheless, basic hydrographic surveys and other vital functions were continued to be carried out by four vessels: ORCHID (renamed FATHOMER), TULIP (renamed PATHFINDER), M/V ALBER and M/V COWIE. A

specially trained staff assumed the responsibilities of the service bureau and pursued the excellent standards set by its precursors. From 1950 to 1951, efforts were doubled in the conduct of coastal surveys in commercial shipping and fishing enterprise areas, in addition to regions of integral importance to national defense and security.

By 1957, only three ships were available for field surveys, observations and operations, to wit: PATHFINDER, FATHOMER and M/V ALBER. In 1959, M/V COWIE was auctioned off with the proceeds used to buy two outboard motors to aid the survey vessels in the pursuit of Philippine defense. The acquisition of RPS SAMAR (renamed RESEARCH) from the Philippine Navy in 1960 benefited the bureau operations very much. The motor vessel replaced FATHOMER that was becoming difficult to maintain and operate.

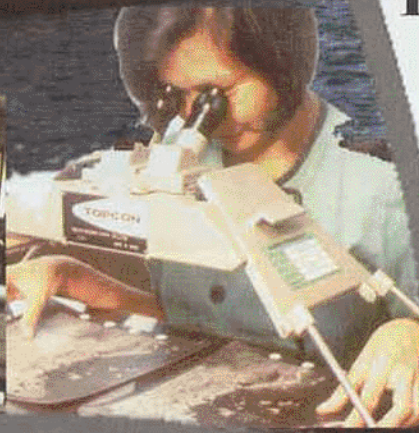
Through a benevolent donor country, the BCGS' survey fleet and charting functions were strengthened during the 1960s. In 1962, a survey vessel was presented to the Philippines by the Australian government as a component of the economic assistance program of the Southeast Asia Treaty Organization (SEATO). The ship was christened RPS ARINYA, the Australian native word for "kangaroo." She was the first ship ever bestowed by Australia to a foreign state, as well as the largest single equipment presented through the aid program.

The brand-new ARINYA was a twin-screw steel, diesel-driven motor vessel; 90 feet long with a 22-foot beam; and a depth of 10 feet and 6 inches. She was outfitted with specialized survey equipment such as echo-sounding devices, radio detecting and ranging system, gyro-compass and tellurometer. She carried two 20-foot diesel driven survey boats and two 16-foot skiffs on deck. She had a displacement of 245 tons, a gross tonnage of 180, a speed of 10 knots, and her loaded draught measured 8 feet. With her advent, sea trade flourished as the production of necessary maps and charts needed by the business and maritime sectors was hastened.

Australia's second contribution for the continuing economic aid program arrived in 1964. Resembling the ARINYA in design and tonnage, it was used for drawing more refined charts of Philippine coastal waters, fisheries, navigation, and defense. The ship was called RPS ARLUNYA, meaning "The Sun" in Australian aboriginal language, in the hope that her service would mirror the illustriousness of her namesake.

The turnover of the survey vessel RPS ATYIMBA in 1969 completed the SEATO program for the Philippines. Specially designed by the Australian Shipbuilding Board for hydrography, topography, leveling and current and magnetic operations in the tropics, the ship was a twin-screw motor vessel 161 feet long with a 33-foot beam and a 9-foot laden draft. ATYIMBA, meaning "emu," had a range of 4,000 miles at a

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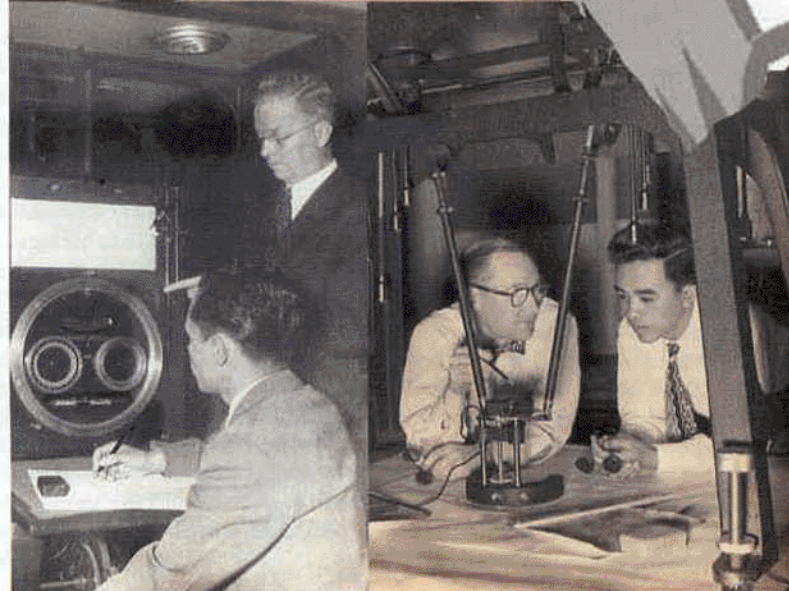
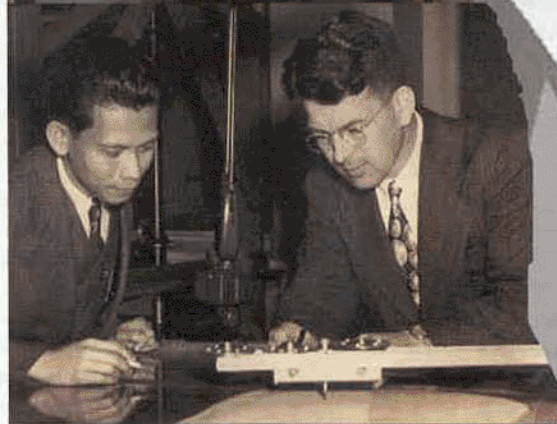
Through the Years in the History of USCGS, BCGS and NAMRIA

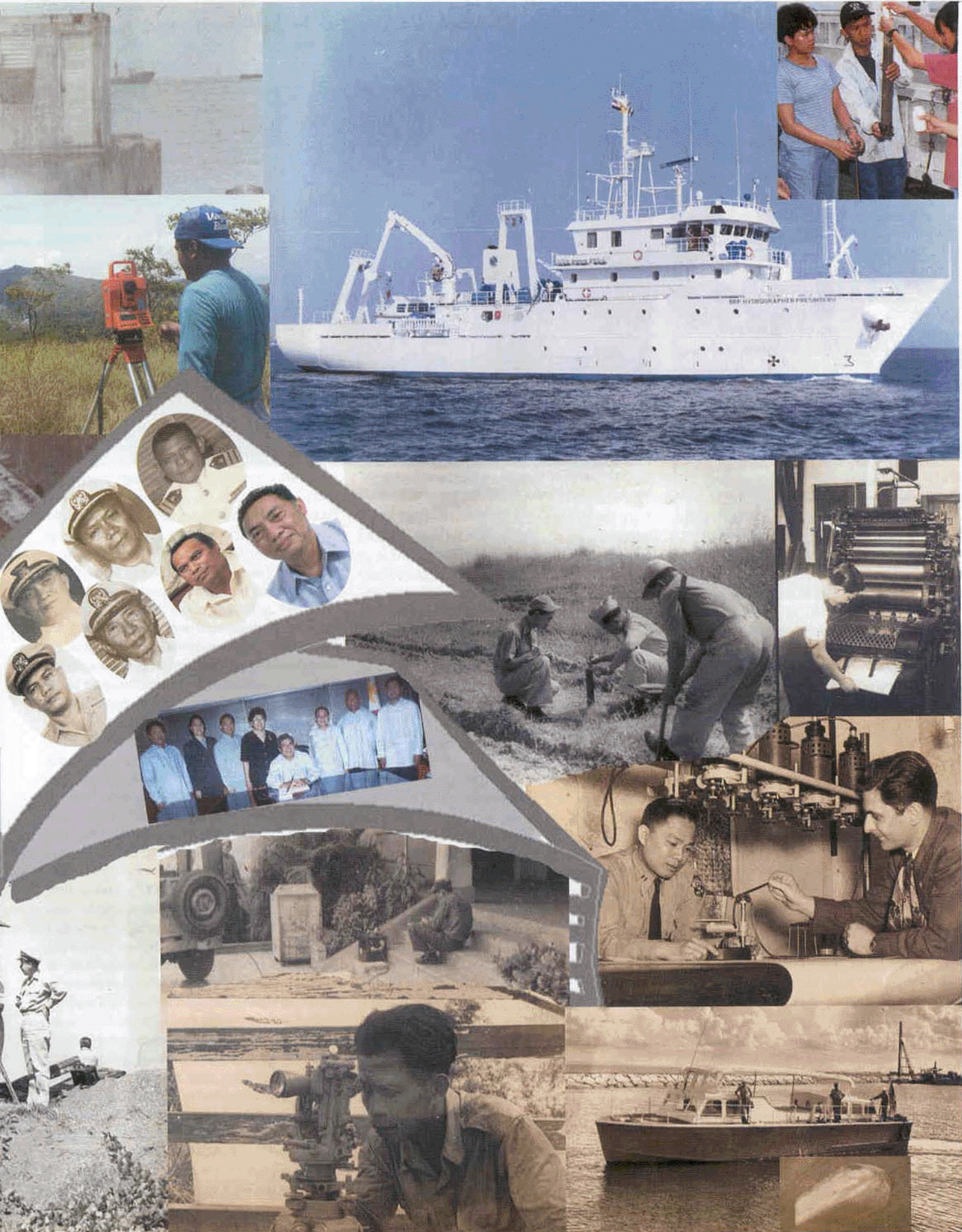
(1901 - 2001)

American Directors, Coast Surveys in Manila

- George R. Putnam (1900-1906)
- John E. McGrath (1906-1908)
- Edmund F. Dickens (1908-1911)
- Philip A. Welker (1911-1914)
- William C. Hodgkins (1914-1916)
- Fremont Morse (1916-1919)
- Commander Hugh C. Denson (1919-1922)
- Commander Edwin H. Pagenhart (1922-1924)
- Lieutenant Commander Harry A. Seran (1924-1926)
- Commander Richard B. Derickson (1926-1928)
- Lieutenant Commander Leo O. Colbert (1928-1930)
- Commander Jean H. Hawley (1930-1932)
- Commander Robert F. Luce (1932-1934)
- Captain Edwin H. Pagenhart (1934-1936)
- Captain Thomas J. Maher (1936-1938)
- Commander Frederick B. T. Siems (1938-1940)
- Commander Richard Lukens (1940-1941)
- Comdr. George D. Cowie (1941-*)
- Commander Carl Egner (1941-1945)
- Commander Glenn W. Moore (1945-1947)
- Commander Charles Pierce (1947-1950)

*killed during the Japanese bombing of Manila





The BCGS Directors: A cursory Profile

by Xenia R. Andres

The backbone of any organization is its staff. This article is about the dedicated forebears of the BCGS to whom the present generation should be especially indebted. The strong talents of these individuals in management saw the bureau victoriously through its numerous functions especially during turbulent times.

The American Officials

The Spanish-American war ushered in US control of the Philippines, among other countries, in 1898. A new territory meant a new task but the USCGS was more than prepared to face the challenges posed by an expanse of varied geographic conditions. The commencement of the survey of the Philippines as well as the establishment of a sub-office in Manila was delegated to Assistant George Rockwell Putnam. He arrived with his men on 15 December 1900 after almost a month of traveling by sea and immediately took on his assignment. Through his exemplary leadership and the cooperative efforts of his staff were braved harsh circumstances such as local insurgencies, lack of facilities for transportation and hydrographic work, health problems, and violent weather conditions.

Following Assistant Putnam as director of coast surveys was John Edward McGrath. Mr. McGrath served the bureau from 1906 to 1908. A civil engineering graduate of the University of Missouri School of Mines and Metallurgy, he was born on 19 September 1856 in Washington, D. C. Edmund F. Dickins was designated as director from 1908 to 1911. His co-workers in the USCGS regarded him as a man of courteous manners and genial disposition. Philip A. Welker directed coast survey work from 1911 to 1914. During his first year of service, he was made a member of the Lighthouse Board and in 1912, a member of Harbor Lines Commission. He was also a member and secretary of the Philippine Committee on Geographical Names. He was born in Toledo, Ohio on 01 June 1857 and obtained his civil engineering degree at Cornell University.

From 1914 to 1916, William Candler Hodgkins superintended the coast surveys. He was born on 21 October 1854 in Boston, Massachusetts. He received his civil engineering degree at Lawrence Scientific School of Harvard University. Fremont Morse supervised the coast survey works from 1916 to 1919. Born in Manchester, Massachusetts on 19 January 1857, he graduated from the University of California with a bachelor of philosophy degree. Before overseeing the coast survey from 20 November 1918 to 12 January 1922, Commander Hugh Cowan Denson of LaFayette, Alabama served from 1900 to 1916 in various survey ships, including those in the Philippines, specifically MARINDUQUE, ROMBLON and PATH-FINDER. Born on 20 May 1872, he graduated



(left to right) G. C. McGlasson, Cartographer, USCGS; Commander Charles Pierce, Director of Coast Surveys [Chief of Mission]; G. W. Hutchison, Chief Engineer

from the University of Alabama in 1891. After which, he enrolled in a special course in civil engineering at the Massachusetts Institute of Technology. Like Commander Denson, Commander Edwin H. Pagenhart also served on several ships and field parties in the Philippines. At 23 years of age, he was already the commanding officer of the ship ROMBLON, operating in the Philippines in 1907. Commander Pagenhart served as director of coast surveys for two terms: 1922 to 1924 and 1934 to 1936. He finished school at the University of Minnesota.

From 1924 to 1926, coast surveys in Manila was under Lieut. Commander Harry A. Seran, a native of New Philadelphia, Ohio. Subsequently from 1926 to 1928, it was under the auspices of Commander Richard B. Derickson of Meadville, Pennsylvania. Between 1913 and 1915, Commander Derickson was involved in the hydrographic and oceanographic investigations in the uncharted waters of the Sulu Sea. The assigned survey of a steamer track posed many hazards but afforded a short route never before accessible. He graduated from Allegheny College with a degree in civil engineering. Rear Admiral Leo Otis Colbert, USCGS director from 1938 to 1950, was just a lieutenant commander when he was appointed director of coast surveys in the Philippines from 1928 to 1930. He was also assigned as navigator, executive officer, and commanding officer of the survey ships operating in various countries, including the coastal waters of the Philippines where he had his first command in 1912. He was born in Cambridge, Massachusetts and a graduate of Tufts College. At the head of the bureau from 1930 to 1932 was Commander Jean Hodgkins Hawley who also served as junior officer and executive officer of

ROMBLON prior to his appointment as director in the Philippines. In 1931, he was made chairman of the Lighthouse Board.

A graduate of Yale University next held the reins of coast surveys in Manila from 30 June 1932 to July 1934. Captain Robert F. Luce was also a former commanding officer of ROMBLON before becoming a director. Captain Thomas J. Maher, who was known for his undecipherable penmanship that even he could not read it, guided coast surveys from 1936 to 1938. From 1913 to 1915, he was the commanding officer of the FATHOMER and PATH-FINDER operating in the Sulu Sea. Commander Frederick B.T. Siems headed the bureau from 1938 to 1940. He was appointed as chairman of a conference to discuss proposed harbor improvements in 1938. Commander Richard Lukens was likewise detailed in the Philippines preceding his directorship in 1940 to 1941.

A sad incident came in 24 December 1941 when Commander George Durno Cowie, then bureau chief for just nine months, was killed in Manila during an attack by Japanese warplanes. He was born on 30 December 1888 at Ogdensburg, New York and attended school at Clarkson College of Technology in Potsdam, majoring in civil engineering. In his service, he also commanded various survey vessels functioning in the Philippines, among other nations. Commander Carl Egner, director from 1941 to 1945, was in command of the ship RESEARCH at the time of the Japanese assault. From January 1942 until March 1945, he was among the captives held at the University of Santo Tomas. Captain Glenn W. Moore from Kensett, Iowa directed coast surveys from 1946 to 1947. Dur-

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"It is hereby proclaimed..."
from page 4

Surveying and Mapping Board created through EO number 388 of President Carlos P. Garcia, dated 18 March 1960.

The Board of Technical Surveys and Maps (BTSM) was to have been the culmination of all of the aforementioned Boards. Created by RA number 2912, which was enacted without Executive approval on 19 June 1960 and known as the Surveying and Mapping Act of 1960, among the BTSM's "functions, powers and duties" were promulgation and adoption of a set of national mapping and surveying standards; adoption and prescription of national survey data; and coordination of activities of surveying and mapping agencies in the government as well as semi-government corporations. The BTSM was chaired by the Secretary of National Defense the members of which included the Budget Commissioner, the Undersecretary of Public Works and Communications, among others.

A Central Mapping Agency

In an undated paper on the BCGS, Captain Cayetano C. Palma, director from 1963 to 1973, voiced the need for "only one agency to undertake surveying and mapping of a national scope." He believed the BCGS "should logically form the nucleus of such an agency." This, however, would not be the case.

The BTSM was abolished and its pertinent functions were transferred to the BCGS, pursuant to the Integrated Reorganization Plan reorganizing the Executive Branch of the National Government, under Presidential Decree (PD) number 1 of President Ferdinand E. Marcos, dated 24 September 1972. Relevant issuances include Presidential Letter of Implementation number 19, dated 31 December 1972; and DND order number 737-A, dated 24 January 1973, the supplementary document to order number 737 signed by Secretary Juan Ponce Enrile.

By 1974, the BCGS had, to quote from the agency's official report for this year, "updated and revised functions" to pursue as a result of revisions made "to cope with the new changes initiated by the government." From 6 official functions as of 1972 to 14 in 1974, the notable additions include undertaking of basic map making and exercising of supervision over the use of aerial photographs or maps (e.g., photomosaic, planimetric and topographic maps). The bureau also had 5 of the 13 functions of the former BTSM, particularly the promulgation and adoption of a set of mapping and surveying standards; and coordination of the activities of surveying and mapping agencies in the government and semi-government corporations.

The BTSM would resurface somehow in the National Committee to Coordinate and Standardize Surveying and Mapping Activities in the National Government, through Memorandum

Order number 431, dated 23 May 1974, of the Office of the President. The committee's creation was said to be in agreement with the objectives of the Integrated Reorganization Plan and to promote Section 23(g) of Letter of Implementation number 19, dated 31 December 1972, which provided "for the coordination of the activities of surveying and mapping agencies in the government and the promulgation and adoption of surveying and mapping standards." The committee was chaired by the BCGS with the Department of Agrarian Reform, the Philippine Air Force, among other agencies, as members.

A few years later, still another committee was created by virtue of Letter of Instructions number 613 of President Marcos, dated 03 October 1977. The National Cartography and Photogrammetry Committee, under the Technology Resource Center, was given the responsibility of formulating and implementing through the Center "an effective nationwide program on aerial photography and cartography which will establish technical standards, coordinate and complement the efforts and activities of government offices and agencies engaged" in these fields. The committee was composed of the respective heads of the Bureau of Lands (chair-agency), the BCGS, the AFP Mapping Center, the Human Settlements Commission, and the Technology Resource Center.

Then through PD number 1588 of President Marcos, dated 11 June 1978, was established the National Cartography, Photogrammetry and Remote-Sensing Center (NCPRSC) as the government's central mapping agency. Its creation was primarily to answer the need for initiating, developing and implementing "a continuing and integrated program of aerial photography and base mapping." EO number 677, dated 12 April 1981, amended PD number 1588 by renaming the NCPRSC as the National Cartography Authority (NCA).

In charge of governance and policy direction for the NCA was an Executive Board composed of the Director-General of the National Intelligence and Security Authority as Chairman and six Presidential appointees as members. EO 677 also stipulated integration into the NCA of the mapping functions of the BCGS, including necessary "applicable appropriations, records, equipment, property, personnel and projects."

These "mapping functions" were given specification in Letter of Implementation number 147 of President Marcos, dated 01 March 1984, transferring the topographic mapping and national mapping management functions (standardization, coordination, etc.) of the BCGS to the NCA.

Finally, a significant breakthrough for Philippine surveying and mapping was reached through the Reorganization Act of the Department of Environment and Natural Resources (DENR). EO number 192 of President Corazon

C. Aquino, dated 10 June 1987, created NAMRIA, among other provisions. NAMRIA is presently the central mapping agency of the government. In it was integrated the powers and functions of the NCA and the BCGS with two other government mapping agencies: the Natural Resources Management Center (NRMCC⁶) and the Land Classification Team of the Bureau of Forestry Development. DENR Administrative Order (DAO) number 31, of Secretary Fulgencio S. Factoran, Jr. prescribed the guidelines implementing EO number 192 with respect to the organization and functions of NAMRIA. The NAMRIA Board of Governors adopted and unanimously approved the order through Resolution number 1, series of 1988, enacted on 29 January 1988.

Aerial Photography

Map production is facilitated through remote sensing technologies such as aerial photography and satellite remote sensing. Before the advent of satellite photos in the Philippines were the aerial photos which, according to one reference, were acquired first by the US Army after World War II, with additional ones taken by the Philippine Air Force and private surveying companies during the second half of the 1960s through the middle 1970s. Through the years, relevant edicts had been issued especially to govern the conduct of aerial photo surveys in the country.

It was upon the recommendation of the BTSM that authorization was given, through EO number 16, dated 20 August 1962 of President Diosdado P. Macapagal, for the taking of aerial photography "in any part of the Philippines for purposes of surveying and mapping." Affected were "the government agencies engaged in surveying and mapping and private entities duly registered and licensed to engage in the same activity." Henceforth, permission was secured from the DND upon recommendation of the BTSM.

Memorandum Circular number 78, dated 14 August 1964, from the Office of the President promulgated rules governing security of classified matter (including charts and maps) in government offices. Likewise, Circular number 1 issued by the General Headquarters of the AFP, dated 02 July 1968 prescribed the "definition, classification, and procedure governing procurement, distribution, release and disposition of maps, charts, air photographs and map materials."

Repealing RA 2912 was PD number 1178, dated 12 August 1977, which was promulgated for the management and regulation of aerial photography, along with mapping activities. The PD cited the "urgent need to institute effective centralized control of aerial photography and mapping activities" under the DND in order to

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⁶ Created through PD number 1041, dated 25 October 1976, of President Marcos, the NRMCC was a resource information and research agency, under the Ministry of Natural Resources.

The Mapping and Resource Information Management Programs of NAMRIA: A Retrospective and a Forward Look

by Engr. Randolph S. Vicente¹

The objective of publishing this article is primarily to inform the stakeholders of the Geomatics community on how the NAMRIA envisions the dynamics and future state of mapping and resource information management in the country, with respect to the unabated advances in technology vis-à-vis institutional, national and international concerns.

This article involves an abridged review and assessment as well as projections of the mapping and resource information management programs of NAMRIA based on the point of view of the author/contributor. It embraces an outlook of the present footing of NAMRIA and a comparative service assessment. A forward look or directions is also given on how the agency sees itself in the next decade based on its long-term objectives.

NAMRIA at its Present Footing

This section will highlight NAMRIA's current programs, significant accomplishments and a comparative service assessment.

Major Programs

NAMRIA today takes its place among the leading organizations of its kind in the government with aspirations to make significant reforms in its traditional activities. With its meager annual allocation from the national government and limited support from the international community, the agency vigorously pursues its mandate by way of implementing three major programs. These are as follows: (a) Water, Coastal and Land Surveys-WCLS; (b) Mapping and Remote Sensing-MRS; and (c) Information Management and Statistical Services-IMSS.

The *first* program involves hydrographic/oceanographic surveys and charting of the coastal and marine resources (including the internal waters and the Exclusive Economic Zone or EEZ, ports and harbors, navigational lanes, among others), establishment/densification of geodetic control points, magnetic surveys, and the production of electronic navigational charts.

The *second* program is comprised by two-tiered activities with responsibilities vested upon the agency's Mapping Department and the Remote Sensing and Resource Data Analysis Department. The first activity encompasses the production of large- to small-scale topographic maps, medium- and small-scale administrative maps, and other general-purpose and special maps; and printing/reproduction of these maps. The latter involves forest land surveys and mapping, production of thematic and analytical maps,

including forest resources inventory. The operation of the National Remote Sensing Center is also under the second activity.

The *third* program embraces the development and maintenance of information systems and networks, natural resource databanking, production of atlases and statistical profile, and the implementation of the agency's Information, Education and Communication program.

Since its inception in 1987, we can enumerate the most significant achievements of the agency consistent with the above-cited major programs. Some of them are as follows: (1) acquisition and operation of two state-of-the-art survey vessels which provide a more efficient hydrographic/oceanographic data collection/processing, and for multidisciplinary research and development purposes; establishment using Global Positioning System (GPS) techniques of a homogeneous geodetic network which serves as the basic reference for all surveying and mapping activities; (2) maintenance of a strong representation and provision of vital inputs to the Cabinet Committee for Maritime and Ocean Affairs (CABCOM-MOA) and other entities in pursuit of the country's territorial claim and the acquisition of physical data in the country's EEZ; (3) attainment of self-reliance in terms of manpower resources vis-à-vis production of base maps at various scales; (4) diversified map products and services, from analogue to digital products and other outputs that cater to the requirements of its multidisciplinary clientele; (5) completion of the national land cover inventory and mapping in 1988; and (6) acquisition of a higher degree of technical competence in the area of information systems technology applications through its Information Technology Strategic Plan and the Geographic Information Management Framework Plan.

Aside from the implementation of such programs, the agency is also involved in pursuing its regulatory functions, marketing and sales of its products and services, responding to local and international commitments, technology research and transfer, and undertaking of special projects in support of the different programs and projects of the government and the private sector as well.

As part of the DENR, NAMRIA has geared its plans toward providing precise and up-to-date geographic information on the country's land and water environment needed for the completion of the land management and administration program, the management of our natural resources, and the preservation of the environment.

The environment and natural resources (ENR) are critical factors in promoting economic development. Environmental quality greatly affects the population's quality of life in terms of health and safety, while resource depletion invariably leads to poverty. These are the main concerns of the DENR today, and NAMRIA has always been behind the DENR in its bid to develop sustainable management of ENR for economic development and poverty alleviation through scientifically produced maps which will be extensively used in resource inventory, replenishment, re-growth, management and protection. A beneficial offshoot of these mapping activities includes the increase in revenues of local government units through land use/land suitability analysis and tax mapping.

In support of the DENR's aim to promote efficient planning and management of coastal and marine areas primarily for the nation's food security and the development of economic opportunities, the agency's hydrographic/oceanographic surveys and nautical charting of such areas has been long underway and has covered portions of the sea territory. These surveys are a crystallization of policies set forth by the CABCOM-MOA on maritime safety, fisheries management and development, delimitation of the country's territory, offshore exploration for self-reliance and prevention of piracy/poaching within the Philippine EEZ.

Comparative Service Assessment: Past and Present

Perhaps the best way to draw a synopsis of NAMRIA's mapping and resource information management programs is to make an abridged assessment of the past and present state.

In the past, the demand for geographical information was based on the traditional/usual requirements of a developing country. Today, it is more oriented to complex and changing demands for geographic information needed to address local issues and global concerns. The necessity of geographic information involves customized and/or client-based specifications of map products.

To respond to the erstwhile requirements on geographic information, the predecessors of NAMRIA were contented with the approach on how products are made available to the public. The methodology embraces the conventional and tedious means of production. To date, the agency is presently using more advanced technologies such as high-resolution remotely sensed data,

¹Chief, NAMRIA Corporate Planning Division and Member, Geodetic Engineering Centennial Commission

availability of satellite surveying technologies, multitasking information systems, and improved map production systems.

Previously, the human resource component of resource data generation and management was more reactive because of inadequacy of relevant educational programs and opportunities for skills enhancement were not available locally. Nowadays, more specialized educational and training programs are made available, locally and internationally. Consistent with the government's personnel placement policy, wherein qualification standards are strictly adhered to, we therefore expect better service delivery.

On facilities and gadgetry, the absence of appropriate platforms for hydrographic/oceanographic surveys, GPS and more compact surveying equipment, and lack of powerful computers and peripherals or appropriate workstations contributed to the tedious map-making processes and information dissemination schemes. The availability of multidisciplinary survey vessels equipped with state-of-the-art scientific equipment, utility of GPS/GLONASS receivers and GPS total stations, more robust computer workstations at hand, and an improved information systems development/maintenance scheme, provides incremental benefits to the agency and its beneficiaries. The dynamics of Information and Communications Technology (ICT) that are presently and continuously being developed and made available locally, pave the way for better delivery of service which is expected for NAMRIA's benefactors/stakeholders.

The concept and practice of public information management has not gained much headway because of firm protection of data holdings by other government agencies. But the government through the initiative of NAMRIA and collaborating agencies attempted to break new ground by enunciating a participatory approach in policy formulation and more coordinated program implementation through the Inter-agency Task Force on Geographic Information.

With the improvements in terms of methodology, progress in human resource capability, and technology advances, it is expected that such progress in geographical information generation and management will bring about positive outcomes to supply the needs of the Geomatics community.

Despite the agency's difficulties in pursuing its programs and projects, it has still maintained and continuously provides the general public with the required geographic information and services for various purposes.

A Forward Look

This section contains the NAMRIA Medium-Term Public Investment Plan (MTPIP) update which had just been submitted to the DENR and the DBM, NAMRIA's vision and mission, long-term objectives, as well as an enumeration of some anticipated impacts. It concludes a scenario on how the agency sees itself in

the next decade(s).

The NAMRIA MTPIP Update

NAMRIA recently updated its MTPIP for FY 2002-2004 based on the call of the national leadership. The updates include the incorporation of additional activities and refocusing of priorities under the agency's three major programs mentioned earlier. Such an update is intended to support the government's thrusts and sectoral missions as well as support mechanisms to the socially- and environmentally-oriented thrusts and natural resource-based priorities of the DENR.

On WCLS, we have incorporated the delimitation of municipal waters as a requirement of the implementation of the 1998 Fisheries Code; the delimitation of EEZ and the country's continental shelf in compliance with the provisions of the United Nations Convention on the Law of the Sea (UNCLOS); and the establishment of an Integrated Geo-spatial Referencing Facility in the country.

The MRS Program subsumed the operation of large-scale orthophoto production, the use of GIS technology in analytical mapping, the generation of fundamental datasets to support the implementation of a National Spatial Database Infrastructure, and the operation of an assembly-line type of digital map production.

The establishment of a National Geographic Information Infrastructure; development of GIS- and Web-based Information Systems; transformation of existing map sales outlets into NAMRIA Information Centers equipped with the necessary ICT equipment and peripherals; and enhancement of clientele services were incorporated under the IMSS Program.

Aside from the above-mentioned updates on the MTPIP, parallel efforts were put on the preparation of project proposals which had been submitted to potential donor countries/entities. This initiative intends to seek assistance from the donors just to augment the limited financial support from the national government, to sustain its operations primarily designed to address multiple pressing issues such as environmental, socioeconomic, physical and other global concerns.

It is not enough that medium-term initiatives are attained but there has to be a system by which long-ranged steps must be carried out. Thus, the agency deemed it wise to come up with its long-term objectives.

Long-Term Objectives

The future of the local Geomatics industry greatly depends on how the government, through NAMRIA, shapes the business and the industry for the sake of progress and profitable growth. Certainly, long-term objectives and strategic themes should be defined to reach that desired state and to fulfill the aspirations of all sectors concerned. But in terms of satisfying the demands of its clientele and to ensure that all efforts converge in attaining its goal, the agency

has officially set a vision: *"A national mapping and resource information agency imbued with strength and experience, with a firm commitment to excellence in meeting the geographic information needs of the citizenry."* Inherent to this, it has also delimited its mission: *"To provide the government and general public with reliable geographic information on the country's land and water resources; and to promote judicious management and use of spatial information technology needed for the achievement of the national security and development agenda."*

In order to attain such vision and mission and ultimately realize the desired future situation, the following long-term objectives must be seriously adopted and assimilated by NAMRIA and other stakeholders, to wit: (1) to achieve a national focus for strategic spatial information initiatives; (2) to shift from a production entity to a quasi-developmental body; (3) to shape the business of Geomatics for progress and profitable growth; (4) to continuously improve in quality and efficiency under the philosophy of "quality products and service with integrity;" (5) to encourage the use of spatial information to support better decision-making; and (6) to implement an internal re-engineering and adopt best corporate practices.

It is a fact that addressing the current national issues and concerns as well as global challenges requires the use of right geographic information. Being the authority on national mapping and resource information management, what lies ahead depends on critical success factors. The bottom line of which involves the pursuance of the agency's mandate and responsibilities on a playing field that takes into account the principle of an "Envirogram." In simple terms, it means that any business activity which an institution aims to undertake must consider the sectors of the entire industry where it belongs.

Therefore, the success of the mapping and resource information management programs depends on the government and the private sector playing lead roles in pushing forward the development of the Geomatics industry in the country. With NAMRIA's current assets such as highly technical manpower complement (civilian and uniformed), inventories and equipment, plant facilities, data holdings, and other possessions, the agency sees itself in the next decade as, *first*, a *catalyst* providing the national geo-spatial information infrastructure and the policy, program and institutional environment that will encourage the growth of Geomatics use and the industry in the country. *Second*, NAMRIA will become the *lead user* implementing leading edge Geomatics applications and providing examples of "best practice" in the use of the technology for the delivery of its services. Lastly, as *associate* of the private sector, NAMRIA will undertake key Geomatics projects for participation and implementation by business, the academe, the

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The Survey Vessels of NAMRIA ... from page 7

cruising speed of 9.5 knots. The vessel carried a complex radio and telephone system for communications and was equipped with, among others, a gyro-compass and an echo-sounding equipment that provided accurate soundings reaching up to 2,000 fathoms and a testing apparatus for the survey of ocean bottoms. Walkers Ltd. of Maryborough, Queensland built all the survey vessels. Later installed in ATIYIMBA was the computerized Integrated Hydrographic Survey System to enhance cartographic capabilities and a special sub-bottom profiling instrument provided by the United Nations.

In the 1970s and 1980s, the three survey vessels given by Australia undertook most of the fieldwork as all the other vessels were almost unserviceable and impractical to maintain due to recurrent mechanical failures. M/V ALBER was decommissioned in 1969. In 1975, RESEARCH was in an advance state of deterioration and was ultimately turned over to the Philippine Navy. PATHFINDER was auctioned in 1983.

CGSD-NAMRIA: 1987 to 1997

With the merging of BCGS with three other agencies to form the NAMRIA, the BCGS was now the agency's Coast and Geodetic Survey Department (CGSD). Through its complement of three vessels, CGSD-NAMRIA expanded its concerns primarily from maritime-oriented activities to environmental conservation, development of ocean energy, disaster management, and support to infrastructure, among others. Topographic and hydrographic surveys conducted during the period included those for significant field projects such as the agency's formulation of a vessel traffic separation scheme later implemented in the Verde Island Passage; and the government's rehabilitation program on areas affected by mudflows and lahar sedimentation caused by the Mt. Pinatubo eruption. Starting 1992, the three survey vessels set periodic voyages pursuant to the project to delimit the Philippine archipelagic baselines which will eventually serve as references for the definition of the country's maritime boundaries.

In this period, the smaller survey boat RPSB HIZON built in 1992 by Puloy Shipyard in Puerto Princesa, Palawan was supporting the various field projects. The diesel boat with a single-screw propulsion had an overall length of 19.2 meters, a breadth length of 1.8 meters, a speed of 8 knots, and a draft of 0.7 meter.

A New Dawn: 1998-2000

By this period, the agency's three old hydrographic/oceanographic vessels were no longer operational. The effectivity of the Law of the Sea in 1994 heightened the need to strengthen facilities and systems in order to meet the requirements of more immense maritime and exclusive economic territories. The controversy over the disputed *Kalayaan* Island Group more-over pushed the urgency to complete the survey

and mapping of the country's maritime territory. Thus there was a need for new survey vessels with offshore survey capabilities and automated processing systems in order to deliver the essential information.

After 13 arduous years beginning 1985, the fervent desire for suitably equipped vessels was fulfilled with the acquisition of two brand-new oceanographic research and survey vessels. They were named after Commodores Jayme V. Presbitero and Antonio P. Ventura, former BCGS directors. The multidisciplinary twin vessels were purchased through a state-to-state soft-loan facility from the Spanish government mainly (1) to map the national marine territory and delimit the outward boundaries of the EEZ and continental shelves, as well as delineate the different maritime zones therein; and (2) to be utilized in the production of up-to-date nautical charts fundamental to maritime safety and all marine activities. The duo were built by Factorias Vulcano shipyard in Vigo, Spain from May 1997 to August 1998. The initial vessel, BRP HYDROGRAPHER PRESBITERO, arrived in October 1998 while BRP HYDROGRAPHER VENTURA arrived in January 1999.

The state-of-the-art survey vessels are capable of hydrographic charting and geophysical and oceanographic surveys. Onboard the vessels are advanced instrumentation like a wide-angle, multi-beam echo or swath sounding equipment for a more thorough sea bottom coverage; the Acoustic Doppler Current Profiler for tidal current metering; satellite positioning [Differential Global Positioning System (DGPS)]; and navigation equipment. The vessels' integrated survey and data operation systems comprising of dry and wet sample laboratories, multi-beam echo-sounder, sonar, and automated cartographic systems, among others, moreover facilitate the obtainment and processing of results and information base. The vessels are also capable of continuous sea survey operation. Survey operations have since been fast-tracked with acquisition of the two vessels.

A Century Hence: 2001 to the Future

Through a special order from the DENR, the management and operations of M/V Sulu-Celebes Biodiversity Research Vessel or BRP BANTAY KALIKASAN was transferred to NAMRIA from the Directorate for Special Project for Water and Integrated Ecosystems Management and Development. The ship has an overall length of 46.44 meters, a breadth length of 7.4 meters, gross tonnage of 363.16, a draft of 3.68 feet, and a speed of 15 knots.

With the promise of the hydrographic vessels acquired in the recent years and the addition of another in the agency's operations, NAMRIA hopes to discover more oceans and navigate broader horizons. It must, however, be able to keep attuned with the incessant shifts and advances in technology in order to have current information on our seas which is parallel to economic, maritime safety, and sovereignty aspects.

"It is hereby proclaimed..." from page 11

"reconcile and simplify... two fundamental requirements: national development and security;" to strengthen EO number 16 and to provide a penalty provision for violation of the rules and regulations prescribed by the DND to the detriment of national interest and security. Said provision was not provided by RA number 2912 and EO number 16. In PD number 1178, penalties ranging from imprisonment to payment of fines covered convictions for "unauthorized sale, use or improper disposition of aerial photographs and/or its reproductions."

In turn, PD number 1178 was repealed by PD number 1588 and the rest is history. A check with the DND through the former AFP Mapping Center, now the Military Intelligence Group 18, under the Intelligence Service unit of the AFP, revealed that the old Circular number 1 of the AFP holds to this day.

Ad Infinitum

Another landmark statute also worth mentioning is EO number 45 of President Fidel V. Ramos, dated 05 January 1993, which stipulates adoption of the new geodetic control network, known as the Philippine Reference System of 1992 (PRS '92) as the standard reference for all surveying and mapping activities in the Philippines. EO number 280 of President Joseph Ejercito Estrada, dated 14 August 2000, amended EO number 45 through imposition of a transition period up to year 2005 from the original target date of 2000 for the mandatory full implementation of the PRS '92.

Then of course there is Proclamation number 27 by President Gloria Macapagal-Arroyo, dated 16 April 2001. The proclamation declares this year as the centennial year of the geodetic engineering (surveying and mapping) profession, with the establishment of the former offices of the Bureau of [Public] Lands and the BCGS in 1901. The opening of the School of Surveying of the Bureau of Lands was greatly instrumental in the development of the geodetic engineering course in the Philippines.

Other legal issuances can no longer be cited here due to space constraints. We also await the passage of new ones to further shape the important fields of Philippine surveying and mapping.

The BCGS Directors... from page 10

ing World War II, he served at the US Army Corps of Engineers where he rendered service in the Philippines, among other places. His numerous awards and decorations include Philippine Independence and Philippine Liberation Ribbons. Commander Charles Pierce oversaw the bureau during the Philippine Rehabilitation program from 1947 to 1950. At that time, a Fili-

pino director was likewise designated to prepare the entity for eventual independence from US technical supervision and material aid.

Filipinos at the Helm

Reposing special trust and confidence in the abilities of the Filipinos, coast surveys were steered in July 1950 by a full agency of the Philippine government. The first Filipino director of the BCGS was Captain Andres Ochoa Hizon, who was also acting director in 1945. He was born on 08 February 1906 in Hagonoy, Bulacan. His high scholastic records include a bachelor's and a master's degree in civil engineering from the University of the Philippines (UP) [where he graduated *magna cum laude*] and Cornell University, respectively. He also finished law at the University of Santo Tomas. Captain Hizon was also the first Filipino officer of a USCGS survey vessel, FATHOMER. Through his leadership, he was able to maintain the excellent traditions of the former office holders. He moreover instituted the creation of a commissioned service in the bureau through EO No. 94, series of 1947. He was a member of professional societies such as the US National Research Council, the American Geophysical Union, and the US Naval Institute. He also served the Philippine government in other capacities as acting executive director of the National Economic Council in 1956 and chairman of the Lighthouse Board and the Manila Railroad Company.

Captain Angel Gutierrez de Jesus succeeded Captain Hizon in 1958. He was born on 10 October 1910 in Tondo, Manila. He was first employed in the bureau in 1938 and became the chief of the Administrative Division after the war. Through his assistance, the bureau was able to reconstitute some of its lost records. Captain de Jesus was a holder of a civil engineering degree from UP; a master's degree in economics from the University of the East Graduate School; and a bachelor of laws degree from the Philippine Law School where he was the salutatorian. From 1947 to 1948, he was sent to the USCGS for in-service training under the Philippine Rehabilitation Act. Capt. de Jesus initiated the upgrading of the corps of commissioned officers.

Commodore Cayetano Calceta Palma of Tagbilaran City, Bohol was the third Filipino to assume directorship of the bureau from 1963 to 1973. Born on 07 August 1914, he was a World War II cadet whose titles and decorations include Philippine Defense and Philippine Liberation Ribbons as well as American Defense, World War II "V", and Asiatic-Pacific Ribbons and Medals. He finished his civil engineering degree at UP and his geodetic and hydrographic engineering education at the USCGS from 1947 to 1948. He was a member of the committee for the DND's participation in the socio-economic program of the Macapagal presidency. From 1973 to 1977, Commodore Jayme Villanueva Presbitero supervised the BCGS. He hailed from Valladolid, Negros Occidental. He was born on

03 November 1918. A mining engineering graduate of UP and a USCGS trainee, he was a young lieutenant of the second battalion 76th Infantry, seventh Military District in 1941.

Commodore Antonio Pambid Ventura was the BCGS director from 1977 to 1986. He was born on 10 May 1922 in Batac, Ilocos Norte. He was characterized as a man of integrity in character, seriousness in purpose, and with a determination to succeed. He obtained his geodetic engineering degree from UP and was also a USCGS trainee. Commodore Ananias Azarcon Batilaran, Jr. of Panitan, Capiz was the last in the roster of BCGS directors. Born on 29 September 1937, his academic qualifications included a mechanical engineering degree from FEATI University, a certificate in the surveying sciences from the University of New South Wales in Sydney, and a certificate/master in physical oceanography from the University of Bretagne, France. He held various assignments in the bureau, including services in the bureau's survey vessels. On 16 September 1987, he was made deputy administrator of NAMRIA, which was created with the merging of BCGS with other national government agencies.

The Present BCGS

The BCGS became the CGSD of NAMRIA and is presently under the able leadership of Commodore Renato Bersamin Feir. Born in Bangued, Abra on 05 April 1943, he too climbed up the ranks of BCGS. He is a licensed electrical engineer from Mapua Institute of Technology. His impressive qualifications include training in photogrammetry, topographic, hydrographic and resources mapping, photolithographic reproduction and DGPS in Australia and map production, compilation and stereo plotting in Japan. He is a member of various scientific and professional organizations such as the Philippine Society of Photogrammetry and the Philippine National Cartographic Association. Moreover, he is part of national committees on marine and geological sciences, and on national security councils on *Kalayaan* and the South China Sea Maritime Conflict. Like all the other Filipino directors, he has represented our country in many scientific conferences abroad.

The invaluable services of these committed individuals to the BCGS, NAMRIA and to the Philippine government in general, in its varied surveying and mapping activities, are truly deserving of recognition and remembrance.

Sailing through rough... from page 5

Section Two of RA 2057." Commodore Cayetano C. Palma was the first director of the Bureau to be elevated to the rank of a Commodore by virtue of this act which was passed into law in 1969. On the same year, RA 5976 or "An Act Providing for the Retirement and Separation

from Service of Commissioned Officers of the BCGS, establishing a Coast Survey Officers Retirement and Separation Benefits Fund in the Government Service Insurance System and for other purposes" was also passed into law. Section 3 of the said law provided that when an officer retires, he shall, at his option, receive a gratuity equivalent to one month of the base and longevity pay corresponding to his retirement or adjusted grade for every year of government service. Such gratuity will be payable in one lump sum or a monthly retirement pay equivalent to two and one-half percent of the monthly base and longevity pay corresponding to such retirement or adjusted grade. The retirement pay shall be subject to adjustment based on the prevailing scale of base pay of officers in the active service. A retirement and separation benefits fund was also established to provide BCGS commissioned officers a perpetual and financially stable assistance that will assure them and their beneficiaries the payment of full benefits. *Batas Pambansa bilang 703* was also passed into law in 1984, decreeing the rates of monthly base pay of BCGS commissioned officers and providing for their retirement gratuity.

Reinforcing the Bureau

Section 10.2 of DAO number 31 stipulated the transfer the BCGS Commissioned Service to NAMRIA and the continued judicious conduct of hydrographic, oceanographic and geodetic surveys. This was amended by DAO number 2000-54, the latest issuance, which mainly stipulated the continued governance over the Officers' Corps, by extant laws, rules and regulations embodied especially by RA 2057, RA 5534, and RA 5976, until the amendment, modification or repeal of these laws; and over enlisted personnel under the Exempt Service.

Moreover, circulars issued by the DND shall still govern the admission of cadets and the selection, appointment and promotion of the NAMRIA commissioned officers. Until these issuances are modified, supported or superseded by subsequent laws and pertinent rules and regulations, they are deemed operative and enforceable.

Carrying the Torch

Certainly if not for the determination especially of the early commissioned officers themselves, things would be a lot different today. The present and future leaders of the present CGSD of NAMRIA bear the responsibility of continuing with vigilant efforts to ensure not only their welfare but also that of the enlisted personnel. The future generations should never lose sight of the fact that the existence of the commissioned service is an essential tool in achieving the goals of surveying and mapping in the Philippines.

Centennial Surveying and Mapping Trivia

by Concepcion A. Bringas

- ❖ The first geodetic control network in the country was established from 1901 to 1927 and was called the *Triangulation of the Philippine Islands*. This old triangulation network, however, was upgraded with the establishment of the first-order, geodetic control network, the PRS '92.
- ❖ The oldest primary tide station in the country is the *Manila Tide Station* located at Pier 16. The station was established in 1902 to provide tide and current data necessary to guide the USCGS hydrographers in the extensive conduct of ports and harbors survey in the entire island of Luzon. To date, a total of 12 primary tide stations provide data for the annual NAMRIA *Predicted Tide and Current Tables* publication.
- ❖ The first topographic map ever produced entirely by Filipinos was launched on 22 December 1988. The map covers Zamboanga del Sur at scale 1:50,000. Four map sheets of the area at scale 1:25,000 were combined to produce the 1st *Filipino-made map*.
- ❖ *Baseline survey* in the country was initiated in 1992 after the Philippine government became a signatory to the 1982 United Nations Convention on the Law of the Sea. The survey determines the geographic positions of the base points which will technically define the Philippine baselines.
- ❖ *Surveying education* was initiated in the Philippines with the enactment of Act number 1491, dated 22 May 1906, of the Philippine Commission. The law provided for the education of Filipino students as surveyors. The earliest form of surveying education in the Philippines was a course in surveying offered in the Manila High School. The earliest *School of Surveying* was opened by the former Bureau of Public Lands in 1916 at the grounds of the Philippine School of Arts and Trades. The school offered a two-year course and the students were the "pensionado" scholars who served the bureau after finishing the course. The school was incorporated into the College of Engineering of the University of the Philippines in 1925. Then the university upgraded the course into a four-year curriculum leading to the degree of Bachelor of Science in Geodetic Engineering in 1937. Finally, the Department of Geodetic Engineering was created in 1947.
- ❖ The practice of the *Junior Geodetic Engineering* profession started in 1973 through Presidential Decree numbers 202 and 335. The decrees were promulgated to augment the country's technical manpower of geodetic engineers needed in the massive cadastral and public land subdivision survey program of the Bureau of Lands and the mapping operations under the Land Reform Program during the Marcos administration.
- ❖ The present NAMRIA *Cadet Competitive Examination* was first conducted in 1937 by the former BCGS and was open only to top civil engineering graduates of the Philippine universities. Six qualified cadets were selected and trained aboardship and in the office under the supervision of the American officers. The trained cadets eventually formed the corps of field officers who later took over the work from the Americans. The educational requirement for the competitive examination has since broadened to include courses on other fields of engineering.
- ❖ The first published *Notice to Mariners* was dated 01 March 1901. The navigational aid was printed in 500 copies and was distributed to government officials including the customs collectors in every port.

The Mapping and Resource... from page 13

science and technology community, and civil society.

Anticipated Long-term Impacts

Assuming a favorable situation, we foresee that immediate outcomes and impacts are to be realized by stakeholders and beneficiaries. Although, the agency provides the basic data for cross-sectoral courses of action and support/contribution in development planning, we cannot discount the fact that such inputs will bring about positive impact in various levels of the government and private sector. To illustrate some of the

direct and indirect impacts of its mapping and information management programs, we can cite the following: (1) [for the WCLS program] reduced land conflicts, high-confidence level on off-shore exploration activities, reduced sea accidents/collision, increased aquaculture and commercial fishery production; (2) [for the MRS program] increased access to water supply and infrastructure, increased available area for socialized housing and housing investments, improved land tenure, improved poverty incidents; and (3) [for the IMSS program] reduction of population growth rate, increased public sec-

tor in ICT, increase in tax revenue due to improvements in tax assessment and collection, and more poor families provided with comprehensive and integrated social services.

The realization of the impacts depends primarily on the way the implementing agency performs its functions and related tasks. The key to the success of the various activities concomitant to such goals and objectives, however, rely on a proactive and responsible management, and a stable business environment in which the agency immerses itself.

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