



***PANAMA CANAL AUTHORITY (PCA) REPORT
MACHC 17-03.S2***

***17th MESOAMERICAN AND CARIBBEAN SEA
HYDROGRAPHIC COMMISSION***

***BELEM, BRAZIL
December 12-16, 2016***

1. HYDROGRAPHIC OFFICE: Hydrographic Unit- Surveys Section

a) Description:

The Hydrographic Unit is primarily involved with the hydrographic surveying required to adequately define and chart all canal channels, harbors, anchorage, lakes, approaches, disposal sites, etc.

Further, it is the responsibility of the Hydrographic Unit to report all shoals that may occur in the Canal channel as the result of bank breaks, slides, dredging operations, blasts, sediments, etc.

Performs periodic hydrographic survey to chart the navigable waters of the Panama Canal in the areas where changes in bottom depth may result in hazards to navigation.

Performs hydrographic surveying operations before, during and dredging operations to verify and monitor progress excavation volumes for partial and final contract payments.

Performs hydrographic surveying operations before and after Blast Operations to verify and monitor any possibility of falling rocks to the Canal channel that may result in hazards to navigation.

b) Name of Institution: Panama Canal Authority (PCA).

c) Submitted by: Ricardo De Levante. Email: rdelevante@pancanal.com

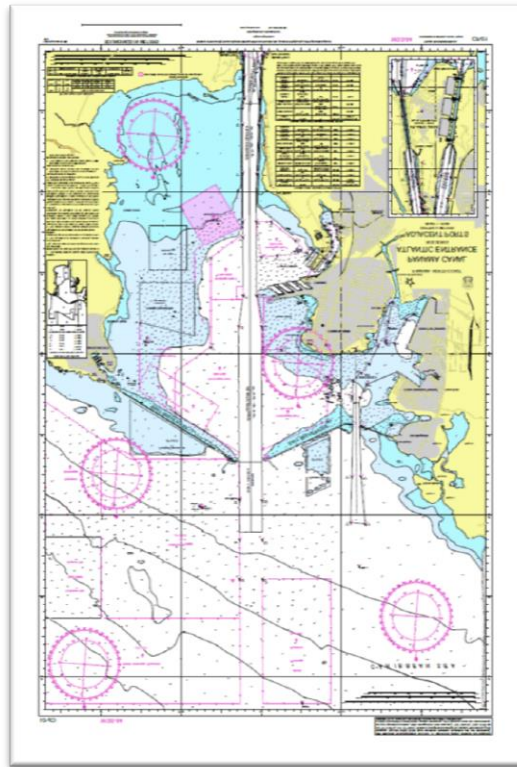
2. SURVEYS:

a) Coverage of new surveys:

Three major hydrographic surveys.



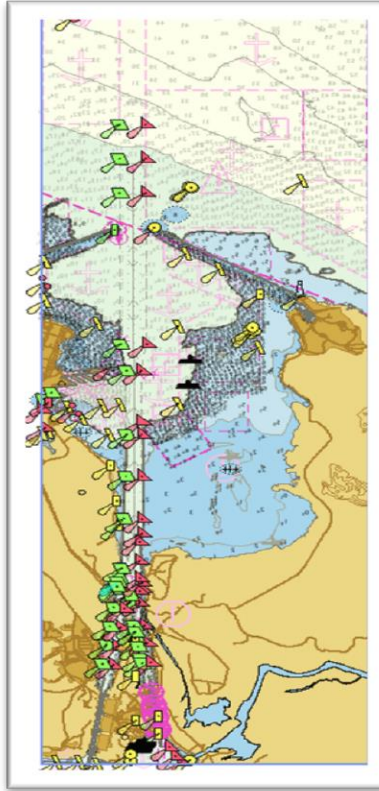
- One major hydrographic survey to verify **dredging progress, payments** and **compliance of design depths** for the expansion of the Canal.



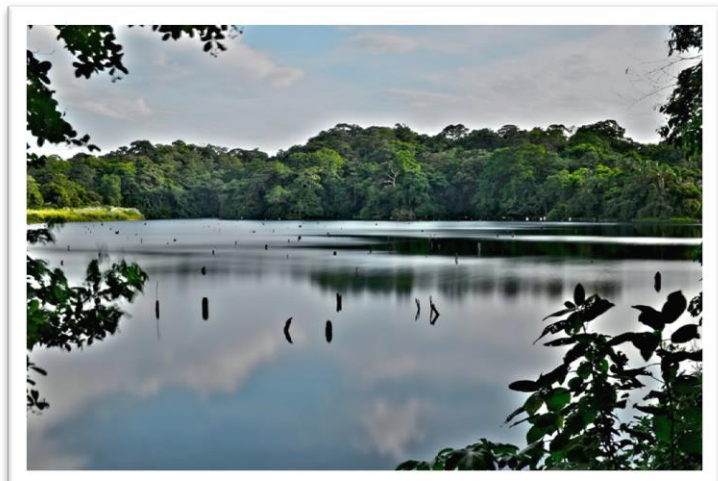
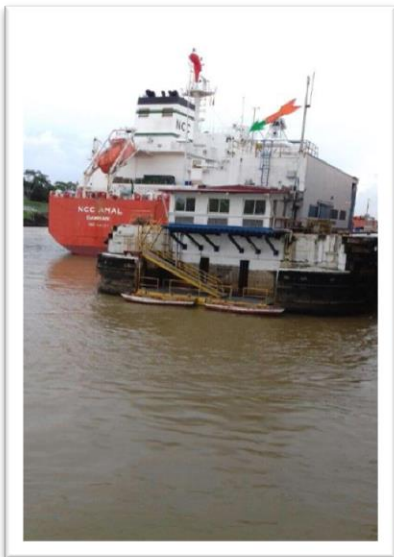
Two major hydrographic surveys to update **ENC PA5CP001** and Paper Chart **CP-01** for the Atlantic Entrance; and **ENC PA5CP005** and Paper Chart **CP-03** for the Pacific Entrance.



- Minor hydrographic surveys to verify **dredging progress** and **compliance of design depths** for the widening of the Canal to 300 meters.



- Minor hydrographic surveys to update other **ENCs** and **Nautical Paper Charts** in the Panama Canal.

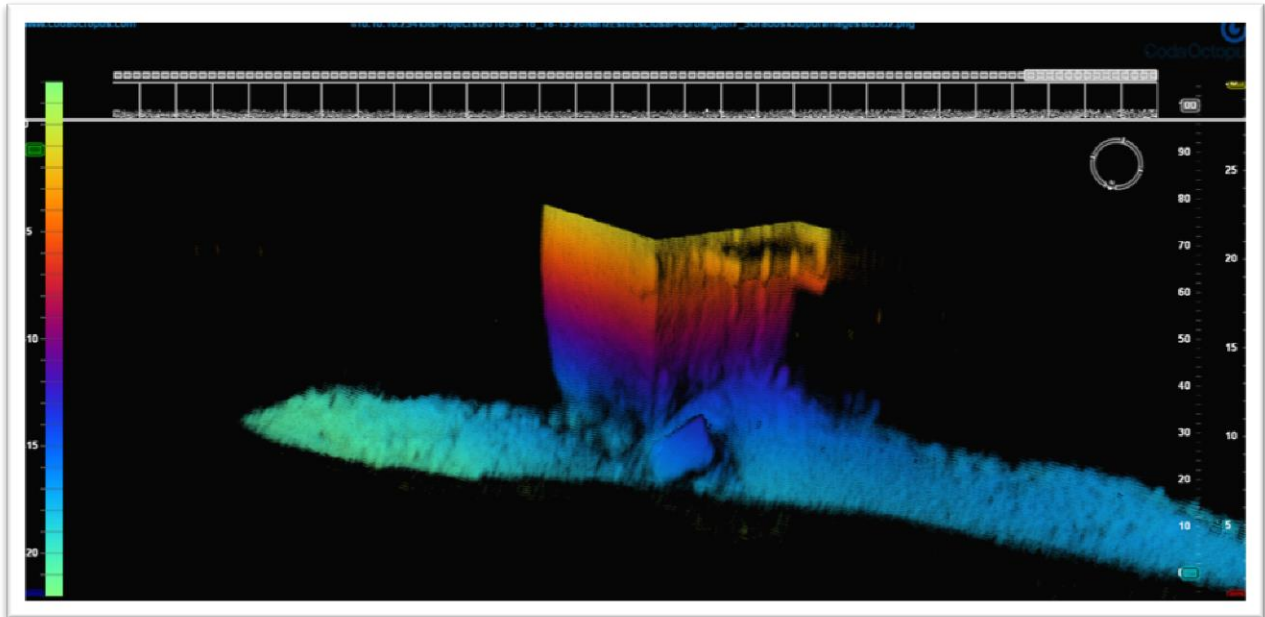


- Other hydrographic surveys, such as the inspection and monitor of **underwater structures (old Canal Locks)** and to verify **underwater trees** in future anchorages for Neo-Panamax vessels.

b) New Technologies and/or equipment:

Equipment recently received:

1. The ***Coda Octopus Echoscope real time 3D imaging sonar***. This equipment is owned by the Canal Protection Division of the Panama Canal Authority. The Hydrographic Unit is the user. This equipment is mainly used for underwater structures inspections.



3D sonar Image

2. The ***Applanix Ocean Master POS MV***. This equipment is owned by the Topographic Unit of the Panama Canal Authority. The Hydrographic Unit is the user. This equipment is mainly used to inspect and monitor slopes for stability designs and it is used together with the multibeam system.

c) New ships: There are no new hydrographic surveying boats since 2010.

d) Problems encountered:

The PCA is in the need to inspect and monitor periodically the underwater structures, such as the existing structures of existing Canal locks, since it might represent an issue for safety of navigation of ships in transit.

3. NEW CHARTS AND UPDATES:

a) Seven (7) new ENC's:

Through **Advisory to Shipping No. A-34-2016**, dated June 14, 2016, the Panama Canal Authority (PCA) announces to all shipping agents, owners and operators, a new set of five (5) electronic nautical charts (berthing) of the Panama Canal.



AUTORIDAD DEL CANAL DE PANAMÁ EXECUTIVE VICE PRESIDENCY FOR OPERATIONS

ADVISORY TO SHIPPING No. A-34-2016

June 14, 2016

TO : All Shipping Agents, Owners, and Operators

SUBJECT: New Set of Electronic Nautical Charts (ENCs) of the Panama Canal

As a new member of the International Centre for ENCs (IC-ENC), the Panama Canal Authority (ACP) announces that a new set of five (5) Electronic Nautical Charts (ENCs) Band 5, covering the entire Panama Canal operational areas, were released to IC-ENC network of Value Added Resellers (VARs) for distribution on June 9, 2016, and should be available to the international maritime community Friday, June 17, 2016.

The IC-ENC validation and technical teams supported the production of these five (5) new Electronic Nautical Charts, through detailed validation and quality assurance. These five (5) ENCs also link with ENCs produced by NGA under the authority of the Panama Maritime Authority covering other Panamanian waters. There are currently three (3) Band 5 ENCs produced by NGA covering the Panama Canal, but will be withdrawn shortly. Two of these NGA Band 5 ENCs (US509860 & US515390) will be cancelled this week and the coverage of the remaining NGA Band 5 ENC (US51540) will be reduced to the area outside of the new ACP Band 5 ENC (PA5CP005).

These new charts are available to shipping companies through any of the eight (8) VARs chart distributors of IC-ENC, and subscription to these charts may be requested in the same manner as is done with ENCs of other regions visited by your vessels. Attached are the Web Site addresses of the eight (8) IC-ENC VARs:

IC-ENC VAR	Web Site address
Admiralty	http://www.admiralty.co.uk/Pages/Home.aspx
Jeppesen	http://commercial.marinc.s-mnp.com/
Chartec	http://www.chartec.com/
PRIMAR	http://www.primar.org/
ChartWorld	http://www.chartworld.com/web/
Maris	http://www.usvix-commercial.com/en-US/Digital-Services/
Datona	https://www.datona.nl/
Navtor	http://www.navtor.com/

IC-ENC is a regional ENC coordinating center that assists sovereign national hydrographic offices in harmonizing the production and distribution of high quality ENCs.

Following are call names and codes of the new five (5) ENCs Band 5:

- PA5CP001 – Panama Canal – Atlantic Entrance
- PA5CP002 – Panama Canal – North Gatun Lake
- PA5CP003 – Panama Canal – South Gatun Lake
- PA5CP004 – Panama Canal – Gaillard Cut
- PA5CP005 – Panama Canal – Pacific Entrance

ORIGINAL SIGNED

Esteban G. Sáenz
Executive Vice President for Operations

Currently, the PCA has seven (7) ENC's of the Panama Canal. Five (5) of these are for berthing usage, scale 1:10,000 and two (2) for harbor usage, 1:5,000.

ENC	Latitude 1	Longitude 1	Latitude 2	Longitude 2	Usage	Region	Scale
PA5CP001	09-15-40	79-57-42	09-26-20	79-54-08	Harbor	Atlantic Entrance	1:10,000
PA5CP002	09-08-36	79-56-57	09-15-40	79-46-13	Harbor	North Gatun Lake	1:10,000
PA5CP003	09-05-02	79-49-45	09-08-36	79-39-15	Harbor	South Gatun Lake	1:10,000
PA5CP004	08-59-40	79-42-31	09-05-02	79-33-32	Harbor	Gaillard Cut	1:10,000
PA5CP005	08-49-58	79-36-41	08-59-40	79-27-51	Harbor	Pacific Entrance	1:10,000
PA6CP002	08-56-21	79-34-52	08-58-18	79-33-33	Berthing	Balboa and PSA Ports	1:5,000
PA6CP003	09-19-44	79-55-23	09-21-22	79-54-08	Berthing	Cristobal Port and LNG-Group Panama Dock	1:5,000

b) ENC Distribution Method:

IC-ENC is assisting the PCA with the production and distribution of high quality ENC's.

The distribution is done through any of the eight (8) VARs CHART DISTRIBUTORS OF IC-ENC.

c) RNCs:

The PCA does not produce RNCs.

d) INT charts:

The PCA does not produce INT Charts

e) National paper charts. :

The PCA is working in the update of three (3) National Paper Charts. In different scales: 1:15,000; 1:30,000 and 1:35,000.

CÓDIGO	TÍTULO	ESCALA	REGIÓN	BOTON SUR	BOTON NORTE
CP-01	PANAMA CANAL ATLANTIC ENTRANCE	1:15,000	ATLANTICO	09°18.26' N - 79°57.69' W	09°26.40' N - 79°52.20' W
CP-02	PANAMA CANAL GATUN LAKE AND GAILLARD CUT	1:35,000	CENTRAL	08°54.00' N - 79°33.00' W	09°20.00' N - 79°58.00' W
CP-03	PANAMA CANAL PACIFIC ENTRANCE	1:30,000	PACIFICO	08°45.50' N - 79°36.75' W	09°01.46' N - 79°26.43' W

f) **Other charts:** No other charts available.

g) **Problems encountered:**

The PCA needs to validate the national paper charts and there is no personnel with experience in the PCA to do it. Also, the PCA needs to find a distributor of these paper charts.

4) CAPACITY BUILDING:

a) **Training received:**

The following training courses were received during year 2016:

a.1) In-House Training (At the Training Center facilities of PCA):

1. ENC verification and validation.
2. Echoscope 3D Collection and Analysis.

a.2) Local Training (At local Hotels of Panama City):

1. Use of the IALA Risk Management Toolbox Training Seminar.
2. HYPACK 2016 Training Seminar.

a.3) Overseas Training

1. Taller de Infraestructuras de Datos Espaciales Marítimos (MSDI).
2. Taller de Estándares de Información Geográfica.

a.4) Training in Spanish:

During 2017, four (4) In-House training courses will be held at the Training Center facilities of the PCA. The courses are related to the following systems and applications:

1. Kongsberg Multibeam model EM2040C.
2. Side Scan Sonar Klein 3000.
3. JW Fisher Magnetometer Proton 4.
4. Caris OnBoard.

a.5) Training in English:

Nautical Paper Charts Verification and Validation.

a.6) Scholarships:

The scholarship for the **Skilltrade Hydrographic Survey Category B Course** to be held in Netherlands was approved for one (1) nominee of PCA, who will attend the course at the first trimester of 2017 and for two (2) nominees of PCA, who will attend the course at the fourth trimester of 2017.

The scholarship for this course is sponsored by SENACYT (Panamanian Institution) and the PCA.

Also, one (1) nominee of PCA is awaiting for approval of the scholarship for the course "**Especialidad Hidrográfica**".

The scholarship for this course is sponsored by La Secretaría de Marina-Armada de México (SEMAR), Agencia Mexicana de Cooperación Internacional para el Desarrollo (AMEXCID) y Asociación de Estados del Caribe (AEC), as part of FOCAHIMECA Capacity Building Project

5) CONCLUSIONS:

The PCA is working in the production of the first three (3) Nautical Paper Charts of the Panama Canal.

The PCA is in the need to validate the Nautical Paper Charts through a recognized organization. Also, needs to negotiate a cooperative agreement with an IHO member that can distribute the paper charts. The goal of the PCA is to look for an agreement with an IHO member based in a fair Royalty rate.

In a near future, the PCA must get training in **Nautical Paper Charts Verification and Validaton**, in order to validate its own paper charts.

Finally, the PCA must continue with the production of other Nautical Paper Charts of the Panama Canal and with the update of the existing ENCs.