Mexico, City 08 October, 2015.

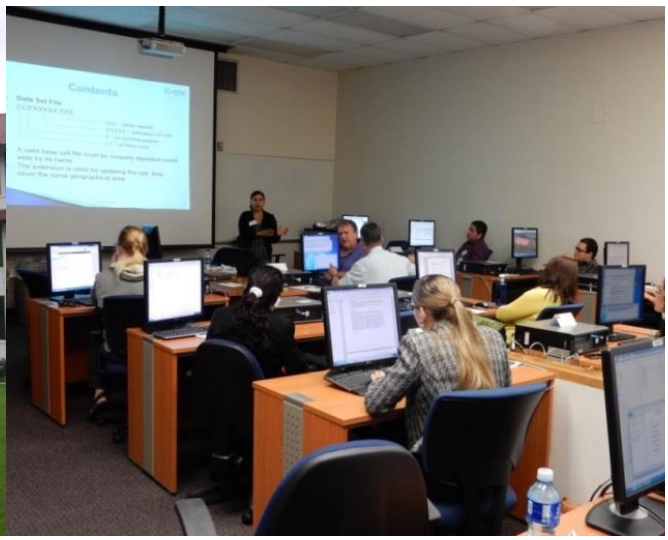
Mr. James Harper
General Manager
International Centre for ENCs.

I beg to inform of activities undertaken during the commission of service from 14 to 26 September, 2015 at the Training Center Ascanio Arosemena in Panama City, Panama, where the course of maritime safety was held with the theme: "Validation International "given by the Data Manager of the International Centre for the Validation of Electronic Nautical Chart **IC-ENC** Michael Hawes in English, with the participation of the subscribed from the support of it in Spanish.

Said course was given to staff of the following hydrographic offices:

DEPENDENCIA	MASCULINO	FEMENINO
Service of Oceanography, Hydrography and Meteorology of the Navy of Uruguay (SOHMA)		01
Venezuela Hydrographic Service	01	
Naval Hydrographic Service of Argentina (SHN)		01
Oceanographic Institute of the Navy of Ecuador (INOCAR)	01	
DIMAR-SH Colombia		01
National Oceanic and Atmospheric Administration USA (NOAA)	01	01
Maritieme Autoriteit de Suriname (MAS)		01
Hydrographic Oceanographic Service of the Chilean Navy (SHOA)		01
Hydrography and Cartography Agency of Cuba		01
Directorate of Hydrography and Navigation of Brazil (DHN)		02
Panama Maritime Authority (AMP)	01	
Cartographic Unit (IAIT-CANAL DE PANAMA)	03	
TOTAL	**07**	**09**

Facilities Ascanio Arosemena Training Center Panama.



Participants from different hydrographic offices.

Introduction.

The IC-ENC under the capacity building program initiated the first training course for this year in Taunton, UK (February) and the second in Wollongong, Australia (August). From 14 to September 26 from this year was held the third course with the participation of a member of the Mexican Navy to provide theoretical and technical support regarding of the content of this course in the Spanish language, with the aim of improving the level of understanding was given as to the production and validation of ENC Electronic Navigational Chart, ensuring equivalence in data quality, structure and content of the products of the Hydrographic Offices and the procedures of IC-ENC.

The course content covered the importance of standardization and construction and structured distribution and technical aspects in the validation process conducted in the Regional ENC Coordinating Centre **RENC**. The material used consisted of slide shows and a variety of official documents of IC-ENC, as well as publications and specifications of the IHO International Hydrographic Organization. Softwares validation dkart Insector (version 6.1) and 7Cs Analyzer (version 4.6) as well as the deployment system eGlobe (version 1.0) to perform validation checks practices.

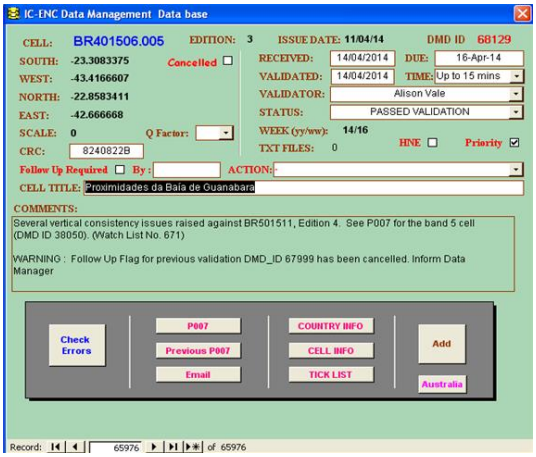
Developing: During two weeks and 80 hours, the following modules were given:

- Module 1 - Introduction to IC-ENC
- Module 2 - Supply of IC-ENC data
- Module 3 - Support Sources / Documentation
- Module 4 - Validation Tools
- Module 5 - Data Validation
- Module 6 - Check data consistency
- Module 7 - ECDIS
- Module 8 - Reports
- Module 9 - Data Distribution / Comments
- Module 10 - Course Summary

Highlighting the following:

a) **Provision of information to the DMD Data Base (Data Management Database) IC-ENC:** The storage process of the ENC (name of the ENC, use, number of editing, boundaries) regarding to the process at the RENC.

Interface Data Management Database DMD.



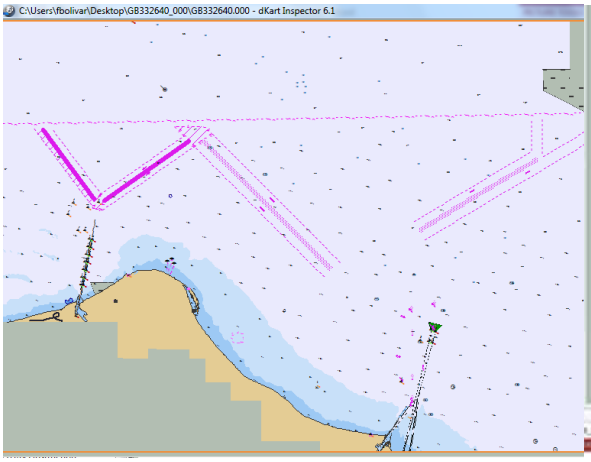
Control data from an electronic navigational chart in DMD.

b) Source documents: The standards for the construction of ENC have emerged as a need to establish a single format that can be read by any navigator in the world. The IHO is responsible for forming working groups that perform, verify and update the standards to generate charts, the idea of exchanging maritime information for navigation today requires increasingly strict regulation.

The aim of this module was to explain the structure of the "digital transfer standard S-57 hydrographic data" and its Annexes A and B describing the production codes for hydrographic offices and cross-reference object classes and attributes, respectively.

This standard applies specifically to real world entities that are of relevance for hydrography as lighthouses, beacons, buoys, etc., emphasizing the importance of the description of the data format, product specification and updating scheme ENC, with the aim that the trainee correctly applied this specifications for encoding data in that format as a combination of descriptive and spatial characteristics, and the use of the object catalog.

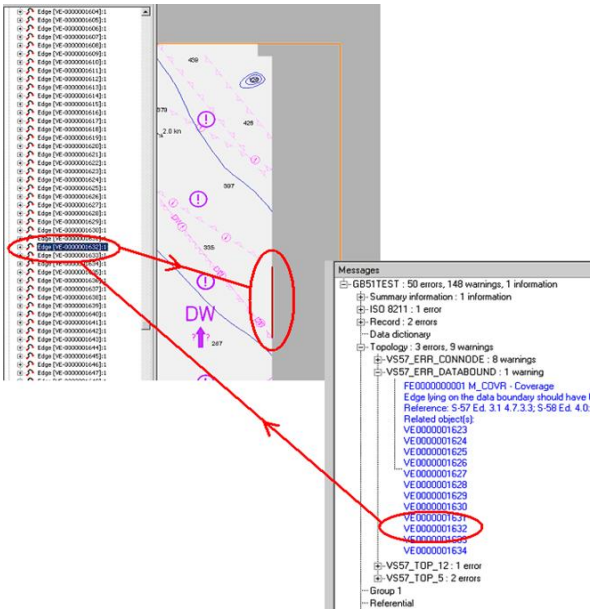
c) Using validation Tools: To ensure the reliability of a cartographic product is necessary meet the necessary guidelines in production and quality control thereof. The process of validation with 7Cs and dkart softwares ensuring compliance with the standards required to verify that the data is in accordance with the specifications of the S-57. The intention of using two software validation is because the results may vary, as each has a tendency to capture the different warnings and errors.



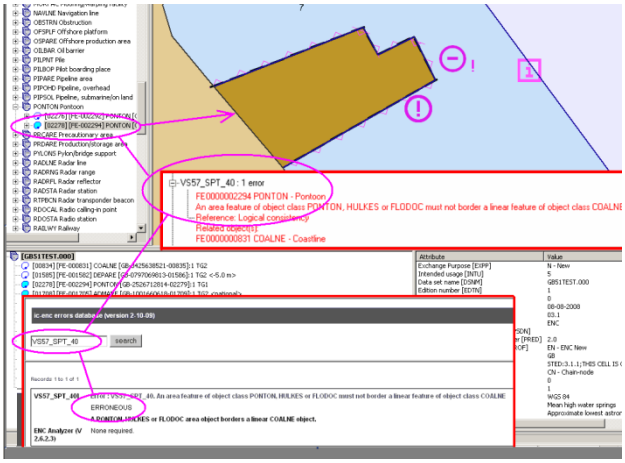
Dkart software interface Inspector 6.1

Analyzer software interface 7Cs 4.6

d) Consistency of the data: practical exercises were conducted with software validation (dkart Insector 7Cs Analyzer) to verify consistency in the construction regarding to standards S-57 and S-58 "validation checks recommended for ENC" for the purpose of to identify "errors" (most serious discrepancies) and "warnings" (less serious violations identified or suspected data) in ENC products.



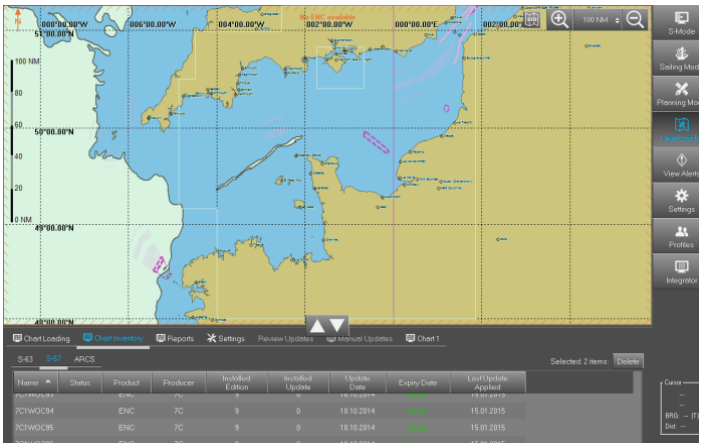
Result validation check with Dkart Inspector.



Result validation check with 7Cs Analyzer.

e) Electronic Chart Display and Information System ECDIS: The electronic nautical chart (file .000) is the vector format IHO and receives the support of the International Maritime Organization **IMO** when used with ECDIS display device, constitutes now the only well-defined and available as an application of this standard product.

The last validation process that takes place so far in the RENC, is the display of information in ECDIS ENC, to display its contents (mapping to physical entities as waterfront, buoys, traffic separation schemes and defeats specific areas; precautions, additional information Hydrographer, from the book of lights, etc.) that are of great help to the navigator to perform the trace route safer navigation of which must comply with the Standard specifications contained in the IHO. "Specifications for the content of letters and representation aspects of ECDIS S-52".



During the course was made exercises of display with the eGlobe ECDIS of ENC from Portsmouth and Plymouth, UK (Use 5-portulano and 4-aproach).

During the class was offered personalized assistance to students in the display and analysis of different objects types (linear, point and area) objects and their relationship with the IHO standards, as well as in the management of validation tools to identify problems during construction of the product.

f) Complementary activity: the Center for Simulation, Research and Maritime Development **SIDMAR** the Ascanio Arosemena Training Center was visited to show the operation of an electronic nautical chart for navigation with ECDIS.

When ENC is used in an ECDIS, the ENCs content can be presented as a continuous map in the user selected and representing only the map elements it selects scales, based on ENC database stores the chart information in the form of geographic objects represented by point, line and area, with individual attributes that make them unique objects, the system allows the visualization and monitoring of the ship in real time.

ECDIS has special operational functions that access the contents of the ENC to provide alarms and warnings through the use of a computer associated with the electronic navigation aids (GPS, radar, gyro, etc.) and alert you to potential dangers in relation to the position and motion of the ship.

Simulation of a breadcrumb.

g) **Result of the validation process:** was made a Report (P-007) that included all errors and warning messages reported by the validation tools based on the S-57 and S-58 standard was made, this report aims to guide hydrographic services on how to examine the discrepancies identified, and decisions about whether or not the correction.

SOFTWARE	dKart Inspector (V6.0.0.6)
ERROR	**LG0022: (T1750)**
EXAMPLE	ERROR LG0022: (T1750) prohibited attribute 'height' in <Light>
EXPLANATION	The attribute HEIGHT has been used on a floating feature.
USER IMPACT	
DESCRIPTION	HO TO CORRECT:
REQ ACTION	If required to indicate the height of a floating structure above the water this should be done using VERLEN, although in the case of a LIGHTS object on a floating structure then the height of the light above the sea can be done using the attribute INFORM.
S57 REFERENCE	S57 Appendix B.1 Annex A 12.8.1;
CROSS REF	

Report errors P007.

Conclution

This course is of great importance for hydrographic services produced ENC, because it promotes interaction among nations and allows the exchange of views and experiences on the processes taking place in each of the hydrographic services and to regulate these processes (national and international) to ensure consistency between the electronic navigational chart and the paper chart and thus provide "a safe navigation".

Sincerely

Tte. Corb. SIA. I. Top.
Carmen Teresa López Carlos