



NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY
Know the Earth... Show the Way... Understand the World

Standardization of Nautical Publications Working Group (SNPWG)

Captain Raymond Chartier Jr., USN

Director, Maritime Safety Office

Silver Spring Civic Center

June 3, 2013





Overview

- USS GUARDIAN Grounding
- Challenge to SNPWG 16



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Digital Nautical Chart (DNC) Discrepancies, Immediate Actions and Way Ahead Associated with USS GUARDIAN Grounding

CAPT Ray Chartier, Jr.

Director, Maritime Safety Office (SH), NGA

SNPWG

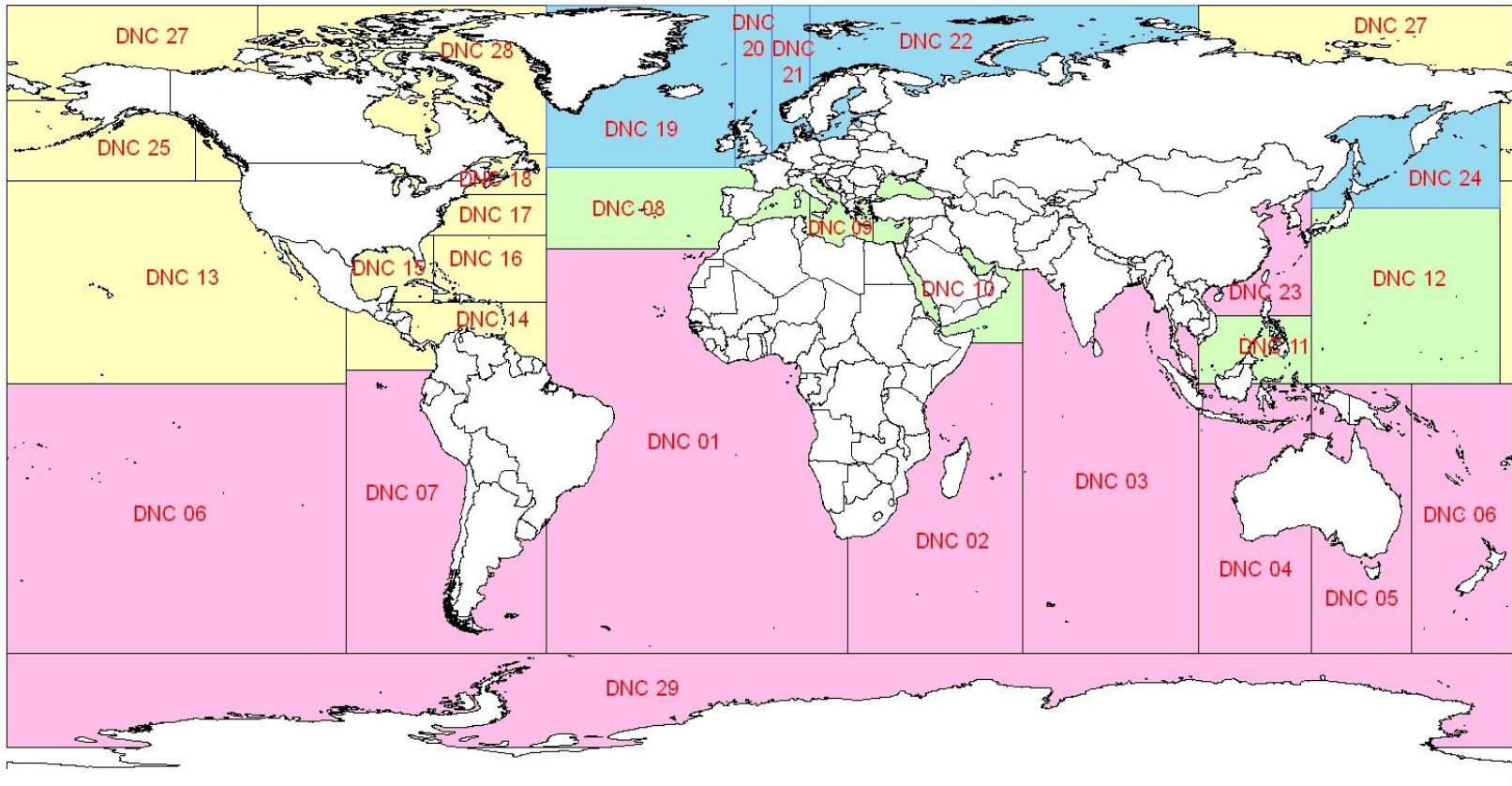
3 June 2013



**OVERALL CLASSIFICATION IS:
UNCLASSIFIED**



DNC Coverage by CD



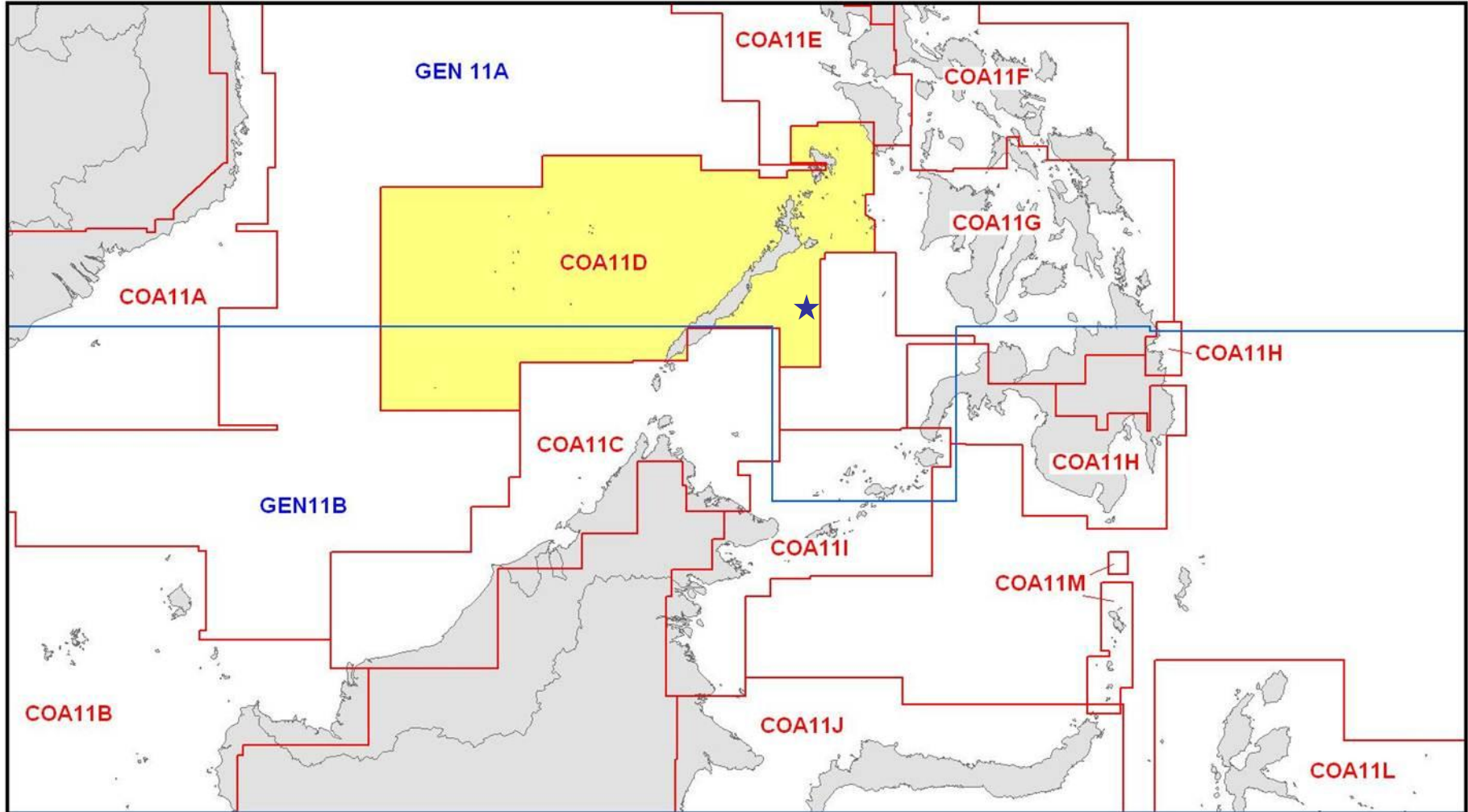


Navigation Chart Classifications

Chart Type	DNC Spec	Typical Scale Range	Purpose
General	>500 m	Smaller than 1:500,000	Open ocean and coastwise nav outside outlying reefs/shoals
Coastal	250 m	1:100,000-1:500,000	Inshore coastwise navigation, large inland waterways
Approach	50 m	1:25,000-1:100,000	Entering/leaving bays/harbors
Harbor	25 m	Larger than 1:50,000	Navigation and anchorage in harbors/small waterways



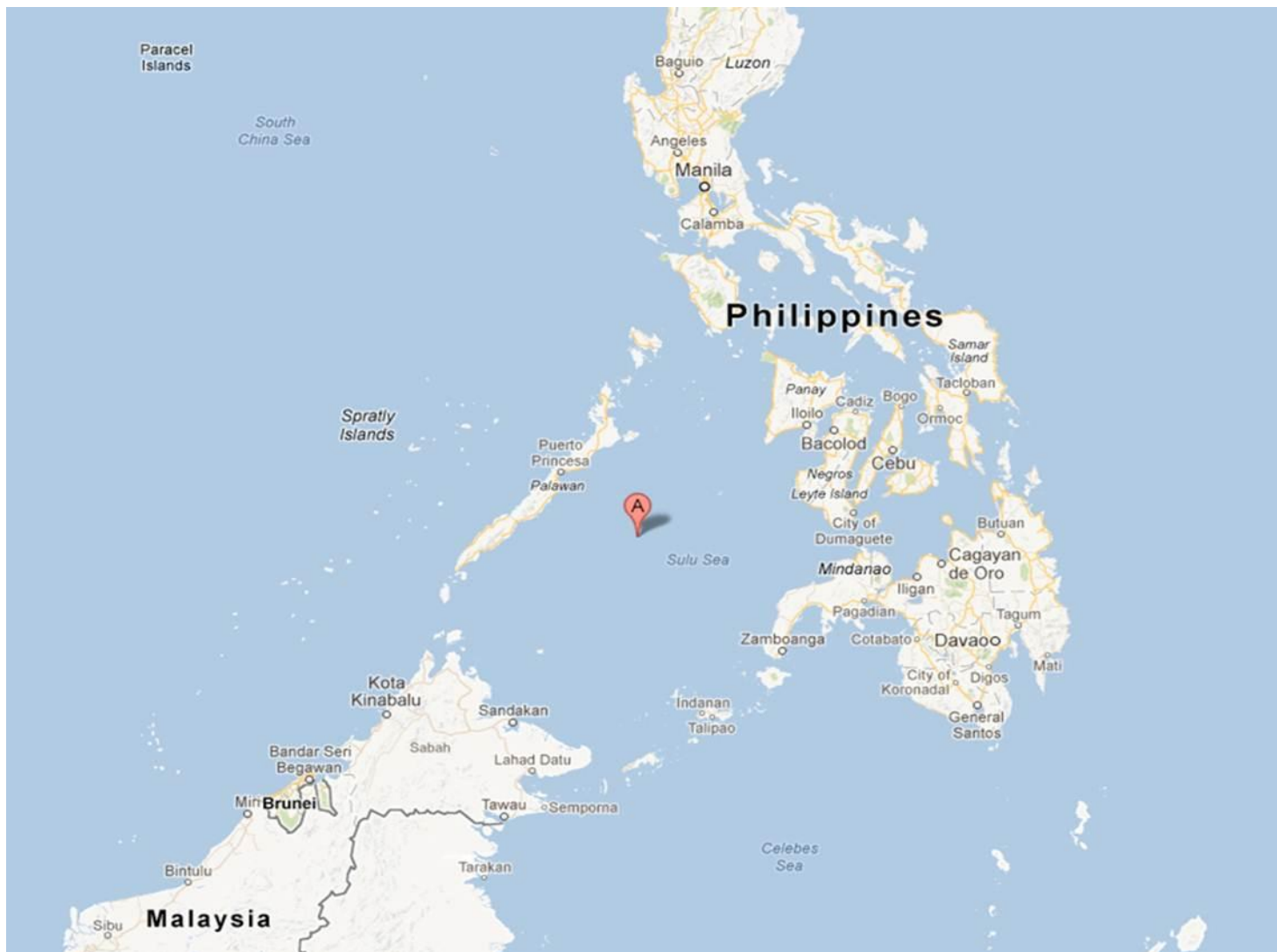
CD 11: COASTAL and GENERAL LIBRARIES



★ Tubbataha Reef



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USS GUARDIAN (MCM-5)

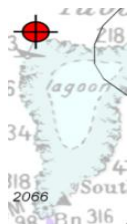
Ran aground on southern Tubbataha Reefs – 16 Jan 2013 (EST)





Positional Discrepancy on 16Jan13 (EST)

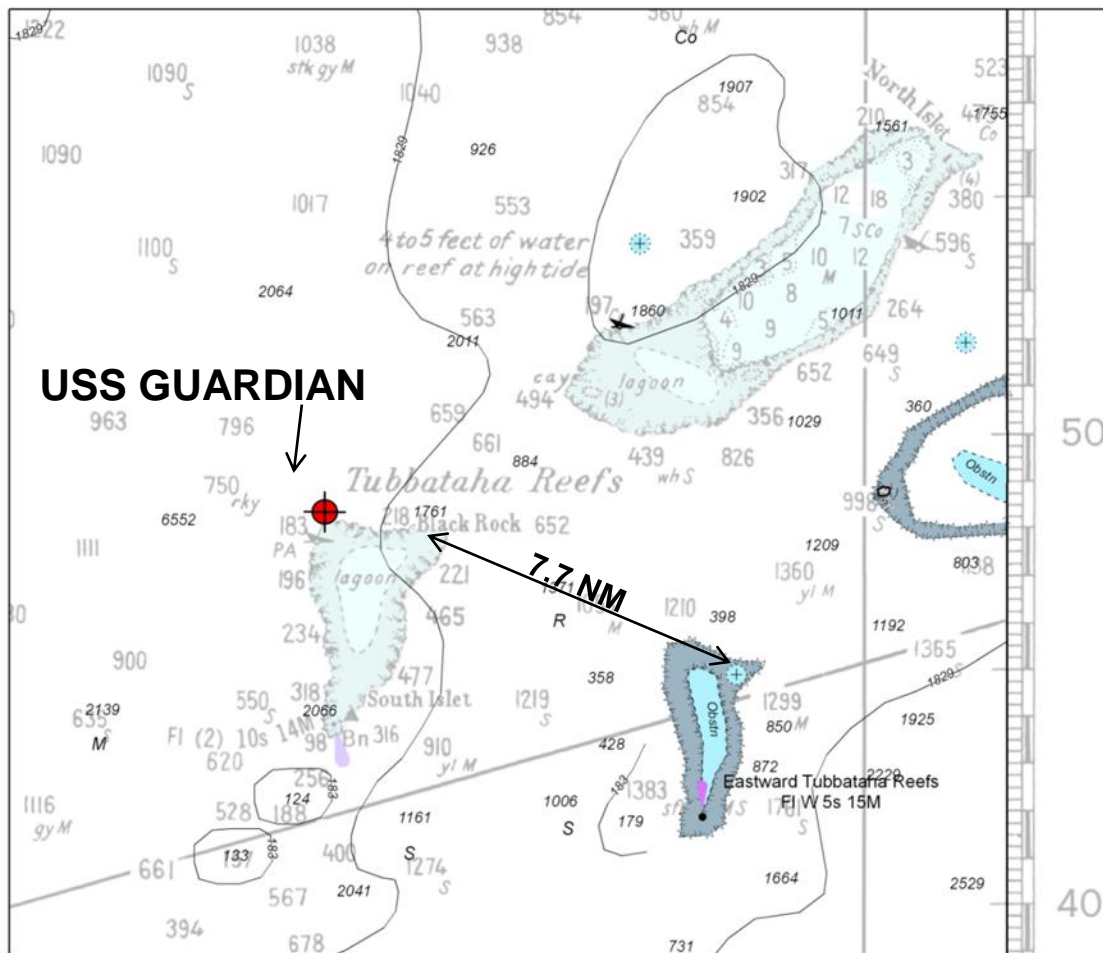
Offset 7.7nm East South East



NGA's Hardcopy Chart 92033 (Greyed out) – correct location, DNC General scale closely matched



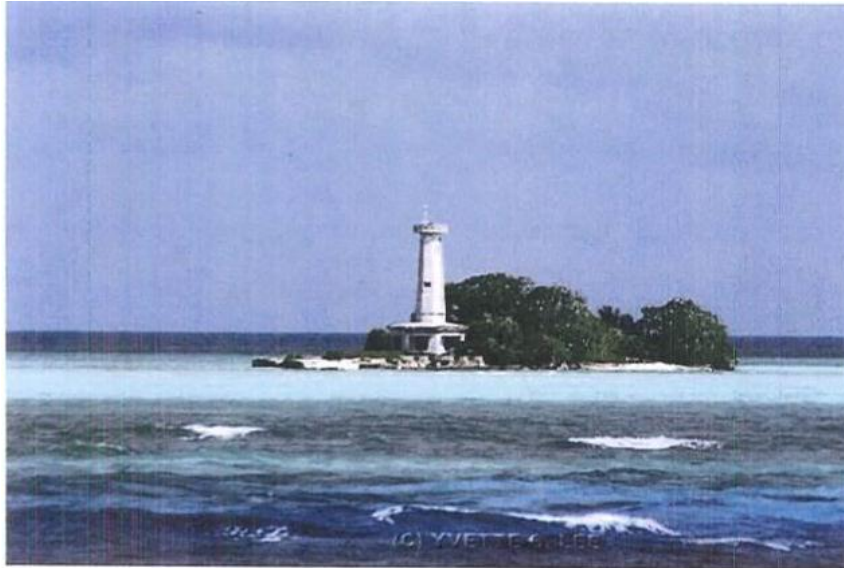
NGA's DNC Coastal scale (COA11D)- incorrect location



Link to lighthouse



Tubbataha Reefs Lighthouse



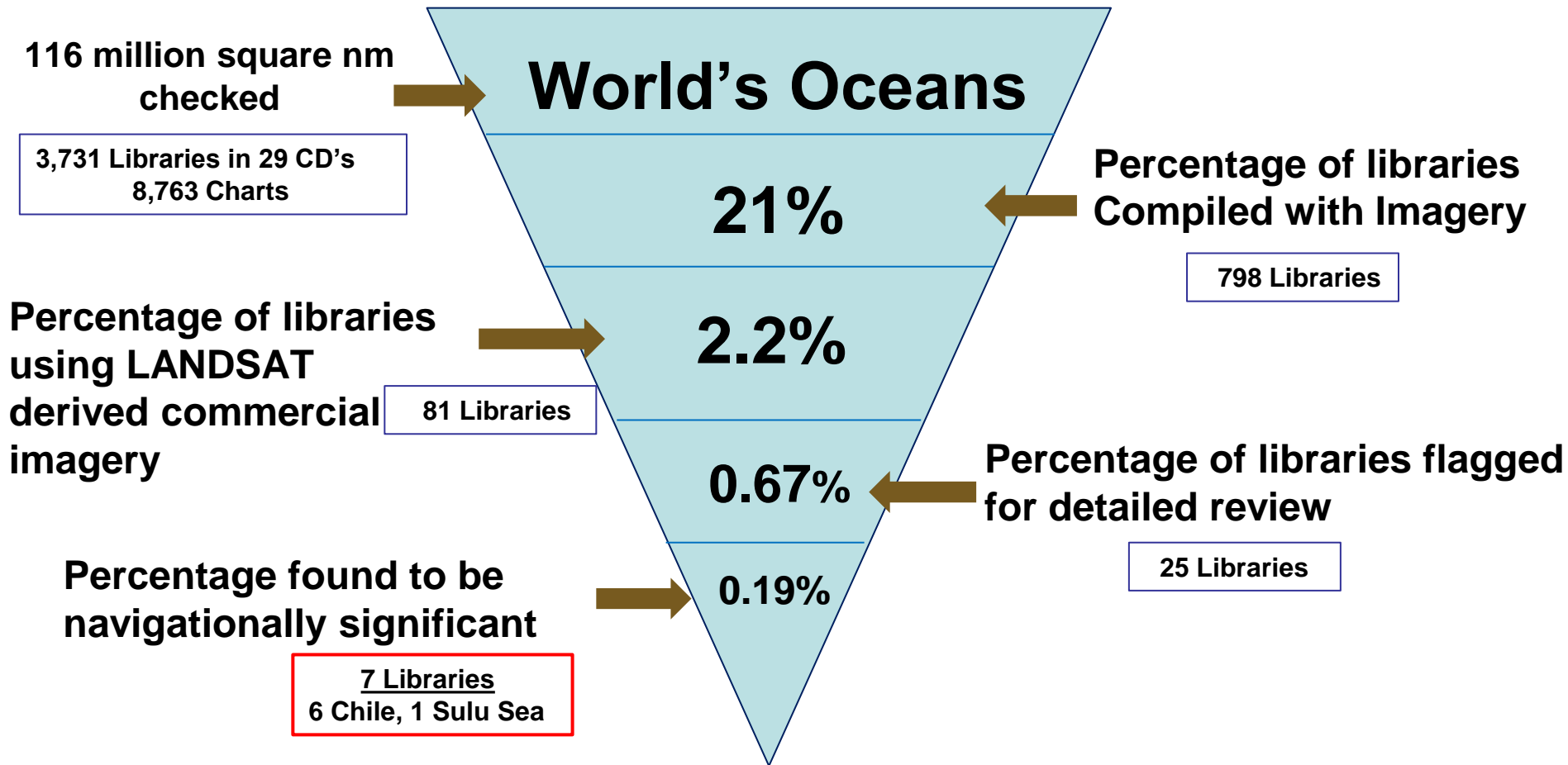
Light # 14528

- 15nm visual range
- 5 sec flash white
- Height unknown





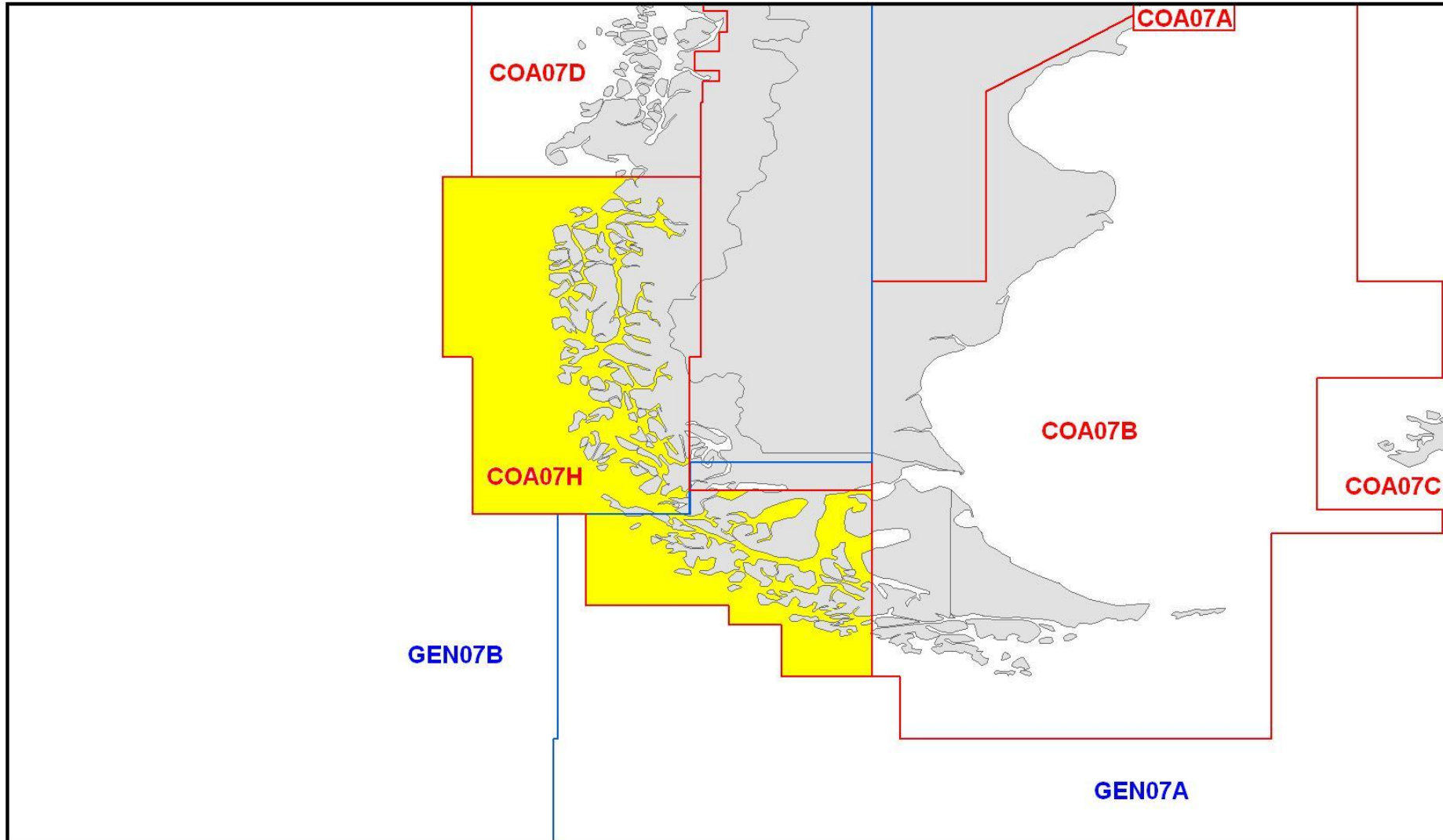
NGA Response / DNC Review Plan



- Root Causes:**
- 1) 2009 - Single faulty source image (geolocation information wrong)
 - 2) 2009 - No check across all Maritime Safety Office product lines
 - 3) 2011 - DNC procedures not properly followed and reoccurrence of 2) above

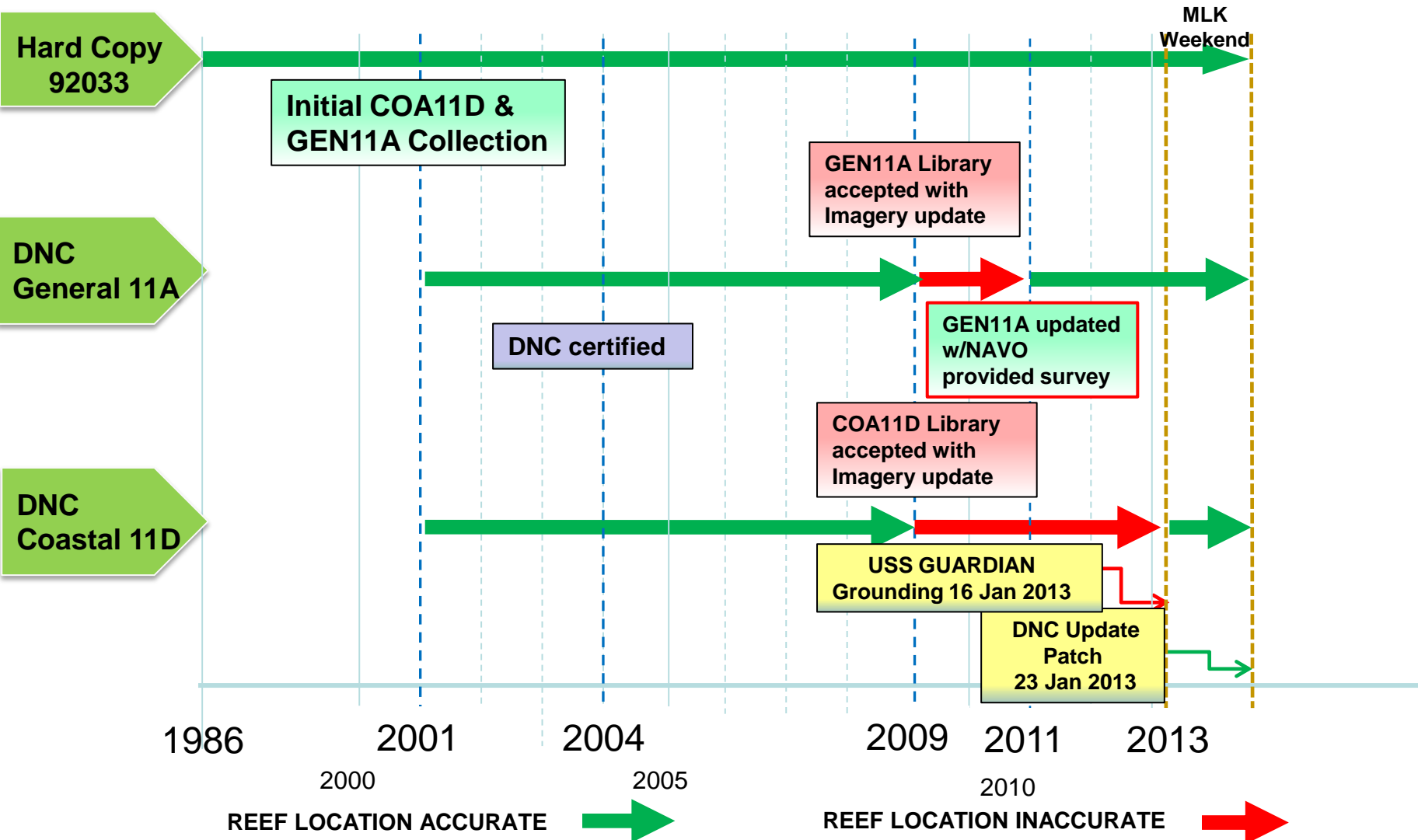


COASTAL and GENERAL LIBRARIES- SOUTHERN SOUTH AMERICA



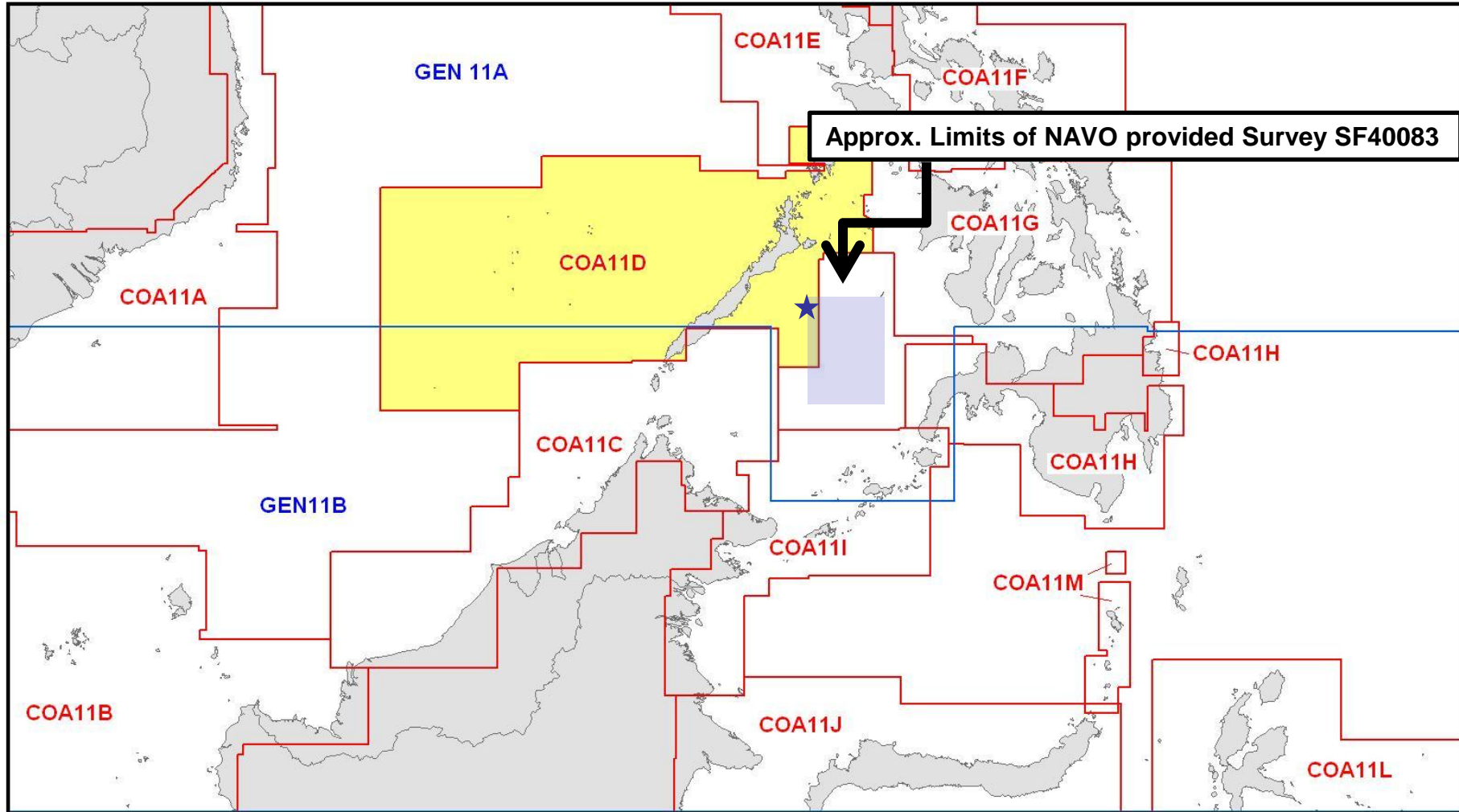


NGA's Tubbataha Reef Navigation Product Accuracy Timeline





CD 11: COASTAL and GENERAL LIBRARIES



★ Tubbataha Reef

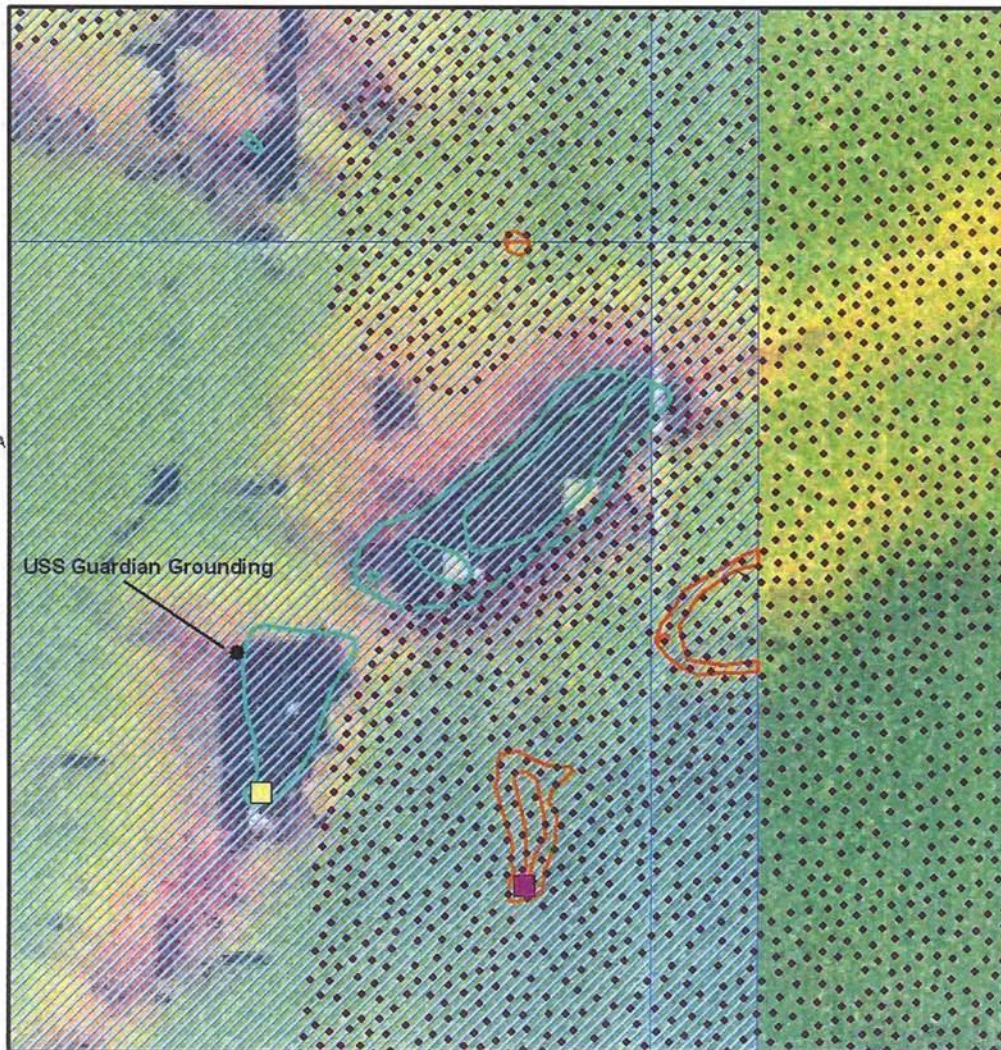




Legend

- ◆ Partial NAVO Survey provided to NGA
- GEN11A Light
- COA11D Light
- GEN11A Reef
- COA11D Reef
- ▨ COA11D Boundary

The background of this graphic represents the survey data available for Tubbataha Reef, but only part of the survey data was provided to NGA.





JAN 2013 EST

NGA & Navy Immediate Actions

- 16th • **USS GUARDIAN runs aground on Tubbataha Reef**
- 17th • **NGA Notified of Grounding**
 - **Initial review of DNC COA11D and GEN11A**
 - **HYDROPAC 171/13 issued to bound area of COA11D not safe for navigation**
 - **Source of positional error determined to be faulty commercial source image**
- 18th • **Began review of all DNC for use of imagery in compilation**
- 19th • **1st Letter from D/NGA to CNO**
 - **Continuation of DNC review**
 - **Reached out to contractors and international partners to assist w/ review**
- 20th • **Identified the 81 areas needing detailed review**
- 21st • **Discrepancies off of Chile identified and fleet notified**
 - **Number of areas with discrepancies narrowed to 25**
- 22nd • **VDU patch posted to the Web**
 - **All reviews complete**
 - **2nd Letter from D/NGA to CNO**
 - **CNO message to Fleet – “...continue to confidently navigate with DNC...”**



From the Chief of Naval Operations (CNO)

- **“NGA is confident that the DNC portfolio is safe for use and navigation – NAVY CONCURS.”**
- **“No chart is infallible, but NGA’s DNC remains the most accurate chart portfolio available. Ships should continue to confidently navigate with DNC, using all standard safe seamanship and navigation practices”**

**– RADM Jon White
Navigator of the Navy
OPNAV N2/N6E**



The Way Forward for DNC

- **Moratorium on use of LANDSAT/derived source data**
 - Pending further investigation
- **Root cause fixes**
 - Upgrade processes, procedures, source quality checks, training & qualifications
- **NGA/CNO stand up of Maritime Safety of Navigation Review Group**
- **Developing a one Feature One Time Capability (production data base)**



Maritime Safety Office (SH)



Mission

Provide global maritime geospatial intelligence in support of national security objectives including safety of navigation (SoN), international obligations, and joint military operations.

Vision

To be a world leader in providing timely, current, accurate and relevant global maritime geospatial intelligence.

PROVIDER OF MARITIME SAFETY INFORMATION



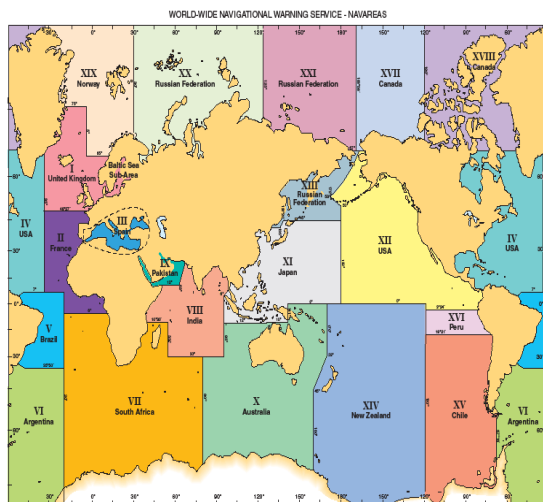
KNOW THE OCEANS... CHART THE COURSE



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Vision for Maritime Publications Users

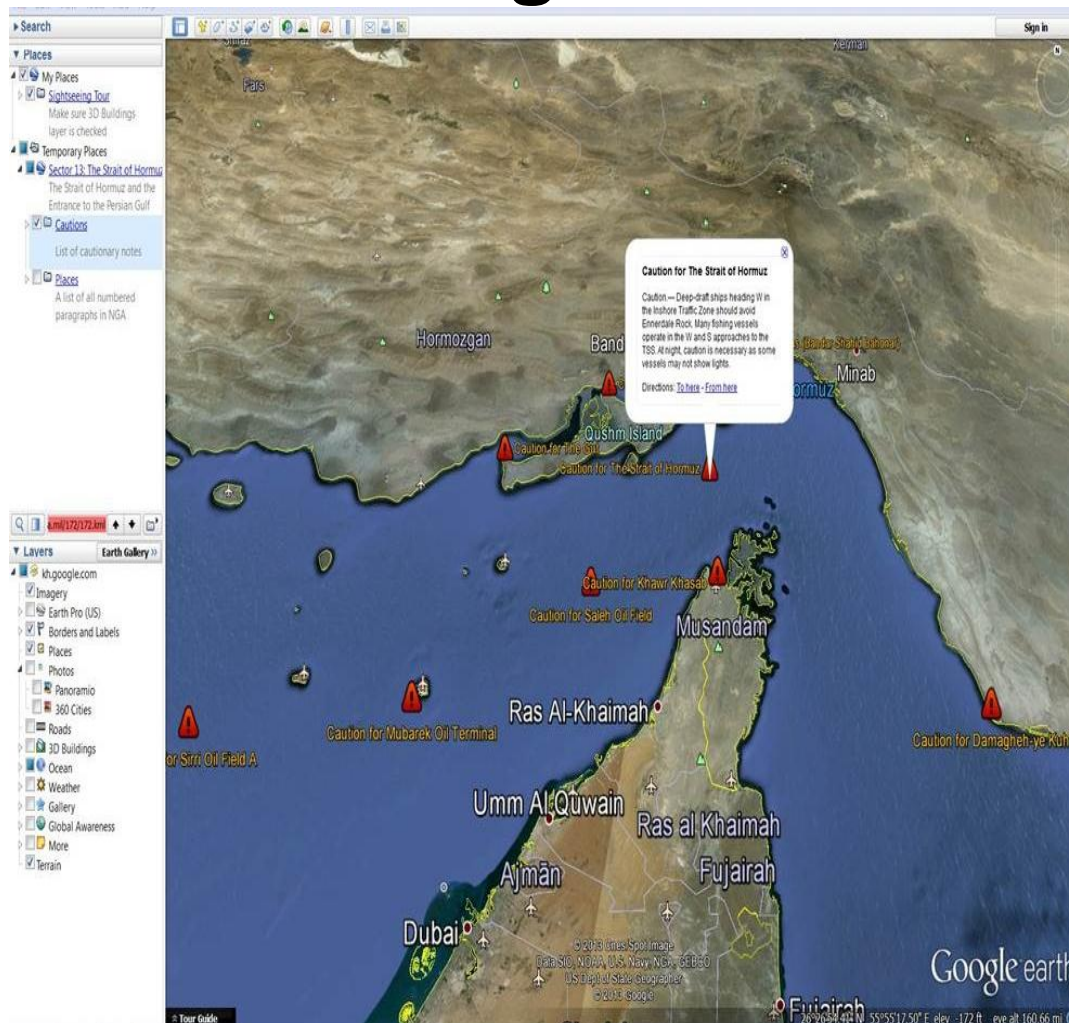


- Seamless information flow from lead nation to customer navigation planning and operational systems
- Work with IHO to develop S100 standards
- Procure S100 capable systems
 - Expert systems to auto ingest data (Sailing Directions, List of Lights, Radio Navigation Aids etc.) into the ECDIS or other Nav systems
- Reduce the disparity in multi-nation formats, systems and wasteful cost due to parallel development
- Maintaining present and future hydrographic data virtually intact



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Geo-tagged Publications Data portrayed in Google Earth

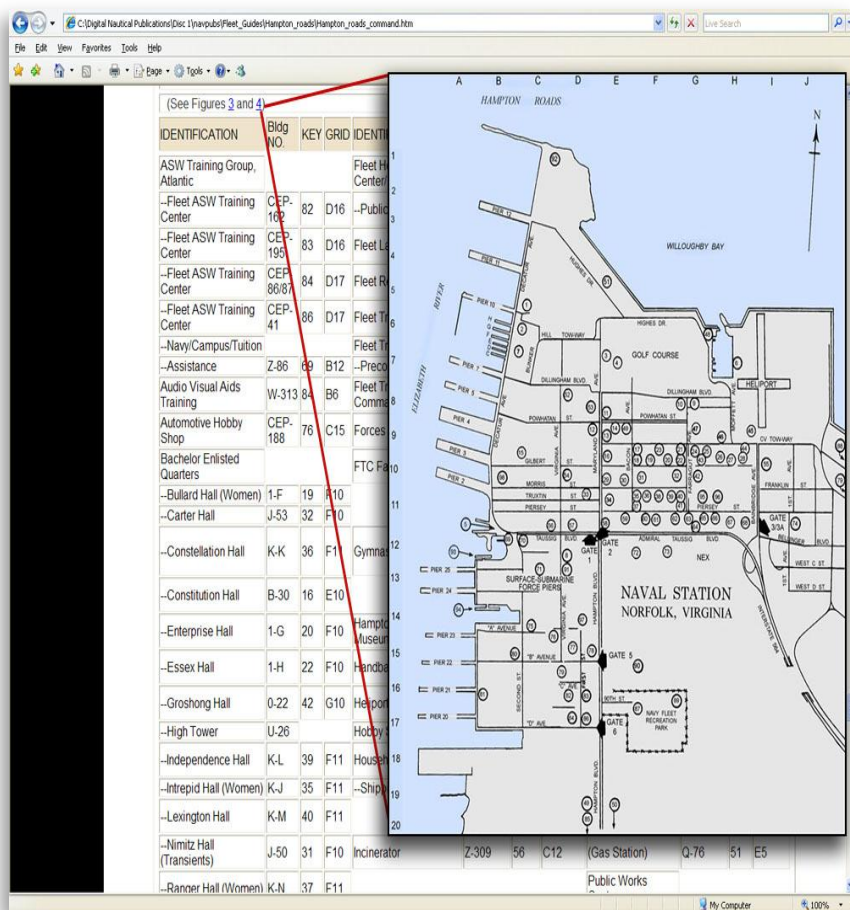




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Benefits of Standardization and Geo-Tagging of Data



- Improved ingestion of data
- Reduced production process
- Simplifies update process – Near real time
- Allows for linking to other data sets and resources such as a global maritime photo database
- Allows for advance search capabilities
 - Scan all applicable publications and the World-Wide Web



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Standardization Allows Consolidation of Publications

- Incorporate multiple traditional publications into one database
 - Sailing Directions
 - NOAA Coast Pilots
 - World Port Index
 - Radio Aids to Navigation
 - Trusted partner publications

- Create customized voyage plans from geo-tagged information

Environment relating to Tank Vessels carrying Oil in Bulk (in part)

(09) Part 160, Ports and Waterways Safety-General

(10) Part 161, Vessel Traffic Management

(11) Part 162, Inland Waterway Navigation Regulations

(12) Part 164, Navigation Safety Regulations (in part)

(13) Part 165, Regulated Navigation Areas and Limited Access Areas

(14) Part 166, Shipping Safety Fairways

(15) Part 167, Offshore Traffic Separation Schemes

(16) Part 169, Mandatory Ship Reporting Systems

(17) Part 207, Navigation Regulations

(18) Part 334, Danger Zones and Restricted Area Regulations.

Title 40 (40 CFR): Protection of Environment

(19) Part 140, Marine Sanitation Device Standard

Title 46 (46 CFR): Shipping

(20) Part 15, Manning Requirements

Title 50 (50 CFR): Wildlife and Fisheries

(21) Part 222, General Endangered and Threatened Marine Species

(22) Part 224, Endangered Marine and Anadromous Species.

(23) Part 226, Designated Critical Habitat

TITLE 33--NAVIGATION AND NAVIGABLE WATERS

Part 26--Vessel Bridge-to-Bridge Radiotelephone Regulations

§26.01 Purpose

(26) (a) The purpose of this part is to implement the provisions of the Vessel Bridge-to-Bridge Radiotelephone Act. This part--

(27) (1) Requires the use of the vessel bridge-to-bridge radiotelephone;

(28) (2) Provides the Coast Guard's interpretation of the meaning of important terms in the Act;

(29) (3) Prescribes the procedures for applying for an exemption from the Act and the regulations issued under the Act and a listing of exemptions.

(30) (b) Nothing in this part relieves any person from the obligation of complying with the rules of the road and the applicable pilot rules.

§26.02 Definitions.

(31) For the purpose of this part and interpreting the Act--

(32) *Secretary* means the Secretary of the Department in which the Coast Guard is operating;

Bridge-to-Bridge Communication

Title 33 CFR, Part 26, (Bridge-to-Bridge Radiotelephone Regulations) and the Vessel Bridge to Bridge Radiotelephone Act require that every vessel navigating upon the navigable waters of the United States maintain a continuous watch on its navigational bridge on VHF-FM radiotelephone for the exchange of safety information. VHF marine band channel 13 (156.65 MHz) is used in the approaches to Chesapeake Bay and throughout most U.S. waters. Vessels must also monitor VHF marine band channel 16 for Safety broadcast by the U.S. Coast Guard.

(See U.S. Coast Pilot 3 for amplifying information)

Traffic Separation Scheme, Chesapeake Bay

The scheme is composed basically of directed areas, each with inbound and outbound lanes separated by defined separation zones, a precautionary area, and a pilotage area.

The scheme is for use by vessels approaching or departing Chesapeake Bay, but is not necessarily intended for



SNPWG 16

- As a technical subcommittee of the IHO you are already working:
 - Geo-tagging
 - Web-enabling
 - Naming Convention
 - Attribution
- Challenge for you is....
 - Develop aggressive time lines
 - Don't hold out for the perfect solution...start and make course corrections
 - Get 'buy in' from your parent organizations and IHO
 - Ask for resources for the highest priority efforts



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