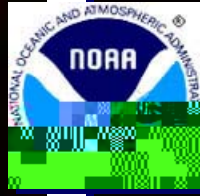


ELECTRONIC NAVIGATIONAL CHARTS

Global Tools for Safety at Sea and Economic Benefit

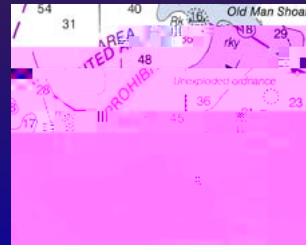


Admiral Richard West

- 2000 World Merchandise Export Volume grew by 11.9%
 - 9.9% in developed economies; 15.7% in developing economies
- World Container Port Traffic up 15.4%
 - E.g., U.S. maritime trade volume expected to double by 2020; Container traffic alone will triple

STATUS QUO: **Traditional Nautical Charts**

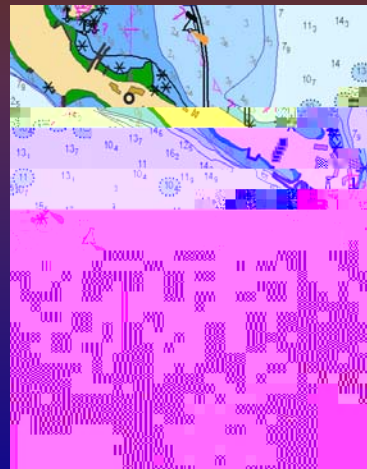
- Paper Charts
 - Static, Require Hand Corrections
 - Time Lag in Plotting Courses
- Raster Charts
 - **Computer Picture of Paper Chart**
 - **'Dumb' Data Lacking Advance Warning Capability**
- New Technologies Can Vastly Improve Navigation Safety



NOAA

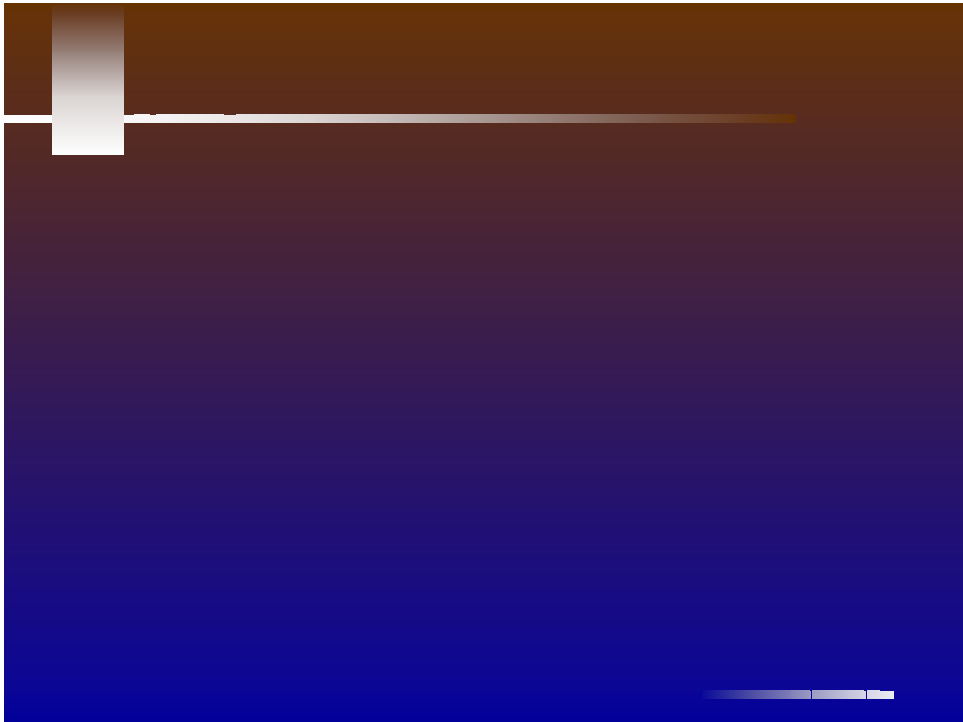
DEFINITION: **What is an ENC?**

- Far Superior to Paper/Raster Charts
- Vector Chart Database
- International Standard
- Displays Selected Layers and Features
- 'Intelligent' Charts with Electronic Navigation Systems



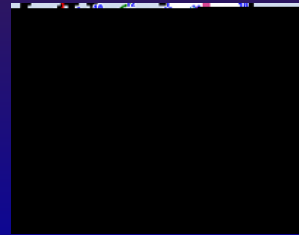
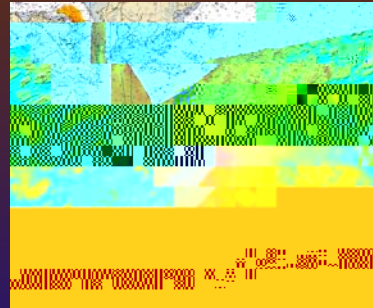
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- Increased Accuracy Demands of DGPS Navigation in 21
- Navigation Aids/Hazards Update Capability



CHALLENGES: **Achieving Worldwide Coverage?**

- Building ENC is Complex
- Chart No Better Than Data on Which It Is Based
 - New Hydrographic Surveys = More Accurate ENCs
- Internationally Standardized Data Essential
- Training and Resources Necessary for Worldwide ENC Coverage



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ELECTRONIC NAVIGATIONAL CHARTS:

The Next Generation of Navigation Tools



A stronger future begins with greater ENC capacity for all Nations