

**16<sup>th</sup> CHRIS MEETING**  
**Ottawa, Canada, 28-31 May 2004**

**ELECTRONIC CHART UPDATING**  
**Proposed Text as a Substitute for S-52 App.1 “Guidance for ENC Updating”**  
*(Radm Chris Andreasen, US-NGA)*

The International Maritime Organization (IMO) Safety of Life at Sea (SOLAS) convention requires that SOLAS regulated vessels carry up-to-date nautical charts and publications (SOLAS V 1974 revised, Chapter 19). National Hydrographic Offices are responsible for the provision of timely updates for nautical charts and publications (SOLAS). The frequency of update established in the Resolutions of the International Hydrographic Organization (IHO) recommends that Notices to Mariners be issued regularly, i.e., weekly, fortnightly or monthly (IHO Resolution F 1.7)

Updating methods may include:

- (a.) Manual Updates—Those where the operator enters the update information manually, usually based on update information that is not machine readable, e.g., Notices to Mariners or voice broadcast information.
- (b.) Automatic Updates--- Digital updates applied within the system to the SENC.

The updates can be official updates issued by a government Hydrographic Office, maritime safety agency or direct translations of official updates, typically by commercial providers, into SENC format. Commercial providers may issue supplemental updates in addition to the SENC conversions of official updates, however, metadata shall distinguish official Hydrographic Office updates from local or other commercially generated updates.

The system (ECDIS) is to keep a record of applied updates and the date/time of application (IMO Resolution A.817 (19)) to the SENC.

Since official updates to the SENC may be applied while a vessel is underway, the updates should be identifiable to the mariner such that the mariner can ascertain the status of correction information of significance to underway navigation. This may be provided through an automated warning function of the ECDIS display system, as an update display layer accompanying the update information or through parallel tracking of applicable Notices to Mariners by the user.

Digital application of updates may be fully automatic without human intervention or semi-automatic wherein the mariner selects and takes action to apply the updates. Updates may be through sequential application of updates (systems shall warn the operator of any out of sequence application) or through “patch” correction of the SENC database. Systems should warn the operator of any updates which have not been successfully applied.

Distributors of update information may implement systems to: 1) check that distribution information has not been degraded, e.g., check sums, 2) assure the integrity of distributed updates, e.g., digital watermarking, encryption.