

**1<sup>st</sup> IHO-HSSC Meeting**  
**The Regent Hotel, Singapore, 22-24 October 2009**

**Report of the ENC Updating Working Group (EUWG)**

<b>Submitted by:</b>	Chairman, EUWG
<b>Related Documents:</b>	- Minutes of 20th CHRIS meeting Niterói, RJ, Brazil, 3-7 November 2008 - IHB circular letter 92/2008
<b>Related Projects:</b>	/

<b>Chair:</b>	Yves Le Franc, France
<b>Vice-Chair:</b>	Richard Coombes, United Kingdom
<b>Secretary:</b>	/
<b>Member States:</b>	Australia, Denmark, Finland, France, Germany, Japan, Netherlands, Norway, Portugal, South Africa, Sweden, United Kingdom, USA.
<b>Expert Contributor Organisations:</b>	IC-ENC, Jeppesen Marine
<i>see Annex A for full details</i>	

### Meetings Held During Reporting Period

The WG works by correspondence. Meeting was not considered necessary to complete the work.

### Work Program

#### Objectives and priorities

The EUWG was formed by CHRIS with the following objectives:

1. develop and propose a pragmatic approach to overcome any current shortcomings in the updating mechanisms for T&P notices in ENC's
2. review and revise the updating mechanisms as contained in S-52 Appendix 1
3. report to the HSSC in 2009 with recommendations as appropriate

These objectives define the initial work program and the priorities. According to the objectives 1 and 3, to the minutes of CHRIS 20 and to the IHB CL 92/2008, highest priority was given to the drafting of guidelines to encode ENC updates (ER) corresponding to T and P Notices to Mariners. The EUWG's work was organized in order to provide the ENC producers with high level guidance as soon as possible.

A lower priority was given to the objective 2.

#### Guidelines for encoding temporary and preliminary ENC updates

The drafting of the Guidelines is achieved. The document is presented in Annex B (separated file). It is submitted to the HSSC.

The Guidelines are the result of the thinking of the EUWG members who are often also associated with other IHO working groups (TSMAD, DIPWG, JTEWG, CSCPWG, PRNWX, SNPWX) and are involved in topics related to those of the EUWG.

Represented HOs are near equally distributed between those who already produce ER corresponding to T and P Notices to Mariners (NM) and those who don't. This distribution proved to be very interesting to study the best practices to be applied.

First, the WG carried out an overview of the subject, including contextual aspects and issues. The EUWG's members who already produce ER equivalent to T and P NM also reported the methods they applied.

The information received from these members provided differing solutions and options. This made it necessary to carry out detailed study and discussion on some typical real cases. Members, whether producing T and P ERs or not, described how they would encode a list of real cases.

By comparing the various responses received, the WG was able to draft a first version of the guidelines defining the best practices to apply. The guidelines were improved and consolidated with comments from EUWG members, JTEWG, chairs of CSCPWG and TSMAD.

Through a set of pragmatic recommendations, the document provides keys to perform appropriate ENC updates. It allows for some latitude in its implementation and is dependent on the assessment of each particular case. The guidelines are in accordance with the current standards to help HOs immediately and encourage them to produce in the short term.

If endorsed by HSSC, it is proposed that the guidelines be quickly published as an encoding bulletin (to clearly demonstrate that they are in accordance with the current standards) and be promulgated and promoted by an IHB circular letter.

### **S-52 Appendix 1 revision**

Due to the constraint of time and the extensive work necessary to address the T and P notices issue in priority, the EUWG was not able to work on S-52 Appendix 1 revision.

S-52 Appendix 1 defines the general model of updating of electronic navigational charts (stakeholders, roles, liabilities, delivery concept, systems requirements ...).

Guidelines and EUWG's works on T and P NM issue do not need to amend S-52 appendix 1 as it is.

The current version of S-52 appendix 1 (3rd Edition, December 1996) already states:

*The existing process for updating the paper chart is described at Annex B [Current updating practice for paper charts (including T&P NM)]. Safety of navigation dictates that many of the processes described will need to have their counterpart in any update process for the ENC.*

By introducing the Guidelines for encoding T and P ENC updates in the document, the nature of S-52 appendix 1 would change and the document would become a curious mix with high level principles for all stakeholders and detailed recommendation for ENC producers for a very narrow (but important) topic (T and P MN).

Note that S-4 section B600 "Chart Maintenance", currently under development by CSCPWG, provides details for paper charts, but also principles which equally apply to paper and electronic charts. This section should enhance ENC maintenance. Then, Encoding Bulletins could be appropriate to provide some complementary detailed advice on ENC maintenance if needed. This advice could be consolidated and integrated in S-101 publication in the future (ENC maintenance section). This could be a suitable alternative to the development of a "mix" S-52 appendix 1.

See also "Problems Encountered".

## **Progress on HSSC Action Items**

No specific HSSC actions Items assigned to EUWG else than the objectives.

## **Problems Encountered**

S-52 appendix 1 defines the general model for updating Electronic Navigational Charts. It refers to principles established by WEND as they were in 1996. Most of the guidance has been applied. Perhaps, some principles should be re-promoted according to the needs of e-navigation (e.g. the link between RNW and ECDIS) and others should be revised according current practices. The review also needs to examine other current documents related to the subject.

As the document deals with fundamental concepts, its review and revision require being carefully undertaken and this might possibly be a long and extensive work. This work would significantly differ from the one for which the EUWG was primary set up (to solve the issue of T and P NM encoding).

Before launching the revision of S-52 Appendix 1 and the associated extensive work, it is suggested to estimate what would be the added value of the work (i.e. which issues would be solved by reviewing S-52 Appendix 1).

Another issue is what should be the nature of the document (a general model or/and detailed advice for ENC maintenance – see above).

## **Any Other Items of Note**

- The too many numerous alarms that ENC's "caution area" objects (CTNARE) generate are a problem for the users. Although the guidelines generally recommend the use of the relevant object, in some cases T or P NM will require the use of "caution area" objects" (especially for preliminary NM when information received is too complex, extensive and/or imprecise to be encoded with the relevant S-57 objects). As for ENC encoding in general, New Objects or Information objects as an alternative to caution area objects ("work in progress", "depth information", "routeing measure" ... objects) should be considered. The study of such objects able to replace caution area objects in some cases, as initiated by TSMAD (14th TSMAD Meeting refers), should be encouraged.
- Numerous NMs (especially temporary NMs) are subsequent to RNWs and relay them. These NMs should be encoded as ENC updates to provide EDCIS with the NM information. Furthermore, there is a need to include the RNW into the ECDIS for example in an overlay (CPRNW10 Report and IMO NAV 55/WP.5 refer). Then the quite same information would be provided to the ECDIS with two different electronic means. It should be interesting to study with WWNWS how to harmonize the two services in the spirit of the e-navigation.

## **Conclusions and Recommended Actions**

- HSSC is invited to endorse Guidelines for encoding T and P ENC updates and ask TSMAD to publish the document as an Encoding Bulletin. It is proposed to promulgate and promote the Encoding Bulletin by an IHB circular letter.
- HSSC is invited to provide instruction and advice regarding S-52 Appendix 1 revision.
- New Objects or Information objects alternative to caution area objects should be developed.
- Harmonisation between electronic information services as RNW and ENC updates would need to be studied.

## **Action Required of HSSC**

See Conclusions and Recommended Actions.

The HSSC is invited to note this report.

The HSSC is invited to decide of the future of the working group.

## Membership of EUWG

<b>Member State</b>	<b>Name of Delegate</b>	<b>email</b>
Australia	Jeff Wootton	jeff.wootton@defence.gov.au
Denmark	Lis Gram	lsg@kms.dk
Denmark	Pelle Aagaard	petar@kms.dk
Finland	Mikko Hovi	mikko.hovi@fma.fi
France	Yves Le Franc (Chair)	yves.le.franc@shom.fr
Germany	Volker Koch	volker.koch@bsh.de
Japan	Kajimura Toru	kajimura-e27wj@kaiho.mlit.go.jp
Netherlands	Maarten de Graaf	m.de.graaf@mindef.nl
Norway	Gjermund Bakken	Gjermund.Bakken@statkart.no
Portugal	LT.Cdr. António Martins Pinheiro	martins.pinheiro@hidrografico.pt
South Africa	Sidney Osborne	hydrosan@iafrica.com
Sweden	Svante Håkansson	Svante.Hakansson@Sjofartsverket.se
Sweden	Hans Engberg	Hans.Engberg@Sjofartsverket.se
United Kingdom	Richard Coombes (Vice-Chair)	richard.coombes@ukho.gov.uk
United Kingdom	Andy Collington	andy.collington@ukho.gov.uk
USA	Keith Alexander	Keith.E.Alexander@nga.mil
USA	Maggie Matos	Margaret.E.Matos@nga.mil
USA	Julia Powell	Julia.Powell@noaa.gov
<b>Observer Organisation</b>	<b>Name of Delegate</b>	<b>email</b>
IC-ENC	Richard Fowle	richard.fowle@ic-enc.org
Jeppesen Marine	Eivind Eik Mong	Eivind.Mong@jeppesen.com

## **DRAFT GUIDELINES for ENCODING TEMPORARY and PRELIMINARY ENC UPDATES**

### **INTRODUCTION**

At its 20th meeting held in Brazil in November 2008, the Committee on Hydrographic Requirements for Information Systems (CHRIS – replaced by the Hydrographic Services and Standards Committee (HSSC) in January 2009) drew attention to inconsistencies in the promulgation and distribution of Temporary (T) and Preliminary (P) Notices to Mariners (NMs) intended for use in ECDIS. It was identified that:

- about half of all ENC Producer States promulgate the equivalent of paper chart (T) and/or (P) NMs via ENC updates, whereas the other half invite mariners to refer to Notices to Mariners booklets or websites;
- not all paper chart (T) and (P) NMs which relate also to ENCs are in English;
- translation of (T) and (P) NMs intended for paper charts into ENC updates is sometimes difficult and may introduce an additional time delay for the distribution of navigationally significant information;
- it is very difficult for ENC users to comprehend the (T) and (P) NM network and get rapid and seamless information from one region to the other.

The CHRIS agreed that the situation has implications for safety of navigation and consistency between ENC services and therefore requires urgent study and resolution. As a result, the CHRIS decided to form a temporary Working Group (ENC Updating Working Group - EUWG) tasked with developing contemporary guidance on standardised processes for the delivery and implementation of updates to ENCs. More specifically the EUWG was asked to develop and propose a pragmatic approach to overcome any current shortcomings in the updating mechanisms for (T) and (P) NMs in ENCs.

This document is the result of the work of the EUWG. It has been developed through an iterative process of correspondence with all the members. It provides high level guidance for the promulgation of the equivalent of paper chart (T) and/or (P) NMs via ENC updates (ER application profile). Through a set of recommendations, it provides keys to compile the appropriate ENC updates. The guidance is in accordance with the current IHO standards (S-57 Edition 3.1). It allows for some latitude in its application and is dependant on the assessment of each particular case, and as such is reliant on the judgement of each producer.

## PART A - Temporary Notices to Mariners

### GENERAL

1. Temporary Notices to Mariners, (T) NMs, for paper charts are defined in S-4, Section B-600, in particular § B-633 (under development by CSPCWG). A (T) NM promulgates navigationally significant information that will remain valid only for a limited period of time.

For the paper chart, the convention is for the mariner to insert the update on the chart in pencil, and erase it when the (T) NM is cancelled.

S-57 provides mechanisms which allow ENCs to be automatically updated (ER application profile<sup>1</sup>). This allows the affected ENC(s) to be continually updated in a timely manner for the duration of the NM without additional workload for the mariner.

Hydrographic Offices (HOs) should promulgate temporary navigationally significant information by ENC update to provide the ECDIS user with an updated SENC. This service corresponds to the service that (T) NMs offer to the paper chart user.

2. ER encoding for an ENC and (T) NM for the paper chart are two completely different communication processes for promulgating information to the mariner. Since these processes are different (but not supposed to be independent), and the products to which they apply are also different, it is recommended that ENC updates be derived from the source information rather than the paper chart (T) NM. Often the (T) NM for paper chart does not provide enough detail to perform the relevant ENC update.
3. If possible the information should be encoded with the relevant S-57 objects. However, HOs should consider the following:
  - An ENC update must not be initiated if the information will no longer be valid by the time it is received by the mariner; this will depend upon the timescales relating to the producer nation's ENC updating regime. Shorter time periods may be covered by Radio Navigational Warnings (RNW). If known, the ENC update should include an indication of how long the temporary change will remain in force.
  - If it is unlikely that the HO will be notified when a temporary change will revert to its original charted state, the HO should consider an alternative method such as a general note or by issuing an ENC update explaining, for example, that the aids to navigation within an area are reported to be unreliable.

It is important that HOs should consider constraints of time when identifying the encoding method. Time consuming and unnecessarily complex methods of encoding should be avoided.

4. The overuse of CTNARE objects (especially CTNARE of type area) for temporary information should be avoided. The CTNARE object is used when it is relevant for the situation and/or when a particular change needs a special warning. CTNARE<sup>2</sup> may be used when the relevant objects cannot be encoded, e.g. information cannot be displayed clearly or cannot be easily promulgated due to time constraints.
5. To correctly encode an ENC update the source information is essential in determining which elements of the update are reliable, which are permanent and which are temporary. The STATUS

---

<sup>1</sup> The ER application profile only applies to ENC update cell files. S-57 Appendix B.1 of the ENC Product Specifications refers

<sup>2</sup> Some "New Object" may be created in the future (see S-57 supplement no. 2 – June 2009). The use of such objects might be more appropriate than the use of CTNARE in this case or in others

attribute value 7 (temporary) should only be used in an update when it is certain that the status of an object is confirmed as temporary.

6. Use of DATSTA – DATEND:

The earliest date on which an object will be present (DATSTA) and the latest date on which an object will be present (DATEND) must only be encoded when known. When these dates are encoded for navigational aids, DATSTA and DATEND must be populated on each component of the aid (for FOGSIG, RETRFL and TOPMAR, *refer to S-57 Edition 3.1 Supplement No. 2 - June 2009*).

The ENC update should be issued as close as possible to the earliest date of the change (DATSTA), unless it is appropriate to provide the information well in advance. An object no longer present should be removed by issuing a further update as soon as possible after the return to the original charted state (DATEND). The timing of its issue will depend upon the timescales relating to the producer nation's ENC Updating regime.

When an ENC update promulgates information well in advance and uses DATSTA and DATEND, a CTNARE object may be used in order to inform mariners that temporal information exists at some future point in time.

NOTE: some older legacy ECDIS's may not have the functionality to manage temporal information correctly or may have implemented it incorrectly. Some ENC producers may wish to include additional encoding to safeguard against this. For example, insert a CTNARE describing the changes and timings.

7. The INFORM attribute should be used to provide supplementary or contextual information when encoding temporary (or preliminary) information. When the text is too long to be encoded with INFORM (the INFORM/NINFOM text should not be over 300 characters - *see S-57 MAINTENANCE DOCUMENT, clarification 8.Cl.1*), the attribute TXTDSC should be used. In these cases the INFORM attribute could be used to highlight the existence of the TXTDSC file. Encoders using INFORM/TXTDSC to provide positional information must express the coordinate values in WGS 84 and in accordance with S-4 §B-131. If it is deemed necessary a picture file (PICREP) may be added. If the relevant object class (e.g. CTNARE) does not have PICREP as an allowable attribute then this may be attributed against a M\_NPUB object which shares the same geometry as the relevant object.
8. ENC updates issued for temporary information should be carefully managed and reviewed regularly to consider whether further action is necessary. New information may have been received that necessitates the issuing of a new update to modify or cancel the previous one. HOs should make it easy to recover the original chart conditions before the temporary changes came into effect.
9. Further verification is recommended to make sure that the encoded ENC update is consistent with the corresponding paper chart NM.

**GUIDELINES FOR TYPICAL CASES**

- a. Individual new physical objects (e.g. wreck, buoy) with no associated explicit or implicit area associated (e.g. restricted area):

Encode the relevant S-57 object.

In this instance a CTNARE would not normally be used.

- b. Individual new physical objects with an associated explicit area around it:

Encode the relevant S-57 area object (e.g. RESARE). The relevant object is created for the new physical object. However, when the area is an "entry prohibited area" or a CTNARE the new physical object may be omitted to simplify encoding unless it is navigationally significant.

- c. Individual new physical object with a notification of caution, e.g. "Mariners are advised to navigate with caution...":

Encode the relevant S-57 object. Additional clarification and advice may, if required, be provided in INFORM or TXTDSC. Exceptionally, a CTNARE may be created to highlight the caution if considered necessary.

- d. Obstructions (including wrecks) reported to exist within an area:

Encode an OBSTRN area or WRECKS area.

- e. New simple area object (military practice area, dredged area):

Encode the relevant S-57 area object.

Supplementary information is provided in INFORM or TXTDSC.

Normally, a CTNARE is not added.

- f. Complex information within an area (e.g. works in progress where the changes are numerous or involve complex changes to the topology):

Encode the area object. It should be encoded with the relevant S-57 object or, if more suitable or by default, a CTNARE. Supplementary or contextual information is provided in INFORM or TXTDSC. When the available information is sufficiently detailed, navigationally significant objects (e.g. navigational aids, obstructions) are created or modified within the area. When the available information does not permit this, a CTNARE defining the area is preferred.

- g. Changes to an existing object (e.g. navigational aid):

In these instances it is usually only necessary to change the attributes values. A CNTARE may be used to warn the mariner if it is considered necessary.

- h. Buoy temporarily moved:

When a buoy is temporarily moved, then it, and any associated objects, are "moved" to the new position and the STATUS attribute value 7 (temporary) is used. Alternative encodings are possible, for example, if the move is for a fixed period of time. In these cases the object, and any associated components, can be created in the temporary position with DATEND attributed to it and

populated with the date corresponding to the end of the fixed period of time. The currently charted object, and any associated components, can be attributed with DATSTA populated also with the date corresponding to the end of the fixed period of time. A Cautionary Area may, if



considered necessary, be added. Data producers may wish to consider the NOTE in section 6 under the "General" heading above.

i. Light temporarily extinguished:

The STATUS attribute of the LIGHTS object is encoded with the values 11 (extinguished) and 7 (temporary).

j. Change to a maintained depth in a dredged area:

When information is received from an official or recognised survey authority relating to a dredged area where the dredged depth has changed, the attribute value of DRVAL1 for the DRGARE object should be changed to the value provided by the survey.

When a depth within a dredged area is reported shoaler than the stated maintained depth, then a CTNARE is created covering the shoaler depth area concerned. The depth information can be provided in the CTNARE attribute INFORM or by adding a SOUNDG object with the attribute EXPSOU attributed with the value 2 (shoaler than the range of depth of the surrounding depth area). See also S-4, § B-414.5.

## Part B - Preliminary Notices to Mariners

### GENERAL

1. Preliminary Notices to Mariners, (P) NMs, for paper chart are defined in S-4, Section B-600, in particular § B-634 (under development by CSPCWG). A (P) NM promulgates navigationally significant information early to the mariner e.g. when a paper chart new edition cannot be issued in due time.

For the paper chart, the convention is for the mariner to insert the update on the chart in pencil, and erase it when the (P) NM is cancelled.

S-57 provides mechanisms which allow ENCs to be automatically updated (ER application profile). This allows the affected ENC(s) to be continually updated in a timely manner for the duration of the NM without additional workload for the mariner.

HOs should promulgate preliminary navigationally significant information by ENC update to provide the ECDIS user with an updated SENC. This method of delivery corresponds to the service that (P) NMs offer to the paper chart user.

2. ER encoding for ENC and (P) NM for paper chart are two completely different communication processes for promulgating information to the mariner.

For example, there are instances when the paper chart needs updating using a NM block (also known as a chartlet or patch) or by issuing a new edition due to the complexity or volume of changes. This could clutter the paper chart unacceptably if amended by hand and/or overburden the chart corrector. The lead time for a NM block correction or a new edition can be lengthy, sometimes several months. In these cases a (P) NM may be issued as an interim measure. The ENC updating mechanisms are more flexible and may allow for ENC updates to be issued in quicker time. However, experience has shown that large updates can cause the ECDIS processing issues and in particular inordinately long loading times. Producing an ENC new edition may be the better option in some cases.

There may be other instances, when new information is received, where it is not be possible to fully update both the ENC and paper chart promptly. For example, not all the information required to produce a chart-updating NM is received by the HO in the first notification (for instance notification of works in progress or projected) or extensive new information requires significant compilation work. In these cases it is still necessary to provide notification of navigationally significant changes to the mariner in a timely manner.

Since the paper chart and ENC processes are different (but not supposed to be independent), and also the products to which they apply are different, it is recommended that ENC updates be derived from the source information rather than from the paper chart (P) NM. It is often the case that the paper chart (P) NM does not provide enough detail to encode the ENC update exactly as it should be.

3. Simple or more complex encoding methods are possible but it is important that HOs should consider carefully which encoding method is appropriate when creating an ENC update with due consideration for time.
4. Often, information received is too complex, extensive and/or imprecise to be encoded with the relevant S-57 objects. In these instances the use of the CTNARE object and its attribute INFORM is preferred to give a précis of the overall changes together with detailed navigationally significant information. For complex or extensive changes the CTNARE should have an associated TXTDSC file containing precise details of the preliminary information. See also Part A, § 7 above. If the information is less precise then the INFORM attribute should be used to inform users of this fact.

It is noted that the mariner, if it is considered necessary, has the facility in the ECDIS to add "Mariner Objects" and annotate them. These can be saved in the SENC based on information provided in textual form by the TXTDSC or INFORM attributes. It is envisaged that these objects would be created at the "Route Planning" stage and act as a prompt during the "Route Monitoring" phase.

When information is issued as advance notification for an ENC it is necessary to provide as soon as possible to the mariner the final and full charted information encoded with the relevant S-57 objects. An ENC update or a new edition of the ENC cell should therefore be issued at a later date when the HO can carry out full encoding of the changes. The period of time will depend on the following:

- the time needed by the HO to undertake the full encoding with relevant objects;
  - the time needed to obtain confirmation of details; and
  - the date at which the real world situation is stabilized and any forecast changes have been completed.
5. Source Information received may contain some navigationally significant elements that are simple to encode with the relevant objects in a timely manner. In these instances these elements may be encoded with the relevant objects provided that they reflect the 'real world' situation after the ENC update is made available to the user. However, if the changes are subject to continual change these objects should be amended as a consequence and will represent additional work for the HO. In such cases, the ENC update should also warn users that the situation is subject to change. For temporary information, see part A.
  6. Use of DATSTA – DATEND: see part A, § 6. For new or amended routeing measures, see ENC Encoding Bulletin number 25.
  7. Use of INFORM: see part A, § 7.
  8. Diagrams are sometimes very useful to the mariner, e.g. for indicating changes to complex routeing measures or the introduction of new ones. A picture file may be referenced using the attribute PICREP in such cases. As the CTNARE object does not allow PICREP attribution, the picture file may be referenced by a M\_NPUB object which shares the same geometry as the CTNARE.
  9. ENC updates issued for Preliminary information should be managed and reviewed regularly. For example further source information may have been acquired requiring a further ENC update. This may add, modify or cancel information previously promulgated.
  10. Further verification is recommended to make sure that the encoded ENC update is consistent with the corresponding paper notice.

**GUIDELINES FOR TYPICAL CASES**

## a. Traffic separation schemes:

*Encoding bulletin E25 – April 2009* and following versions should be applied. For the use of the attributes DATSTA and DATEND, see also, part A, § 6.

## b. Complex information within an area of change (e.g. works in progress):

A CTNARE object is created to cover the area. Information is provided in either INFORM, e.g. under construction, or TXTDSC when it is necessary to give more detailed information. If sufficiently detailed information is available, then navigationally significant information such as navigational aids, fairways, regulated areas, etc. can be created or modified within the CTNARE if time permits.

As the CTNARE object does not allow PICREP attribution, the picture file may be referenced by a M\_NPUB object which shares the same geometry as the CTNARE.

Alternatively and if considered appropriate a RESARE – “entry prohibited area” object can be used instead the CTNARE object.

## c. Simple information which does not need an additional notification of caution:

The relevant object(s) and the appropriate attributes are encoded with any additional contextual information provided in INFORM or TXTDSC. In this case it is not necessary to use a CTNARE object. This could apply, for example, to submarine cables or pipelines being laid (CBLSUB, PIPSOL) or area under reclamation (LNDARE with CONDTN = 3 “under reclamation”). If necessary the encoding should reflect, if appropriate, that positions are approximate.

## d. Depths less than those charted within a defined area:

If the depth values and their positions are known, SOUNDG objects may be created or modified. Any affected depth contours and depth areas should also be amended as necessary. The source of the information should be encoded using the attribute SORIND. However, HOs should carefully consider the time needed to update ENC depth information and the complexity of changes to the topology that may be required. The encoding of amended SOUNDG, DEPARE and associated objects could be inappropriate for promulgating this navigationally significant information within acceptable time scales. In this case a CNTARE is the preferred option. In such cases, only the most significant amendments to depth information should be provided in the attribute INFORM or TXTDSC. This method should also be used if the depth values and/or the exact positions are unknown, or if the HO only has information relating to a limited number of depth values.