CSPCWG4-10.5A

4th CSPCWG MEETING
Monaco, 13-15 November 2007

Paper for Consideration by CSPCWG

Maintenance section for M4

Submitted by:	Secretary
Executive Summary:	The CSPCWG agreed at its 1st meeting to include guidelines on the maintenance of charts (eg by NM and new edition) in a suitable place in M-4.
Related Documents:	CSPCWG Work plan item A8. M4
Related Projects:	On-going revision of M4

Introduction / Background

The CSPCWG agreed at its 1st meeting (2004) to include an item in the work plan to provide some broad (non-prescriptive) guidelines on the maintenance of charts (eg by NM and new edition) in a suitable place in M-4. It was included in the work plan as A8.

At the 3rd meeting (2006), during discussions about Temporary and Preliminary NMs, it was agreed that priority for A8 should be raised to Medium (ie to be progressed after completion of the revision of B-400, but that some preliminary work should be progressed as time allows).

Extract from CSPCWG3 record:

> As a result, the priority for the Work Plan item A8 is to be raised to Medium. A 'skeleton' contents list for this proposed additional section in M-4 had already been prepared and is at Annex F. WG members are invited to consider the proposed outline and send any comments to the Secretary before end January 2007.

A few comments on the 'skeleton' contents list were received, which have helped in deciding the content and layout of the draft section.

Action required of CSPCWG

A very preliminary draft has been prepared by the Secretary (attached as Annex). This has not yet been reviewed by the Chairman and it is not yet ready for WG members to review in detail. However, the Secretary would welcome some indication from the WG whether the style, format and contents are in line with the general expectation of the WG members.

PART B

SECTION 600

CHART MAINTENANCE

Title page, Contents list, Record of Updates, Headers and Footers, page numbers, intentionally blank pages, etc, all to be formatted and inserted in accordance with general format and layout of M4.

Section 600
CHART MAINTENANCE

B-600 CHART MAINTENANCE

The maritime world is not static. Increasingly sophisticated surveying methods provide more accurate details of the bathymetry, which in some areas is constantly changing. Shipping patterns and ship draughts change, ports are developed, navigational aids are changed and moved, safety and environmental concerns result in new routeing measures and navigational restrictions, marine exploitation is increasing, wrecks happen and so on.

All this information, and more, must be brought to the attention of the mariner, so charts and chart series must be continually updated. Some information is safety related and must be passed to the mariner urgently; other information, while navigationally significant, is not so urgent; some is useful only for making up the overall picture of the maritime environment and is not urgent. The importance of keeping charts up-to-date cannot be over-emphasized. If this is not done, their value is seriously diminished and they may become dangerously misleading.

This section provides an explanation of the methods of promulgating information and some guidance on assessing new information to decide which method of promulgation is appropriate. IHO Technical Resolution A1.20 also provides a short list of the actions necessary for the 'Reporting and Publication of Dangers to Navigation'.

In common with the rest of M4, this section has application in detail to paper charts but the general principles apply equally to paper and electronic charts. However, because of the differences in the systems, eg the ease with which electronic charts can be updated, the criteria for selecting information for inclusion between new editions of charts may diverge.

B-601 CHART MAINTENANCE TERMS AND METHODS

B-601.1 **Chart series.** A chart series is a term referring to charts covering a wide area, such as:

- a national series (ie all the charts published by a hydrographic office);
- a world series (charts covering the entire world, published by a few hydrographic offices);
- The International Chart Series (see M11 for further details).

Chart series need to be constantly updated in the light of changing shipping patterns and port developments.

B-601.2 **Chart scheme.** A chart scheme is a term referring to a group of charts covering a specific geographic area. It may be a small area (such as two or three charts covering the approaches to and berthing arrangements for a particular port), or a much larger area (such as a continuous coastal series for a nation) or an International Chart Scheme (such as all the International charts covering the geographical extent of a Regional Hydrographic Commission). For guidance on preparing chart schemes, see M11 Part A.

B-601.3 **New Chart.** A new chart (NC) is the first publication of a nation's chart which may be additional to existing cover and will not usually supersede existing charts on a one for one/ scale for scale basis. A NC will either:

- embrace an area not previously charted by that nation to the scale shown (other than minor changes to scale of inset plan(s) or plan(s) on a sheet of plans); or
- embrace an area different from any existing chart of that nation (including changed limits, such that the area covered has changed by more than 25%); or
- consist of a modernised version (in terms of symbology, depth units and general presentation) of an existing chart; or
- consist of the adoption by that nation of an international (INT) or national chart, first published by another nation.

A New Chart does not necessarily contain newly received information and all information contained may have been previously made available in other national charts. The chart number and usually its title will be different from any chart it supersedes.

B-601.4 **New Edition.** A new edition (NE) is a new issue of an existing chart, containing amendments essential to navigation which will normally have been derived from newly received information. It will include changes additional to those previously promulgated in Notices to Mariners, and will render the existing edition obsolete. However, it should be noted that considerable parts of the chart may remain unchanged. The chart number normally remains unchanged except for the addition of the INT number when the chart becomes INT.

The following changes to limits/content are permissible within the terms of a NE:

- change to horizontal datum (this must be mentioned in the description of the NE when it is announced);
- change to limits affecting less than 25% of the chart area, e.g. DE size to A0 size, adjustment to include significant feature(s) just off existing chart limits, etc (change of limits must be mentioned in the description of the NE when it is announced);
- change of limits and/or scale of an inset plan or plan(s) on a sheet of plans;
- insertion/deletion of inset plan(s) on either a main sheet or a sheet of plans.

A NE should include all outstanding updating information that has accumulated since the previous edition was published. However, for various reasons, this may not be possible or desirable. In such cases, a Limited NE may be prepared; see B-601.5.

A NE is also an opportunity to update the chart for changes in policies and practices since the last edition. This might include, eg:

- removing or replacing obsolescent chart symbols;
- reviewing K29 wreck symbols to confirm from records that they are still not considered dangerous to any surface vessels capable of navigating in the vicinity (see B-422.6-7);
- updating notes;
- adding English language text (see B-510.4??);
- use of colour.

B-601.5 **Limited New Edition.** A limited new edition (LNE) may be prepared if there is information which needs to be included on a chart quickly, but which cannot be promulgated by Notice to Mariners (NM) or NM Block, because of the geographical extent or complexity of the information, or where there are other reasons to produce a new edition to short time scales. Examples are:

- safety-related information too complex or of too large a geographical extent to be promulgated by NM or NM Block (usually following a Preliminary NM), such as:
    - new and revised routeing measures;
    - insertion of a new pipeline/cable;
    - insertion of significantly changed depth information;
- change to horizontal datum for a series of charts, requiring them to be published close together;
- updating an overlapping or smaller scale chart to keep in line with another NE;
- updating magnetic variation lines (isogonals) for a new magnetic epoch.

Limited new editions may be referred to as Urgent NE, NE in lieu of Block, Large Correction and possibly other terms. The announcement of the LNE should indicate its limited nature.

B-601.6 **Reprint.** A reprint (also called Revised Reprint or Corrected Reprint) is a new print of the current edition of a chart incorporating no amendments of navigational significance other than those previously promulgated in Notices to Mariners (if any). It may, however, contain amendments from other sources provided they are not essential to navigation. Previous printings of the current edition of the chart always remain in force.

Because previous printed copies always remain in force, great care is required when incorporating any new information to ensure that the new information would never need updating by Notice to Mariners. In such cases, a NM would then only apply to some copies of the chart, which could cause confusion.

Reprints must include the number of at least the latest NM included in the reprint, in the bottom left hand corner of the chart outside the border. A list of all NMs included since the previous reprint, or even the latest edition date, may be given.

For special regulations concerning reprints, see A-404.

B-601.7 **Notice to Mariners (NM).** Notices to Mariners are used to for the prompt dissemination of information which is safety-related or which otherwise needs to be advised to the mariner urgently. They are regularly published (usually weekly, fortnightly or monthly) by most hydrographic offices in paper booklets and are also often made available on websites. Electronic chart updates may be promulgated on CDs or other digital media, including remote updating systems. More details of the following types of NM are given in B-630 to B-635:

a. Permanent (chart updating) textual NM.

b. NM block (also called a Chartlet or Patch).

c. Temporary (T) NM.

d. Preliminary (P) NM.

e. Miscellaneous notices.

B-601.9 **Radio Navigational Warning.** Radio Navigational Warnings (RNW) are used to promulgate the most urgent information. They are not intended for updating charts, but the information may subsequently be included in Temporary or Permanent chart updating NM, unless the information is of very temporary application. For further details of systems for broadcasting RNW, see IHO Publication S53.

B-610 ASSESSMENT OF INCOMING INFORMATION

Assessment is the process of examining incoming information against existing products and databases to:

- establish the credibility of the source;
- identify the differences;
- consider their importance in relation to those products and databases;
- identify the most appropriate action to incorporate that data into products and databases.

All newly-received information of possible use for charting must be examined against the relevant charts (latest edition corrected for all NMs). Differences critical to the safe navigation of surface ships and/or submarines must be promulgated to chart users by the appropriate method detailed in B-600. Differences which are not critical to safety should be noted in hydrographic office records for inclusion in the next full new edition of the chart.

B-611 CREDIBILITY OF SOURCES

Establishing the credibility of sources is a matter for professional judgement and experience. The following guidelines may be of some assistance. They cover source material for primary charting areas and for areas largely derived from the publications of other hydrographic offices.

All incoming data must be checked for possible typographical or other textual errors. It is essential that the accuracy of all positional data (horizontal datum) and depth data (vertical datum) is established before use. It must be ensured, as far as possible, that there are no errors arising from the method of surveying employed.

B-611.1 **Government, Navy and contract surveys** prepared specifically for charting, that have been validated by competent surveyors, should be accepted without question.

B-611.2 **Multibeam surveys** are routinely undertaken for oil companies, cable laying companies or other contractors. These surveys are often supplied to hydrographic offices for use in charting but should be treated with caution, because of the following limitations:

- Multibeam surveys provide a very dense dataset and as such appear to be of a very good quality. This can easily lead the user to place greater emphasis on this data than on other available sources. Such emphasis may be unwarranted and potentially give rise to false depth information.
- Users need to be aware that such surveys are conducted to provide a high resolution ‘image’ of the sea floor and not to provide absolute depth information. Although depth is of importance to oil and cable companies, a half metre here or there is not. It is the relative shape of the sea floor that matters to them.
- The survey may well have been processed to select the mean depth in any given area rather than the shoal depth as would be used for a hydrographic survey. Mean depth gives a much better ‘image’ of the sea floor, but filters out pinnacles.
- Often, these surveys are provided to hydrographic offices with little or no supporting information, so it is impossible to know what method of selection has been applied.

Therefore, unless a multibeam survey has been provided by a Hydrographic Office or the competent harbour authority for the area and is stated to be for charting or navigational purposes, it must not to be used to disprove existing depth information.

B-611.3 **Information from other responsible authorities** not directly concerned with charting (eg national lights authorities) should generally be accepted without

question.

B-611.4 **Surveys and NMs originated by local port authorities** should usually be accepted without question, if supported by experience.

B-611.5 **NMs originated by the primary charting authority** for an area should normally be accepted without question (unless some anomaly is apparent, which should be resolved by correspondence with the relevant hydrographic office).

B-611.6 **NMs originated by authorities concerning waters which are not their primary charting responsibility** should not normally be acted upon without obtaining corroboration from the primary charting authority. If corroboration is being sought, but the nature of the information is such that it should be promulgated urgently, a (P)NM or chart-updating NM may be issued to cover the intervening period. Where there is no national hydrographic office or the primary charting authority is not the national hydrographic office, the source of any original material should be assessed for its reliability and further information may be sought from the issuing authority.

B-611.7 **Information obtained from NCs or NEs** produced by a foreign government (FG) hydrographic office for its own waters should be accepted without question (unless some anomaly is apparent, which must be resolved by correspondence with the relevant hydrographic office). FG charts should normally be examined as follows:

- Charts published by the primary charting authority, and INT charts published by the authorized producer nation, must be fully examined. In areas where there is no primary charting authority, all source charts should be examined.
- FG charts which are derived, in part, from other FG charts, should be examined only within the area for which the FG producer has primary responsibility, plus any multinational waters.
- FG charts which are wholly derived should not normally be examined, unless there is a requirement based on knowledge of the particular area and of the source charts.
- Reprints should not usually be examined. However, because hydrographic offices follow a variety of policies with regard to which sort of information can be included in a reprint, if it is known or suspected that a reprint may contain information other than that already issued by NM, then it should be examined.

B-611.8 **Reports from ships** should not usually be accepted as the basis for permanent chart updates without corroboration unless:

- they originate from recognised survey vessels, research ships or other vessels/masters known to be reliable;
- they are reports of shoal depths, preferably accompanied by an unambiguous echo-sounder trace, for areas where it is unlikely that corroboration can be obtained. The Primary Charting Authority for the area should be consulted before NM action is taken;
- they are the sole source of information in a remote area;
- they are of great significance to navigation;
- the reliability of the Primary Charting Authority is in doubt or the level of information flow and lines of communication are poor.

B-611.9 **Reports from private individuals** must be treated on their merits. Where the individual is a local resident of the area of the report, the information may be accepted without corroboration, but must be forwarded to the Primary Charting Authority for comment and confirmation.

B-611.10 **Publications, such as port guides, that are not produced by Hydrographic Offices**, need not be examined for dangers. Such documents may be consulted during

compilation of a new chart or new edition (if navigationally significant items are found at this stage, appropriate follow-up action should be taken).

B-611.11 **Where there are conflicting or inconsistent sources of information**, or there are doubts about the accuracy or validity of the information, clarification should be sought from the appropriate authority. In some cases, it may be helpful to suggest a possible solution to a query. If no answer is forthcoming, a professional judgement must be made. In such instances, it is important for research purposes that the reasons for the decisions made are fully recorded.

B-611.12 **Confirmation of completion** should normally be obtained before permanent action is taken on features such as: cable-laying; planning consents; harbour works. Such features may be covered in the interim by (P)NM action, and/or the use of legends such as 'Under construction' or 'Works in progress'. Confirmation is not normally required for lights and buoys administered by a national lights authority (unless announced some months in advance) or for superimposed limits (e.g. anchorages; fairways; fish farm licence areas) designated by a competent regulatory authority.

B-611.13 Chart updating NMs for shoal depths, new drying heights and other dangers should not normally be delayed in order to confirm precise details; however, where extended drying areas affect territorial or fishing limits, (P)NM action may be required until they have been confirmed by an appropriate legal authority. – move elsewhere or delete?

B-620 SELECTION CRITERIA FOR URGENT PROMULGATION OF INFORMATION

Maritime Safety Information (MSI) is the collective term for all temporary and permanent information likely to affect the safety of navigation. The volume of MSI worldwide is considerable. Ideally, all permanent changes to charted information would be promulgated immediately, but in practice restraint must be exercised in the interests of producing a manageable updating system and, more importantly, to avoid over-loading the chart user. This section provides some guidelines for selecting information for urgent promulgation, normally via the Notice to Mariners (NM) system. Where this is not practicable, it may be via an urgent Limited New Edition (LNE); see B-601.5.

B-621 **Strict control** must be exercised in selecting that which is necessary for immediate or relatively rapid promulgation. If all the available information were promulgated immediately as updates to charts, the quantity would be sufficient to overload most users and render the products useless. Consequently, that which is merely desirable should usually be recorded for including in the next edition of the appropriate chart(s). Each item of new information received in a hydrographic office must be assessed on a scale of potential danger to the mariner (ie how critical to safety), bearing in mind the wide variety of users of charts in the area affected and the different emphases which those users place on the information contained in the products. For example, the master of a large merchant vessel may be far more concerned with information regarding traffic routes and deep water channels than the recreational user, who may in turn have a greater interest in shoaler areas where the merchantman would never intentionally venture. The fisherman and submariner may have a greater interest in hazards on the sea floor.

The aim must be to keep charts up-to-date whilst keeping the foregoing firmly in mind. As far as possible, charts, both paper and electronic, should be safe, fit for purpose and consistent with associated publications which should be carried and consulted.

B-622 **Priorities**. The following principles apply in deciding priorities for inserting information:

- Where differences exist between charts or between charts and publications, the largest scale national or, where appropriate, INT chart is accepted as the authoritative document and must therefore be given priority for updating. The exception to this is the List of Lights, which is authoritative for details of lights, although their accurate geographical positions should be taken from the largest scale chart.
- There is no obligation for the Mariner to either use or carry the largest scale chart available; however, he should always use the largest scale chart appropriate for his purpose and should also bear in mind that:
    - larger scale charts are generally updated first
    - areas which are covered by larger scale charts may be extensively generalized on the smaller scales to make the chart clearer and easier to use for those whose purpose does not require the large-scale inshore detail.
- Consideration must be given to the likely type of shipping using an area. For example, areas used by leisure craft may require NM action for inshore detail that would not be required in other areas where only larger vessels transit, further offshore.
- Navigationally significant changes that occur when a New Edition (or New Chart) is within a few weeks of publication may be promulgated by (P)NM instead of

NM. The (P)NM should state that the changes will be included in the New Edition (or New Chart).

B-623 Within the constraints outlined above, the following types of information are considered to be navigationally significant and should normally receive NM, NM block or LNE action, at least on the larger scale charts affected, including the largest scale INT chart for information relevant to international shipping:

a. **Reports of new dangers significant to surface navigation**, e.g. shoal depths and obstructions with less than 31 metres of water over them; wrecks with a depth of 28 metres or less. The following is a general guide for changes in depths from 0 to 31 metres:

- depths 0 to 10 metres - depth shoaler than charted by at least 0.5 metres (0.3 metres at berths);
- depths 10 to 31 metres - depth shoaler than charted by at least 1 metre;
- any reported changes to critical or controlling depths in high risk areas where vessels operate regularly with minimum under-keel clearance (eg Dover Strait TSS, Southern North Sea DW Routes, Malacca Strait) and within and adjacent to main channels in port areas and their approaches. In such areas, dangers which have been removed (eg wrecks) or conclusively disproved (eg controlling depths) should be deleted (navigators may otherwise try to avoid the non-existent danger, thereby putting themselves or others at risk);
- if the existence of a danger, which is charted as doubtful, is confirmed.

b. **Changes in general charted depths significant to submarines, fishing vessels and other commercial operations** (depths to about 800 metres) including reports of new dangers, sub-sea structures and changes to least depths of wellheads, manifolds and templates, pipelines and permanent platform anchors in oil exploration areas such as the North Sea and the Gulf of Mexico. The following is a general guide for changes in depths greater than 31 metres:

- 31 to 200 metres - new dangers and any depths shoaler than charted by 5% or more;
- 200 to 800metres - new dangers and any depths shoaler than charted by 10% or more;
- Insertions, deletions and amendments of reported and confirmed dangers and anomalous depths of less than 750 metres in ocean areas (see Technical Resolution A5.4);
- wrecks that might be the least or controlling depth in the general area;
- wrecks in anchorage areas;
- all sub-sea oil and gas structures, regardless of depth, unless they are known to have been abandoned and sealed below the sea floor. (Modern trawlers can operate at depths greater than 800m, and damage to oil and gas sub-sea structures could have serious environmental consequences).

c. **Changes to important navigation aids**, e.g. major lights, buoys in critical positions. The following is a general guide for changes:

- change to characteristic (character, period, colour) of light/light-buoy;
- addition of light sector or change to existing sector. The degree of change that warrants NM is dependent on the type of light, importance, range and local circumstances and each case must be judged on its own merits. However, in general, NM action should be considered on light sectors where the sector changes by more than 1° on major lights and by more than 3° on other lights;

- light range change depending on amount of change and significance & location of light – generally issue by NM if range change is more than 5 miles;
- height change only if significant change and long nominal range.

d. **New routeing measures** or changes to existing ones.

e. **Works in progress** outside harbour areas.

f. **Changes in restricted and regulated areas** (subject to the same NM safety selection criteria as areas that are not restricted), anchorages, etc.

g. **Changes in radio-navigation aids,** eg new or moved radio reporting points and lines, new or changed AIS transmitters and radar beacons, and Vessel Traffic Services, including changes to names and limits.

h. Additions / deletions of **conspicuous landmarks** and landmarks assessed as being useful for navigation.

i. **In harbour areas**: changes to wharves, reclaimed areas, dredging areas, updated date of dredging if previous date more than 3-4 years old, works in progress. Also new ports/port developments.

j. **Cables and pipelines**: all overhead cables and pipelines (with clearances); submarine cables and pipelines to a depth of 200 metres, although this should be flexible for some geographical areas where there is seabed activity on the continental shelf at greater depths.

k. **Marine Farms** and other aquaculture structures which might be a danger to navigation. (Note: In areas where marine farms are constantly moving or being established, a general chart note may be more appropriate than constantly updating by NM).

l. **Pilotage** services and pilot boarding places.

m. **Vertical clearances** of bridges and in some cases horizontal clearances.

n. **Magnetic variation** should be considered for updating if the variation, corrected by the annual change shown on the chart, differs by more than 1° from the value used for the current epoch.

o. **Chart references.** References to and limits of adjoining and other scale charts when a NC (or NE with changed limits) is published.

B-624 **In ports undergoing development**, the legend 'Port Development (see Note)', with an appropriately worded note, may be used to reduce the amount and frequency of NMs. The legend and note should be removed on completion of the development programme. Alternatively, a (P)NM and graphic may be issued (see B-601.7d).

B-625 **Deletions**. When a feature is deleted, care must be taken to ensure that the deletion does not affect another item. In particular, whenever fixed marks in open water, eg beacons or lights on rocks or islets, are deleted, the original surveys or other sources must be consulted to determine whether any rock or islet should be re-instated.

B-630 THE NOTICE TO MARINERS SYSTEM

B-630.1 SOLAS Chapter V regulation 9 requires contacting governments to:

> 'promulgate notices to mariners in order that nautical charts ai publications are kept, as far as possible, up to date'

SOLAS Chapter V regulation 27 states that:

> 'Nautical charts and nautical publications, such as sailing directions, lists of lights, notices to mariners, tide tables and all other nautical publications necessary for the intended voyage, shall be adequate and up to date'.

The Notice to Mariners (NM) system exists for this purpose. These specifications cover those aspects of the NM system which deal with charts (including electronic charts). ENC updates are issued for all chart-updating NMs and all chart-specific (T) and (P)NMs, although in some cases, (T) and (P) NMs may be issued as chart-updating NMs for ENC. It may not be possible to include non-chart-specific (T) and (P)NMs in updates for ENC.

B-630.2 **Reference to NM on charts.** Charts sold must state clearly on them (in the bottom left hand corner, outside the chart border) to which NM they have been corrected. If a hydrographic office produces a separate series of charts for the users of small craft, there is no requirement for it to incorporate NM updates between printings of these charts on charts sold, but a warning should be inserted on them clearly stating that they have not been corrected from Notices to Mariners (Technical Resolution B1.10).

B-630.3 **Periodicity.** NMs should be issued regularly, eg weekly, fortnightly or monthly (Technical Resolution F1.7).

B-630.4 **Arrangement.** The limits of oceans and sea described in IHO publication S-23 should be used as a basis for the geographical arrangement of NM periodicals. A geographical index and a numerical index of the charts affected should be given in each edition. The sequence in which the information is given should always be the same, and is recommended by IHO as:

1. Number of Notice. Date and year of publication. T or P, as necessary.
2. Ocean or sea. Country. Coast, gulf, island or river.
3. Place. Subject.
4. Reference to former or cancelled NM (as necessary).
5. Date of establishment, alteration, etc. (as necessary).
6. Name and position.
7. Abridged description (if necessary).
8. Detailed description. (In the case of lights, to be given in the following sequence: character, height, visibility, structure, sectors. In the case of depths, etc., to combine 6 and 8 as necessary).
9. Remarks.
10. Charts and publications affected, if applicable.
11. Authority. Original source upon which the Notice is based.

(Technical Resolutions F2.1, 2.2, 2.3, 2.4)

B-630.5 **Numbering.** A standard method of numbering notices should be adopted, the arrangement being Number of NM/Year of publication, eg NM1234/07 (Technical Resolution F2.5).

B-631 PERMANENT TEXTUAL NM

B-631.1 **Permanent (chart updating) textual NM.** This is the quickest means of permanently correcting a paper or electronic chart for navigationally significant information. Although mainly textual, it may include printed symbols or other small graphics to assist manual updating.

B-631.2 **Limitations.** Generally not more than 10 points should be plotted, but each case will be assessed on its merits (see B-632.4). A NM block or LNE would be more appropriate if:

- there is a large amount of navigationally significant information;
- if the area concerned has already been subject to considerable updating and may therefore become unreadable on users' charts when manually updated.

B-631.3 **Title.** The NM should be given a title which will assist the mariner in finding where in the world and then where on the chart the update is located. (It may also be useful for statistical analysis of NMs, particularly in respect of data required for bilateral arrangements). It is therefore normal to start the title with the country name, followed by any sub-region, local names and a general indication of the nature of the update, eg:

> NEW ZEALAND – North Island – West coast – North Taranaki Bight – Marine reserve. Buoyage.

Names should be in agreement with the largest scale chart. There will often appear to be a choice of region between the relevant country and its adjacent sea or ocean; whenever possible use the country name, particularly in coastal waters.

B-631.4 **Text.** As English is the language of navigators (see B-122), all text should be given in English in addition to the national language. They must be free from ambiguity and for ease of interpretation a standard set of terms should be used to instruct the user, eg:

- 'Insert' (for the insertion of new information);
- 'Delete' (for the removal of existing charted details);
- 'Amend' (to change existing charted detail when the position has not changed);
- 'Replace' (when a feature replaces a different feature in the same position);
- 'Move' (when a point feature has moved a short distance, but the associated details are unchanged). If the distance of the move is large, it may be better to use 'insert' and 'delete'.

Other textual terms should, as far as possible, follow those used in INT 1. Symbols may be described, ideally by the term used in INT1, together with the INT 1 number to assist the user in identifying the correct symbol to be inserted or deleted, etc. If possible, it is better to print the actual symbol in the NM.

B-631.5 **Positions.** In general, for deletions, amendments or replacements, quoted positions do not need to be quite so precise as for insertions and moves, provided the mariner is left in no doubt as to which feature the notice refers. **Positions** may be quoted by one of three methods:

a. **Latitude/Longitude.**

Precision in the quoting of positions for inserting or moving detail should be as follows:

Scales of 1:15 000 and larger	3 decimal places (dp) of minutes
Scales between 1:15 000 and 250 000 (see note)	2 dp of minutes
Scales smaller than 1:250 000 (see note)	1 dp of minutes

Notes:

It is difficult to give definitive guidance for the limiting scale between 2dp and 1dp as the graduation depends on latitude as well as scale. The NM author should bear in mind the user's maximum hand-plotting precision of 0.2mm and judge whether 1 or 2 decimal places is required. In general, it would be unusual to

quote 1 decimal place for insertion of new features on charts of a larger scale than 1:250 000.

When deleting point features, unless there may be ambiguity with adjacent features, it is usually adequate to round up and quote to just one or two dp depending upon the scale of the chart. On charts which have minutes of latitude and longitude subdivided other than 10, 5 or 2, quote positions to the nearest second (or dp of a second if necessary).

Where a geographical position coincides with existing chart detail or chart border, then reference to this should be given, e.g.

- 44°29,584'N 12°17,090'E (shore)
- 34°38,400'N 135°08,675'E (end of breakwater)
- 51°23,065'N 0°31,230'E (E border)

b. **Bearing** and **Distance from a reference point**

This should only be used only where the chart or plan to be corrected carries no graduation. The reference point must be identified clearly and unambiguously, eg: chimney centre of E border; light centre left of plan.

List insertions in the sequence of their bearing from the reference point.

Quote the bearing to the degree of precision that will serve to define the position of the insertion within the plottable error, ie decimal points of degrees depending on the length of the line of bearing.

Distances should be given in sea miles or metres, depending on the scale of the chart or plan and availability of linear scales (see B-220).

c. **Reference to a feature previously quoted in the NM**

A position can be described in relation to a feature already quoted in the NM. Generally, positions should have a letter identifier when that position is referenced by another part of the notice relating to that chart, eg:

- Insert legend, Gas (see Note), along pipeline at (a)-(b) above
- Delete depth 75 , close W of (c) above

B-631.6 **Authority**. The notice should include an acknowledgment of the source of the information, which may be, eg:

- a 'Government survey';
- a Foreign Government Chart (the number and edition should be quoted);
- a Foreign Government NM (the number and year should be quoted);
- the name of an authority, vessel or person who sent a report; etc.

Each NM which is from an original source (ie not reproduced Foreign Government NM) should be marked with an asterisk (Technical Resolutions F3.1, 3.2).

B-631.7 **Chart(s) affected.** Some hydrographic offices issue separate NMs for each chart to avoid possibility of confusion. The national (and INT) numbers of the chart (or charts) affected by the NM must be given (from largest to smallest scale affected), together with the latest update to that chart (so the mariner can ensure he has not missed an earlier update). It is helpful to also give the horizontal datum to which it is referred; this is useful if there is any need to plot the information onto other maps or charts. If the update affects a light, the international number (or national number if there is no international number) should be quoted. (Technical Resolution F3.3).

B-631.8 **Amplifying notes.** These are notes to the mariner to be included in the notice which are used to provide additional information. They may be used to indicate that the

contents of the notice will be included in a forthcoming New Chart or New Edition or that the notice cancels a former Preliminary or Temporary notice, eg:

- Note: This update will be included in a New Edition of Chart 591 to be published 24 January 2008.
- Note: Former Notice 2457(T)/07 is cancelled.
- Note: This change is effective from 22 February 2008.
- Note: Chart 591 is to be deleted from the list of charts affected by Notice 2547(T)/07.

An amplifying note should also be used to indicate when a notice is relevant for 'Certain copies only'. This is used when there has been an error either in the text of the original notice, but not on printed copies subsequently sold, or vice versa.

B-632 NM BLOCK CORRECTION

B-632.1 A NM block (also called a Chartlet or Patch) is a small auxiliary chart giving new details of a particular area, or possibly a new or revised chart note, to be pasted on the chart by the user, covering any obsolete details. Blocks are normally included in Notices to Mariners. The purpose of a NM block is to promulgate a significant amount of new safety-related data in a relatively small area involving complex line work, where the volume of changes would clutter the chart unacceptably if amended by hand, or where a textual NM would be long and complex.

B-632.2 A NM block should be announced by a textual NM, which states the approximate position and in general terms, what features the Block is updating, eg:

> Insert the accompanying block, showing amendments to depths and contours, centred on: 11□57□0□N 16□09□5W

The accompanying text may include further details which update the same chart, but fall outside the limits of the block. For example, the block size may be reduced by providing details of linear features (such as light sectors or leading lines) to be manually updated, which would otherwise necessitate a much larger block. These are sometimes called 'Mentions'.

B-632.3 Due to the possible extended timescale involved in preparing a block, consideration should be given to issuing a Radio Navigational Warning (see B601.9) or a chart updating Notice to Mariners (see B-631) ahead of the NM Block for the most significant safety-related items. Alternatively, a Preliminary NM (see B-634) could be issued to describe the changes in general terms.

B-632.4 A general guide is that a textual NM may be issued where there are fewer than 10 points to be plotted. If there are more than 10 points, then a graphical update should be considered (either Block or LNE). However, if the items to be updated are point symbols (eg depths or lights) spread throughout the chart, then a textual notice may be appropriate even if there are more than 10 points to be plotted. Conversely a block may be appropriate when there are fewer than 10 points to be plotted where:

- the points are in a very small area, ie the update would need to be applied very neatly to be clear;
- there are complex line features, eg curved depth contours in shallow water, that are significant dangers;
- there are insertions and deletions of line features in close proximity, eg where there are small changes to light sectors or a leading line, such that the detail may not be entirely clear when the update has been carried out;
- new limits of significant areas are being inserted and the old limits deleted, with a result that there could be confusion over what remains in force, or where the limits

are semi-circular or an irregular shape and therefore both difficult to describe concisely and difficult to plot accurately;

- there are complex changes to coastline, particularly berths;
- there are changes to points that have been changed recently, ie otherwise there would be textual updates to previous textual updates which could be confusing for the chart user.

B-632.5 Size and fitting of NM Blocks

a. The recommended maximum image size for a block is approximately 130mm x 185mm. This allows two blocks per A4 page and also ensures the digital file size is small enough to be easily downloaded from a web site. Larger size blocks are possible, but can cause considerable problems of paper stretch and therefore accuracy problems when fitting to the chart. They should only be used where there are clear grounds for rejecting the alternative of a LNE. A large block can sometimes be avoided by using 'mentions' (see B-632.2).

c. For convenience and ease of use a block should not be smaller than 45mm x 35mm.

d. A minimum margin of 5mm is needed within the block around all new and deleted work. This allows for inaccuracies in cutting out.

e. A block must extend beyond the limits of a previous block in the same area on at least one side to allow for accurate fitting.

f. Sufficient detail must occur at the edges of a block to allow accurate fitting to the chart. A meridian, parallel or legend running across the edge of a block helps.

g. Block limits should be designed if possible to avoid:

- cutting through or close to important point information such as wrecks, rocks, navigational aids;
- fouling compass roses and scales. A block may be made five-sided to do this.
- folds in charts.

B-633 TEMPORARY NM

B-633.1 A (T)NM is used to promulgate navigationally significant information that will remain valid only for a limited period (eg temporary oceanographic buoys, temporary changes in aids to navigation or authorized draughts, hazards of a temporary nature such as naval operations, exploratory drilling or salvage operations, withdrawal or re-instatement of buoys at the close or beginning of the navigation season). The mariner will be able to insert the update on his paper chart in pencil, and erase it when the (T)NM is cancelled. A (T)NM should not normally be initiated where the information will be valid for less than 2 months, which will be adequately covered by RNW. The maximum duration for a (T)NM to be in force is usually no more than 12 months; if likely to be longer, a permanent chart updating notice should be issued. If possible, the (T)NM should include an indication of how long it is to remain in force.

B-633.2 A (T)NM should not be used if there is little likelihood that the publishing hydrographic office will be notified when the charted state is restored, as without such notification the (T)NM cannot be cancelled at the correct time.

B-633.3 Although ENC updates are generally designed to replicate the paper chart NM system, because of the different nature of ENC, many (T)NM will be issued as chart updating NM for ENC. For example, oceanographic buoys which are frequently moved.

B-633.4 The specifications at B-631.3 (Title), 6 (Authority) & 7 (Charts affected) also apply to (T)NM.

B-633.5 The NM number for a (T)NM should be followed by '(T)', before the year date. The publishing hydrographic office should issue regular (usually monthly) lists of (T)NM which are still in force. It is very important to ensure that mariners (and other hydrographic offices who chart the area) are aware when (T)NMs are cancelled. If a (T)NM is replaced by a chart-updating NM, that NM should state that the (T)NM is cancelled.

B-634 PRELIMINARY NM

B-634.1 A (P)NM is issued to promulgate navigationally significant data early to the mariner when:

- Action/work will shortly be taking place (eg harbour developments).
- Information has been received, but is too complex or extensive to be promulgated by permanent chart updating NM. A précis of the overall changes, together with detailed navigationally significant information, should be provided in the (P)NM, with a statement that full details will be included in a New Chart or New Edition to be published shortly (a date or timescale for the NC/NE should be given, if possible).
- Further confirmation of details is needed. A permanent chart updating NM should be promulgated, or NE issued, when the details have been confirmed.
- For ongoing and changeable situations such as a bridge construction across a major waterway. A permanent chart updating NM should be promulgated, or NE issued, when the work is complete. In such cases, regular updates and diagrams can be provided via (P)NM.

The mariner will be able to insert the update on his paper chart in pencil, and erase it when the (P)NM is cancelled. A (P)NM should give an indication when the information will be included on the appropriate chart. If this is known it should be stated, eg:

- 'These changes will be included in a New Edition of Chart 1234 to be published in March 2004'.

Or, if the date for inclusion in the chart is unknown:

- 'These changes will be included in the next New Edition of Chart 1234'.

Where a particular date is specified, the P or T NM should be monitored and if it appears that the publication date mentioned is going to be missed, then consideration should be given to reissuing the notice with a revised date.

Instead of issuing a (P)NM, consideration should be given to issuing a permanent NM inserting a 'Works in progress' legend on the face of the chart, e.g. 'Bridge under construction (2006)'.

B-634.2 **In addition to the (P)NM**, it may also be appropriate, where there are major changes, to issue a permanent NM inserting a legend, in magenta, on the face of the chart, referring to the (P)NM, eg:

- *See NM1234(P)/06*;
- *Shoal Depths (see NM2345(P)/06)*.

B-634.3 **Diagrams.** Diagrams to support (P)NMs are very useful to the mariner, eg:

- where a new TSS or complex series of routeing measures is being announced;
- a new bridge is being constructed and shipping routes need to be diverted.

In order to restrict the digital file size, it is best to produce such diagrams in monochrome, using black stipple in lieu of tints if necessary. They should also be a different scale from the chart, to prevent the mariner from using them as blocks to

amend the chart.

B-634.4 Although ENC updates are generally designed to replicate the paper chart NM system, because of the different nature of ENC, many (P)NM will be issued as chart updating NM for ENC. For example, because of the length of pipelines or cables, a 'cautionary area' may cover a whole ENC cell, whereas it is relatively simple to insert the pipeline in the planned position with an 'under construction' attribute.

B-634.5 The specifications at B-631.3 (Title), 6 (Authority) & 7 (Charts affected) also apply to (P)NM.

B-634.6 The NM number for a (P)NM must be followed by '(P)', before the year date. The publishing hydrographic office should issue regular (usually monthly) lists of (P)NM which are still in force. It is very important to ensure that mariners (and other hydrographic offices who chart the area) are aware when (P)NMs are cancelled. If a (P)NM is replaced by a chart-updating NM, that NM should state that the (P)NM is cancelled. If a (P)NM is cancelled on publication of a NC or NE, the announcement of the NC or NE should state that the (P)NM is cancelled (or that the chart should be removed from the list of charts affected by the (P)NM if it remains in force for other charts).

B-635 MISCELLANEOUS NOTICES

B-625.1 When a hydrographic office decides on the issue of a new chart or a new edition of an existing chart, or withdrawal of an existing chart, it must publish advance notification in its Notices to Mariners, indicating the approximate date of availability or withdrawal (when possible), title and any information which can be of interest to users (Technical Resolution 3.1).

In addition to the number and title of the chart, this might include:

- a brief statement of:
  - the main changes (for a new edition),
  - its purpose (for a new chart),
  - the reason (for a withdrawal without replacement);
- whether the chart includes any changes (eg Routeing measures) which come into force on a particular date;
- the horizontal and/or vertical datum (if changed from the previous edition);
- the scale and limits (for a new chart, or new edition with changed scale or limits);
- titles, scales, limits of new plans (or mention of plans deleted);
- whether the chart is in the International Series;
- an acknowledgment of the producer for an adopted chart;
- whether there are any (T) or (P)NMs which remain in force or should be cancelled on publication.

B-635.2 Printed forms to be used by mariners (and instructions on how to use them) should be provided by hydrographic offices in their regular NM editions (and other appropriate nautical publications), so that mariners may be encouraged to report any observed changes needed to any charts and publications which they have used, by the quickest possible method.

Hydrographic offices which as a result receive information relating to waters for which another hydrographic office has the primary responsibility, should forward a copy to that office by the quickest possible method. In cases of immediate action being required, a RNW should be issued by the original hydrographic office (Technical Resolution A1.15 & F4.1).

B-636 GENERAL NOTICES

The term 'General Notices' applies to all information and instructions that hydrographic offices may wish to bring to the attention of mariners but the nature of which is such that they may not properly refer to any specific nautical document. Such Notices might cover, for instance, various types of nautical information, sale and upkeep of nautical documents, safety of navigation and protection of human life at sea, provision for assistance to vessels in distress and for communications, etc.

Notices of this type are repeated periodically, often unchanged, and most of them are included in the first periodical issue of Notices to Mariners of each year (and are therefore sometimes referred to as Annual NM). New, altered, or deleted material in such General Notices should be indicated by means of sidelines of appropriate length in the margin of the page. English or French translations of General Notices of interest to foreign mariners should be issued by hydrographic offices simultaneously with those in their national language (Technical Resolution F1.1).

B-640 CHART RECORDS

As stated at B-621, not all newly received information can be immediately included in charts. It is therefore necessary to record information which may be included on charts at a later date (usually at the next full new edition). Hydrographic offices will evolve many different ways of archiving and recording such source data. In this specification:

- Archiving refers to the method of storing source documents in a system which protects the documents and allows for retrieval.
- Recording is the method by which the information is recorded to ensure it is not overlooked when a new edition of a chart is prepared.

Archiving is not the subject of this specification. However, Hydrographic offices need to consider carefully how long source documents should be retained as they may form part of an audit trail in the event of an incident.

B-641 The method used for **recording outstanding information** may be one of the following.

B-641.1 **Manuscript lists.** These may be used to record both the data (with some unique identifier to facilitate retrieval from the archive) and a summary of the differences identified in the area of a chart. This is simple to administer, but has the disadvantage of giving little impression of how out-of-date a chart's depiction may have become.

B-641.2 **'Standard' or 'Pattern' copies.** These are printed copies of current charts, marked up to show the outstanding information in some detail. This enables work done during assessment of data to be transferred to the standard in a way which will provide some impression of the amount and significance of data outstanding. However, it is more time consuming and on 'busy' charts it may get confusing as some outstanding data is replaced by newer data. An alternative is to hold assessment work as a series of overlays to the standard.

B-641.3 **'Running compilations'.** These are compilations which run for the whole time between editions, so that at any time, it is comparatively easy to produce the new edition when it is decided the amount of change justifies it. The disadvantage is that, over time, some detail may have to be erased to make way for newer information. They may be on a plastic base or in digital form, depending on the compilation system being used in the hydrographic office.

B-641.4 **Geographic Information Systems (GIS) Databases** are electronic methods of storing all valid and relevant information in a geographical format. Such a database can be maintained up to date, so that a new edition of a chart for a given area can be prepared quickly without recourse to the original documents. Carefully managed,

such databases can reflect the ‘real world’ for all relevant hydrographic information required to produce charts and other products in different formats (eg paper and ENC) and at different scales with little final manual intervention. In practice, the technology is new and still being developed.

B-642 **Recording decisions.** In a period of increasing litigation, it is important that hydrographic offices protect themselves by carefully recording the decisions made about the use of received information, in particular when any information is rejected for chart use or for immediate action. In many cases the decisions are routine and may simply be recorded as, eg ‘scale too small’, ‘off chart limits’, ‘time-expired’, ‘does not meet NM criteria’ (see B-620). In other cases, where decisions are more difficult and professional judgement is called for, it is important to state clearly why the decision was reached and probably note the name and rank of the person(s) concerned. If a decision can be shown to have been taken with due care by professionally competent people, the risk of a claim for negligence is much reduced, even if with hindsight the decision proves to be wrong.

It is obviously necessary that a system, whether manuscript or electronic, must exist to record and retrieve such decisions. Supporting documents, eg the original source, correspondence with the source authority, copies of NMs issued, etc, should be held with the record of decisions or be cross referenced to them, to provide an easy method of assembling all material evidence.