

# **U.K. CHARTING PRACTICE IN THE IMPLEMENTATION OF IALA MARITIME BUOYAGE SYSTEM "A"**

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## **1. SUMMARY**

The changeover to IALA System "A" buoyage in northwest Europe between 1977 and 1979 created new problems of charting and promulgation. This paper describes in detail the methods developed by the Hydrographic Department, Taunton, to supply mariners with the information needed to ensure safety of navigation in the areas affected at all stages of the implementation.

## **2. PROMULGATION POLICY**

When the decision was made in 1975 by the International Association of Lighthouse Authorities (IALA) to establish the Maritime Buoyage System "A" (Red to Port) in northwest Europe, it was realised in the Hydrographic Department at Taunton that a radical approach would be needed. The United Kingdom has had a major involvement in the first three annual stages of the implementation in 1977-8-9 and, from the outset, has been insistent that the changeover must not be rushed through by the national and local buoyage authorities without taking fully into consideration the problems of promulgation imposed on the various charting authorities involved. Without effective notification to mariners and amendment of all relevant charts, the safety of shipping, for whose benefit the new buoyage has been evolved, can be put at serious risk.

The Hydrographic Department decided that satisfactory promulgation required a departure from the normal practice of announcing changes "after the event". It was decided that new editions of charts most heavily affected by the changeover must be made available to the mariner at least one month before its start in

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the area covered by each chart concerned. Charts with a few amendments only would be corrected by Notices to Mariners in the usual way. In addition, because of the time factor involved in the physical changeover in any area, the mariner would need to know details of both the old and new aids. This resulted in another break with conventional practice in that the mariner was instructed to retain, for reference with regard to buoyage, the old (pre-System "A" buoyage) version of the chart. Copies of these cancelled charts were also kept available for sale after the publication of the new edition and to distinguish them they were given an "X" suffix. Thus there would be two editions of the chart in existence at the same time, but only the System 'A' version was to be corrected by Notices to Mariners.

At the outset it was appreciated that the introduction of a completely new buoyage system involving fundamental changes was so important that something more than a traditional changeover on the charts by new edition and Notices to Mariners was needed. The mariner was about to be presented with a completely new system involving new types of buoys, new light characters and a new convention for buoyage direction: in addition, certain shore lights could be involved as these have to be modified at the same time to conform to the "Red to Port" convention.

Consequently, prior to the start of the Stage 1 implementation in 1977, a series of introductory Notices to Mariners, a handbook explaining System "A" in detail (HD publication NP 735), a chartlet (5044) and a new edition of 5011 (Symbols and abbreviations used on Admiralty charts) were issued. The chartlet and amendment to 5011 were needed to make known the new chart symbols being used to portray the new buoyage. Moreover, to ensure that all mariners at sea would be in possession of all the relevant facts, it was decided that each Stage would be preceded by the issue (as an Annexe to a weekly edition of Notices to Mariners) of a complete list of all the aids (buoys, shore lights and beacons) due to be changed during that period. In addition, arrangements were made to publish a few preliminary charts - small scale charts covering the area affected and showing, in the case of all major and offshore aids, both the old and the new versions and also the limits of sub-areas with reference letters, to be quoted in radio navigational warnings during the changeover period. It was also planned to issue, early in each stage, a comprehensive Notice to Mariners announcing the change, the special methods of promulgation being used, and listing those charts due to be amended by new editions.

### **3. SUPPLY OF INFORMATION BY THE BUOYAGE AUTHORITIES**

The measures referred to in Section 2 above were, however, only the culmination of the build-up to each stage. It was realised that, for implementation on the charts to progress smoothly and to be completed in time, affected hydrographic offices would have to be provided with details of the buoyage changes at least 12 months in advance of the first change being made. It was also stressed

that the lists provided at this time must be, as far as practicable, the final version, subject only to the usual variables such as shifting channels, wreck marking, etc. The early supply of information was vital: in Stage 3 (1979), for example, compilation of the first of the 136 new editions began on 2 March 1978, some 13 months before the start of the changeover. The early start was needed to ensure that all IALA new editions could be ready for publication on time, without unduly disrupting the normal chart supply activities of the Department.

Buoyage authorities were also requested to provide a list of planned implementation dates, however approximate, so that priority could be given to the new editions which covered the areas in which the changeover was due to be implemented first, bearing in mind that, to cater for vessels arriving in the affected area from overseas, those new editions would have to be issued some weeks in advance of the start of the changeover.

In general, the "12 month rule" was adhered to for the aids maintained by the major buoyage authorities. The real problem was with the supply of information from local and harbour authorities and private owners of navigational aids. It was most important that the new editions, once compiled and processed to negative stage, should not be subject to further amendments, otherwise the advantage of an early start would be lost. This was true also for scheduled changeover dates; changes to these, necessitating an earlier-than-planned publication, would inevitably disrupt the processing of the rest of the new editions in the schedule.

Local aids were coordinated by the major buoyage authority for the area concerned - eg. Trinity House, Northern Lighthouse Board, Commissioners of Irish Lights - but the lists of planned changes to local aids produced by these authorities were, in fact, often only the "ideal" picture. It sometimes proved impossible to get the local authority affected to agree to the type of change being recommended or even to any change at all. Also ownership of many aids was disputed or unknown.

All buoyage lists needed careful appraisal to ensure that relevant changes had been considered for all existing aids shown on charts and to identify any dubious selection of characteristics, especially those which seemed potentially dangerous to navigation.

Some typical problems were :

- (a) Many aids not listed, particularly sewer beacons and outfall buoys.
- (b) Errors in the IALA characteristics, for example a west cardinal buoy listed as V Qk Fl(9) 15s, i.e. the wrong combination of characteristic and period.
- (c) Positional errors, for example a north cardinal buoy positioned to the east of the danger.
- (d) Totally inappropriate characteristics, for example navigational buoys with yellow and black chequers.
- (e) Ambiguities caused by changes in the direction of buoyage.

One copy of each list received was maintained as a master copy and was kept corrected for any subsequent amendments. Duplicate lists, used by the chart compilers, were corrected from these master copies.

#### 4. DETERMINATION OF THE CHART ACTION REQUIRED

Prior to the examination of the lists, all charts within the area affected at that particular stage had to be examined to determine the action required. Possible action was of 3 types :

- (a) New Edition : for System "A" changes only, or for System "A" plus normal new edition material, for example new survey data.
- (b) Notices to Mariners (NM).
- (c) Revised Print (RP) : for items not warranting NM action (RP corrections are usually included at the next routine printing of the chart by amending the printing plates).

To avoid excessive hand correction of charts it was decided that a minimum of 10 changes would justify a new edition, though this was not adhered to rigidly; for example, 9 complex corrections would merit a new edition whereas 11 simple ones would not. It was inevitable that because some changeover information was not known, certain charts could not be placed in a category. These had to be held back until the necessary information was obtained. On the other hand, some charts warranting a new edition on the basis of the number of aids thought likely to change were eventually downgraded when the buoyage authority decided that certain changes would not be made.

Charts designated for NM or RP action were, of course, corrected in the usual way "after the event". In Stage 3 (1979) some 100 Notices to Mariners affecting approximately 54 charts were required.

A list of all charts affected in each stage and the action planned was circulated to all those affected within the Department, for example, Production Branch (reproduction drafting and printing), Supply Branch (sales and stocks) and Notices to Mariners Branch, and was kept correct for any changes. Advanced warning was important for stocks section whose additional task was to forecast the number of "X" charts required to cover likely demand during the changeover period. For this task they also needed approximate changeover dates.

#### 5. ANNEXE TO WEEKLY EDITION OF NOTICES TO MARINERS

As stated in section 2, a list of all aids due to be changed, together with their new System "A" characteristics, was issued free of charge as an Annexe to a Weekly Edition of Notices to Mariners before the start of the changeover in each stage.

The compilation of these lists relied heavily on the groundwork done in the initial checking of lists received from the various buoyage authorities. Work could not be started until the majority of the information was to hand but it was inevitable that corrections would be required before and after publication. Before compilation could start, the area affected had to be broken down into sub-areas.

This was to permit ease of reference within the list itself and to provide a regional reference system for use in radio navigational warning messages issued during the changeover. The breakdown was on a geographical basis rather than being related to the planned progress of the changeover. Each area had to be easily identifiable, eg. Plymouth Sound, the Channel Islands. Liaison with other hydrographic offices and the buoyage authorities was important as the sub-areas chosen were usually adopted by all the nations involved. For example, in Stage 3, the sub-areas on the French coast were delineated by France and the sub-areas off the UK coast were evolved by discussion with the relevant British Isles buoyage authorities.

Once the limits of the sub-areas were fixed, the listing of aids could begin. The first step was a list, with names and positions, of all the aids in each sub-area as they would be encountered by a ship proceeding in the new direction of buoyage. This entailed consultation of all the charts affected in conjunction with the master buoyage lists available at that time. The next stage was to add the System "A" characteristics to the list. Once compiled and checked thoroughly, the list had to be kept correct for the latest information and the introductory text, index and diagrams prepared.

The publication date of the Annexe had to be chosen carefully. If it was too early then very large amendment lists would be necessary as happened in Stage 1, the first year of the changes (1977) – the Annexe was issued in 1976 with Weekly NM 49 and had to be followed by supplements to Weekly NMs 8 and 14 of 1977. If it was too late, the mariner would not receive the information in sufficient time prior to the start of the changeover. For Stages 2 and 3 the end of February was chosen (Weekly NM 7 of 1978 and 1979) and no special supplements were required for the smaller number of later amendments.

During the period after the list was sent for printing and up to the receipt of proofs, it was vital that a record of reported changes be maintained. Proofs were read, corrected, amended to incorporate changes and returned for final printing and binding (fig. 1): a proof copy then became the master list, replacing all the individual lists used up to that time. Any amendments reported subsequent to the publication of the list were noted for inclusion in later correcting Notices to Mariners, six of which were needed in Stage 3, the last being issued in June 1979. By that time, the changeover was well underway and, as most of the new editions had been published, any major amendments reported had to be promulgated by chart-correcting Notices to Mariners; so thereafter no further corrections to the list of aids were issued.

Although it was stated in Section 3 that, ideally, buoyage authorities should not amend their plans in the 12 months prior to changeover, some changes were inevitable. Therefore, many of the entries in the correction supplements and NMs were to add, in the case of certain aids, System "A" characteristics not known when the Annexe was published. About 150 individual amendments were needed in Stage 3, i.e. approximately 4 per cent of the total number of aids involved: this represented a considerable improvement over Stages 1 and 2 when the percentages of necessary amendments were much higher.

When available, a copy of the published Annexe became the master buoyage list replacing the proof copy.

## AREA 'P' CLYDE PORT AUTHORITY

Name / Number / Location	Position			Type	Body Shape	Colour	Topmark	Light / Fog Signal	Scheduled Date	Remarks
	°	'	"							
	N	W								
<b>BUOYS</b>										
<b>FIRTH OF CLYDE, IRVINE TO GREENOCK</b>										
Irvine Bay Spoil Ground	55 35 03	04 41 42.6		Spec	Cone	Y		FIY 5s		New Station
IB-B	55 35 36	04 43 45		Spec	Cone	Y	X	FIY 3s		
Outfall, North of Irvine	55 37 06.4	04 43 58.2		Spec	Cone	Y				
Eagle Rock	55 38 12.9	04 49 37.2		Star	Cone	G		FIG 5s		
Hunterston Outfall	55 43 34.2	04 54 42		Spec	Cone	Y		FIY 5s		
Tann Spit	55 44 25.9	04 57 03.6		S Car	Pillar	YB	S			
Portachur	55 44 21	04 58 26.5 *		Star	Cone	G		FIG 3s		
Largs Mooring "A1"	55 47 02.2	04 52 21		Spec	Moort	B		FIY 2.5s		
Mount Stuart	55 48 00	04 57 30		Safe	Pillar	RWVS	Sph	LFI 10s		
Toward Bank	55 51 02.6	04 59 56		Star	Cone	G		FIG 3s		
Toward Spit	55 51 26.4	04 59 02		E Car	Pillar	BYB	E			
Skelmorlie Bank	55 51 38.5	04 55 50.8		Star	Cone	G		FIG 2s		
Skelmorlie	55 51 39	04 56 16		Safe	Pillar	RWVS	Sph	Iso 5s		
Kip Outer	55 54 28.9	04 52 57		Star	Cone	G		QkFIG		
Ardgowan Outfall	55 54 55.3	04 53 00.2		Spec	Cone	Y				
Warden Bank	55 55 40	04 54 31		Star	Cone	G		FIG 2s		
Cowal	55 56 00	04 54 45		Safe	Pillar	RWVS	Sph	LFI 10s		
Gantock	55 56 33.7	04 55 02.9		N Car	Pillar	BY	N			
Wreck-Dunoon Bank	55 56 41.2	04 54 21.9		W Car	Pillar	YBY	W			
Dunoon Bank	55 56 43.1	04 54 07.2		E Car	Pillar	BYB	E	QkFI(3) 10s		
Unnamed	55 57 09	04 51 36		Spec	Cone	Y	X	FIY 3s		New Station
Ashton	55 58 07	04 50 35		Safe	Pillar	RWVS	Sph	Iso 5s		
Gourcock Bay	55 57 41.9	04 48 24.3		Spec	Can	Y	X	FIY 3s		
Ardmore	55 58 40	04 47 26		Star	Cone	G		FIG 5s		
Whiteforeland	55 58 07	04 47 12		Safe	Pillar	RWVS	Sph	LFI 10s		
Wreck	55 58 33.6	04 44 31.2		W Car	Pillar	YBY	W	QkFI(9) 15s		
Skelmorlie Channel										
Skelmorlie A	55 46 30	04 57 42		Star	Cone	G		FIG 5s		

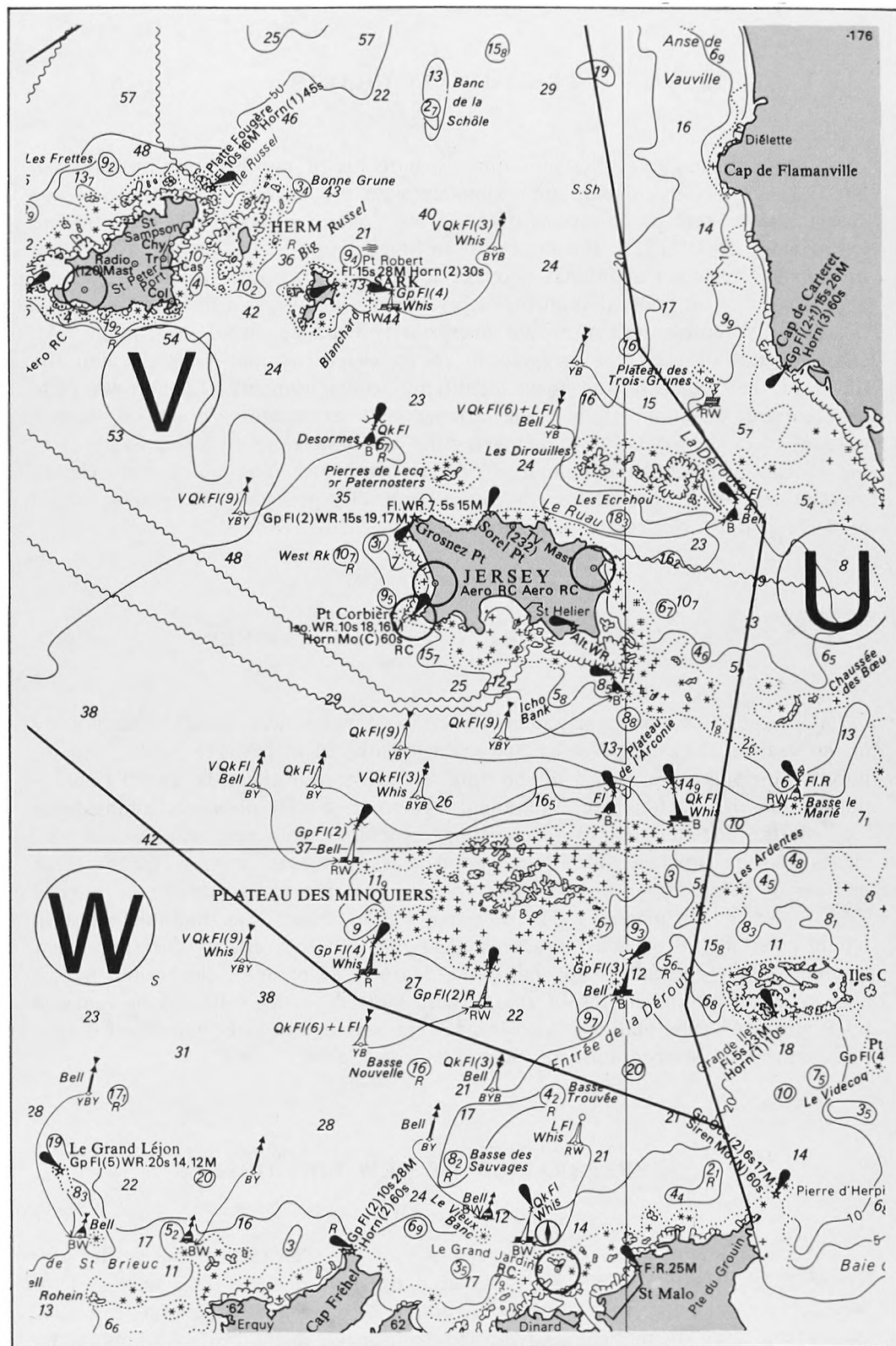


FIG. 2. - Part of preliminary chart D2675.

## 6. PRELIMINARY CHARTS

The publication of the preliminary charts, with numbers prefixed by the letter D, was set to coincide approximately with the issue of the Annexe. These special charts were modifications of small scale charts covering the area affected, eg. in Stage 2 : D.2182A and D.2182B; in Stage 3 : D.1824A and D.2675. Extra information included additional buoyage ie more than would usually be shown on a chart of that scale, though inevitably at such small scales the buoyage could not be fully represented. A brown overprint showed details of the System "A" characteristics of each aid arrowed in to its exact position, together with the limits of the sub-areas and their identifying letters/numbers. The brown plate also carried direction of buoyage arrows and explanatory notes. A certain amount of existing detail was removed from the basic chart to avoid overcrowding eg cables, pipelines and limits of larger-scale charts. The charts were clearly marked as 'Not to be used for Navigation' and after publication were not subject to correction by Notices to Mariners (fig. 2).

## 7. INTRODUCTORY NOTICE TO MARINERS

For each Stage an explanatory Notice to Mariners was issued, usually early in the year of the change - eg Stage 3 was covered in NM 118 of 1979 - to inform Mariners with regard to the limits of the area(s) affected; special publications to be issued (Annexe, Preliminary Charts); special measures adopted (eg "X" charts); and the need to order requisite copies of both new editions and "X" charts well in advance. This latter point was important in view of the large number of new editions to be printed over a short period, in addition to normal stock-replenishment printings. The objective was to ensure that the initial printing would cater for all expected needs as there was not the capacity for subsequent reprints shortly thereafter. To enable the Mariner to plan his needs, the Notice also included a complete list of charts (with latticed versions) due to be replaced by System "A" new editions. Also listed were new charts to be published during the changeover incorporating the new buoyage (fig. 3).

## 8. PREPARATION OF NEW EDITIONS

Section 2 above refers to the retention of the "X" charts, that is the pre-System "A" versions of the charts replaced by new editions. This new system, together with the fact that compilation of the new editions began up to a year before the start of the changeover, led to a new method of working being adopted in Production Branch. When a standard new edition is put in hand it is



## ADMIRALTY NOTICE TO MARINERS

### 118. NORTH WEST EUROPE, English Channel and Irish Sea—Implementation of IALA System 'A', Stage 3 (1979).

(1) For details of the IALA Maritime Buoyage System 'A', see the explanatory booklet NP 735, available from Admiralty Chart Agents.

(2) Former Notice 22/79, with accompanying diagram, indicated that, in Stage 3 (1979), System 'A' will be introduced in the English Channel and Irish Sea. The limits of the area affected are:—

- |           |  |
|-----------|--|
| North     | — a line between Malin Head (55° 23' N., 7° 23' W.) and the Isle of Islay (55° 41' N., 6° 32' W.).   |
| East      | — the Greenwich meridian from the English coast to 50° 20' N., thence along the parallel of 50° 20' N. to the French Coast. East of this line, in the Dover Strait and North Sea, System 'A' was implemented during 1977 and 1978. |
| Southwest | — a line from Old Head of Kinsale (51° 36' N., 8° 32' W.) to position 47° 50' N., 5° 30' W. (approx.), thence along the parallel of 47° 50' N., to the French coast.   |

(3) System 'A' is also scheduled to be implemented during 1979 on the north and southeast coasts of Spain, in Gibraltar, and on the Algerian and north Tunisian coasts, also in Malaysia and in parts of Australia, Hong Kong and Indonesia. Details of those areas are **not** included in this notice; relevant information will be published separately.

(4) In Northwest Europe, except for Poole Harbour (See former Notice 2604/78), the Port of Liverpool (see former Notice 2784(P)/78) and Chichester Harbour (see former Notice 2795/78), implementation is not scheduled to start until March 1979 and should be completed by November 1979. A list giving the individual characteristics and positions of the new buoys and shore marks relevant to the Admiralty Chart series will be published as an Annexe to a Weekly Edition of Notices to Mariners in February. At about the same time, two special charts D2675 and D1824A will be issued. These will show, in the case of all offshore and major buoys, the details of both the old and the new marks. They will also show the limits of the lettered areas A to Z into which Stage 3 (Northwest Europe) has been divided for ease of reference. These area references will be used in the list of new buoys and shore marks, and in Radio Navigational Warnings broadcast during the change-over period.

(5) Within the affected area in Northwest Europe, there are 215 Admiralty charts and 97 associated latticed versions. As indicated in the list in paragraph (10) below, 203 new editions of Admiralty charts, including the latticed versions, will be published. The new buoyage is also being incorporated in 11 new charts in preparation (including latticed versions), and 84 charts (including latticed versions) will be amended by issue of correcting Notices to Mariners.

(6) The publication of the special D-charts, the new navigational charts and the new editions will be announced in Notices to Mariners in the usual way. As far as is practicable, issue of the charts will be co-ordinated with the change-over schedule of the buoyage authorities. To make it possible for ships entering the affected areas to have amended charts on board, the revised versions will be published some weeks before the change-over in each area gets underway. Each new edition or new chart, therefore, will carry the following note in magenta:—

[Continued

not normally considered necessary to make a new base for the preparation of the new edition and no precautionary measures, such as duplicate printing plates or negatives, are taken. Under the new system, however, because of the requirement to retain the pre-System "A" version after publication of the new edition, it was decided that two sets of reprostat for each chart were needed. The reprostat included fair drawings, scribes, negatives, printing plates and, in some cases, masks, all of which had to be kept updated. It was decided that the reprostat for the "X" version would be destroyed only when there was clearly no longer a need for future printings of the "X" version, i.e. when all or most of the changes on that chart had taken place.

In the event, this proved to be an unnecessary precaution; in very few cases during Stages 1 and 2 were new printing plates required for an "X" version, and as an ad hoc expedient they could have been prepared photographically using a printed copy of the chart. It therefore became possible subsequently to discontinue this extensive duplication of reprostat.

The new editions were compiled in Nautical Chart Branches in the usual way incorporating the new buoyage information, any outstanding information from other sources and corrections from the latest Notices to Mariners. Once verified, they were sent to Production Branch for fair drawing or scribing in the normal way. However, because of the need to make an early start on some of the new editions, complete information about the new buoyage was not always to hand at the compilation stage. So, to avoid the cost of producing proofs straight away which would definitely require fairly extensive additions and amendments, a "Report" stage was introduced. Under this system, a new base was prepared and the amendments on the compilation carried out, but rather than proceeding to negative, the compilation was returned to the originating Branch "reporting" that the new edition was correct up to that stage. When the outstanding information about the new buoyage was received by the compiler, it was added to the compilation drawing, marked to distinguish it from the earlier work, and the compilation was returned to Production Branch. The amendments were then carried out and the work proceeded to negative stage and preparation of a first proof on plastic.

First proofs, when received back in the originating Nautical Chart Branch, were revised and updated in the usual way and then held to await the time to order final litho proofs. Throughout the period from compilation to publication a record of each chart was maintained, any amendments being noted for inclusion at the next opportunity (eg. first proof, litho proof). This maintenance of precise records was important, not only to ensure that amendments were not missed, but also to keep track of the large number of new editions involved.

Finally, using the list of scheduled dates provided by the buoyage authorities, a programme of publication dates was worked out. In those cases where a local authority had not quoted a specific date, an estimated date was used, based on the time when the general and offshore buoyage in the vicinity of the local area in question was to be altered to System "A" by the major buoyage authority concerned (eg. Trinity House). The aim was to publish each chart at least one month before the start of the changeover in the area of that chart and involved a spread, for example in Stage 3 British Waters, from December 1978

to July 1979. The timing had to take into account the large number of new editions involved and the resultant extension of the time needed to prepare printing plates and supply litho proofs. In general, 6-8 weeks was allowed from the return of the first plastic proof by the Nautical Chart Branch to Production Branch to the receipt of the litho proof. The litho proofs were then corrected, given a publication date and the order for machine printing given.

The publication of the System "A" new editions was announced in the usual way in Weekly Notices to Mariners except that the NM in question carried a special note referring the Mariner to "caution" on each new edition instructing him to retain the previous edition of the chart (fig. 4).

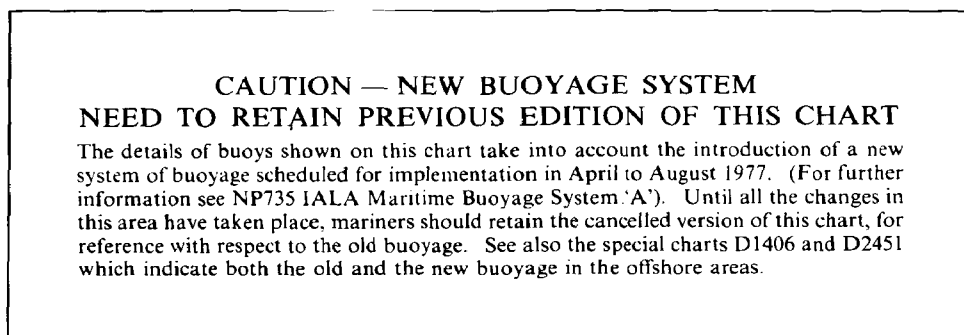


FIG. 4. - The Caution carried on new editions in Stage I.

## 9. MONITORING THE PROGRESS OF THE CHANGEOVER

Once the buoyage changeover had begun, it was very important to keep track of what changes had actually been made. This was important for several reasons :

- (a) Radio navigational warnings had to be issued announcing where the changeover was about to start, was underway, or was completed. It should be noted, however, that these warnings were concerned only with buoys and other aids up to pilot pick-up points and harbour limits.
- (b) Notices to Mariners for aids to be changed on charts not corrected by new edition had to be issued when the changes were made.
- (c) To determine when all or most of the aids on a particular chart were changed, so that the "X" version could then be cancelled.
- (d) To keep track of any deviation from the planned changes for which Notices to Mariners might be necessary.

As mentioned in Section 5, a copy of the Annexe was maintained as a master in the coordinating Branch. Once the change was underway this copy, and a duplicate held by Radio Navigational Warnings Section, were used to keep track of changes completed, each aid being crossed through and the authority for the information noted. The two copies were necessary to cater for the different

sources of information. RNW sources were mainly signals and telex messages from the major buoyage and port authorities; Nautical Chart Branch information was in the form of local Notices to Mariners, Hydrographic Notes and information gleaned from innumerable telephone calls. Both copies were cross-referenced each week. In addition, master copies of all the charts affected were annotated as the changes were made.

As sub-areas were completed, radio warnings announcing the fact were issued, being followed by similar printed Notices to Mariners. The different criteria used by Radio Navigational Warnings Section (offshore aids only) and the coordinating Nautical Chart Branch meant that in some instances the radio warning and the final Notice to Mariners for each sub-area were separated by several weeks: the Notice not being issued until all the major changes in the sub-area were complete, i.e. all aids except minor unlit beacons.

The criteria used for the issue of this Notice were used to determine when to cancel an "X" chart. In some cases it could be stated definitely that all the aids on that particular chart had been changed. On others, however, "X" charts were cancelled when all the most important aids were changed. The reasons for this apparently premature cancellation were:

- (a) In some instances it proved impossible to determine whether a particular aid had been changed or, in fact, if the intention to change still existed. It is significant that some aids due to change in Stage I (1977) were not in fact dealt with until 1979.
- (b) It followed that the Mariner could not be expected to retain two versions of each chart indefinitely. If, however, it was discovered that some important aid was not to be changed until some distant, probably uncertain date, then it was considered appropriate to issue a Notice to Mariners to reinstate the pre-System "A" characteristics.
- (c) The retention of the large amount of reformat and the stock of "X" charts posed serious storage problems within the Hydrographic Department.

### **Acknowledgements**

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