

RESOLUTION A.617(15) adopted on 19 November 1987
IMPLEMENTATION OF THE NAVTEX SYSTEM AS A COMPONENT OF
THE WORLD-WIDE NAVIGATIONAL WARNING SERVICE



ASSEMBLY - 15th session
Agenda item 12

IMO

RESOLUTION A.617(15)

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IMPLEMENTATION OF THE NAVTEX SYSTEM AS A COMPONENT OF
THE WORLD-WIDE NAVIGATIONAL WARNING SERVICE

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO resolution A.419(XI) by which it established the World-Wide Navigational Warning Service,

RECALLING ADDITIONALLY resolution A.420(XI) concerning development of the maritime distress and safety system,

RECALLING FURTHER resolution A.525(13) by which it adopted performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships,

BEARING IN MIND the decisions of the XIth and XIIth International Hydrographic Conference,

BEARING IN MIND ALSO Recommendation 540-1 of the International Radio Consultative Committee (CCIR) of ITU,

BEARING IN MIND FURTHER that the World Administrative Radio Conference for the Mobile Services, 1987, allocated the frequency 518 kHz for the International NAVTEX system, as well as the frequencies 490 kHz and 4209.5 kHz for other NAVTEX-type systems;

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NOTING that a number of countries are currently providing a NAVTEX service to ships operating in coastal waters,

NOTING ALSO that the Maritime Safety Committee has identified functional requirements and draft carriage requirements for the maritime distress and safety system which include the use of the NAVTEX system,

HAVING CONSIDERED the recommendations made by the Maritime Safety Committee at its fiftieth, forty-first and fifty-second sessions,

1. ADOPTS the automated direct-printing telegraph system for promulgation of navigational and meteorological warnings and urgent information to ships (NAVTEX) as a component of the World-Wide Navigational Warning Service on the basis of the Recommendation set out in the Annex to the present resolution;
2. INVITES Member Governments to commence NAVTEX broadcasts as soon as practicable, in accordance with resolution A.420(XI) and the present resolution, to serve those coastal areas where the safety of navigation warrants such a service;
3. ALSO INVITES Member Governments wishing to establish, augment or alter any NAVTEX service to forward all relevant information to the Organization;
4. FURTHER INVITES Member Governments to encourage their ships to be fitted as soon as practicable with NAVTEX equipment which conforms to performance standards not inferior to those specified in resolution A.525(13);
5. AUTHORIZES the Maritime Safety Committee to agree to such departures from the principles and standards set out in the Recommendation annexed to the present resolution as it may deem necessary in individual cases to serve the interests of safety of navigation;
6. REQUESTS the Maritime Safety Committee to keep the Recommendation under review in the light of experience gained in its application and to report as necessary to the Assembly.

ANNEX

RECOMMENDATION ON THE ESTABLISHMENT AND OPERATION OF NAVTEX SERVICES 1/

1 INTRODUCTION

1.1 NAVTEX provides ships with navigational and meteorological warnings and urgent information by automatic print-outs from a dedicated receiver.

Figure 1 illustrates the operation and the typical service.

1.2 NAVTEX is a component of the World-Wide Navigational Warning Service (WWNWS) adopted by Assembly resolution A.419(XI) and a requirement of the Global Maritime Distress and Safety System (GMDSS).

1.3 Details of existing NAVTEX services are published periodically in national publications and in volume II of the ITU List of Radio Determination and Special Service Stations.

2 PRINCIPAL FEATURES OF NAVTEX

2.1 The operational and technical characteristics of the system are given in CCIR Recommendation 540-1. Performance standards for shipborne narrow-band direct-printing equipment (NAVTEX) are prescribed in Assembly resolution A.525(13).

2.2 The principal features are as follows:

- .1 The service uses a single frequency (518 kHz)^{2/} on which coast stations transmit information in English on a time-sharing basis to prevent mutual interference. All necessary information is contained in each transmission.

1/ Unless stated otherwise, NAVTEX means an international system operating on the frequency 518 kHz.

2/ The World Administrative Radio Conference for the Mobile Services, 1987, allocated the frequencies 490 kHz and 4209.5 kHz for use in NAVTEX-type systems.

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- .2 The power of each coast station transmitter is regulated so as to avoid the possibility of interference between coast stations.
- .3 Dedicated NAVTEX receivers are used which have the ability to select messages to be printed, according to a technical code ($B_1 B_2 B_3 B_4$) which appears in the preamble of each message, and to reject messages other than certain essential classes of safety information which have already been received.
- .4 In order to ensure that ships using NAVTEX always receive the most vital information, receivers are unable to reject navigational warnings, meteorological warnings, search and rescue information and certain special warnings.
- .5 NAVTEX co-ordinators exercise control of messages transmitted by coast stations according to the information contained in each message and the geographical cover required. A user may thus choose to accept messages either from the single coast station transmitter which serves the sea area in which the ship is sailing, or from a number of coast station transmitters, as appropriate.

THE NAVTEX CONCEPT

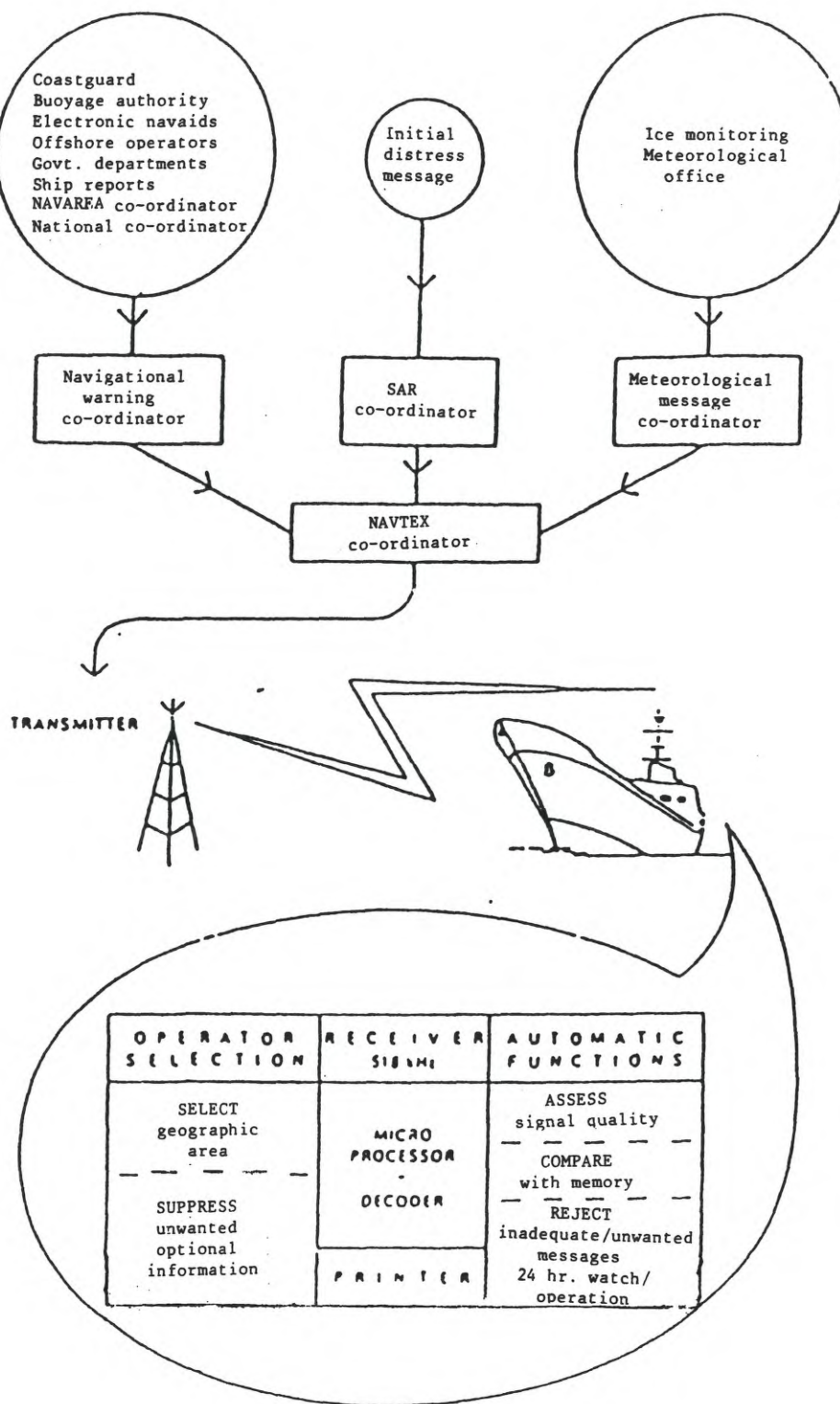


Figure 1

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3 THE TRANSMITTER IDENTIFICATION CHARACTER (B_1)

3.1 The transmitter identification character (B_1) is a single character identifying the transmitter coverage area and broadcasts which are to be accepted by the receiver or are to be rejected.

3.2 In order to avoid erroneous reception of transmissions from two coast stations having the same B_1 character, it is necessary to ensure that such coast stations have a wide geographical separation. This will be achieved by allocating B_1 characters in accordance with the basic scheme for allocation of transmitter identification characters by the Organization given in figure 2. Figure 2 shows how B_1 characters will be allocated in alphabetical sequence in each NAVAREA world-wide.

3.3 NAVTEX transmissions may be adjusted to provide a range of about 250 to 400 nautical miles. The minimum distance between two transmitters with the same B_1 identifier must be sufficient to ensure that shipborne NAVTEX equipment cannot receive from both transmitters at the same time. Close co-ordination between States in adjacent NAVAREAS will be necessary to achieve this separation. For this reason, national Administrations should request the advice of the Organization at an early stage in the planning of a new NAVTEX service. All proposals for B_1 allocations should be approved by the Organization before implementation.

IMPLEMENTATION OF THE NAVTEX SYSTEM AS A COMPONENT OF

NAVAREAS of the World-Wide Navigational Warning Service

The basic scheme for allocation of transmitter identification characters by the Organization

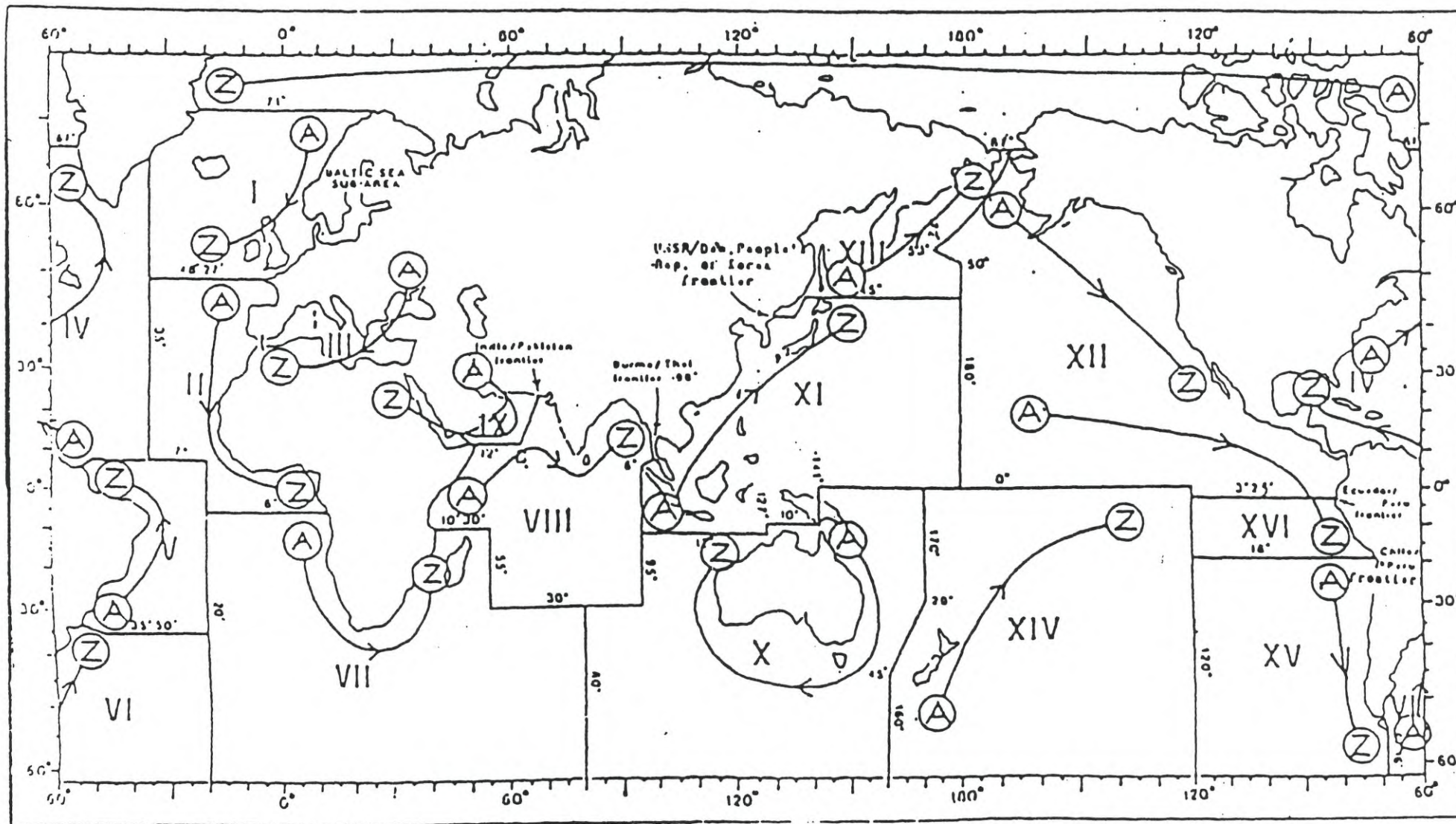


Figure 2

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4 ALLOCATION OF TRANSMISSION TIMES

4.1 In order to ensure the least possible interference between transmitting stations, the transmission schedules must take account of the relative geographical location of all NAVTEX coast stations within range.

4.2 Early co-ordination of transmission schedules will therefore be important when planning NAVTEX services.

4.3 Figure 3 illustrates the scheme for allocation of transmission schedules by the Organization. The scheme will be used to evaluate and recommend time schedules for each coast station transmitter of a proposed new service. Figure 3 shows the scheduled times (UTC) of a NAVAREA using four groups of transmitters. Each group has a potential capacity of 6 transmitters, each with 10 min transmission time allocated in every 4 h.

4.4 Only in exceptional circumstances would such a large number of coast stations be approved that a transmission time schedule of 10 min was necessary. Normally a longer transmission time would be available. However, the frequency should remain unused for a high percentage of the time to permit the immediate broadcast of vital information, e.g. search and rescue information, gale warnings, etc.

4.5 Proposals for allocation of time schedules to a coast station should be submitted to the Organization for approval.

SCHEDULED TIMES (UTC)						TRANSMITTER IDENTIFICATION CHARACTERS (B)																							
						Group 1						Group 2						Group 3						Group 4					
00	04	08	12	16	20	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
.10	-	-	-	-	-	■																							
.20	-	-	-	-	-		■																						
.30	-	-	-	-	-			■																					
.40	-	-	-	-	-				■																				
.50	-	-	-	-	-					■																			
01	05	09	13	17	21						■																		
.10	-	-	-	-	-							■																	
.20	-	-	-	-	-								■																
.30	-	-	-	-	-									■															
.40	-	-	-	-	-										■														
.50	-	-	-	-	-											■													
02	06	10	14	18	22												■												
.10	-	-	-	-	-													■											
.20	-	-	-	-	-														■										
.30	-	-	-	-	-															■									
.40	-	-	-	-	-																■								
.50	-	-	-	-	-																	■							
03	07	11	15	19	23																								
.10	-	-	-	-	-																								
.20	-	-	-	-	-																								
.30	-	-	-	-	-																								
.40	-	-	-	-	-																								
.50	-	-	-	-	-																								
04	08	12	16	20	24																								

Figure 3

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5 SUBJECT INDICATOR CHARACTER (B_2)

5.1 Information is grouped by subjects for NAVTEX broadcasts. Each subject is allocated a unique B_2 character indicating the type of message to be transmitted.

5.2 The B_2 character can be used to reject messages of a type which the ship does not require. The B_2 character is also used to identify messages which, because of their importance, may not be rejected (see paragraph 2.2.3).

5.3 The B_2 characters prescribed in CCIR Recommendation 540-1 should be used.

5.4 Special service B_2 characters may be allocated by the Organization for trials, for example for use as an optional means to provide a national language broadcast. National authorities should obtain the agreement of the Organization to all proposals for the use of special service B_2 characters. Such proposals should meet the following criteria:

- .1 The full English language service must remain unaffected.
- .2 Special service broadcasts should be transmitted only when time allows and with due regard to the necessity for the NAVTEX frequency to remain unused for a high percentage of the time (paragraph 4.4).
- .3 Special service broadcasts should be prepared exclusively for the intended purpose.

5.5 The Organization should be consulted whenever it is necessary to allocate new B_2 characters.

6 MESSAGE NUMBERING (B_3B_4)

6.1 Each NAVTEX message within a subject group (B_2) should be allocated a serial number (B_3B_4) between 01 and 99. This number will not necessarily relate to the series numbering in other radio navigational warning systems. On reaching 99, serial numbers should re-commence at 01 but avoid the use of serial numbers of messages still in force.

6.2 A shortage of numbers should, where possible, be alleviated by the allocation of messages to other relevant subject groups. It has been found that 99 messages are not always enough for navigational warnings and $B_2 = L$ may be used, when necessary, in addition to $B_2 = A$ for warnings in excess of 99.

6.3 Numbers in each subject group should be allocated by the responsible NAVTEX co-ordinator, i.e. the authority responsible for the selection of information to be broadcast by each NAVTEX transmitter. Each co-ordinator may have one or more transmitters under his control.

6.4 Certain messages may be allocated the B_3B_4 character "00". Messages carrying this character will always be printed if the broadcast containing such messages is identified to be accepted by the receiver (see paragraph 3.1) and its use should be strictly controlled. Therefore, the number "00" must only be used for vital messages such as an initial distress message. Routine messages and service messages should not be allocated the number 00. It should be borne in mind when considering use of the B_3B_4 "00", that receivers are unable to reject certain classes of vital safety information (i.e. B_2 characters A, B, D and L).

7 MESSAGE FORMAT

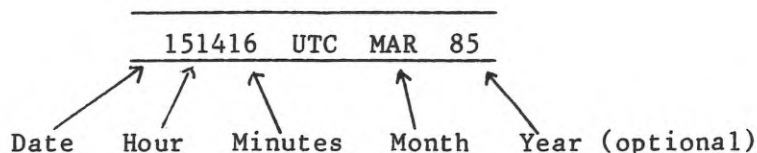
7.1 The format of all messages should be in strict accordance with figure 4. This shows the essential elements of the NAVTEX message which influence the operation of the receiver. Great care is required to avoid errors of syntax in the groups "ZCZC", " $B_1B_2B_3B_4$ " and 'NNNN' as they will cause receivers to operate incorrectly, which may well result in the loss of a vital message. Transmitting stations should be particularly aware of this when monitoring their own broadcasts.

7.2 Certain formats have been adopted for the textual content of NAVTEX messages. These contribute to the clarity and uniformity of the messages, and should be followed in all cases. They include:

- .1 The date, time (UTC) and month of origin may be given at the start of the message when this contributes to the value of the message as follows:

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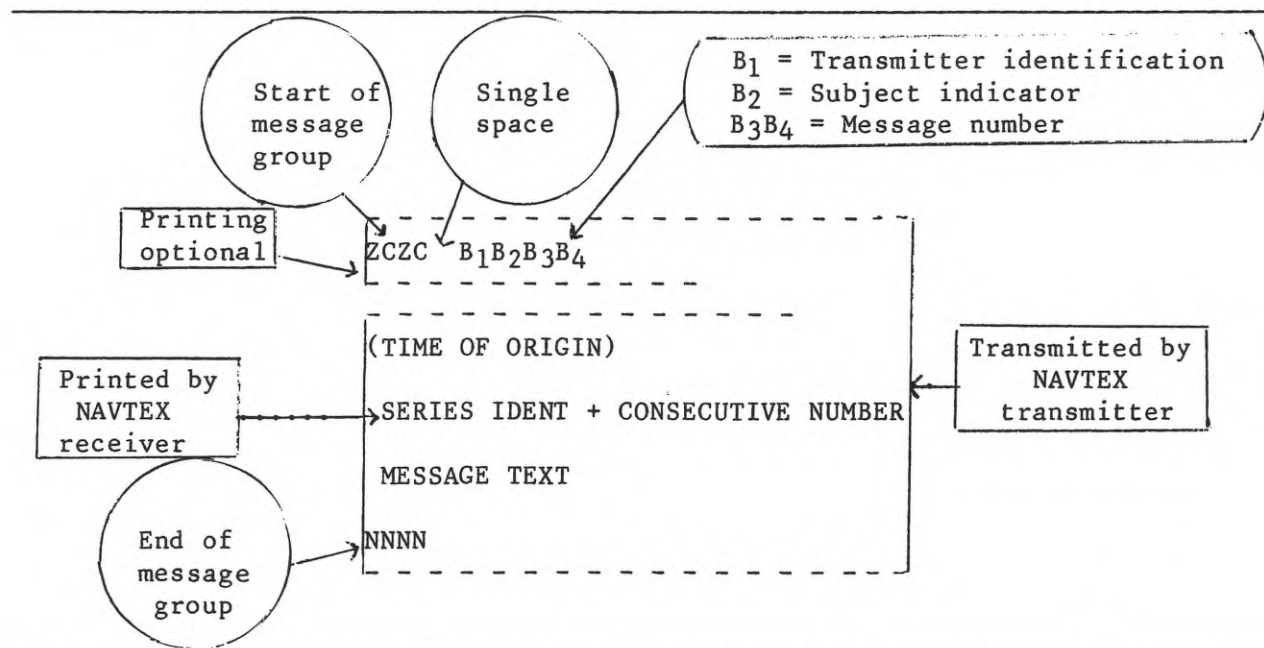
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The date, time and month of origin should always be followed immediately by a carriage return/line feed, so that it appears as a separate line at the start of the message text.

- .2 The first words of the text should invariably be message series identity and consecutive number. Note that this consecutive number is not the same as the NAVTEX message number (B_3B_4), but identifies the source of the report (e.g. NAVAREA III 274).
- .3 It has been found that the clarity of a chain of messages is improved by ensuring that the group 'NNNN' indicating the end of message appears on a separate line.

7.3 Figure 4 illustrates the standard format for NAVTEX messages:



Standard format for NAVTEX messages.

Figure 4

8 INFORMATION CONTROL

8.1 The time-shared nature of NAVTEX broadcasts imposes the need for strict discipline in controlling the information flow of each broadcast. To achieve this it is necessary to co-ordinate the messages in each B_2 subject at each transmitter. In general, all messages should be brief, clear and avoid duplication. Strict adherence to relevant guidelines such as those in Assembly resolution A.419(XI) is recommended, but certain additional operating procedures have also been found necessary:

- .1 Messages in each category should be broadcast in REVERSE order of receipt, with the latest being broadcast first.
- .2 Cancellation messages should be broadcast ONCE only. The cancelled message should be removed from the broadcast in which the corresponding cancellation message appears and the cancellation message should then be removed from the broadcast.
- .3 Navigational warnings
 - .3.1 Coastal warnings and NAVAREA warnings issued in accordance with Assembly resolution A.419(XI) which would be of concern to ships in the area allocated to the transmitter, should be included in the broadcast.
 - .3.2 Local warnings, as defined by Assembly resolution A.419(XI), should NOT be broadcast on NAVTEX.
 - .3.3 Warnings should normally be repeated at every scheduled transmission for as long as they remain in force.
 - .3.4 NAVTEX co-ordinators should arrange to receive appropriate NAVAREA warnings for inclusion in their broadcasts.
 - .3.5 Negative tidal surge and tsunami warnings (navigational warnings) should be broadcast 'on receipt' and at subsequent scheduled transmissions.

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.4 Meteorological messages

- .4.1 Gale warnings are provided by national meteorological authorities. They should be broadcast 'on receipt' and at the next routine schedule only.
- .4.2 Weather forecasts should normally be broadcast by NAVTEX twice each day. This service must be carefully co-ordinated where transmitters are geographically close together. It is important that, where practicable, the area addressed by a weather forecast should be similar to the area allocated to the NAVTEX transmitter.
- .4.3 Routine ice reports should normally be broadcast once a day.
- .4.4 Ice accretion warnings should normally be included in the NAVTEX ice report but when separately issued, treated as a meteorological warning using $B_2 = B$ and transmitted immediately on receipt and at the next routine schedule.

.5 Search and rescue information

- .5.1 NAVTEX broadcasts are not suitable for distress traffic. Therefore, only the initial distress message should be relayed to ships on NAVTEX using $B_2 = D$ in order to alert mariners to a distress situation. The use of $B_3B_4 = 00$ is appropriate for distress messages.
- .5.2 Requests for reports of ships overdue etc. should be broadcast as navigational warnings only when they satisfy the requirements of Assembly resolution A.419(XI). They should never be broadcast as $B_2 = D$ messages.
- .5.3 A single authority, which will normally be a maritime rescue co-ordination centre (MRCC), should be designated NAVTEX co-ordinator for search and rescue. Coast radio stations should discharge their responsibility for re-transmitting initial distress messages on NAVTEX by passing the message to

the designated SAR co-ordinator for broadcast on NAVTEX. This should not affect a coast radio station's responsibility for re-transmitting initial distress messages on other frequencies.

.6 Pilotage service messages

- .6.1 Character $B_2 = F$ messages should only be used for broadcasting temporary alterations to a pilotage service. They may include messages which notify ships of the temporary movement or suspension of a pilotage service owing to weather conditions, etc. The use of $B_2 = F$ is intended for messages providing information to ships approaching a port and should not be used for specific instructions to individual ships or pilots.

.7 Electronic navigational aid degradation

Unique B_2 characters are provided for all the principal types of electronic navigational aids. They should be used to advise mariners of significant degradation of an electronic navigational aid service. Short periods of transmission failure are not generally regarded as significant since, given prudent navigation, they do not impair safety. The following thresholds have been found to be appropriate for the majority of users:

- .7.1 DECCA - off air or multipulse failure $>1/2$ h
- .7.2 LORAN C - off air >1 h
- .7.3 OMEGA - off air >4 h, and polar cap absorption
- .7.4 SATNAV - off air >4 h

.8 No messages on hand

This facility may be used by transmitting stations to confirm the correct operation of receivers and transmitters at scheduled times when no messages are on hand for transmitting. In accordance with

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the simple philosophy of NAVTEX, the 'Q Code' group QRU should not be transmitted. Instead, the plain language text 'No messages on hand at radio' should invariably be used.

- .9 Use of abbreviations should be kept to a minimum and be strictly in accordance with internationally accepted usage.

9 PLANNING A NAVTEX SERVICE

9.1 When planning NAVTEX coverage for a new region, it is most essential to take account of the high level of local and international co-ordination required for the service. The principles which must be borne in mind are as follows:

- .1 Although NAVTEX coverage need not be implemented simultaneously over an entire region, it is necessary for the Organization to be provided with a draft regional scheme before any service is commenced. The region concerned will usually be a complete NAVAREA.
- .2 The minimum number of coast stations should normally be used to cover a region.
- .3 Each coast station should contribute to the overall service in the region in a co-ordinated way, bearing in mind the geographical area covered by other NAVTEX coast stations and the effective co-ordination and control of information to be transmitted.
- .4 Each coast station will usually provide all the information for a precisely defined sea area. In establishing a sea area full account should be taken of the character and volume of information needed to be transmitted and trading patterns of shipping in the region.
- .5 When limitations of resources affect the rate of establishment of NAVTEX services, every effort should be made first to implement the NAVTEX service in areas of highest shipping density.
- .6 The range of a NAVTEX transmitter depends on the transmitted power and local propagation conditions. The actual range achieved should be adjusted to the minimum required for adequate reception in the

NAVTEX area served, taking into account the needs of ships approaching from other areas. Experience has indicated that the required range of 250 to 400 nautical miles can generally be attained by transmitted power in the range between 100 and 1,000 W during daylight with a 60% reduction at night.

- .7 After choice of transmitter sites and allocation of service areas the main need for co-ordination lies in the assignment of B_1 characters and time schedules.
- .8 The national NAVTEX co-ordinator should make arrangements for a quality control organization in his area which should include both the message originating offices and the NAVTEX transmitting stations. This organization should aim to confirm, on a continuing basis, that:
 - Minimum power is used to achieve satisfactory range performance.
 - Time schedules are not exceeded.
 - The co-ordinated service is operating satisfactorily.

9.2 Guidance on these and the many other factors to be considered when planning NAVTEX services should be obtained at an early stage from the Organization.

10 LOGGING NAVTEX MESSAGES

The reception of weather forecasts or navigational warnings on NAVTEX need not be noted in the radio log. The NAVTEX receiver print-out may replace the log entries required by chapter IV of the 1974 SOLAS Convention.

11 INFORMATION FOR MARINERS AND PUBLICITY

11.1 The widest possible publicity should be given to the establishment of new NAVTEX services. In particular, every opportunity should be given to the electronics industry to participate in any relevant activity at an early stage to ensure that suitable receivers, which would satisfy any obligatory type approvals, are available when the system becomes operational.

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11.2 Administrations should ensure that mariners are fully informed of the establishment of a NAVTEX service by inclusion of full details in notices to mariners and radio lists. In addition, full details of the service agreed should be forwarded to the Organization, ITU and other authorities which produce international radio lists.

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