

NP283(1)

ADMIRALTY LIST OF RADIO SIGNALS

VOLUME 3, PART 1

2017/18

MARITIME SAFETY INFORMATION SERVICES

Europe, Africa and Asia
(excluding the Far East)

IMPORTANT - SEE RELATED ADMIRALTY PUBLICATIONS

Notices to Mariners (Annual, Permanent, Preliminary and Temporary); **ADMIRALTY Information Overlay (AIO)**; **Symbols and Abbreviations used on ADMIRALTY Paper Charts** (NP5011); **ADMIRALTY Guide to ENC Symbols used in ECDIS** (NP5012); **The Mariner's Handbook** (NP100, especially Chapters 1 and 2 on the use, accuracy and limitations of charts); **Sailing Directions** (Pilots); **List of Lights and Fog Signals**; **List of Radio Signals** and **Tide Tables** (or their digital equivalents).

KEEP CHARTS AND PUBLICATIONS UP TO DATE AND USE THE LARGEST SCALE CHART APPROPRIATE

PUBLISHED BY THE UNITED KINGDOM HYDROGRAPHIC OFFICE

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DIRECTIONS FOR UPDATING THIS VOLUME

Subsequent updates to this book will be included in Section VI of the Weekly Edition of ADMIRALTY Notices to Mariners, copies of which can be obtained from authorised ADMIRALTY chart agents, or from the UKHO Website www.admiralty.co.uk/msi

A cumulative list of updates is published quarterly in Section VI and provides a summary list of the entries in the current editions which have been updated. New or extensively altered material is intended to be pasted over the existing material. Shorter updates should be made in manuscript. The Weekly Edition number is shown on all updates. The appropriate indexes and diagrams should also be updated if necessary.

RECORD OF UPDATES

This Volume should only be used once fully updated by Section VI Notices to Mariners. The inclusion of updates in this Volume should be recorded in the following table:

NEW EDITION First Updates	
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Weekly Notices to Mariners (Section VI)

ANNUAL NOTICES TO MARINERS

Attention is called to the following ADMIRALTY Notices to Mariners which are published annually and contain information of particular interest to the users of ADMIRALTY List of Radio Signals:

- 03 Safety of British Merchant Ships in periods of peace, tension, crisis or conflict.
- 05 Firing Practice and Exercise Areas.
- 20 Mandatory Expanded Inspections - EU Directive 2009/16/EC.

The content of annual ADMIRALTY Notices to Mariners 04 is included in NP285, ADMIRALTY List of Radio Signals, Global Maritime Distress and Safety System (GMDSS).

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PREFACE

The 2018/19 edition of this ALRS Volume contains the latest information received by the UKHO.

All reasonable effort has been made to ensure that this Volume contains all of the information obtained and assessed by the UKHO by the date of publication. Information received after that date will be included in Section VI of the Weekly Edition of ADMIRALTY Notices to Mariners.

This edition supersedes the 2017/18 edition which is cancelled.

Mr John Humphrey
Chief Executive
United Kingdom Hydrographic Office

PURPOSE OF ADMIRALTY RADIO SIGNALS

ADMIRALTY List of Radio Signals (ALRS) provides a comprehensive source of information on all aspects of Maritime Radio Communications. The purpose of this Volume is to provide information on the following topics:

Maritime Weather Services

Maritime Safety Information Broadcasts

Worldwide NAVTEX and SafetyNET Information

Submarine and Gunnery Warning Details

Radio-Facsimile Stations, Frequencies and Index of Map Areas

HOW TO REPORT NEW OR SUSPECTED DANGERS TO NAVIGATION OR CHANGES OBSERVED IN AIDS TO NAVIGATION

A Hydrographic Note, Form H102, with instructions, is contained in the back of the Weekly Edition of ADMIRALTY Notices to Mariners. This form can also be downloaded from the UKHO Website. The form should be used to report all observations, including new or suspected dangers to navigation or changes to aids to navigation.

FEEDBACK

Feedback on this publication is most welcome and should be addressed to Customer Services and marked for the attention of ADMIRALTY List of Radio Signals and Marketing.

DRAFT

UKHO CONTACT DETAILS

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Enquiries regarding the content of ADMIRALTY List of Radio Signals should be made to the contact listed above clearly stating "For the attention of ALRS".

HOW TO OBTAIN ADMIRALTY CHARTS AND PUBLICATIONS

A complete list of ADMIRALTY Charts and Publications (both paper & digital), together with a list of authorised ADMIRALTY chart agents for their purchase, is contained in the "*Catalogue of ADMIRALTY Charts and Publications*" (NP131), published annually. The ADMIRALTY Digital Catalogue is available to download free of charge from the UKHO Website.

Details of authorised ADMIRALTY chart agents can also be obtained free of charge from Customer Services.

RELATED ADMIRALTY PUBLICATIONS AND THEIR CONTENTS

ADMIRALTY Notices to Mariners (NMs):

- Weekly Notices to Mariners
 - Navigationally significant changes to nautical charts, lights and fog signals, Radio Signals and Sailing Directions
 - Reprint of all Radio Navigational Warnings in force and a summary of charts and publications being published.
- Cumulative List of Notices to Mariners
 - Published in January and July of each year
 - A list of all nautical charts available and a complete list of all NMs affecting them during the previous two years.
- Annual Summary of Notices to Mariners
 - Published at the beginning of the year in two parts
 - Annual Notices to Mariners, Temporary and Preliminary NMs
 - Cumulative summary of updates to Sailing Directions.

For more information, please visit www.admiralty.co.uk/msi

The Mariner's Handbook:

- Information on nautical charts and their use
- Operational information and regulation
- Tides and currents
- Characteristics of the sea
- Basic meteorology
- Navigation in ice
- Hazards and restrictions to navigation

ADMIRALTY Sailing Directions (Pilots):

- Waterway directions
- Port facilities
- Directions for port entry
- Navigational hazards
- Buoyage
- Climate information.

ADMIRALTY List of Radio Signals:

- Maritime Radio Stations
- Radio Aids to Navigation
- Time
- Maritime Safety Information
- Radio Weather Services
- Global Maritime Distress and Safety System (GMDSS)
- Pilot Services
- Vessel Traffic Services
- Port Operations
- Ship Reporting Systems.

ADMIRALTY List of Lights:

- Lighthouses, lightships, fog signals and other lights of navigational significance.
- Equivalent foreign language light descriptions
- International number
- Characteristics
- Light elevation and structure height in metres
- Range of light
- Description of structure.

ADMIRALTY Tidal Publications:

- Tide Tables
 - Daily predictions of time and height of high and low waters at Standard Ports
 - Time and height differences for Secondary Ports
 - Harmonic constants where known
 - Supplementary Tables including Land Levelling to Chart Datum connections where known.
- Tidal Stream Atlases
 - Major tidal streams for selected waters of north west Europe
 - Direction and rate of tidal streams at hourly intervals.

For more information, please visit www.admiralty.co.uk

GENERAL INFORMATION

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Times

Times quoted are in Universal Time (UT) unless otherwise stated, and are reckoned from 0000 (midnight) to 2400. The term UT is gradually replacing Greenwich Mean Time (GMT); the abbreviation UT(GMT) will be used to indicate the general equivalence of the two terms. GMT will be retained as the term for the time within Standard Time Zone 0 (Zero).

Geographical Positions

Geographical positions of radio aids to navigation are normally given by the controlling authority. In some cases they are in accordance with the ADMIRALTY Chart. If bearings are taken to radio aids, it should be remembered that, in some cases, the positions quoted are only approximate.

Radio aids to navigation are ascribed to a coastal state purely to indicate to the mariner where to look for the feature. This publication is not an authority on either the ownership of such or sovereignty of features on which they are constructed.

Bearings

Bearings are given from seaward and refer to the true compass.

Names

Names in ADMIRALTY List of Radio Signals are spelt in accordance with the principles and systems approved by the Permanent Committee on Geographical Names for British Official Use.

A second name may be given in parentheses in the following circumstances:

1. if the retention of a superseded rendering will facilitate cross-reference to related publications;
2. if, in the case of a name that has changed radically, the retention of the former one will aid recognition;
3. if it is decided to retain an English conventional name in addition to the present official rendering.

Diagrams

Diagrams will be updated by weekly Notices to Mariners when significant changes are required. Otherwise diagrams will be corrected for the next new edition.

Telephone Numbers

National Direct Dialling (NDD) prefixes are shown in brackets (0). This digit should only be dialled when calling from within that country.

Reporting Changes

In the interests of safe navigation, mariners and others are invited to notify the United Kingdom Hydrographic Office (UKHO) of any information which would be useful towards the updating of ADMIRALTY Charts and Publications. Early advice, with supporting particulars of newly discovered dangers, the establishment of, or changes to any aids to navigation is specially requested. Copies of forms H102, H102a and H102b, designed for such notification are contained in the weekly editions of ADMIRALTY Notices to Mariners. Additional copies can be obtained free of charge from the UKHO. In addition, user feedback on our products in terms of format, content, availability and any other aspects is always welcome.

General Disclaimer

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Laws and Regulations Appertaining to Navigation

While, in the interests of the safety of shipping, the UKHO makes every endeavor to include in its hydrographic publications details of the laws and regulations of all countries appertaining to navigation, it must be clearly understood:-

- (a) that no liability whatever can be accepted for failure to publish details of any particular law or regulation.
- (b) that publication of the details of a law or regulation is solely for the safety and convenience of shipping and implies no recognition of the domestic or international validity of the law or regulation.

ABBREVIATIONS AND GLOSSARY

The following list gives the meaning of abbreviations and a glossary of terms and definitions used in ALRS products.

A	Aerodrome, airfield, etc.
A1A	Continuous wave telegraphy, Morse code.
A1B	Amplitude modulation telegraphy with automatic reception, without using a modulating subcarrier.
A2A	Telegraphy by the on-off keying of a tone modulated carrier, Morse code: double sideband.
A3E	Telephony using amplitude modulation: double sideband.
A9W	Composite emission: double sideband e.g. a combination of telegraphy and telephony.
AAIC	Accounting Authority Identification Code.
Absorption	The loss of energy from a radio wave. Mostly occurs in the D region.
ACO	Aircraft Co-Ordinator.
ADRS	ADMIRALTY Digital List of Radio Signals.
AFTN	Aeronautical Fixed Telecommunications Network.
AIS	Automatic Identification System.
AIS SART	AIS Search And Rescue Transmitter.
Alert data	Generic term for COSPAS-SARSAT 406 MHz alert data derived from 406 MHz distress beacon information. Alert data may contain beacon position and other beacon information such as beacon identification data and coded information.
Almanac	A set of parameters included in the GPS satellite navigation message that is used by a receiver to predict the appropriate location of a satellite.
ALRS	ADMIRALTY List of Radio Signals.
AM	Amplitude Modulation.
AMVER	Automated Mutual-Assistance Vessel Rescue system.
AOH	After Office Hours.
AOR-E	Atlantic Ocean Region (East), coverage area of Inmarsat satellite.
AOR-W	Atlantic Ocean Region (West), coverage area of Inmarsat satellite.
approx	Approximate.
Apr	April.
APR	Automated Position Report
ARCC	Aeronautical Rescue Coordination Centre. A centre nominated by the national SAR agency to which an Inmarsat Land Earth Station (LES) normally routes distress calls.
ARQ	Automatic Repetition reQuest (mode of telex operation for point to point working between two stations).
ASCII	American Standard Code for Information Interchange, see Kilobit(s).
ASIC	Application Specific Integrated Circuit.
ASM	Application Specific Messages. An extension of AIS whereby the VDL is used for additional purposes such as weather, tides, planned routes, pilotage etc.
ATBA	Area To Be Avoided.
AtoN	Aid to Navigation.
ATS	Air Traffic Services
Aug	August.
AUT	Automatic Station or observation made by automatic equipment
Autolink RT	Any vessel fitted with Autolink RT equipment is able to make a radiotelephone call, using direct dialling on VHF, MF or HF frequencies, through any coast radio station operating an Autolink RT service.
AVISO	Notice.
AVURNAVE	AVisos URgentes a los NAVegantes.
AVURNAVS	AVis URgents aux NAVigateurs.
AWOS	Automatic Weather Observing System.
AWS	Automatic Weather Station.
Baud	A measure of the rate of transfer of binary messages (1 bit/second = 1 baud for most purposes).
BBC	British Broadcasting Corporation.
BC Code	Code of safe practice for Solid Bulk Cargo.
BCD	Binary Code Decimal.
Bcst	Broadcast.
Bit	A single unit of binary data (see Kilobit).
BMS	Bulletins Météorologique Spéciaux.
Bn	Beacon.
BOA	Beam Over All.
bps	Bits per second (transmission rate).
BPSK	Bi Phase Shift Keying.

ABBREVIATIONS AND GLOSSARY

brg	bearing.
Broadcasting-satellite service	A radiocommunication service in which signals transmitted or retransmitted by space stations are intended for direct reception by the general public.
Broadcasting service	A radiocommunication service in which the transmissions are intended for direct reception by the general public.
BSH	Bundesamtes für Seeschifffahrt und Hydrographie.
Byte	The collection of bits that make up a binary word.
C	Coastal station
°C	Degrees Celsius.
CCR	Coast Radio Station — Spain.
CDMA	Code Division Multiple Access.
CES	Coast Earth Station. See LES.
CG	Coastguard.
CGAS	Coastguard Aviation Station.
CGOC	Coastguard Operations Centre
Ch, Ch/s	Channel (As in VHF Ch).
Cm	Centimetre.
CNIS	Channel Navigation Information Service. A 24 hour information service provided by MRCC Dover for vessels using the Dover Strait TSS.
CNW	Coastal Navigational Continued Warning.
COLREGS	Convention on the International Regulations for Preventing Collisions at Sea, 1972.
COMMCOM	Communications Command (formally CAMSLANT). This is the central controlling station for all US Coastguard HF broadcasts and communications.
Cont	Continuous.
(Cont)	Continued.
Contracting Government	A signatory to the 1974 Safety of Life at Sea Convention.
COSPAS-SARSAT system	A satellite - aided search and rescue system based on low-altitude near-polar-orbiting satellites and designed to locate distress beacons transmitting on the frequencies 406 MHz and 121.5 MHz. COSPAS is an acronym for the Russian words " CO asmicheskaya S istyema PO iska AV ariynikh S udov", which translates to "Space System for the Search of Vessels in Distress". SARSAT is an acronym for Search And Rescue Satellite-Aided Tracking . The system uses 4 geosynchronous satellites. GEOSAR's and 5 low-earth polar orbit satellites LEOSAR'S.
CPRNW	The Commission on Promulgation of Radio Navigational Warnings.
CROSS	Centres Régionaux Opérationnels de Surveillance et de Sauvetage (Regional centre of operations for surveillance and maritime rescue MRCC) in France.
CRS	Coast Radio Station. A land station in the maritime mobile service.
CSS	Coordinator Surface Search.
D7W	Emission in which the main carrier is amplitude and angle, modulated either simultaneously or in a pre-established sequence combined with two or more channels containing quantized or digital information.
dB	decibels.
dBW	decibel watts.
Dec	December.
DF	Direction-finding.
DGNSS	Differential Global Navigation Satellite Systems.
DGPS	Differential Global Positioning System. For a full explanation see the SATELLITE NAVIGATION SYSTEMS section.
Distress Alerting	Rapid and successful reporting of a distress incident to a unit which can provide or coordinate assistance.
Distress Call	The spoken word "MAYDAY" made three times followed by the name of the vessel three times which prefaces the distress message.
Distress Message	Consists of the following; The distress signal MAYDAY, the name and or callsign of the vessel in distress, the vessel's position, the nature of the distress, the type of assistance required, and any other information which may assist in facilitating the rescue.
Distress Phase	A situation wherein there is a reasonable certainty that a vessel or other craft, including an aircraft or a person, is threatened by grave or imminent danger and requires immediate assistance.
Distress-Priority Request Message	A ship-to-shore request message containing priority indication 3, the highest priority of ship-to-shore calls.
DOM-TOM	Départements d'outre-mer — Territoires d'outre-mer.
D Region	The lowest region of the ionosphere where most HF absorption occurs. Present during daylight hours only.

ABBREVIATIONS AND GLOSSARY

DSC	Digital Selective Calling system. A technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations utilising HF, MF and VHF bands.
DSHA	Dangerous Substances in Harbour Areas.
DST	Daylight Saving Time. For a full explanation see the LEGAL TIME section.
DUT1	Is the value of the predicted difference between UTC and UT1. For a full explanation see the UNIVERSAL TIME and RADIO TIME SIGNALS sections.
DWD	Deutscher Wetterdienst.
DWT	Dead Weight Tonnage.
E	East.
ECDIS	Electronic Chart Display and Information Service.
EEZ	Exclusive Economic Zone.
EGC	Enhanced Group Calling. This system enables information providers to send messages for selective reception by multiple Inmarsat C terminals, located anywhere in one of the four Ocean Regions.
EMSA	European Maritime Safety Agency.
ENID	EGC Network Identification Code used in the EGC FleetNET Service.
Ephemeris data	Tabulated information from which the location of a satellite (e.g.: COSPAS-SARSAT) relative to the Earth may be determined for any time within a specified time interval.
EPIRB	Emergency Position-Indicating Radio Beacon. A station in the mobile service, the emissions of which are intended to facilitate search and rescue operations.
EPIRB registration database	A register established and maintained for the purpose of: (a) establishing a readily accessible and up-to-date satellite EPIRB data register containing essential SAR information particular to individual EPIRBs for the use by SAR authorities; and (b) providing readily accessible access to essential SAR data by recognized SAR authorities in the processing of distress situations.
ESV	Eath Station on board a vessel.
ETA	Estimated Time of Arrival.
ETD	Estimated Time of Departure.
EU	European Union.
ext	Extension.
°F	Degrees Fahrenheit.
F1B	Single channel using frequency modulation containing quantised or digital information without the use of a modulating sub carrier. Frequency shift keying, used in DSC systems.
F3E	Telephony using frequency modulation.
Fax	Facsimile.
FDPSO	Floating, Drilling, Production, Storage and Offloading.
Feb	February.
FEC	Forward Error Correction.
FIR	Flight Information Region.
FleetNET	An Inmarsat EGC broadcast facility.
FM	Frequency Modulation.
FPSO	Floating, Production, Storage and Offloading.
Fri	Friday.
FSO	Floating, Storage and Offloading.
FSK	Frequency Shift Keying.
FTP	Anonymous File Transfer Protocol (INTERNET).
Fx	Frequency.
G2B	Phase modulation (automatic reception). A single channel containing quantized or digital information with the use of modulating sub-carrier.
G3E	Phase modulation telephony.
GBAS	Ground Based Augmentation System.
General communications	Those communications between ship stations and shore-based stations which concern the management and operation of the ship, normally taken to mean public correspondence to the exclusion of safety, distress and urgency messages. These communications may be conducted on the appropriate frequencies.
GEOSAR	COSPAS-SARSAT GEostationary Orbiting Search And Rescue satellite system.
Geostationary-Satellite Orbit	The orbit of a geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator.

ABBREVIATIONS AND GLOSSARY

GHz	Gigahertz.
GLA	General Lighthouse Authority.
GLONASS	GLO bal'naya NA vigatsionnaya S putnikovaya S istema.
GMDSS	G lobal M aritime D istress and S afety S ystem; a global communications service based upon automated systems, both satellite based and terrestrial, to provide distress alerting and promulgation of maritime safety information for mariners.
GMPRS	Geo-mobile Packet Radio Service.
GMT	Greenwich Mean Time.
GNSS	Global Navigation Satellite System.
GPS	Global Positioning System.
GroundWave	The radio wave which propagates close to the Earth's surface. Severe signal losses due to ground resistance limit the range of ground waves to about 100 km over land and 300 km over sea for the lowest HF frequencies. The ground waves for the higher HF frequencies cover much shorter distances.
GSM	Global System for Mobile Communications.
gt	Gross Tonnage.
h	Hours.
H	Heliport.
H+...	Commencing at...minutes past the hour (UTC).
H24	Continuous.
H3E	Telephony: single sideband, full carrier.
H9W	Composite emission: single sideband, full carrier; composite system with one or more channels containing quantized or digital information together with one or more channels containing analogue information (e.g. combination of telegraphy and telephony).
HAZREP	HAZardous incident REPort. Near miss incident or breach of the COLREGS.
HAZMAT	HAZardous MATerial. Reporting requirements for vessels carrying dangerous or polluting cargoes.
Hd	Head.
HF	High Frequency (3 - 30 MHz).
Hi+	At...minutes past odd hours (UTC).
HJ	Day service only.
HM	Her Majesty's.
HMCG	Her Majesty's Coastguard.
HN	Night service only.
Hp+	At...minutes past even hours (UTC).
hPa	Hectopascal; unit of pressure used in meteorological work, supersedes the millibar (1 mb = 100 pascals = 1 hPa).
Hr	Harbour.
Hr Mr	Harbour Master.
HSD	High Speed Data.
HW	High Water.
HX	No specific hours or fixed intermittent hours.
HY/A	Seaplane base
HYDROLANT	US Navigational Warnings for the Atlantic and contiguous areas outside NAVAREA IV.
HYDROPAC	US Navigational Warnings for areas outside Navarea XII.
Hz	Hertz.
I	Island.
IAC	International Analysis Code.
IALA	International Association of Lighthouse Authorities.
IAMSAR	International Aeronautical and Maritime Search And Rescue Manual. This manual is published every three years and is a mandatory publication for all SOLAS vessels.
IBC Code	International Bulk Carriers Code, means the International Code for construction and equipment of Ships carrying dangerous chemicals in bulk.
ICAO	International Civil Aviation Organization.
Ident	Identification Signal.
IERS	International Earth Rotation Service.
IHO	International Hydrographic Organization.
IMDG Code	International Maritime Dangerous Goods Code.
IMN	Inmarsat Mobile Number.
IMO	International Maritime Organization.
IMSO	International Mobile Satellite Organization.

ABBREVIATIONS AND GLOSSARY

INF Code	International code for the safe carriage of Irradiated Nuclear Fuel.
Inmarsat	The organisation established by the Convention on the International Mobile Satellite Organization (Inmarsat) adopted on 3 September 1976.
Inmarsat C	Operating since 1991 to compliment Inmarsat A, provides a global low cost two-way data communications network using a small terminal and omni-directional antenna - suitable for vessels of any size, low power-consumption. This system provides the services of global two-way store-and-forward messaging, distress alerting, reception of MSI, EGC SafetyNET and FleetNET. Inmarsat C is capable of data reporting and polling and is used extensively for SSAS and LRIT reporting.
Inmarsat Fleet	F33/F55/F77 based on approximate antenna size. F77 has GMDSS approval and an advanced voice distress safety system. F77 and F55 offer communication including High speed Mobile ISDN (Integrated Services Derived Network) and MPDS (Mobile Packet Data Service) an "always connected" service. F77 runs ISDN packet data - 64/128kbps. F33 has an integrated global voice service, a spot beam integrated data service running at a speed of 9V6kbps and an MPDS service.
Inmarsat FleetBroadband	Provides broadband and voice services simultaneously on a global basis. A compact antenna used in conjunction with three different terminal types can offer standard IP of up to 432kbps, and streaming IP of up to 256 kbps. A distress facility is standard for all terminals.
Inmarsat GAN	(Global Area Network) supporting high speed data, ISDN compatible service @ 64 kbit/s.
Inmarsat mini-C	mini-C offers the same primary functions as Inmarsat C through a lower-power terminal. It is also GMDSS compatible and meets the requirements for Ship Security Alert Systems (SSAS).
Inop	Inoperative.
Int	International.
International Alphabet Number 5 (IA5)	(Also known as ASCII, IRA5 & ISO646) — a standard alpha-numeric character set based on 7-bit binary codes.
International Atomic Time	see TAI.
International DSC frequencies	Frequencies designated in the Radio Regulations for exclusive use for DSC on an international basis.
International NAVTEX Service	The coordinated broadcast and automatic reception of Maritime Safety Information by means of narrow-band direct-printing. See also: NAVTEX.
IOPP	International Oil Pollution Prevention.
IOR	Indian Ocean Region, coverage area of Inmarsat satellite.
IPS	Ionospheric Prediction Service.
IR	Infra-red.
ISDN	Integrated Service Digital Network.
ISL	Interstation Signalling Links, used to pass information between LESs and the NCSs in an Ocean Region.
ISPS	International Ship and Port facility Security. The IMO adopted changes to SOLAS in December 2002, as part of agreeing the new ISPS code, within the changes, a Ship Security Alert System (SSAS) was specified. The ISPS Code came into effect on 1 July 2004.
ISSC	International Ship Security Certificate.
ITOFAR	Interrogated Time Offset Frequency Agile Racon.
ITU	International Telecommunication Union.
ITZ	Inshore Traffic Zone.
J2B	Single sideband suppressed carrier containing quantised or digital information with the use of a modulating sub carrier used in DSC systems.
J3E	Telephony using amplitude modulation: single sideband, suppressed carrier.
Jan	January.
JCG	Japan Coast Guard.
JCOMM	The Joint WMO-IOC Technical Commission on Oceanography and Marine Meteorology.
JRCC	Joint Rescue Coordination Centre. A Rescue Coordination Centre responsible for both aeronautical and maritime search and rescue.
Jul	July.
Jun	June.
kbps	kilobit per second.
kHz	Kilohertz.
Kilobit (Kbits)	1 Kbit = 1024 bits = 128 characters (a character in ASCII is a letter, digit or a special character, represented by a byte or a group of 8 bits). This code is used in computer-to-computer communication.
km	Kilometre(s).
kW	Kilowatt(s).
L	Lightship
L1	GPS primary frequency, 1575.42 MHz.

ABBREVIATIONS AND GLOSSARY

L2	GPS secondary frequency, 1227.60 MHz.
LANBY	Large Navigational Buoy.
Lat	Latitude.
LBP	Length Between Perpendiculars.
Ldg	Leading.
LEO	Low Earth Orbit.
LEOSAR	COSPAS-SARSAT Low Earth Orbit Search and Rescue polar orbiting satellite system.
LES	Land Earth Station. An earth station in the fixed-satellite service or, in the maritime mobile-satellite service, located at the specified fixed point on land to provide a feeder link for the maritime mobile-satellite service.
LF	Low Frequency (30 - 300 kHz).
LH	Lighthouse
LOA	Length Over All.
Locating	The finding of ships, aircraft, units or persons in distress.
Locating signals	Transmissions intended to facilitate the finding of a mobile unit in distress or the location of survivors using DF or 9 GHz radar.
Londonlength	Approximate length between the stem and the stern x 96%.
Long	Longitude.
LORAN	LOng RANge Navigation.
LORAN-C	LOng RANge Navigation-C. This is a low frequency electronic position fixing system.
LPG	Liquefied Petroleum Gas.
LPS	Local Port Service.
LRIT	Long Range Identification and Tracking. The new regulation on LRIT is included in SOLAS Chapter V on Safety of Navigation. The Maritime Safety Committee (MSC 81), adopted a new SOLAS Amendment on LRIT (MSC.202 (81)). This amends SOLAS Chapter V, Regulation 19-1 and requires that ships shall be fitted with equipment to transmit automatically the LRIT information (ship's ID, position, date/time of position). LRIT data can be provided, using Inmarsat C, mini-C or D+
LT	Local Time.
Lt	Light.
Lt F	Light Float.
Lt Ho	Light House.
Lt V	Light Vessel.
LUT	Local User Terminal. A ground receiving station which receives alert data from COSPAS and SARSAT satellites.
LW	Low Water.
m	Metre(s).
M	Mountain Station
MAFOR	Maritime Forecast Code.
Mar	March.
MAREP	Mariner Reporting Program.
Maritime Distress Channel	An Inmarsat satellite channel between a ship in distress and a Land Earth Station.
Maritime mobile service	A mobile service between coast stations and ship stations, or between ship stations, or between associated on board communication stations; survival craft stations and Emergency Position-Indicating Radiobeacon (EPIRB) stations may also participate in this service.
Maritime mobile-satellite service	A mobile-satellite service in which Mobile Earth Stations are located onboard ships; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service.
Maritime SAR plan	A Search and Rescue plan developed by coastal States.
MARPOL	International Convention for the Prevention of Pollution from Ships, 1973.
MAS	Maritime Assistance Service.
Mar	March.
MBM	Multi Buoy Mooring.
MCA	Maritime and Coastguard Agency.
MCC	Mission Control Centre. A COSPAS-SARSAT ground system element which receives alert data from its local user terminal(s) and distributes that information to affiliated SAR points of contact or forwards it to other MCCs. The MCC may also receive alert data from another MCC and receive and distribute COSPAS-SARSAT system information.
MCC service area	The area for which an MCC accepts responsibility for the distribution of COSPAS-SARSAT alert data. The service area includes sub-areas serviced by SAR points of contact (SPOCs).
MCS	Master Control Station.
MCTS	Marine Communications and Traffic Services.

ABBREVIATIONS AND GLOSSARY

MDR	Marine Domain Awareness
MEDILINK	MEDical LINK call.
MENAS	Middle East Navigation Aids Service.
MES	Mobile Earth Station — Inmarsat device installed on a ship (or on fixed installation in a marine environment) to enable the user to communicate to and from shore-based subscribers, via a selected satellite and LES.
Met	Meteorological
METAREA	METeorological AREA: Short title of a meteorological service area, limits similar to NAVAREAs within the World-Wide Navigational Warning Service.
MF	Medium frequency (300 - 3000 kHz).
MGN	Marine Guidance Note. Issued by the MCA.
MHz	Megahertz.
MID	Maritime Identification Digits.
MIN	Marine Information Note. Issued by the MCA.
min(s)	Minute(s).
MKD	Minimum Keyboard Display.
MMSI	Maritime Mobile Service Identity.
MOB	Man overboard.
Mon	Monday.
MOU	Memorandum of Understanding.
MPDS	Mobile Packet Data Service.
MRCC	Maritime Rescue Coordination Centre.
MRSC	Maritime Rescue coordination Sub-Centre.
ms	Millisecond(s).
m/s	Metres per Second.
MSI	Maritime Safety Information. Navigational and meteorological warnings, meteorological forecasts, distress alerts and other urgent safety related information broadcast to ships.
MSK	Minimum Shift Keying.
MSL	Mean Sea Level.
MSLP	Mean Sea Level Pressure.
MSN	Merchant Shipping Notice. Issued by the MCA.
mt	Metric Tonnes.
Multipath	Signal arrival at a receiver's antenna by way of two or more different paths such as direct, line-of-sight path and one that includes reflections from nearby objects.
N	North.
n mile	International nautical mile.
n/a, N/A	Not Applicable.
National Hydrographic Office	A National organisation responsible for collecting and distributing navigational warnings.
National Meteorological Office	A National organisation responsible for collecting and distributing meteorological warnings and forecasts.
NAVAREA	NAVigational AREA: One of the sea areas into which the world's oceans are divided for the dissemination of navigational and meteorological warnings.
NAVAREA warning	Long- range warning broadcasts issued by an area coordinator of the world-wide navigational warning service for his area and broadcast by CRS(s) or LES(s) to cover the whole of the area, for which the area coordinator is responsible, and parts of an adjacent area.
NAVDAT	A digital system for the broadcasting of Navigational Data on the 500 kHz frequency. ITU-R M.2010 refers.
NAVIP	Navigational Warning (Russia). NAVIPs contain information about dangers to navigation in the coastal waters of countries other than Russia and the high seas areas. NAVIPs are broadcast in Russian.
NAV-msg	Navigation Message. A 37,500-bit data message included in the GPS signal. The message, sent at a rate of 50 bits per second, includes the satellite ephemeris, clock data, almanac and other information about the satellites and their signals.
NAVTEX	Narrow-Band Direct-Printing telegraphy system for transmission of navigational and meteorological warnings and urgent information to ships. See also: International NAVTEX Service.
NAV warning	NAVAREA warning.
NBDP	Narrow-Band Direct-Printing; automated telegraphy as used by the NAVTEX system and telex-over-radio.
NCC	Network Control Centre.
NCS	Network Coordination Station (for Inmarsat).
NCSR	IMO Sub-committee for Navigation, Communications and Search & Rescue.
NE	North East.
NM	Notice to Mariners.

ABBREVIATIONS AND GLOSSARY

NMOC	National Maritime Operations Centre
Nov	November.
NP	Nautical Publication.
NS or ns	Nanosecond.
NSR	Northern Sea Route.
nt	Net Tonnage.
NW	North West.
OBS	The station accepts messages concerning weather observations by ships.
OCC	Operations Control Centre (for Inmarsat).
Occas	Occasional.
Oct	October.
OFCOM	Office of Communication.
On-scene communications	Communications between the ship in distress and assisting units.
OSC	On-Scene Coordinator. The commander of a rescue unit designated to coordinate surface search and rescue operations within a specified search area.
OTF	Optimum Transmitting Frequency.
P	Pilot-balloon; upper wind observations by optical tracking of a free balloon
PA	Position Approximate.
Paired frequencies	Frequencies which are associated in pairs; each pair consisting of one transmitting and one receiving frequency.
PEC	Pilotage Exemption Certificate.
PFSO	Port Facility Security Officer.
PLB	Personal Locator Beacon.
PMO	Port Meteorological Office(r).
PNT	Position, Navigation and Timing.
POB	Persons On Board — total number of.
Polar Orbiting Satellite Service	A service which is based on polar orbiting satellites which receive and relay distress alerts from satellite EPIRBs and which provides their position.
POR	Pacific Ocean Region, coverage area of Inmarsat satellite.
Port Operations Service	A maritime mobile service in or near a port between coast stations and ship stations or between ship stations, in which messages are restricted to those relating to the operational handling, the movement and safety of ships and, in emergency, to the safety of persons. It does not include public correspondence.
Positioning	Establishing the geographical place of the unit in distress (normally expressed in degrees and minutes of latitude and longitude).
PRIP	Coastal Warning (Russia). PRIPs contain information for the safety of navigation in the coastal waters of Russia and the Arctic Ocean. PRIPs are broadcast by maritime radio stations in Russian. NAVTEX coastal warnings are transmitted in English.
PSK	Phase Shift Keying.
PSTN	Public switched Telephone Network.
Pt	Point.
PTTI	Precise Time and Time Interval.
Public Correspondence	Any telecommunication which the offices and stations must, by reason of their being at the disposal of the public, accept for transmission.
PV	Pilot Vessel.
QHM	Queen's Harbour Master.
R	Radiosonde; atmospheric pressure, temperature and humidity observations in the upper air obtained by electronic means.
Racon	RAdar BeaCON.
Radiolocation-Satellite Service	A radiodetermination satellite service used for the purpose of radiolocation.
Radio Regulations	Means the Radio Regulations annexed to, or regarded as being annexed to, the most recent International Telecommunication Convention which is in force at any time.
RANP	Regional Air Navigation Plan
RCC	Rescue Coordination Centre. A unit responsible for promoting efficient organisation of search and rescue (SAR) services and for coordinating the conduct of SAR operations within a SAR region.

ABBREVIATIONS AND GLOSSARY

RCF	Remote Communications Facility. This is a term used by the US Coastguard to describe HF radio stations that are remotely controlled by Communications Command (COMMCOM) – (NMN).
Rep	Reported.
Rescue unit	A unit composed of trained personnel provided with equipment suitable for the expeditious conduct of SAR operations.
RF or RFx	Radio Frequency.
RG	Radio Direction-finding Station.
RR	ITU Radio Regulations (as amended).
RSC	Rescue Sub-Centre. A subordinate to the Rescue Coordination Centre, established to complement the latter according to particular provisions of the responsible authorities.
RT	Radio telephony.
RTCM	Radio Technical Commission for Maritime services.
RTCM SC-104	The special committee of the Radio Technical Commission for Marine Services that developed recommended standards for DGPS.
RT (HF)	Radio Telephony (High Frequency).
RT (MF)	Radio Telephony (Medium Frequency).
RTTY	Radio Teletype.
Rx	Receiver.
RX	Retransmission.
S.	Saint.
s	Second(s).
S	South.
SafetyNET	The International SafetyNET Service.
SAR	Search And Rescue.
SAR Convention	International Convention on Search and Rescue 1979.
SARSAT	Search And Rescue Satellite Aided Tracking.
SART	Search And Rescue Transponder.
SAS	Satellite Access Station.
Sat	Saturday.
SATNAV	SATellite NAVigation.
SBAS	Satellite Based Augmentation Systems.
SBM	Single Buoy Mooring.
SBP	Shore Based Pilotage.
SBT	Segregated Ballast Tanks.
SC	SAR Coordinator.
SCADA	Supervisory Control and Data Acquisition.
sdwt	Summer Dead Weight Tonnes.
SE	South East
Sea Area A1, A2, A3 and A4	Under the GMDSS the (radio) equipment required to be carried by ships is determined in principle by the ship's area of operation; these areas are designated as 'Sea Area A1', 'Sea Area A2', 'Sea Area A3' or 'Sea Area A4'.
Search And Rescue (SAR) region	An area of defined dimensions within which search and rescue services are provided.
Sec	Seconds.
Sep	September.
Seq	Sequence.
SES	Ship Earth Station, see MES .
SHIPPOS	SHIP POSition Reporting Service.
Ship station	A mobile station in the maritime mobile service located on board a vessel which is not permanently moored, other than a survival craft station.
Sig	Signal.
Single frequency	The same frequency used for transmission and reception.
SITOR	Simplex Telex Over Radio.
SITREP	SITuation REPort.
SMC	SAR Mission Controller.
SMS	Short Messaging Service.
SNAC	Single Network Access Code.
Solar Cycle	Solar activity changes over a period of, on average, 11 years. At solar maximum, the solar activity is high and so too the EUV (Extreme Ultra-Violet) radiation output which affects the ionosphere. At solar minimum, the opposite is true.

ABBREVIATIONS AND GLOSSARY

SOLAS	The International Convention on the Safety Of Life at Sea 1974 (SOLAS), as amended.
Sous-CROSS	Sous-Centres Régionaux Opérationnels de Surveillance et de Sauvetage (Regional sub-centre of operations for surveillance and maritime rescue, MRSC).
SPM	Single Point Mooring.
SPOC	SAR Point Of Contact. In the COSPAS-SARSAT system mission control centres (MCCs), rescue coordination centres (RCCs) and other established and recognized national points of contact which can accept responsibility for the coordination of the rapid and effective transfer of alert data to enable the rescue of people in distress.
SPS	Standard Position Service. The GPS single receiver (stand-alone) positioning service available to any user on a continuous world wide basis.
SRR	Search and Rescue Region. An area of defined dimensions within which search and rescue services are provided.
SRS	SAR Sub-region.
SRU	Search and Rescue Unit.
SSAS	Ship Security Alert System. Resolution XI-2/6 states that the Ship Security Alert System shall provide ships with two alarm buttons, which can be activated in case of a piracy or terrorist attack. The alarm is a covert signal, no sound and no flashing lights.
SSB	Single SideBand.
SST	Sea Surface Temperature.
Stn, STN	Station.
Sun	Sunday.
Survival craft	A craft capable of sustaining the lives of persons in distress from the time of abandoning ship.
SW	South West.
SWL	Safe Working Load.
System information	In the COSPAS-SARSAT system tabulated data (ephemeris and time calibration) that affect the determination of distress beacon locations using the satellite sub-track; current status of all system elements; information related to interference.
TAI	International Atomic Time is determined by the comparison of the reading of very accurate (better than 1 microsecond a day) atomic clocks located at national observatories throughout the world. Unlike UT1, TAI does not change with variations in the rate of the Earth's rotation. TAI provides the most accurate and uniform unit of time interval for scientific purposes. The fundamental unit of TAI is the SI second, defined as "the duration of 9 192 631 770 periods of the radiation corresponding to the transition between two hyperfine levels of the ground state of the cesium 133 atom".
TBD	To Be Determined.
Tel	Telephone.
Thurs	Thursday.
Time Calibration	Data used to relate the SARSAT satellite time code in an alert message to the actual elapsed time from a known satellite time epoch.
TLX	Telex.
TMAS	The maritime TeleMedical Assistance Service.
TOR	Telex Over Radio.
Tr	Tower.
TSS	Traffic Separation Scheme.
TTAC	Telemetry, Tracking and Control.
Tues	Tuesday.
Tx	Transmitter; Transmission.
UHF	Ultra High Frequency (300 - 3000 MHz).
UIR	Upper flight Information Region.
UK	United Kingdom.
UKHO	United Kingdom Hydrographic Office.
UT	Universal Time.
UT0	Uncorrected Universal Time.
UT1	UT0 corrected for polar variation.
UT2	UT0 corrected for polar and seasonal variations.
UTC	Coordinated Universal Time is a composite time scale, broadcast in many radio time signals. UTC corresponds exactly in rate with TAI but differs from it by an integral number of seconds. UTC is adjusted by the insertion or deletion of seconds (positive or negative leap seconds) to ensure that the departure of UTC from UT1 does not exceed +/- 0.9 seconds. Stations listed in the Radio Time Signals section of this volume broadcast time signals in the UTC time scale unless otherwise indicated in the station entry. Leap seconds are notified in advance as corrections to TABLE 1 within the RADIO TIME SIGNALS section.

ABBREVIATIONS AND GLOSSARY

VDES	A VHF Data Exchange System which together with a satellite component (VDE-SAT) is designed to augment AIS and provide intership and ship-shore data exchange and other related applications.
VDL	VHF Data Link. A set of frequencies, messages and protocols forming a maritime information exchange; used for AIS and associated applications.
VHF	Very High Frequency (30 - 300 MHz).
VLCC	Very Large Crude Carrier.
VLF	Very Low Frequency (3 - 30 kHz).
VOS	Voluntary Observing Ship Programme.
VSAT	Very Small Aperture Terminal.
VTM	Vessel Traffic Management.
VTMIS	Vessel Traffic Management and Information System.
VTMS	Vessel Traffic Management System.
VTs	Vessel Traffic Service.
W	West; Watt; Radiowind; upper wind observations by tracking of a free balloon by electronic means
Wed	Wednesday.
wef	With effect from.
WMO	World Meteorological Organization.
WP	Wind Profiler
WT	Radio (Wireless) Telegraphy.
WT (HF)	Radio (Wireless) Telegraphy (High Frequency).
WT (MF)	Radio (Wireless) Telegraphy (Medium Frequency).
WWNWS	World-Wide Navigational Warning Service. A service established by the International Maritime Organization and International Hydrographic Organization for the purpose of coordinating the transmissions of radio navigational warnings in geographical areas.
www	World-Wide Web (INTERNET).
µs	Microsecond(s).
Note:	In the WMO Station tables P, R and W are combined as necessary to indicate simultaneous upper-air observations of the different types.

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MARITIME SAFETY INFORMATION

EXTRACTS FROM THE REVISED JOINT IMO / IHO / WMO MANUAL ON MARITIME SAFETY INFORMATION (MSI) JANUARY 2016:

2 - PROMULGATION OF MARITIME SAFETY INFORMATION

(Reference NAVAREA and METAREA diagrams within the SafetyNET section)

2.1 Introduction

- 2.1.1 The Maritime Safety Information service of the GMDSS is the internationally and nationally coordinated network of broadcasts containing information which is necessary for safe navigation, received by vessels equipment which automatically monitors the appropriate transmissions, displays information which is relevant to the ship and provides a print capability.
- 2.1.2 Maritime Safety Information is of vital concern to all ships. It is therefore essential that common standards are applied to the collection, editing and dissemination of this information. Only by doing so will the mariner be assured of receiving the information he needs, in a form which he understands, at the earliest possible time.

2.3 Broadcast methods

- 2.3.1 Two principal methods are used for broadcasting Maritime Safety Information in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended, in the areas covered by these methods, as follows:
.1 **NAVTEX**: broadcasts to coastal waters;
.2 **SafetyNET**: broadcasts which cover all the waters of the globe except for Sea Area A4, as defined by IMO Resolution A.801(19), Annex 3, as amended.
- 2.3.2 Information should be provided for unique and precisely defined Sea Areas, each being served only by the most appropriate of the above methods. Although there will be some duplication to allow a vessel to change from one method to another, the majority of messages will be broadcast either on NAVTEX or SafetyNET.
- 2.3.3 NAVTEX broadcasts should be made in accordance with the standards and procedures set out in the NAVTEX Manual.
- 2.3.4 SafetyNET broadcasts should be made in accordance with the standards and procedures set out in the International SafetyNET Manual.
- 2.3.5 HF NBDP may be used to promulgate maritime safety information in areas outside Inmarsat or NAVTEX coverage (SOLAS Regulation IV/7.1.5).
- 2.3.6 In addition, Administrations may also provide maritime safety information by other means.
- 2.3.7 In the event of a failure of normal transmission facilities, an alternative means of transmission should be utilised. A NAVAREA Warning and a Coastal Warning, if possible, should be issued detailing the failure, its duration and, if known, the alternative route for the dissemination of MSI.

2.4 Scheduling

2.4.1 Automated methods (NAVTEX / SafetyNET)

- 2.4.1.1 Navigational Warnings should be broadcast as soon as possible or as dictated by the nature and timing of the event. Normally, the initial broadcast should be made as follows:
.1 for **NAVTEX**, at the next scheduled broadcast, unless circumstances indicate the use of procedures for VITAL or IMPORTANT warnings;
.2 for **SafetyNET**, within 30 minutes of receipt of original information, or at the next scheduled broadcast.
- 2.4.1.2 Navigational Warnings should be repeated in scheduled broadcasts in accordance with the guidelines promulgated in the NAVTEX Manual and International SafetyNET Manual as appropriate.
- 2.4.1.3 At least two scheduled daily broadcast times are necessary to provide adequate promulgation of NAVAREA warnings. When NAVAREAs extend across more than six time zones, more than two broadcasts should be considered to ensure that warnings can be received. When using SafetyNET in lieu of NAVTEX for coastal warnings, administrations may need to consider an increase in the number of scheduled daily broadcasts compared with the requirement for NAVAREA warnings.
- 2.4.1.4 It is important that where the degree of hazard is known, this information is included in the relevant warning e.g. naval exercises, missile firings, space missions, nuclear tests, ordnance dumping zones, etc. Whenever possible such warnings should be originated not less than five days in advance of the scheduled event and reference may be made to relevant national publications in the warning.

4 - NAVIGATIONAL WARNINGS FOR THE WORLD-WIDE NAVIGATIONAL WARNING SERVICE**4.1 General**

- 4.1.1** Navigational Warnings are issued in response to SOLAS regulation V/4 and carry information which may have a direct bearing on the safety of life at sea. It is the fundamental nature of Navigational Warnings that they will often be based on incomplete or unconfirmed information and mariners will need to take this into account when deciding what reliance to place on the information contained therein.
- 4.1.2** In order to achieve the necessary impact on the mariner it is essential to present timely and relevant information in a consistent format that is CLEAR, UNAMBIGUOUS and BRIEF. This is ensured by using structured messages in standard formats.
- 4.1.3** The resources employed by administrations and the mariner are extremely limited. Thus only information which is vital to the safe conduct of vessels should be transmitted. Notices to Mariners and other means exist for passing less urgent information to ships after they have reached port. Information of a purely administrative nature should never be broadcast on the regular international Navigational Warning schedules.
- 4.1.4** There are four types of Navigational Warnings: NAVAREA warnings, Sub-Area warnings, coastal warnings and local warnings. The WWNWS guidance and coordination are involved with only three of them:
.1 NAVAREA warnings;
.2 Sub-Area warnings;
.3 Coastal warnings.
- 4.1.5** Navigational Warnings should remain in force until cancelled by the originating coordinator. Navigational Warnings should be broadcast for as long as the information is valid; however, if they are readily available to mariners by other official means, for example in Notices to Mariners, then after a period of six weeks they may no longer be broadcast.
- 4.1.6** The minimum information in a Navigational Warning which a mariner requires is "hazard" and "position". It is usual, however, to include sufficient extra detail to allow some freedom of action in the vicinity of the hazard. This means that the message should give enough extra data for the mariner to be able to recognize the hazard and assess its effect upon his navigation.
- 4.1.7** If known, the duration of the event causing a Navigational Warning should be given in the text.
- 4.1.8** Some of the subjects for navigational warnings listed in paragraph 4.2.3 (e.g. drifting ice and tsunami warnings) may also be suitable for inclusion in METAREA forecasts or warnings. In this event, appropriate coordination between the relevant NAVAREA and METAREA Coordinators must occur.

4.2 NAVAREA warnings

- 4.2.1** NAVAREA warnings are concerned with the information detailed below which ocean-going mariners require for their safe navigation. This includes, in particular, new navigational hazards and failures of important aids to navigation as well as information which may require changes to planned navigational routes.
- 4.2.2** Coastal warnings are broadcast by the International NAVTEX service, or by the International SafetyNET service when implemented in lieu of NAVTEX. They are not normally re-broadcast as NAVAREA warnings unless deemed of such significance that the mariner should be aware of them before entering a NAVTEX service area. The National Coordinator will evaluate the significance of the information for consideration as a NAVAREA warning while the NAVAREA Coordinator will make the final determination.

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- 4.2.3** The following subjects are considered suitable for broadcast as NAVAREA warnings. This list is not exhaustive and should be regarded only as a guideline. Furthermore, it pre-supposes that sufficiently precise information about the item has not previously been disseminated in a Notice to Mariners. Whenever possible, warnings concerning scheduled events, in particular those covered in 4.2.3.13, should be originated not less than five days in advance, and reference may be made to relevant national publications:
- .1 casualties to lights, fog signals, buoys and other aids to navigation affecting main shipping lanes;
 - .2 the presence of dangerous wrecks in or near main shipping lanes and, if relevant, their marking;
 - .3 establishment of major new aids to navigation or significant changes to existing ones when such establishment or change might be misleading to shipping;
 - .4 the presence of large unwieldy tows in congested waters;
 - .5 drifting hazards (including derelict vessels, ice, mines, containers, other large items over 6 metres in length etc.);
 - .6 areas where search and rescue (SAR) and anti-pollution operations are being carried out (for avoidance of such areas);
 - .7 the presence of newly-discovered rocks, shoals, reefs and wrecks likely to constitute a danger to shipping and if relevant, their marking;
 - .8 unexpected alteration or suspension of established routes;
 - .9 cable or pipe-laying activities, seismic surveys, the towing of large submerged objects for research or exploration purposes, the employment of manned or unmanned submersibles, or other underwater operations constituting potential dangers in or near shipping lanes;
 - .10 the establishment of research or scientific instruments in or near shipping lanes;
 - .11 the establishment of offshore structures in or near shipping lanes;
 - .12 significant malfunctioning of radio-navigation services and shore-based maritime safety information radio or satellite services;
 - .13 information concerning special operations which might affect the safety of shipping, sometimes over wide areas, e.g. naval exercises, missile firings, space missions, nuclear tests, ordnance dumping zones etc.
 - .14 operating anomalies identified within ECDIS including ENC issues;
 - .15 acts of piracy and armed robbery against ships;
 - .16 tsunamis and other natural phenomena, such as abnormal changes to sea level;
 - .17 World Health Organization (WHO) health advisory information;
 - .18 security related requirements.

4.3 Sub-Area warnings

- 4.3.1** Sub-Area warnings broadcast information which is necessary for safe navigation within a Sub-Area. They will normally include all subjects listed in 4.2.3 above, but will usually affect only the Sub-Area.

4.4 Coastal warnings

- 4.4.1** Coastal warnings broadcast information which is necessary for safe navigation within areas seaward of the fairway buoy or pilot station and should not be restricted to main shipping lanes. Where the area is served by NAVTEX, it should provide Navigational Warnings for the entire NAVTEX service area. Where the area is not served by NAVTEX, it is necessary to include all warnings relevant to the coastal waters up to 250 n miles from the coast in the International SafetyNET service broadcast.

- 4.4.2** Coastal warnings should include at least the subjects in 4.2.3.

4.5 Local warnings

- 4.5.1** Local warnings broadcast information which cover inshore waters often within the limits of jurisdiction of a harbour or port authority. They are broadcast by means other than NAVTEX or SafetyNET and supplement coastal warnings by giving detailed information within inshore waters.

5 - THE STRUCTURE OF NAVIGATIONAL WARNINGS

5.1 Numbering

- 5.1.1** Navigational Warnings in each series should be consecutively numbered throughout the calendar year, commencing with 1/YY at 0000 UTC on 01 January.
- 5.1.2** Navigational Warnings should be transmitted in reverse numerical order on scheduled broadcasts.

5.2 Language

- 5.2.1** All NAVAREA, Sub-Area and coastal warnings should be broadcast only in English in the International NAVTEX and SafetyNET services in accordance with IMO resolution A.706(17), as amended.
- 5.2.2** In addition to the required broadcasts in English, NAVAREA, Sub-Area and coastal warnings may be broadcast in a national language using national NAVTEX and SafetyNET services and/or other means.

5.2.3 Local warnings may be issued in the national language and/or in English.

5.3 “No warnings” message

5.3.1 When there are no Navigational Warnings to be disseminated at a scheduled broadcast time, a brief unnumbered message should be transmitted to identify the broadcast and advise the mariner that there is no Navigational Warning message traffic on hand.

5.4 Standard elements of messages

5.4.1 The minimum information which a mariner requires to avoid danger is:

HAZARD + POSITION

It is usual, however, to include amplifying remarks in order to provide sufficient extra details to clearly identify the significance of the hazard and to assist mariners in recognizing and assessing its effect upon their navigation. The time, date and duration of the event should be included if known.

5.4.2 A message can have up to three parts: Preamble, Warning, Postscript. Sections 6 and 7 of the Manual give guidance on the correct way of phrasing each part of the warning to achieve maximum impact with minimum broadcast time.

5.4.3 The text of a Navigational Warning should contain specific message elements, identified and ordered by the reference numbers shown in the message elements table. The format and structure of a message should ensure that each message element begins on a new line.

5.4.4 The first words of the text of every warning message should always be the message series identifier, followed by the consecutive number; this may be preceded on a separate line by the time of origin of the message.

5.5 Message Elements Table

MESSAGE ELEMENTS TABLE		
Part	Reference No.	Message Elements
Preamble	1	Message series identifier
	2	General area
	3	Locality
	4	Chart number
Warning	5	Key subject
	6	Geographical Position
	7	Amplifying remarks
Postscript	8	Cancellation details

6 - MESSAGE FORMAT OF RADIO NAVIGATIONAL WARNINGS

Part 1 - PREAMBLE

Standard Message Element Reference 1 - MESSAGE SERIES IDENTIFIER

The first words of the text of every warning message should always be message series identifier followed by the consecutive number (N/YY).

Standard Message Element Reference 2 - GENERAL AREA

The general area should be sufficient to identify which broad geographic region the message affects. The geographical name which is selected for the general area should be one that can be found on charts and in nautical publications.

Standard Message Element Reference 3 - LOCALITY

The locality should be stated in terms which allow the mariner to identify warnings which affect their passage without having to plot them. Locality will only need to be stated when it is considered necessary to refine the general area. The geographical name which is selected as locality should be one that can be found on charts and in nautical publications.

Standard Message Element Reference 4 - CHART NUMBER

For charted features, reference should be made to a national chart (not necessarily the largest scale) identified by the State abbreviation and chart number. Reference should also be made to an international chart number if one exists.

Part 2 - WARNING**Standard Message Element Reference 5 - KEY SUBJECT**

Key subjects referenced in paragraph 4.2.3 are considered suitable for broadcast as NAVAREA, SUB-AREA or COASTAL WARNINGS.

Standard Message Element Reference 6 - GEOGRAPHICAL POSITION

Geographical positions should always be given in Degrees and Minutes or in Degrees, Minutes and Decimal Minutes.

Standard Message Element Reference 7 - AMPLIFYING REMARKS

Amplifying remarks may be used to provide sufficient extra details to clearly identify the significance of the hazard and to assist mariners in RECOGNIZING and ASSESSING its effect upon their navigation.

Part 3 - POSTSCRIPT**Standard Message Element Reference 8 - CANCELLATION DETAILS**

Cancellation details should be provided in a message that includes a definitive timeframe; the cancellation time should be one hour after the event completes or one day if the time is not accurately known.

9 - METEOROLOGICAL WARNINGS AND FORECASTS**9.2 Procedures**

Preparation and issue of weather and sea bulletins

- 9.2.1** Weather and sea bulletins should include, in the order given hereafter:
- .1 Part I: Storm warnings;
 - .2 Part II: Synopsis of major features of the surface weather chart and, to the possible extent, significant characteristics of corresponding sea-surface conditions; and
 - .3 Part III: Forecasts.
- 9.2.2** Weather and sea bulletins may, in addition, include the following parts:
- .1 Part IV: Analysis and/or prognosis in IAC FLEET code form;
 - .2 Part V: Selection of reports from sea stations; and
 - .3 Part VI: Selection of reports from land stations.
- Notes:* (1) The reports included in part VI should be for a fixed selection of stations in a fixed order.
(2) Parts IV, V and VI may be issued at a separate scheduled time.
- 9.2.4** Weather and sea bulletins should be prepared and issued at least twice daily.
- 9.2.7** Warnings should be given in plain language. Synopses and forecasts should be given in plain language, however some abbreviations may be used, especially when the size of the bulletin needs to be reduced for dissemination by a low bandwidth system, such as the NAVTEX Service.
- 9.2.8** Warnings, synopses and forecasts intended for the International SafetyNET and the International NAVTEX services should be broadcast in English.
Note: Additionally, if a national Meteorological Service wishes to issue warnings and forecasts to meet national obligations under SOLAS, broadcasts may be made in other languages. These broadcasts will be part of national SafetyNET or NAVTEX Services.

9.3 Warnings

- 9.3.1** Warnings should be given for gales (Beaufort Force 8 or 9) and storms (Beaufort Force 10 or over) and for tropical cyclones (hurricanes in the North Atlantic and eastern North Pacific, typhoons in the Western Pacific, cyclones in the Indian Ocean and cyclones of similar nature in other regions).
- 9.3.2** The issue of warnings for near gales (Beaufort Force 7) is optional.
- 9.3.3** Warnings for gales, storms and tropical cyclones should have the following content and order of items:
- .1 type of warning;
 - .2 date and time of reference in UTC;
 - .3 type of disturbance (e.g., low, hurricane, etc) with a statement of central pressure in hectopascals;
 - .4 location of disturbance in terms of latitude and longitude or with reference to well-known landmarks;
 - .5 direction and speed of movement of disturbance;
 - .6 extent of affected area;
 - .7 wind speed or force and direction in the affected areas;
 - .8 sea and swell conditions in the affected area;
 - .9 other appropriate information such as future positions of disturbance.
- Sub-items .1, .2, .4, .6 and .7 listed above should always be included in the warnings.
- 9.3.4** When warnings are included for more than one pressure disturbance or system, the systems should be described in descending order of threat.
- 9.3.5** Warnings should be as brief as possible and, at the same time, clear and complete.
- 9.3.6** The time of the last location of each tropical cyclone or extra-tropical storm should be indicated in the warning.

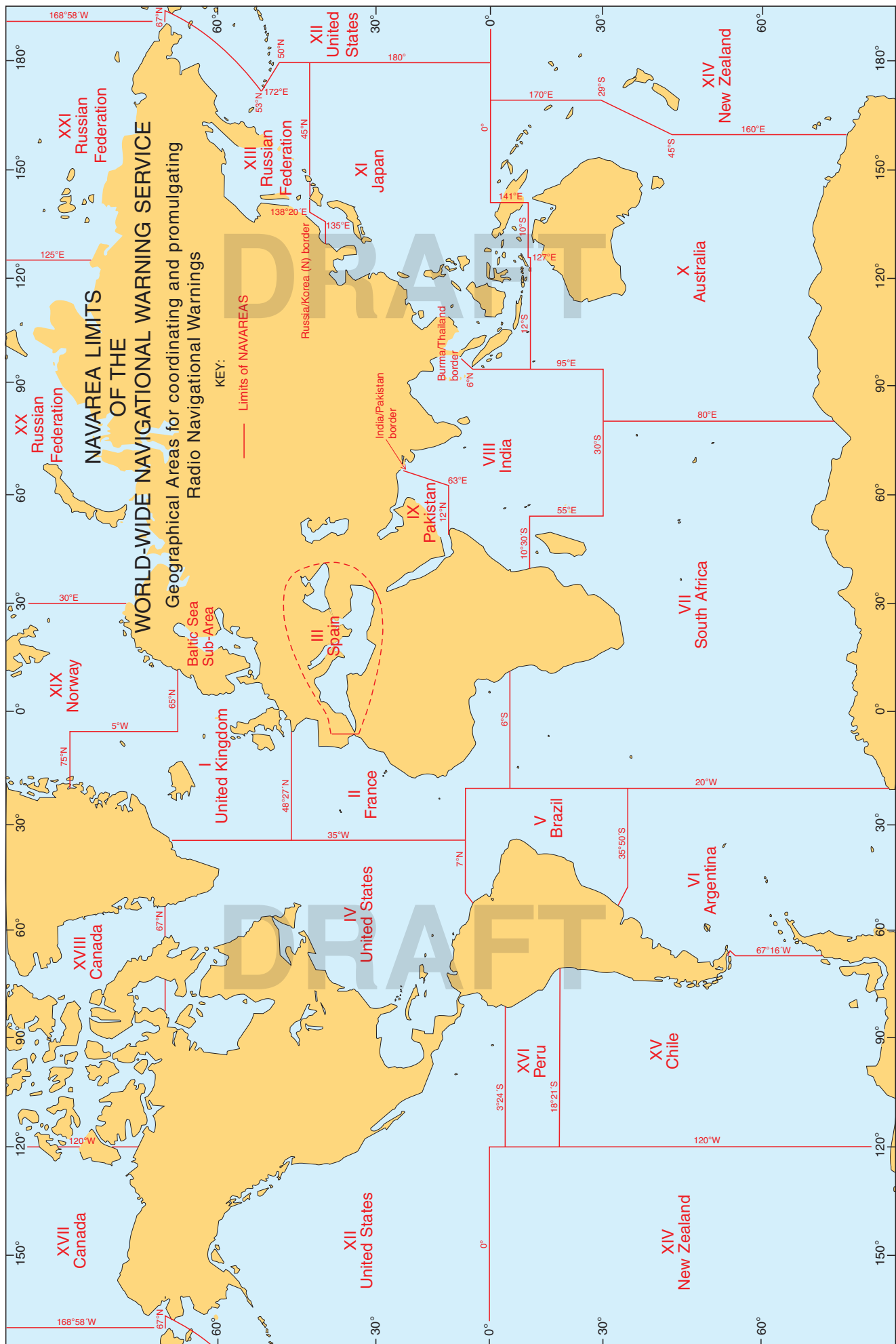
- 9.3.7 A warning should be issued immediately the need becomes apparent and broadcasted immediately on receipt, followed by a repeat after 6 minutes, when issued as an unscheduled broadcast.
- 9.3.8 When no warnings for gales, storms or tropical cyclones are to be issued, that fact should be positively stated in part I of each weather and sea bulletin.
- 9.3.9 Warnings should be updated whenever necessary and then issued immediately.
- 9.3.10 Warnings should remain in force until amended or cancelled.
- 9.3.11 Warnings issued as part I of a scheduled bulletin do not need to be repeated after 6 minutes.
- 9.3.12 Warnings for other severe conditions such as poor visibility, severe sea states (such as high swell, risk of abnormal waves, etc.), ice accretion, etc., should also be issued as necessary.

9.4 Synopses

- 9.4.1 The synopses given in part II of weather and sea bulletins should have the following content and order of items:
 - .1 date and time of reference in UTC;
 - .2 synopsis of major features of the surface weather chart;
 - .3 direction and speed of movement of significant pressure systems and tropical disturbances.
- 9.4.2 If possible, significant characteristics of corresponding wave conditions (sea and swell) should be included in the synopsis as well as characteristics of other sea-surface conditions (drifting ice, currents, etc.) if feasible and significant.
- 9.4.3 Significant low-pressure systems and tropical disturbances which affect or are expected to affect the area within or near to the valid period of the forecast should be described; the central pressure and/or intensity, location movement and changes of intensity should be given for each system; significant fronts, high-pressure centres, troughs and ridges should be included whenever this helps to clarify the weather situation.
- 9.4.4 Direction and speed of movement of significant pressure systems and tropical disturbances should be indicated in compass points and metres per second or knots respectively.
- 9.4.5 Units used for speed of movement of systems should be indicated.

9.5 Forecasts

- 9.5.1 The forecasts given in part III of weather and sea bulletins should have the following content and order of items:
 - .1 the valid period of forecast;
 - .2 name or designation of forecast area(s) within the main MSI area;
 - .3 a description of:
 - (i) wind speed or force and direction;
 - (ii) sea state (significant wave height/total sea);
 - (iii) visibility when forecast is less than five n miles;
 - (iv) ice accretion, where applicable.
- 9.5.2 The forecasts should include expected significant changes during the forecast period, significant meteors such as freezing precipitation, snowfall or rainfall and an outlook for a period beyond 24 hours. In addition, phenomena such as breaking seas, cross seas and abnormal waves should also be included, where possible.
- 9.5.3 The valid period should be indicated either in terms of numbers of hours from the time of issue of the forecast or in terms of dates and time in UTC of the beginning and the end of the period.
- 9.5.4 The following descriptive terms should be used for visibility:
 - (i) very poor (less than 0.5 n miles),
 - (ii) poor (0.5 to 2 n miles),
 - (iii) moderate (2 to 5 n miles),
 - (iv) good (greater than 5 n miles).



NATIONAL PRACTICES

This section contains details of the procedures adopted by various countries for the dissemination of Navigational Warnings. This information is, in general, of too lengthy a nature to be included with individual station entries.

FRANCE

Navigational Warnings are of three kinds; NAVAREA Warnings, Coastal Warnings (AVURNAV) and Local Warnings.

NAVAREA II WARNINGS

These are broadcast via international and national NAVTEX by CROSS Corsen and by SafetyNET.

A weekly bulletin is published through the Avis aux Navigateurs. Warnings more than 45 days old are not published unless considered essential.

AVURNAV

AVURNAV Cherbourg covers the North Sea and the Channel. AVURNAVS are broadcast via international and national NAVTEX by Niton (UK) and RT (MF) by CROSS Gris-Nez and CROSS Jobourg.

AVURNAV Brest covers the Atlantic. AVURNAVS are broadcast via international and national NAVTEX and RT (MF) by CROSS Corsen.

AVURNAV Toulon covers the Mediterranean. AVURNAVS are broadcast via international and national NAVTEX and RT (MF) by CROSS La Garde and by Sous-CROSS Corse by VHF on request for the Corsican coast.

NOTES:

1. AVURNAVS broadcast on RT (MF) are preceded by an announcement on 2182 kHz.
2. According to their degree of urgency they are issued upon receipt or at the next session

LOCAL WARNINGS

Local warnings for coastal waters and ports.

GERMANY

NAVIGATIONAL WARNINGS

Navigational Warnings are issued by Seewarndienstzentrale Emden (Emden Maritime Warning Service Centre) for the German warning area (German territorial waters) (see NfS [Notices to Mariners] Issue 1 and Hb. Brücke und Kartenhaus [Handbook - Bridges and Chartrooms]). The information is issued through:

- (a) NAVTEX
 - on 518 kHz and 490 kHz in the area of the North Sea via the DWD's transmitter in Pinneberg
 - on 518 kHz in the area of the Baltic Sea via Stockholm / Gislövshammar
 - on 490 kHz in the area of the Baltic Sea via the DWD's transmitter in Pinneberg
- (b) telex transmissions from Pinneberg
- (c) internet at www.bsh.de
- (d) Bremen Rescue Radio on VHF Ch 16
- (e) Information broadcasts of the VTS centres for their areas of responsibility
- (f) certain radio stations.

SHIPS REPORTS: Vessels encountering dangers to navigation in German waters should notify the nearest competent authority:

- (a) Seewarndienst Emden (Sea Warning Service Emden).
 - Tel: +49(0)49 271877283 (H24)
 - Fax: +49(0)49 271877288
 - e-mail: seewarndienst.wsa-emd@t-online.de
- (b) Bremen Rescue Radio.
- (c) or the responsible VTS centre.

GREENLAND

Notices of importance to safety at sea which cannot be published in Notices to Mariners (EfS) with sufficient notice are transmitted by Aasiaat Radio. Aasiaat Radio transmits the Navigational Warnings in Danish and English. The warnings are issued by Arktisk Kommando (AKO), and begin with the wording Navigational Warning AKO and a number. The three figure numbering system commences 1 January each year. Times, when quoted, consist of six figures, the first two giving the date and the last four the time in UTC. Aasiaat Radio transmits Navigational Warnings after the first silence period after reception after prior announcement on MF DSC 2187.5 kHz, MF 2182 kHz and VHF Ch 16. They are then broadcast after the Traffic Lists on all working frequencies and channels.

Navigational Warnings are transmitted by Aasiaat Radio until they are published by Notices to Mariners (EfS) or are cancelled.

ITALY

The warnings are enumerated from No. 1, and commence at 0000 (local time) on the first day of each month. Each maritime radio station transmits the warnings in reverse order so that the most recent warning takes precedence. Urgent Navigational Warnings are broadcast in Italian and English on RT. They are broadcast on receipt and repeated in scheduled transmissions.

Important Navigational Warnings are broadcast as Coastal Warnings (COSTAVURNAV) in Italian and English by all the Italian maritime radio Stations.

Local Navigational Warnings (LOCAVURNAV) are broadcast by the local maritime radio stations closest to the area affected by the warning.

NORWAY

Radio Navigational Warnings for Norwegian Waters are issued in English by Kystverket" (The Norwegian Coastal Administration), and broadcast over the national maritime radio stations.

Essential and Important warnings, including gale and storm warnings, are announced by DSC, on VHF Ch 16 and 2182 kHz and by telephone immediately on receipt.

Gale and storm warnings are repeated twice during the following scheduled broadcast times.

Navigational Warnings are repeated in the two subsequent scheduled broadcasts and repeated once every 24h at 1033 UTC for up to 7 days. Beyond this the warning number is repeated at all scheduled broadcast times while still in force until cancellation.

Transmissions are made on the primary RT (MF) channels and available VHF working channels.

In the NAVTEX system important warnings and reports are transmitted immediately on receipt. Warnings are repeated at the next fixed transmission times until cancelled. Gale and storm warnings are repeated once at the following fixed transmission time.

PAKISTAN

Navigational Warnings are of three types; NAVAREA Warnings, Coastal Warnings and Local Warnings. The language used in these warnings is English.

NAVAREA IX WARNINGS

The Warnings are promulgated as consecutively numbered NAVAREA IX. All NAVAREA IX Warnings are broadcast through SafetyNET. These Warnings are originated by the Coordinator NAVAREA IX and subsequently broadcast through Inmarsat via LES Burum. These messages can be received on any standard Inmarsat receiver. Depending upon the area affected, NAVAREA IX Warnings may also be transmitted through NAVTEX from Karachi Coast Radio Station.

A numerical list of all NAVAREA IX Warnings in force is broadcast each Saturday and a reprint for the current week is included in PART II of the Weekly Edition of Pakistan Notices to Mariners (PNM).

COASTAL WARNINGS

The Coordinator NAVAREA IX issues Coastal Warnings to all vessels and concerned National Authorities. These Warnings are broadcast on NAVTEX through Karachi Coast Radio Station. Port Authorities announce Warnings relating to their areas of jurisdiction on VHF.

Coastal Navigational Warnings contain information pertaining to navigational aids and safety hazards in waters along the Pakistan coast.

Warnings are repeated at routine times as messages so long as they remain in force. Serial numbers are given to the messages and a cessation of broadcasting indicates that they are either cancelled or sufficiently promulgated in the Pakistan Notices to Mariners. A message should, however, be considered as in force up to 24 hours after the last broadcast is received.

LOCAL WARNINGS

Warnings are broadcast on VHF Ch 16 for vessels approaching Karachi and Port Muhammed Bin Qasim. Vessels may confirm any such Warnings with the local pilot stations.

RUSSIAN FEDERATION

The system of Navigational Warnings is operating in the Russian Federation as a part of the World-Wide Navigational Warning Service (WWNWS) and is providing the following:

- (a) broadcast of NAVAREA XIII Warnings for the Russian Federation area of responsibility
- (b) broadcast of PRIP Coastal Warnings for Russian coastal waters
- (c) broadcast of NAVIP Warnings for NAVAREAS I–XII and XIV–XIX.

NAVAREA WARNINGS (see ALRS Volume 3(2) (NP283(2)) for details)

PRIP - COASTAL WARNINGS

PRIPs contain information which is essential for ensuring the safety of navigation in the coastal waters of the Russian Federation and the Arctic Ocean.

PRIPs are consecutively numbered for each year and also separately for each area, commencing on 1 Jan each year.

PRIPs concerning dangerous operations, are announced three days in advance of the beginning of operations and repeated at scheduled times until cancelled. PRIPs which are no longer valid are cancelled by radio if the period of their validity is not stated in the text of the warning. PRIPs containing information about drifting objects are valid for three days.

Warnings concerning information which is intended to be valid for more than six weeks will be re-issued in printed Russian Notices to Mariners. Warnings are broadcast by maritime radio stations in Russian.

Coastal Warnings for Arctic waters are broadcast in English on SafetyNET through Nudol LES.

NAVIP - NAVIGATIONAL WARNINGS

NAVIPs contain information about dangers to navigation in the coastal waters of countries other than the Russian Federation and the high seas.

NAVIP Warnings are numbered separately for each NAVAREA in a sequence which commences on 1 Jan of each year.

The text of each Navigational Warning contains the following:

- (a) geographical identifier of a three digit number, the first two digits of which are the NAVAREA number and the third - the appropriate sub-area, followed by the consecutive number of the warning;
- (b) chart number(s);
- (c) general area;
- (d) text of warning;
- (e) time and date of cancelling if known.

Warnings remain in force until cancelled by radio and those with the stated time of cancelling become ineffective at the stated time without a special announcement.

NAVIP Warnings containing information about drifting objects remain valid for three days.

When information, promulgated earlier in NAVIPs or PRIPs is announced in Russian Notices to Mariners, these NAVIPs or PRIPs will be cancelled on receipt of the appropriate Notices to Mariners.

SOUTH AFRICA AND NAMIBIA

Navigational Warnings are of two kinds:

LONG RANGE WARNINGS

NAVAREA VII Warnings are broadcast simultaneously on all frequencies on receipt. Thereafter NAVAREA VII Warnings are broadcast at all schedules on days 1, 2 and 3 after issue and then every 4 days for the next 6 weeks, unless previously cancelled.

NAVAREA VII Bulletins are issued at 0800 UTC on Fridays and are broadcast at all schedules for that day.

Vessels at anchor within or near the port limits of South African harbours are to maintain continuous radio watch on VHF Ch 16. If they are under Vessel Traffic Services control they shall maintain the assigned VTS frequency for the port in question.

Vessels at anchor off Namibian ports and all vessels passing through Namibian Coastal Waters and/or the Namibian Economic Zone should keep radio watch on VHF Ch 16 and/or 2182 kHz, preferably both whenever possible.

COASTAL NAVIGATIONAL WARNINGS (CNW)

For waters out to about 150 n miles around South Africa and Namibia, CNW of an urgent and temporary nature are broadcast simultaneously on all frequencies from maritime radio stations and via NAVTEX on receipt. These warnings are repeated at scheduled times for as long as they remain in force.

A summary of CNW in force are issued weekly at 0800 UTC on Mondays and are broadcast at all schedules for that day.

SPAIN, ISLAS BALEARES AND ISLAS CANARIAS

LONG RANGE WARNINGS

Warnings are broadcast for NAVAREA III through the SafetyNET service. The text of the previous week's warnings, together with a numerical list of those in force, is included in the weekly editions of Spanish Notices to Mariners. The text of all in force NAVAREA III warnings is included monthly in Spanish Notices to Mariners.

WARNINGS BY NAVTEX

Coastal warnings are broadcast in English (518 kHz) and Spanish (490 kHz), full details of which are given in the appropriate section of this Volume. This service is managed, coordinated and broadcasted by Salvamento Marítimo (Spanish SAR Agency).

COASTAL WARNINGS BROADCAST BY MARITIME RADIO STATIONS

Warnings are also broadcast in English and Spanish on RT (MF) and VHF and are classified as "important" (AVURNAVE) or "for scheduled broadcast" (AVISOS). Important warnings are transmitted on receipt, following prior announcement on 2182 kHz RT (MF) or VHF Ch 16 and are then repeated at the station's scheduled broadcast times, along with all other warnings in force.

Scheduled warnings are broadcast directly on the station's working frequency three times a day on RT (MF), full details of which are given in the appropriate section of this Volume. This service is managed and coordinated by Salvamento Marítimo (Spanish SAR Agency) and is broadcasted by a private telecommunications company, hired by the Spanish administration.

LOCAL WARNINGS

Warnings are broadcast in Spanish and English on VHF twice a day, full details of which are given in the appropriate section of this Volume. This service is managed and coordinated by Salvamento Marítimo (Spanish SAR Agency) and is broadcasted by a private telecommunications company, hired by the Spanish administration.

All meteorological information for Spanish territorial waters in the broadcasts is provided by the Spanish Meteorological Agency (AEMET).

UNITED KINGDOM

Radio Navigational Warnings, issued by the UKHO or other competent authorities, provide the mariner with immediate information concerning dangers to navigation. Information of a less essential nature or concerning waters within harbour limits, even though it forms the subject of a Notice to Mariners, may not be broadcast.

NAVAREA WARNINGS

Long range warnings are broadcast for NAVAREA I through the SafetyNET service. Messages are numbered sequentially. The text of the week's warnings together with a list of those in force is included in Section III of the Weekly Edition of Notices to Mariners. A printed sheet is issued weekly, in advance of the Notices to Mariners, containing the NAVAREA I warnings issued during the week and also selected important NAVAREA II, III and IV warnings.

WARNINGS BY NAVTEX

Details of the NAVTEX system are given in the appropriate section of this Volume. United Kingdom stations Niton **[E]**, Portpatrick **[O]** and Cullercoats **[G]** broadcast warnings for the areas shown in the diagram. Warnings are also broadcast by Oostende **[M]**.

COASTAL (WZ) WARNINGS

HM Coastguard (HMCG)/Coordination Centres broadcast coastal Navigational Warnings for specific sea regions.

Warnings are broadcast on receipt and at scheduled times by appropriate HMCG stations, and are repeated at scheduled times for as long as they remain in force. Vital or Important warnings may be announced at any time on the distress frequencies 2182 kHz and VHF Ch 16. Warnings are originated by the UKHO and are numbered sequentially in the WZ series.

- (a) **PROCEDURE:** Warnings are generally broadcast only by the station, or stations, nearest to the reported danger or the area where a gale is expected. All messages are announced on 2182 kHz RT(MF) or Ch 16 (VHF). Announcements are preceded by the safety signal Sécurité, pronounced "SAY-CURE-E-TAY" (RT), spoken 3 times, on full power. Messages are transmitted on the station's working frequency. NAVTEX messages are not announced.
- (b) **ROUTINES:** Warnings are transmitted at all routines with the exception of warnings relating to light failures which are transmitted at VHF and RT routines 1, 2, 5 and 6 (1, 2, 5, 6, 7 and 8 for Jersey) between 1 September and 30 April and at VHF and RT routines 1 and 6 (7 and 8 for Jersey) between 1 May and 31 August, the first routine of the day counting as routine 1.

Warnings will be re-broadcast at the appropriate routines each day so long as they remain in force. On notification from the NAVAREA I Coordinator that a WZ has been cancelled, this will be broadcast once only at the next routine broadcast schedule.

LOCAL WARNINGS

Some port authorities broadcast warnings relating to their areas of jurisdiction through nearby coastguard radio stations.

In addition, HMCG broadcasts local warnings relating to hazards which may affect craft in inshore waters outside port and harbour authority limits. These local warnings are broadcast on a working frequency after an announcement on VHF Ch 16. Warnings are not broadcast at specific broadcast schedules and do not follow a numerical sequence. They will be repeated at the discretion of the originating HMCG station.

Further details of Radio Navigational Warnings are given in the appropriate station entries in this volume and in The Mariner's Handbook (NP100).

SHIP REPORTS

Vessels encountering dangers to navigation or severe weather conditions should notify other vessels in the vicinity and the nearest HM Coastguard Coordination Centre.

UNITED STATES

The United States maintains world-wide coverage using the HYDROLANT / HYDROPAC Navigational Warning System outside of NAVAREAs IV and XII. HYDROLANTs are broadcast by Boston and cover the eastern North Atlantic, South Atlantic, Mediterranean Sea, North Sea, Baltic Sea and contiguous areas. HYDROPACs are broadcast by Guam and Honolulu and cover the western North Pacific, South Pacific, South China Sea, Indian Ocean, Red Sea, Persian Gulf and contiguous areas (for further details see ALRS Volume 3(2) (NP283(2))).

RADIO NAVIGATIONAL WARNINGS ON THE INTERNET

NB: The availability of Navigational Warnings on the web does not relieve Masters / Captains of the requirement to receive Navigational Warnings via IMO/IHO approved broadcast systems, as websites are not continuously updated and not necessarily monitored for correctness.

NAVAREA Coordinators

NAVAREA	INTERNET LINK
NAVAREA I (United Kingdom) Baltic Sea sub-area (Sweden)	http://www.ukho.gov.uk/ProductsandServices/MaritimeSafety/RNW/Pages/Home.aspx http://www.sjofartsverket.se/baltico
NAVAREA II (France)	http://www.shom.fr/navarea/NavareallenVigueur.txt
NAVAREA III (Spain)	http://www.armada.mde.es/ihm/Aplicaciones/Navareas/Index_radioavisos.htm
NAVAREA IV (United States)	http://msi.nga.mil/NGAPortal/MSI.portal (Select Broadcast Warnings)
NAVAREA V (Brazil)	http://www.mar.mil.br/dhn/chm/box-aviso-radio/avradioing.htm
NAVAREA VI (Argentina)	http://www.hidro.gob.ar/nautica/inv.asp
NAVAREA VII (South Africa)	http://www.sanho.co.za/_nav_area7_bulletins/bulletin.htm
NAVAREA VIII (India)	http://www.hydrobarat.nic.in/views/index.php
NAVAREA IX (Pakistan)	http://www.paknavy.gov.pk/hydro/n_navwarn.asp
NAVAREA X (Australia)	https://www.amsa.gov.au/safety-navigation/navigation-systems/maritime-safety-information-database
NAVAREA XI (Japan)	http://www1.kaiho.mlit.go.jp/TUHO/keiho/navarea11_en.html
NAVAREA XII (United States)	http://msi.nga.mil/NGAPortal/MSI.portal (Select Broadcast Warnings)
NAVAREA XIII (Russia)	http://mil.ru/navigation.htm
NAVAREA XIV (New Zealand)	http://www.maritimenz.govt.nz/navarea
NAVAREA XV (Chile)	http://www.shoa.mil.cl/en/our-services/radio-warnings

Continued overleaf

NAVAREA	INTERNET LINK
NAVAREA XVI (Peru)	https://www.dhn.mil.pe/radioavisos_warnings
NAVAREA XVII (Canada)	http://www.ccg-gcc.gc.ca/e0004476?todo=warning
NAVAREA XVIII (Canada)	http://www.ccg-gcc.gc.ca/e0004476?todo=warning
NAVAREA XIX (Norway)	http://kyvreports.kystverket.no/NavcoReport/navareaxixvarsler.aspx
NAVAREA XX (Russia)	http://structure.mil.ru/structure/forces/hydrographic/info/notices.htm
NAVAREA XXI (Russia)	http://structure.mil.ru/structure/forces/hydrographic/info/notices.htm

METAREA WARNINGS ON THE INTERNET

The WMO/JCOMM website (maintained by Meteo-France), provides the marine weather information broadcast via Inmarsat C SafetyNET by all National Meteorological Services (NMS) appointed as Issuing Services within the framework of the WMO Marine Broadcast System for the GMDSS. Some information broadcast by NAVTEX is also included.

Caution: The Internet is not part of the operational data stream for Maritime Safety Information and should never be relied upon as a means to obtain the latest forecast and warning information. Access to a website may be interrupted or delayed from time to time, updates may also experience occasional gaps. Refer to OFFICIAL sources, Inmarsat SafetyNET or international NAVTEX services, for more complete information.

METAREA	INTERNET LINK
All METAREAS	http://weather.gmdss.org/

AIS MSI BROADCASTS

Introduction

The use of AIS (Automatic Identification System) is an internationally adopted and mature technology with which most mariners will be very familiar. It broadcasts continuously in the VHF maritime mobile band and operates on two dedicated VHF FM radio frequencies AIS1 (Ch 87B – 161.975 MHz) and AIS2 (Ch 88B – 162.025 MHz), allowing the continuous exchange of navigation safety related messages between vessels, shore and Aids to Navigation. AIS information comprises small bursts of data encoded into a bit pattern (bit vector), to enable it to be made as small as possible and is encoded using GMSK modulation – therefore one will be unable to hear anything if a VHF radio were simply tuned to the relevant channel. For further detailed information on AIS please see The Mariner's Handbook NP100.

AIS Message Types

The AIS system has the ability to transmit a range of encoded protocols such as Message 08 (Binary Broadcast Message), 10 (UTC and Date Enquiry) and 14 (Safety Related Broadcast Message) amongst many others.

Emerging Uses of AIS

At the time of going to press, countries such as the USA, are undertaking trials in which the AIS system is being used to broadcast Maritime Safety Information (MSI), meteorological and hydrographic data, (for testing and evaluation purposes). However, it is entirely likely that this broadcast method will be adopted and become much more widely utilised in the future, both in the USA and potentially worldwide. It should be noted that the Message Type being used for testing purposes is likely to change once such systems 'go live' and it is foreseen that such changes will invariably be promulgated by local Notice to Mariners.

AIS/MSI Broadcasts and the UKHO

The UKHO is always striving to be at the forefront of any technological developments affecting the mariner and it is our intention to continually adapt and improve our products to reflect such changes. The ADMIRALTY Digital Publication suite is just one product that we are developing to enable the mariner to access the very latest information about such emerging technologies. For more information about ADP and how it can help you, please see our website:

<https://www.admiralty.co.uk/digital-services/admiralty-digital-publications>

EXTRACTS FROM THE SAFETYNET USERS HANDBOOK

Introduction

SafetyNET is an international automatic direct-printing satellite based service for the promulgation of navigational and meteorological warnings, meteorological forecasts and other safety related messages – Maritime Safety Information (MSI) – to ships. The information transmitted is relevant to all seagoing vessels and the message selection features ensure that mariners can receive safety information broadcasts which are tailored to their particular needs. For full details of SafetyNET see ALRS Volume 5 (NP285).

Language used for MSI broadcasts

All MSI broadcasts are printed in English (sometimes a local language is added after the English wording).

What types of MSI can be received?

The following is a list of the different types of MSI you can receive on your EGC receiver:

- All ships (general call);
- NAVAREA/METAREA Warnings, MET forecast or Piracy warnings to NAVAREA or METAREA;
- Navigational, Meteorological or Piracy Warnings to a circular or rectangular area;
- Search and Rescue coordination to ships to a circular or rectangular area;
- Shore-to-ship distress alerts to a circular area;

Coastal Warnings include the following types of messages (see Note):

- Navigational Warnings
- Meteorological Warnings
- Ice reports
- Search and Rescue information, acts of piracy warnings, tsunami and other natural phenomena
- Meteorological forecasts
- Pilot and VTS service messages
- AIS service messages
- LORAN system messages
- GNSS messages
- Other electronic navigational aid messages
- Other Navigational Warnings
- No messages on hand

Note: The SafetyNET coastal warning service is made available for the transmission of MSI in areas where NAVTEX service is not provided.

Availability of MSI in different areas

To avoid excessive duplication of broadcasts, the IMO has authorised the following arrangements:

For a given NAVAREA/METAREA or other area, which is covered by more than one Ocean Region satellite, scheduled broadcasts of MSI, such as Navigational Warnings and meteorological information, are made only via a single nominated satellite/Ocean Region. For a NAVAREA/METAREA or other area which is covered by more than one Ocean Region satellite, unscheduled broadcasts of MSI, such as gale warnings and distress alert relays, are made via all satellites/Ocean Regions which cover the area concerned.

Repeat broadcasts of MSI

Some classes of Inmarsat C receivers MESS may not provide uninterrupted monitoring of the channel used for MSI broadcasts and may switch to a different channel for normal commercial traffic.

To improve the probability of these mobile terminals receiving MSI broadcasts, Information Providers re-broadcast some messages:

- Unscheduled messages, such as distress alerts and gale warnings are re-broadcast 6 minutes after the initial broadcast;
- Scheduled broadcasts, such as Navigational Warnings and other longer-term information are repeated at every scheduled time, for as long as they remain in force.

Typical MSI broadcasts:

MSI messages may be broadcast with a key-word in their header indicating the priority of the message – DISTRESS or MAYDAY for priority 3, URGENT or PAN PAN for priority 2 and SAFETY or SÉCURITÉ for priority 1.

The date and time of the message is in UTC.

The priority of the message – Safety, Urgency or Distress is given in the message header. The terminal responds automatically to Urgency and Distress priority messages by giving an audible/visual alarm and automatic printing of the message.

The term PosOK that some Inmarsat C and mini-C models include in the message header tells the operator that the EGC receiver has been updated with the ships position within the last 4 hours and position is valid. Otherwise the indicator will change to NoPOS.

Reduce the number of alarms

Your receiver is built to give an audible/visual alarm on receiving MSI with Distress or Urgency messages to which you should respond immediately. To make sure that you do not get any unnecessary alarms, however, you should do the following:

Keep the ship's position updated, to ensure that the receiver rejects messages for any geographic areas which do not include the ship's position.

Good operating practice

The following advice is given to help obtain the best possible use of the SafetyNET service:

- Ensure any equipment associated with the EGC receiver is working properly, as indicated in the manufacturer's instructions, and that the printer is loaded with paper and print cartridge.

- Make sure the Inmarsat C MES monitors the appropriate satellite/Ocean Region at the time of a scheduled broadcast if you are in overlap area of two or three satellites.
- Make sure that the terminal is not storing unwanted messages, and has storage space for new messages.
- If the printer has an option for printing in a small font, consider selecting this option to reduce the amount of paper used for messages.
- Keep watching your current position.
- On the terminal, enter all NAVAREAs/METAREAs and coastal areas for which you want to receive MSI, considering your intended voyage. Also enter the Coastal warning message types you want to receive, rejecting any unwanted types.
- While in port, keep the EGC receiver in operation, to ensure that you have received all necessary MSI before sailing.
- At the scheduled time make sure that the receiver is tuned to the appropriate channel/Ocean Region.
- When sailing from one Ocean Region to another region ensure that the terminal is manually "Logged in" to the new region when it is required. An alarm will sound when synchronisation has been lost due to vessel sailing out of coverage of an Ocean Region. Manual "Logging in" to the new Ocean Region will automatically cause the system to "Log the MES out" of the previous Ocean Region.

Throughout the voyage, ensure that a written log is kept of the identities of all received messages, and a printed copy is kept of all distress traffic. Other messages should be kept on the bridge for as long as they remain in force.

What to do about missed messages

If you think you have missed any messages, for example at a scheduled broadcast time, you can:

- Switch the terminal off and on again – this will clear the internal memory of all stored message IDs, so that if the message is re-broadcast, your receiver will not reject it as a repeated message, and will store/print it.

Regular position updates

Your EGC receiver **MUST** be updated regularly with the ship's position. The reasons for updating your EGC receiver regularly with the ship's position include:

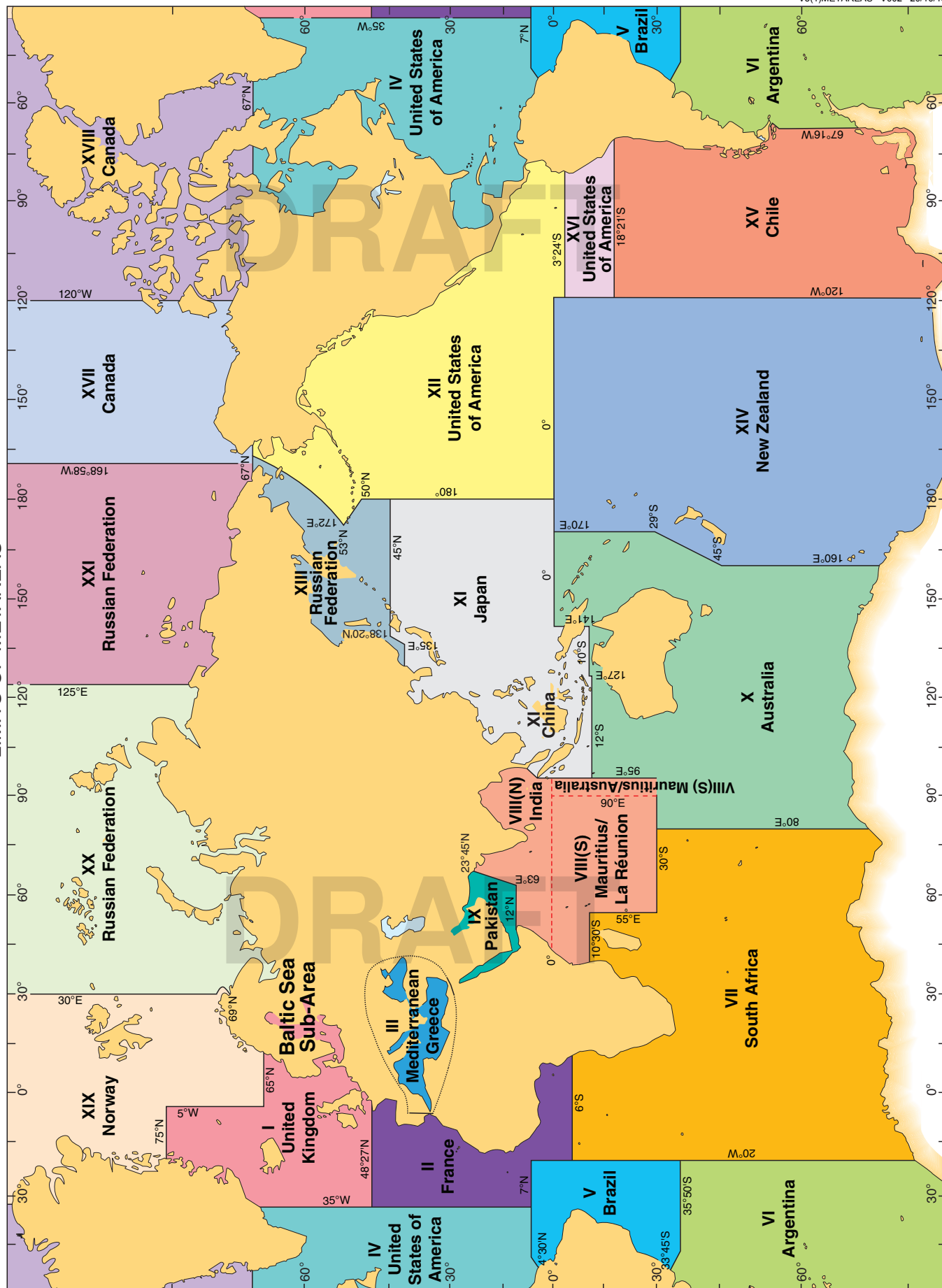
- To receive and print only messages for the area where the ship is navigating; if the ship's position has not been updated for 4 hours (depending on the model), the receiver will automatically print or store all geographically addressed messages within the entire Ocean Region.
- To decide if the receiver should receive and print a message addressed to additional geographic areas.

Another important reason for updating the terminal regularly with the ship's position, while not directly related to the SafetyNET service is to ensure that the correct position is given if a distress alert has to be sent.

Two ways are available to update a terminal with the ship's position:

- **Automatically**, using a built-in GNSS receiver; most modern MES models now contain an integrated GPS receiver, whilst older models may be interconnected to a separate on-board GPS receiver.
- **Manually**, by keying position coordinates directly into the terminal; IMO requires this be done every 4 hours.

DRAFT



EGC SAFETYNET SYSTEM

Transmission schedule for full GMDSS service

NAVAREA	NAV information		METAREA	MET information	
	Coordinator	Times (UTC)		Issuing country	Times (UTC)
I	United Kingdom	0530, 1730 (AOR-E)	I	United Kingdom	0930, 2130 (AOR-E) Warnings only on receipt (AOR-W)
II	France	0430 1630 (AOR-E)	II	France	1015 2215 (AOR-E / AOR-W)
III	Spain	1200, 2400 & on receipt (AOR-E)	III	Greece ¹	1000, 2200 (AOR-E)
IV	United States	1000, 2200 (AOR-E / AOR-W) (2200 Ice reports N Atlantic) 0900 2100 (AOR-W) French West Indies 0900 2100 (AOR-W) French Guyana	IV	Canada (Hudson Bay & Approaches)	0300 1500 (AOR-W) ⁶
				United States	0430, 1030, 1630, 2230 (AOR-E / AOR-W)
V	Brazil	0030, 1230 (AOR-E)	V	Brazil	0730, 1930 (AOR-E) Coastal Warnings for Amazon Basin and additional coastal areas (AOR-E)
VI	Argentina	0200, 1400 (AOR-W)	VI	Argentina	0230 1730 (AOR-W)
VII	South Africa	0940 1940 (AOR-E / IOR) 0040, 1240 (IOR) Réunion 0140, 1340 (IOR) Kerguelen Islands 0330, 1530 (IOR) Mayotte	VII	South Africa	0940, 1940 (AOR-E / IOR) ^{2,5}
VIII	India	1000 2200 (IOR) 0040, 1240 (IOR) Réunion 0330, 1530 (IOR) Mayotte	VIII(N)	India	0900, 1800 for N of 0° (IOR)
			VIII(S)	Mauritius / Réunion	0130, 1330 for S of 0° (IOR) 0000 ³ , 0600 ³ , 1200 ³ , 1800 ³ for S of 0° (IOR)
				Australia	Warnings only for S of 0° and E of 90°E (IOR)
IX	Pakistan	0300, 1500 (IOR)	IX	Pakistan	0700 1900 ⁷ (IOR)
X	Australia	0700, 1900 & on receipt (IOR / POR) 0140 1340 (POR) New Caledonia	X	Australia	1030, 2330 (IOR)
					1100, 2300 (POR)
					Coastal Warnings – see Figure SN-10M
XI	Japan	0005, 1205 (POR / IOR)	XI	China	0330, 1015, 1530, 2215 (IOR)
				Japan	0230, 0830, 1430, 2030 for N of 0° (POR) 0815, 2015 ⁴ for S of 0° (POR)
XII	United States	1030, 2230 (POR / AOR-W)	XII	United States	0545, 1145, 1745, 2345 (POR / AOR-W)
XIII	Russian Federation	0930, 2130 (POR)	XIII	Russian Federation	0930, 2130 (POR)
XIV	New Zealand	0900, 2100 (POR) New Zealand 0140, 1340 (POR) New Caledonia 0030, 1230 (POR) Wallis & Futuna 0250, 1450 (POR) French Polynesia	XIV	New Zealand	0330, 0930, 1530, 2130 (POR) Warnings 0330, 1530 (POR) for Area Southern 0930, 2130 (POR) for Areas Subtropic, Forties, Pacific and Islands 0130, 1330 (POR) for NZ coast only
XV	Chile	0210, 1410 (AOR-W)	XV	Chile	0100, 1330 (AOR-W) for Sea Areas 1–8 1440 (AOR-W) for Sea Area 9 0345, 1845 (AOR-W) for Sea Area 10
XVI	Peru	0500, 1700 (AOR-W)	XVI	Peru	0515, 1115, 1715, 2315 (AOR-W)
XVII	Canada	1130, 2330 (POR) ⁶	XVII	Canada	0300, 1500 (POR) ⁶
XVIII	Canada	1100, 2300 (AOR-W) ⁶	XVIII	Canada	0300, 1500 (AOR-W) ⁶
XIX	Norway	0630, 1830 (AOR-E)	XIX	Norway	1100, 2300 (AOR-E)
XX	Russian Federation	0530, 1730 (IOR)	XX	Russian Federation	0600, 1800 (IOR)
XXI	Russian Federation	0630, 1830 (POR)	XXI	Russian Federation	0600, 1800 (POR)

¹ Scheduled bulletins and warnings for Western Mediterranean Sea are prepared by France.² Forecasts for areas 30°S - 50°E / 50°S - 80°E and tropical cyclone warnings are prepared by Réunion.³ Tropical cyclone warnings (if any) issued by Réunion as an unscheduled broadcast.⁴ Scheduled bulletins and warnings for south of the equator prepared by Australia.⁵ Transmission via AOR-E for areas West of 20°E, transmission via IOR for areas East of 20°E.⁶ For areas South of 75°N and only during the shipping season.⁷ Only if cyclone/depression development.

Broadcast times for MET information published in the table above are for routine Weather Messages. Storm Warnings are also broadcast on receipt. Routine broadcasts of Navigational Warnings and meteorological forecasts are made at scheduled times over a single nominated satellite for each NAVAREA/METAREA. Unscheduled broadcasts of SAR alert relays and severe weather warnings will be made over all satellites which serve the area concerned.

Figure SN-1

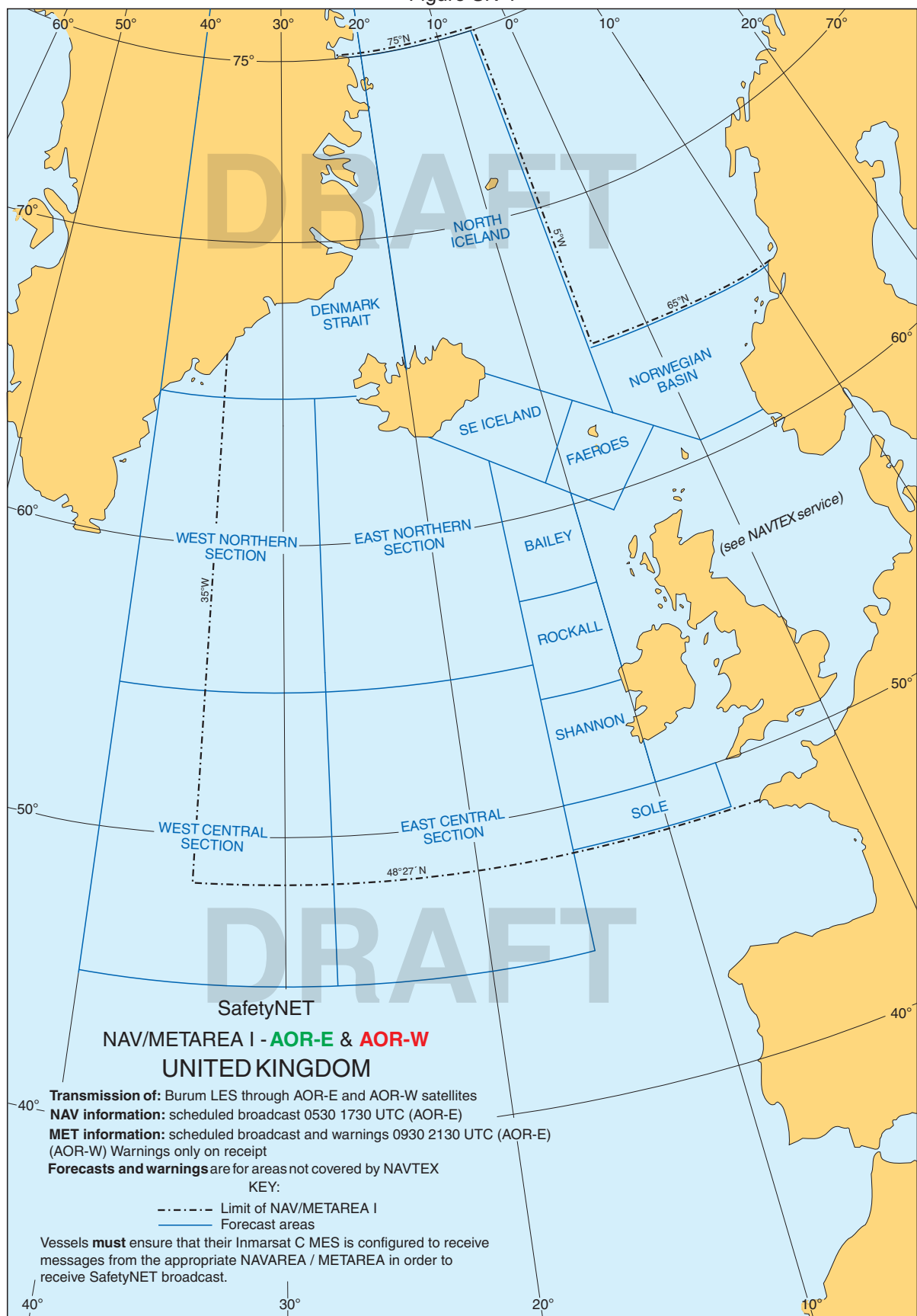
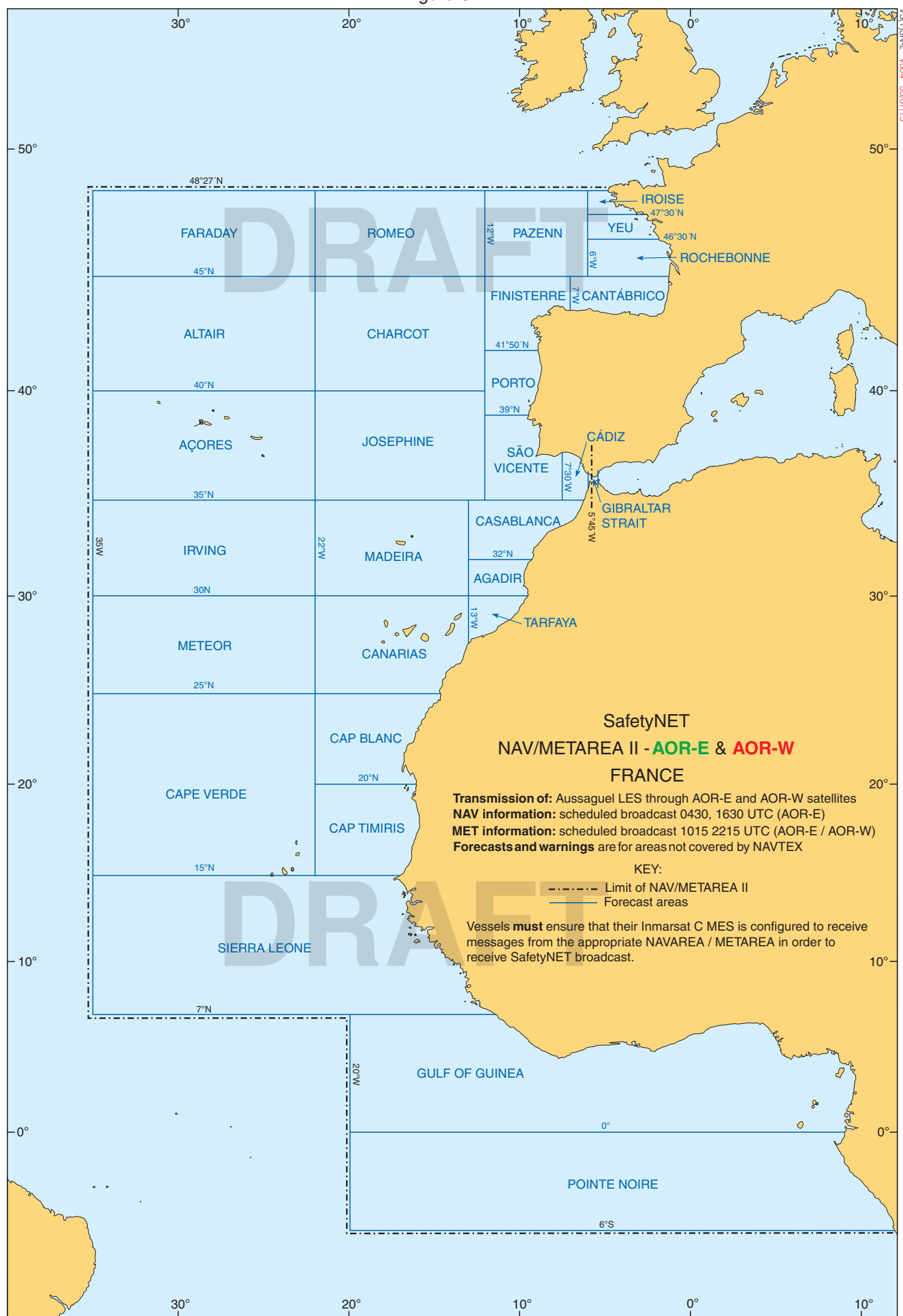
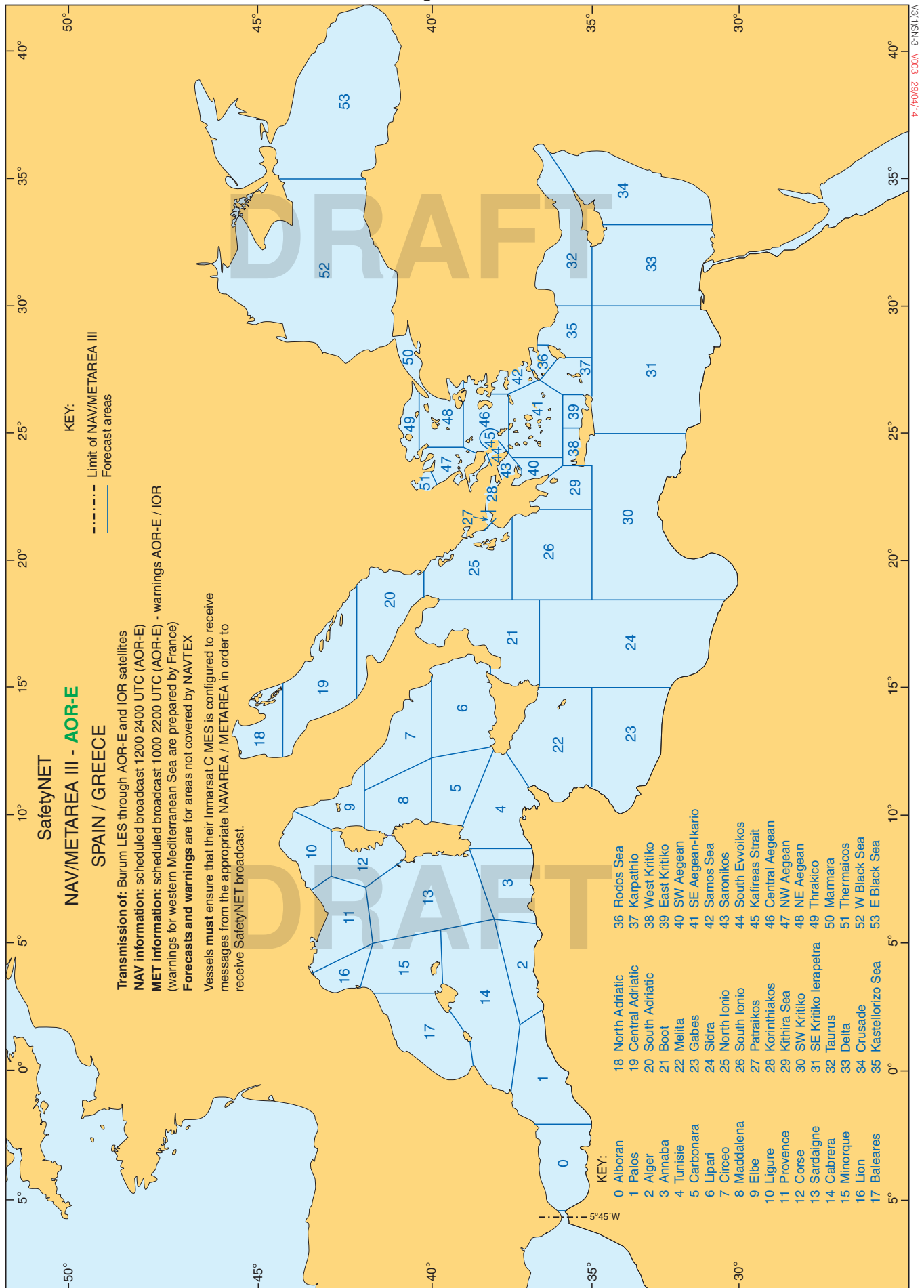


Figure SN-2



V3(1)SN-2 V004 30/07/15

Figure SN-3



13/1 SN-3 0003 29/04/14

Figure SN-7

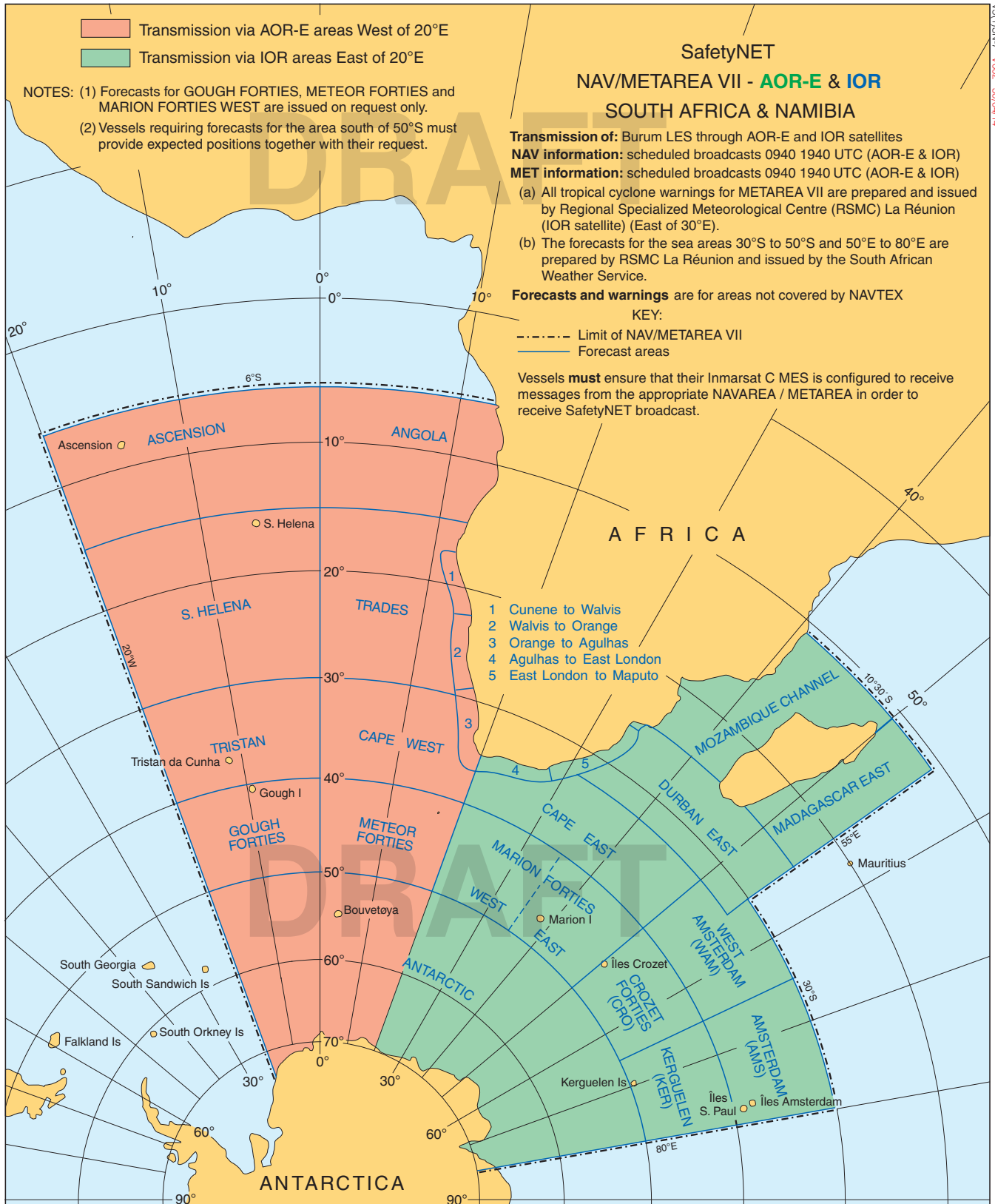


Figure SN-7/8

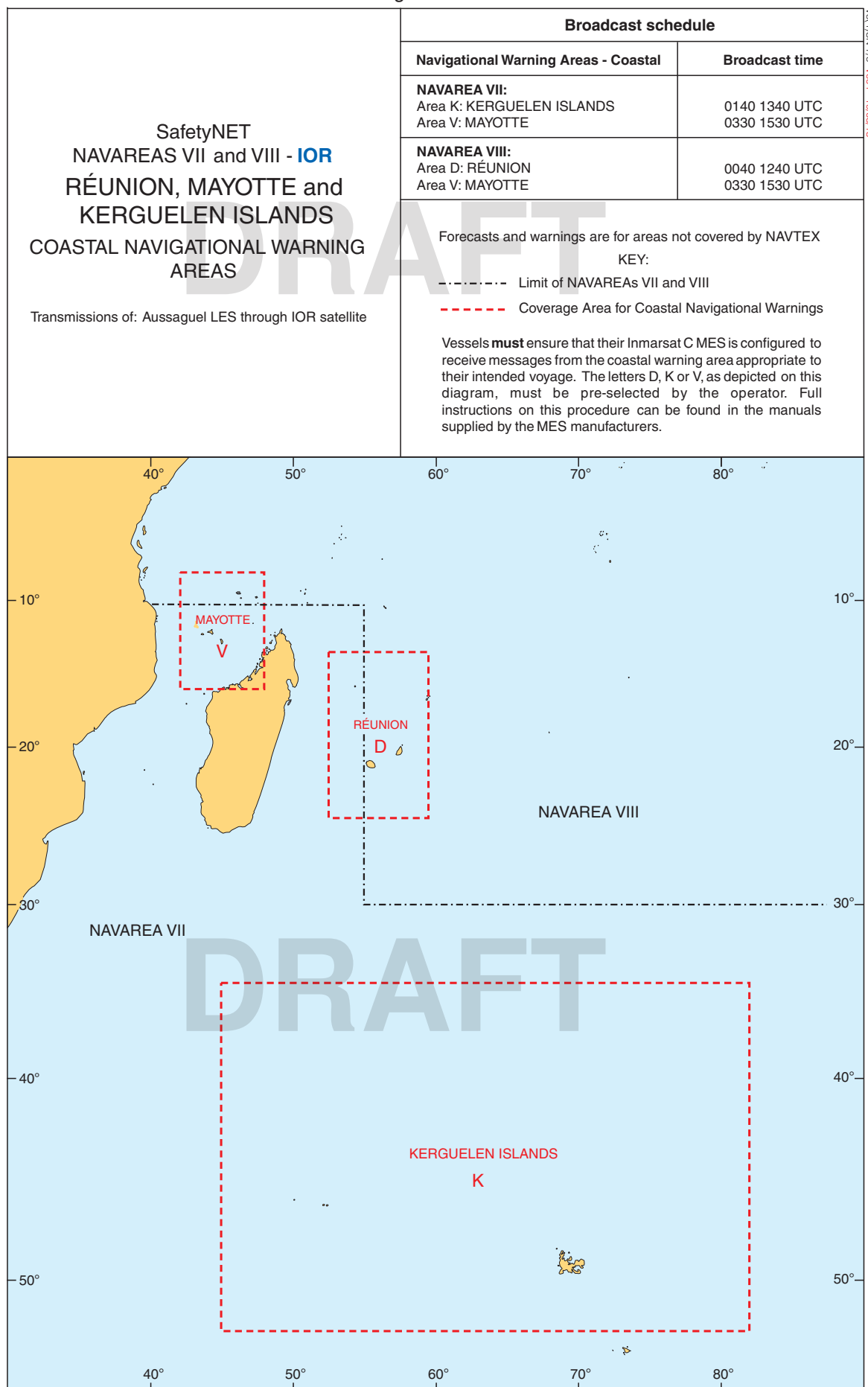
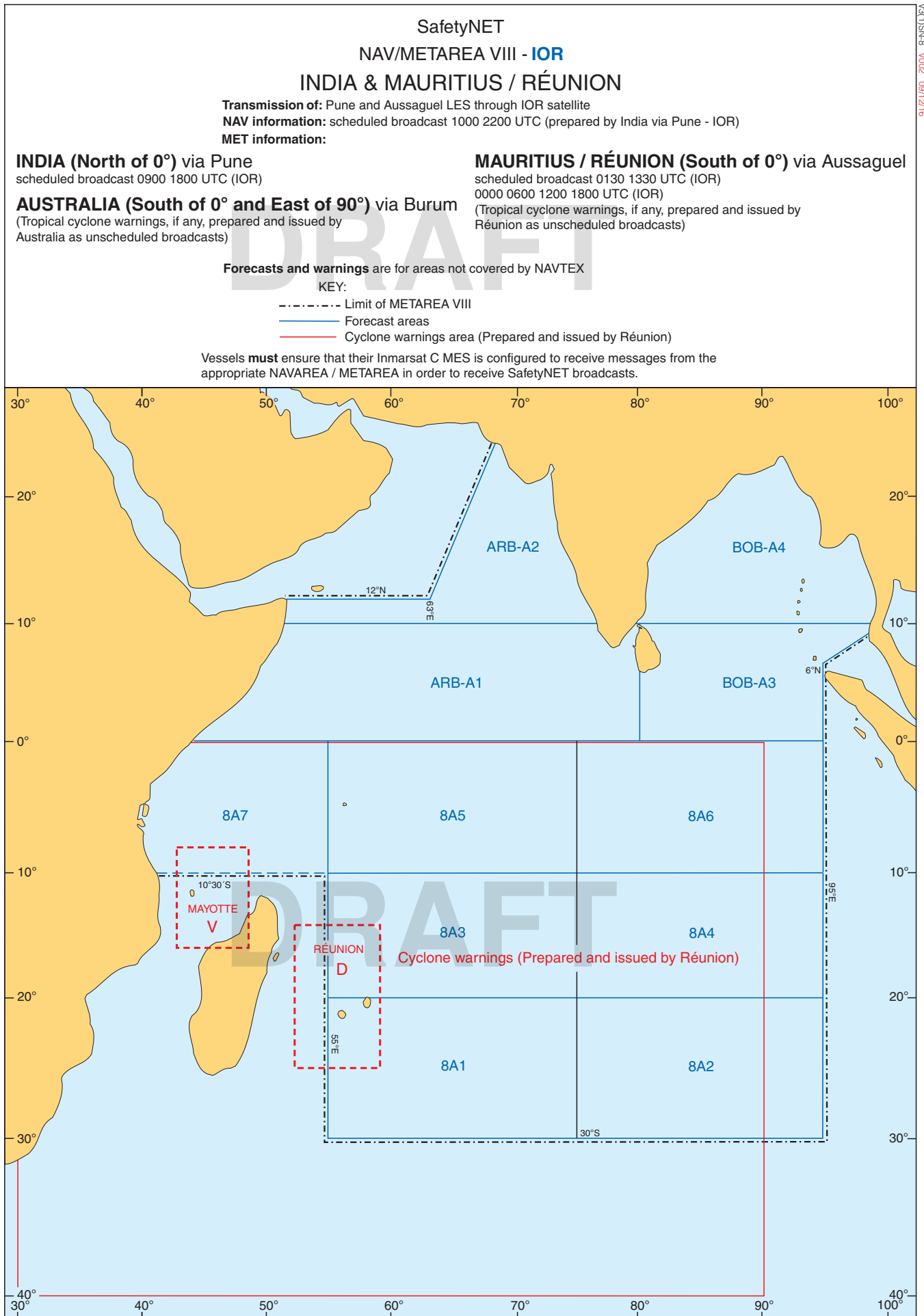


Figure SN-8



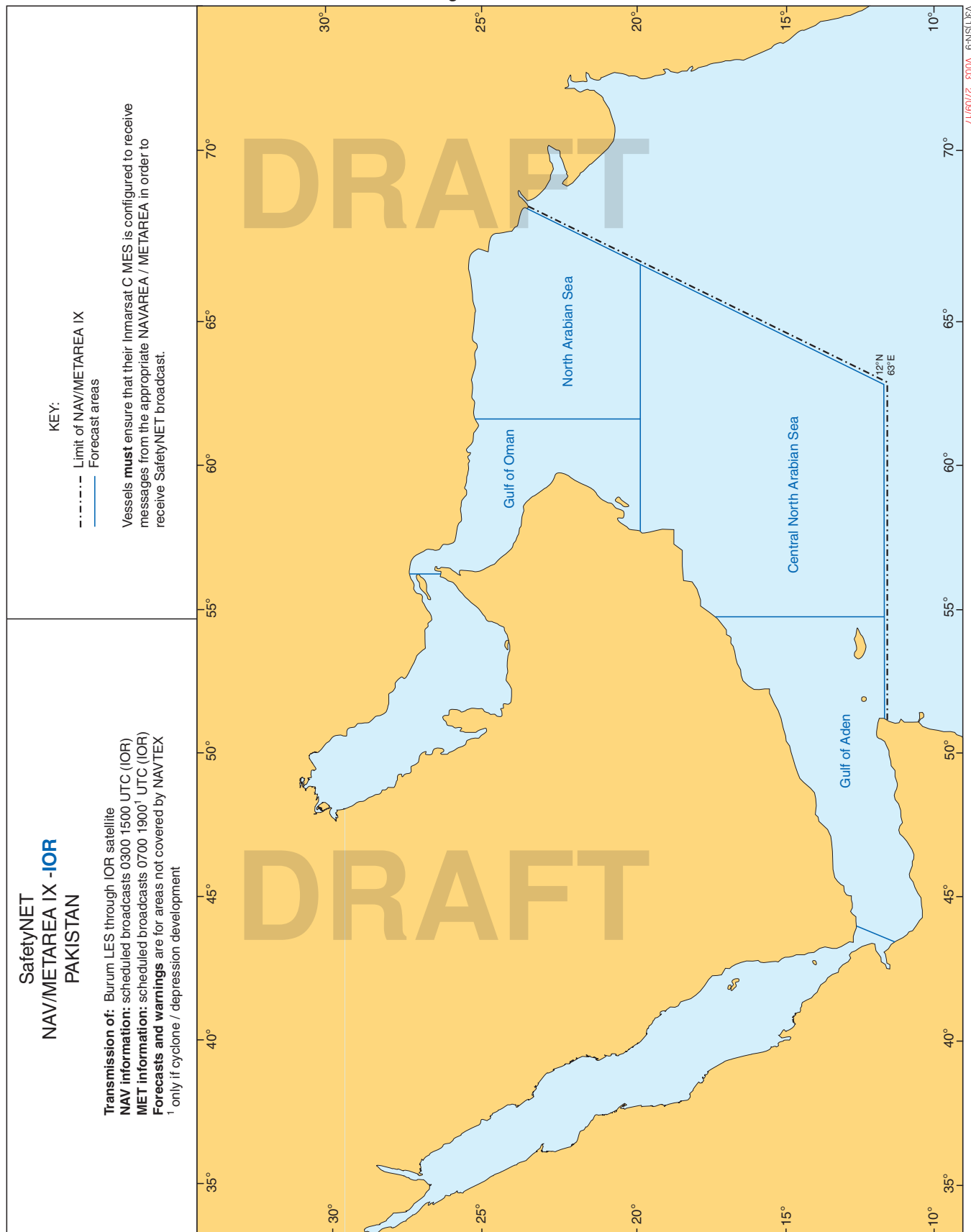


Figure SN-9

Figure SN-17-21

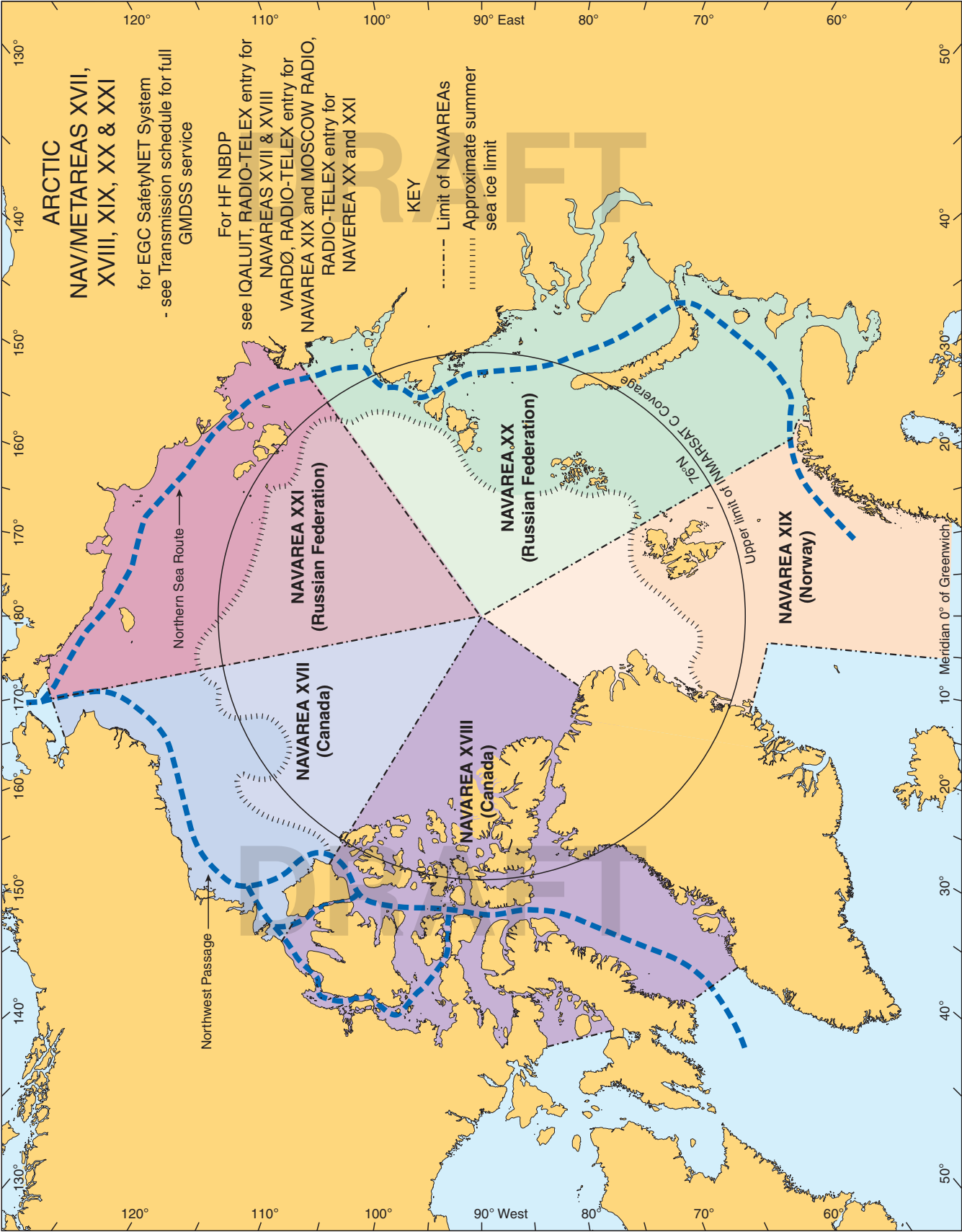


Figure SN-20

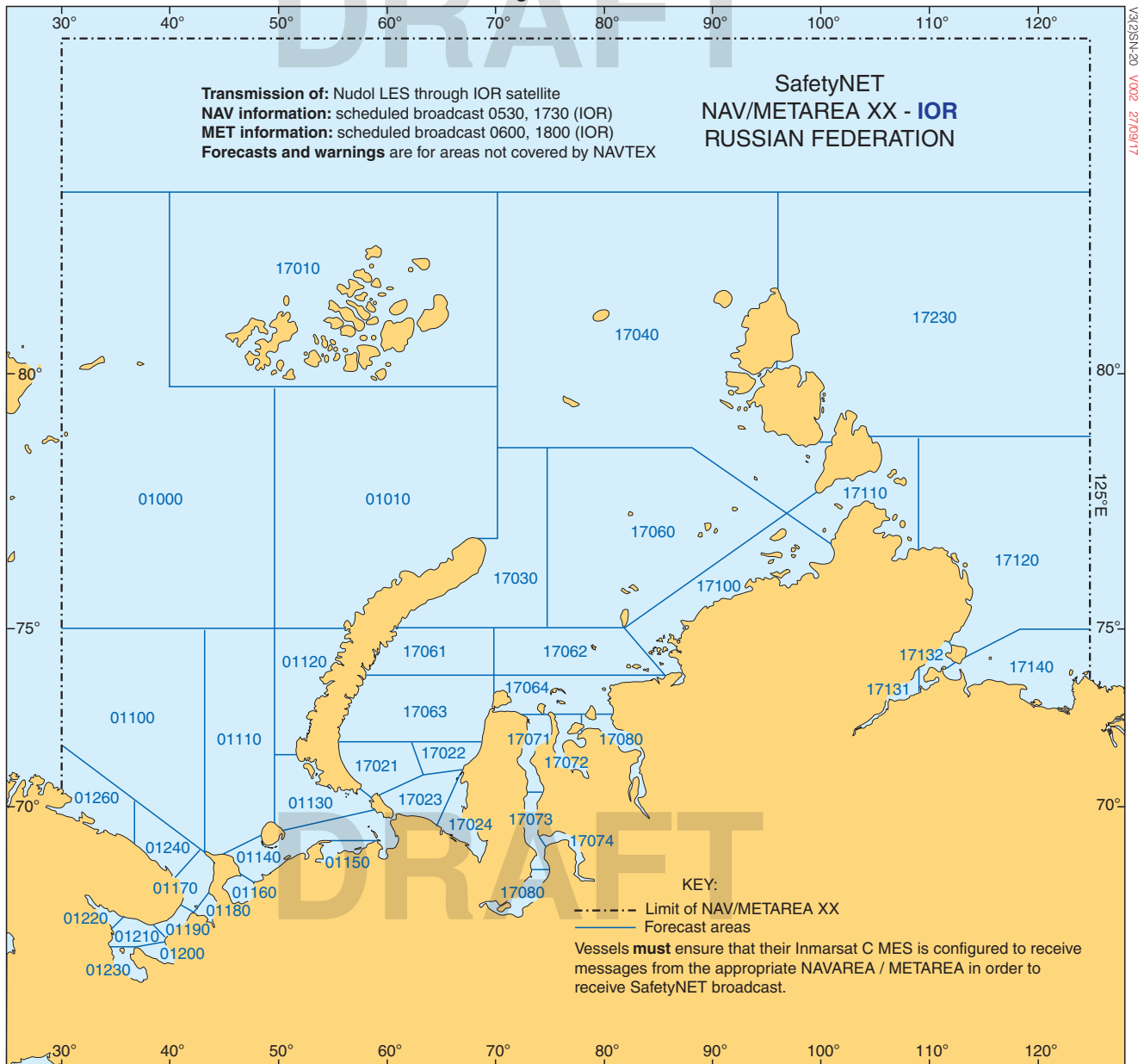
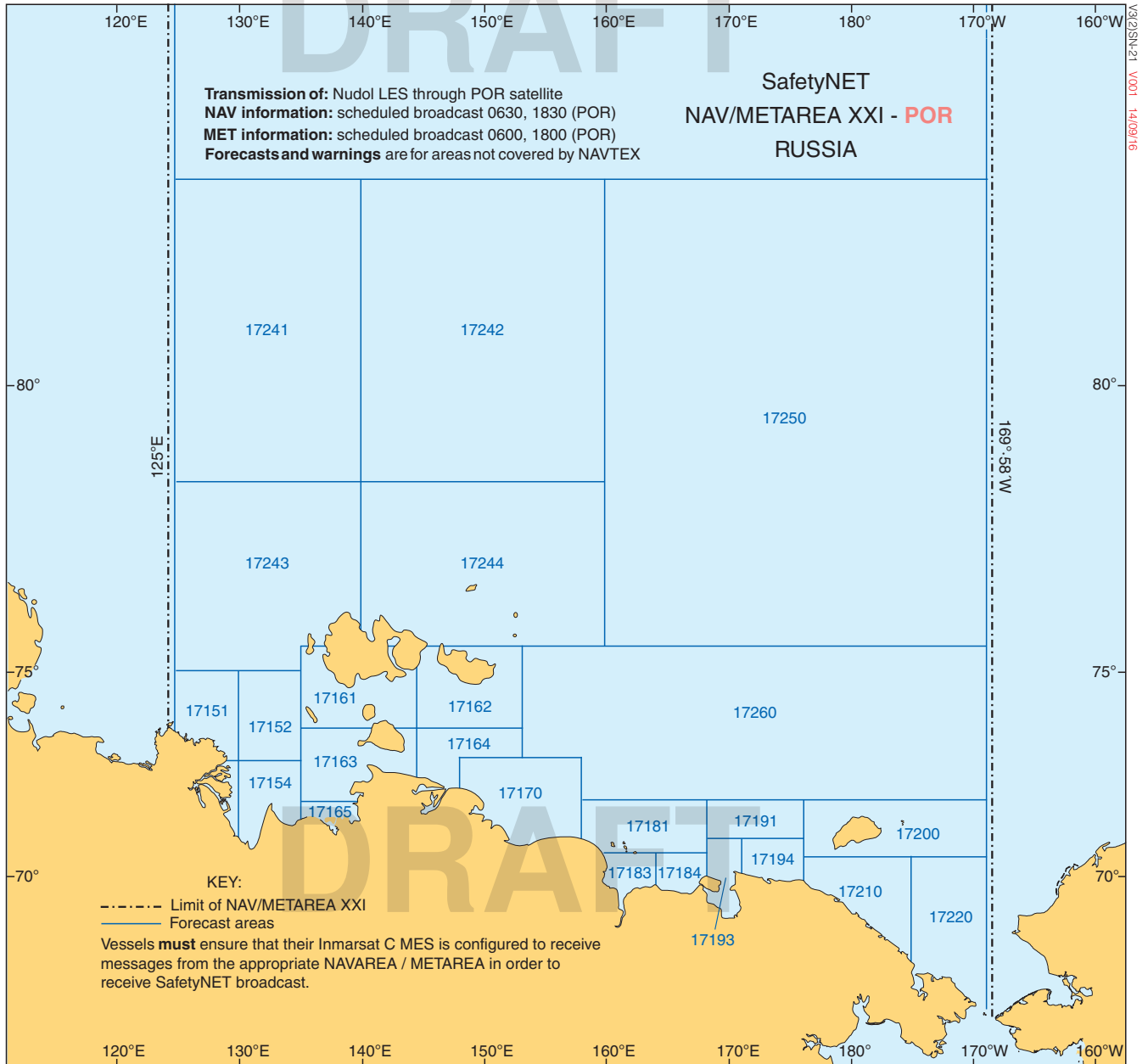


Figure SN-21



NAVTEX

NAVTEX is an international automated direct-printing service for promulgation of navigational and meteorological warnings and urgent information to vessels. The information transmitted may be relevant to all sizes and types of vessel and the selective message-rejection feature ensures that every mariner can receive a safety information broadcast which is tailored to his particular needs. For full details of NAVTEX see ALRS Volume 5 (NP285).

Navtex Reception

Users should be aware that where there is a significant overland path between the transmitter site and the user, the strength of the signal will be markedly reduced, as will the range at which that signal may be received. Furthermore the topography of ports and harbours and the presence of high rise buildings may distort or preclude reception of NAVTEX.

Definitions

NAVTEX means the system for the broadcast and automatic reception of MSI by means of narrow-band direct-printing telegraphy (NBDP).

International NAVTEX service means the coordinated broadcast and automatic reception on the frequency 518 kHz of MSI by means of NBDP using English.

National NAVTEX service means the broadcast and automatic reception of MSI by means of NBDP using frequencies other than 518 kHz and other national languages. These services may simply repeat the messages broadcast over the International NAVTEX service but in the national language, or they may be tailored to meet particular national requirements, for example by providing different or additional information to that broadcast on the International NAVTEX service targeted at recreational vessels or fishing fleets. These NAVTEX services may be broadcast on 490 kHz or 4209.5 kHz or on nationally assigned frequencies.

Principal features of NAVTEX

The International NAVTEX service uses a single frequency with transmissions from nominated stations within each NAVAREA / METAREA, arranged on a time-sharing basis to reduce the risk of mutual interference. All necessary information is contained in each transmission.

A dedicated NAVTEX receiver which has the ability to select messages to be printed, according to:

- (a) a technical code ($B_1B_2B_3B_4$), which appears in the preamble of each message;
- (b) whether or not the particular message has already been printed.

Certain essential classes of safety information such as navigational and meteorological warnings and SAR information are non-rejectable to ensure that vessels using NAVTEX always receive the most vital information.

NAVTEX coordinators exercise control of messages transmitted by each station according to the information contained in each message and the geographical coverage required. Thus a user may choose to accept messages either from the single transmitter which serves the sea area around his position, or from a number of transmitters as appropriate. Ideally, the user should select the station within whose coverage his vessel is currently operating and the station into whose coverage area his vessel will transit next.

Message Priorities

Three message priorities are used to dictate the timing of the first broadcast of a new warning in the NAVTEX service. In descending order of urgency they are:

VITAL	for immediate broadcast, subject to avoiding interference to ongoing transmissions;
IMPORTANT	for broadcast at the next available period when the frequency is unused;
ROUTINE	for broadcast at the next scheduled transmission period.

NOTE: Both VITAL and IMPORTANT warnings will normally be repeated, if still valid, at the next scheduled transmission period.

The standard format of NAVTEX messages

Phasing signals	> 10 sec
ZCZC	Start of message group
$B_1 B_2 B_3 B_4$	B_1 : Transmitter identification B_2 : Subject indicator $B_3 B_4$: message number
Time of origin	Optional
Series identity + Consecutive number	
Message text	
NNNN	End of message
Idle signals aa.....a	> 2 sec
End of emission	

Transmitter Identification Character (B_1)

The transmitter identification character is a single unique identifier which is allocated to each transmitter. It is used to identify the broadcasts which are to be accepted by the receiver and those which are to be rejected, and also the time slot for the transmission.

Subject Indicator Character (B_2)

Information is grouped by subject on the NAVTEX broadcast and each subject group is allocated a subject indicator character.

The subject indicator character is used by the receiver to identify different classes of messages. The indicator is also used to reject messages which are not required by the vessel. Receivers also use the B_2 character to identify messages which, because of their importance, may not be rejected. The following subject indicator characters are in use:

NAVTEX

A = Navigational Warnings (cannot be rejected by the receiver)
 B = Meteorological Warnings (cannot be rejected by the receiver)
 C = Ice Reports
 D = Search and Rescue information and pirate attack warnings (cannot be rejected by the receiver)
 E = Meteorological Forecasts
 F = Pilot Service Messages
 G = AIS
 H = LORAN Messages
 I = Spare
 J = SATNAV Messages
 K = Other Electronic Navaid Messages (messages concerning radio navigation services)
 L = Navigational Warnings- additional to letter A (should not be rejected at the receiver (continuation of B₂ subject group "A"))
 V = Special services- allocation by the NAVTEX Panel
 W = Special services- allocation by the NAVTEX Panel
 X = Special services- allocation by the NAVTEX Panel
 Y = Special services- allocation by the NAVTEX Panel
 Z = No messages on hand

Message Number (B₃ B₄)

Each message within a subject group is allocated a serial number, B₃ B₄, between 01 and 99. This number will not necessarily relate to series numbering in other Radio Navigational Warning systems. On reaching 99, numbering will re-commence at 01 but avoiding the use of message numbers still in force.

A shortage of numbers will, 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 some subject groups, and B₂ = L may be used for additional Navigational Warnings, to receive the overflow from B₂ = A when necessary.

COMMON ABBREVIATIONS FOR THE INTERNATIONAL NAVTEX SERVICE

FOR WIND DIRECTION			
N	North / Northerly	S	South / Southerly
NE	Northeast / Northeasterly	SW	Southwest / Southwesterly
E	East / Easterly	W	West / Westerly
SE	Southeast / Southeasterly	NW	Northwest / Northwesterly

FOR OTHER TERMS			
BACK	Backing	NM	Nautical miles
BECMG	Becoming	NOSIG	No significant change
BLDN	Building	NXT	Next
C-FRONT	Cold Front	OCNL	Occasionally
DECR	Decreasing	O-FRONT	Occlusion Front
DPN	Deepening	POSS	Possible
EXP	Expected	PROB	Probability / Probable
FCST	Forecast	QCKY	Quickly
FLN	Filling	QSTNR	Quasi-Stationary
FLW	Following	QUAD	Quadrant
FM	From	RPDY	Rapidly
FRQ	Frequent	SCT	Scattered
HPA	HectoPascal	SEV	Severe
HVY	Heavy	SHWRS	Showers
IMPR	Improving / Improve	SIG	Significant
INCR	Increasing	SLGT	Slight
INTSF	Intensifying / Intensify	SLWY	Slowly
ISOL	Isolated	STNR	Stationary
KMH	Km/h	STRG	Strong
KT	Knots	TEMPO	Temporarily / Temporary
LAT/LONG	Latitude / Longitude	TEND	Further outlooks
LOC	Locally	VEER	Veering

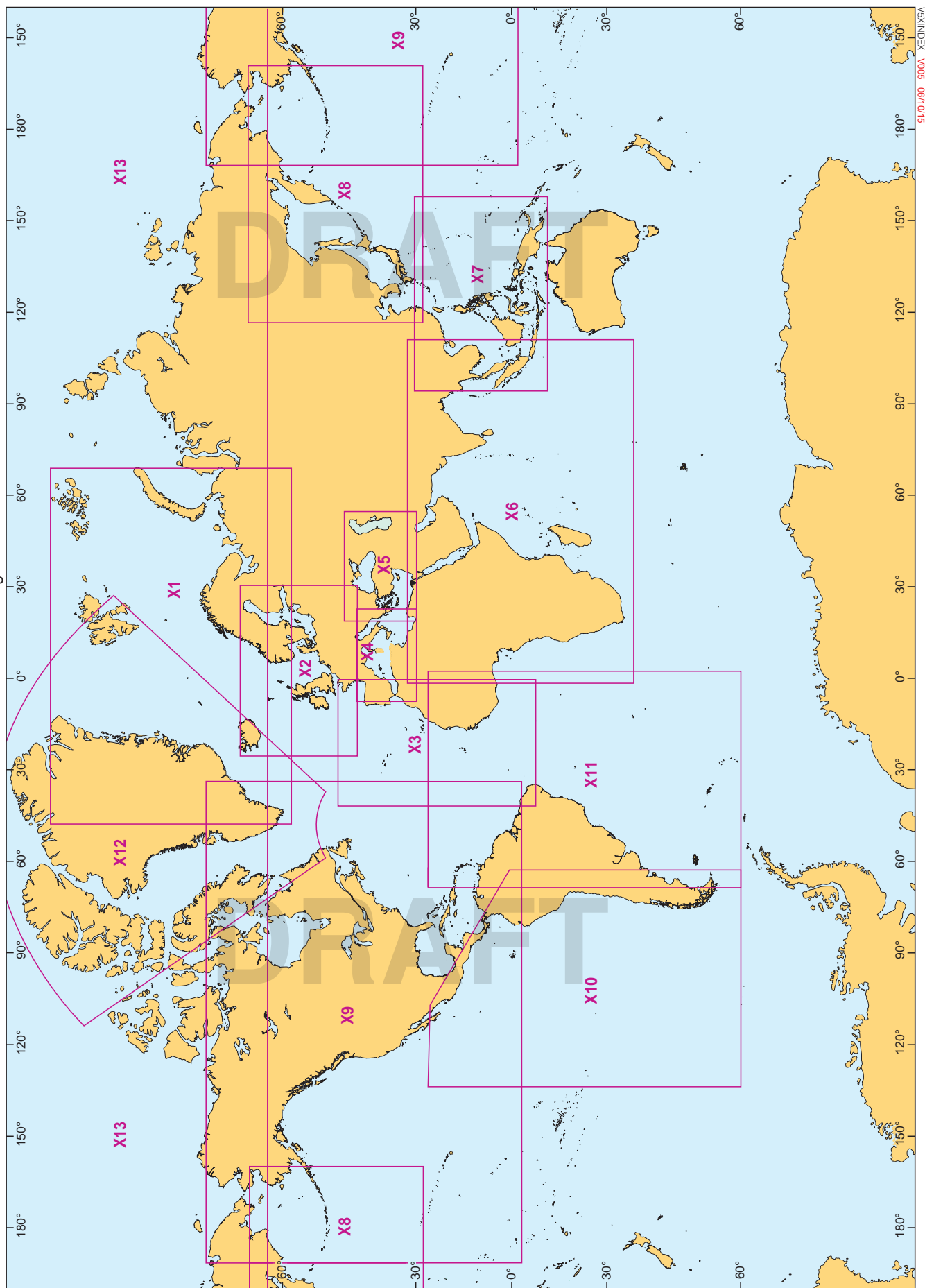
Continued overleaf

FOR OTHER TERMS			
M	Metres	VIS	Visibility
MET	Meteo.....	VRB	Variable
MOD	Moderate	W-FRONT	Warm Front
MOV	Moving / Move	WKN	Weakening
NC	No change		

DRAFT

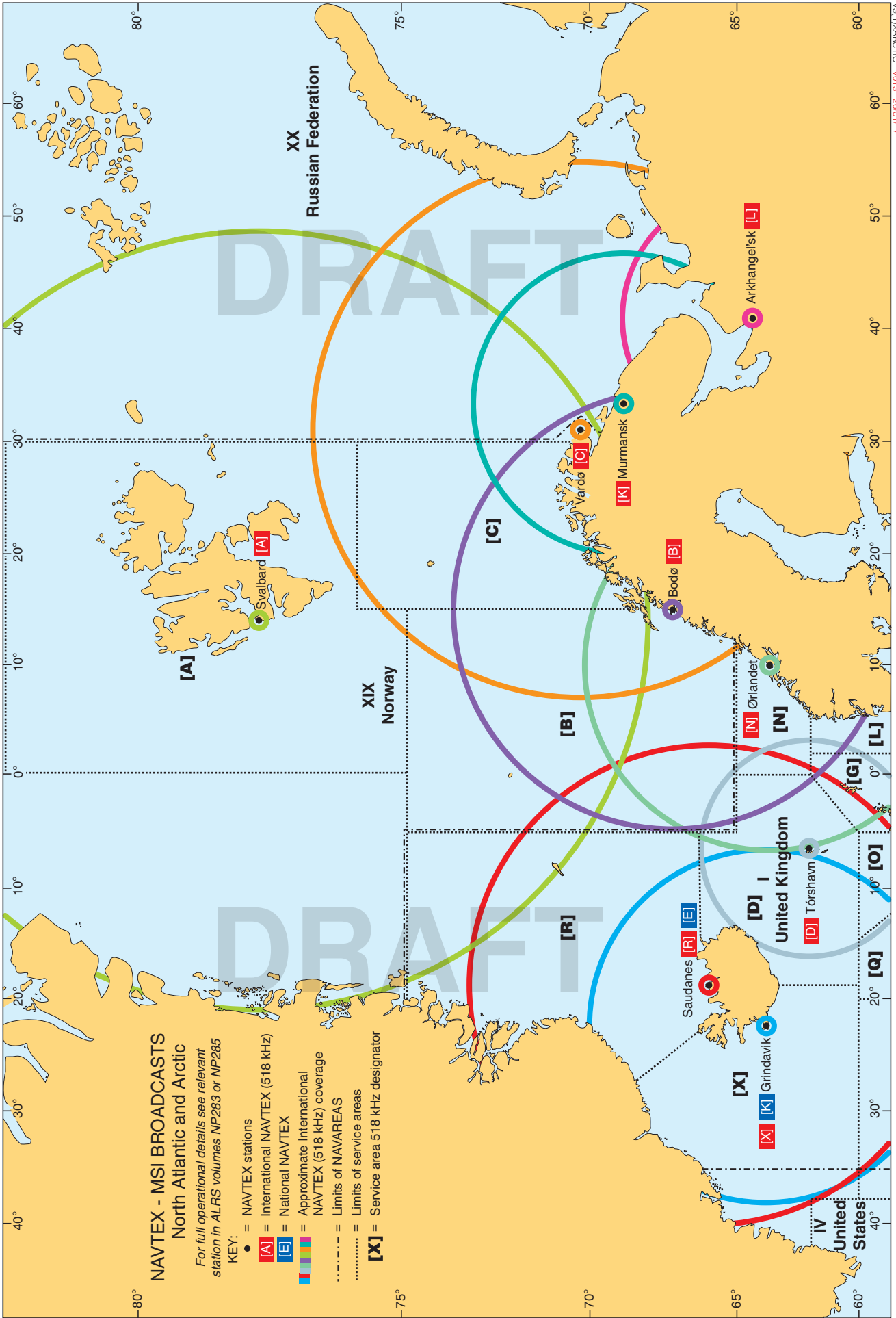
DRAFT

NAVTEX - Index of Diagrams

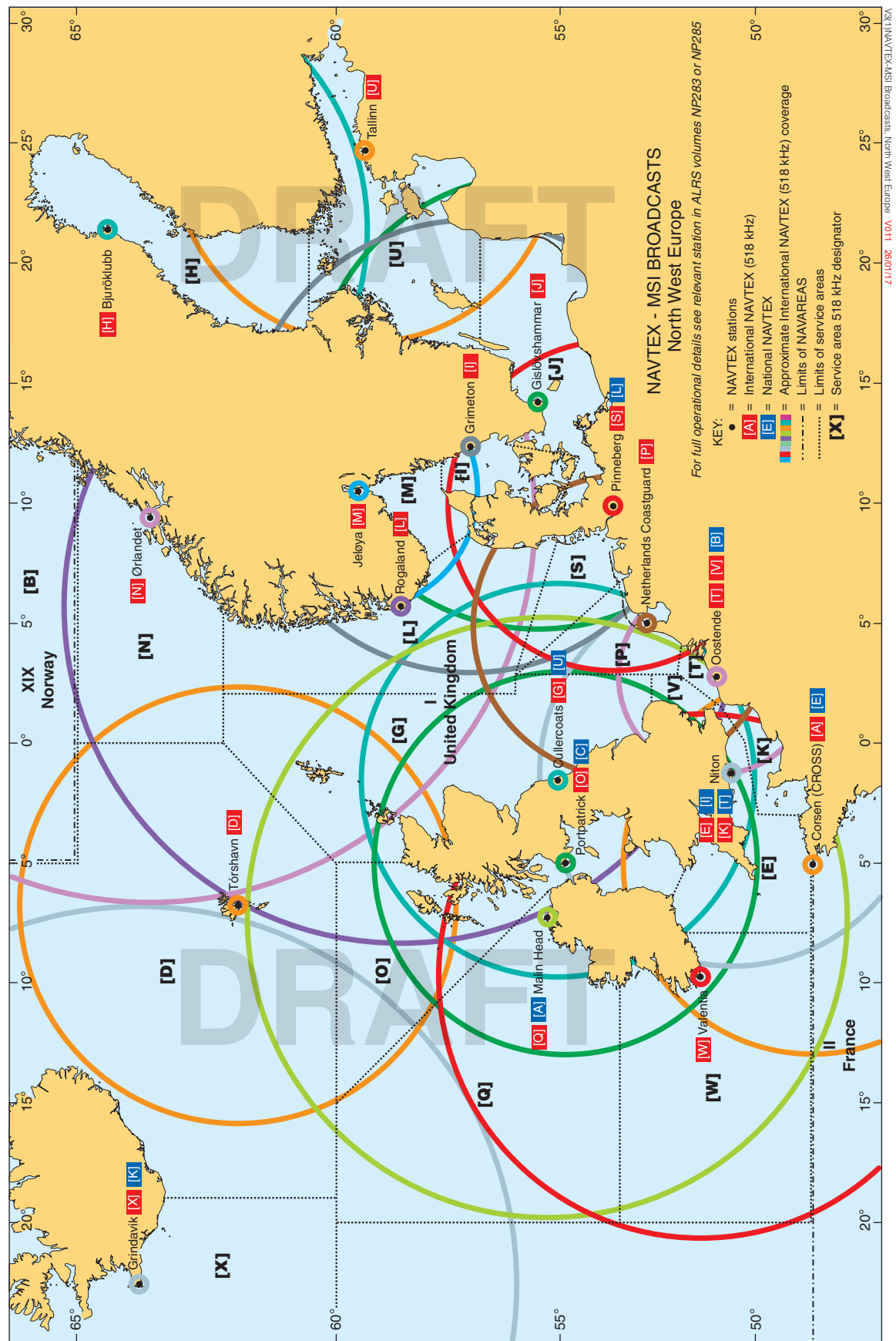


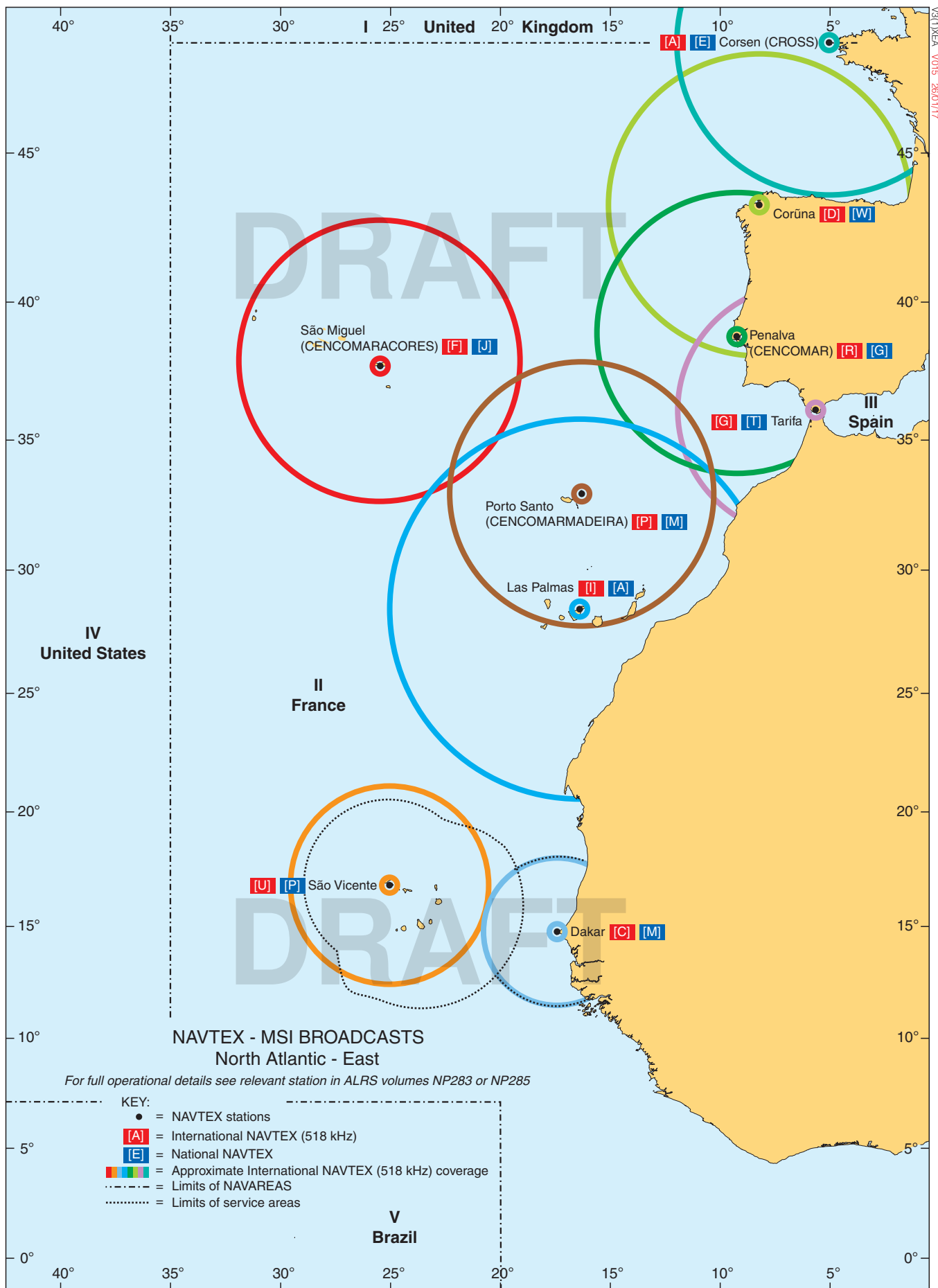
51/01/90 9000

X0

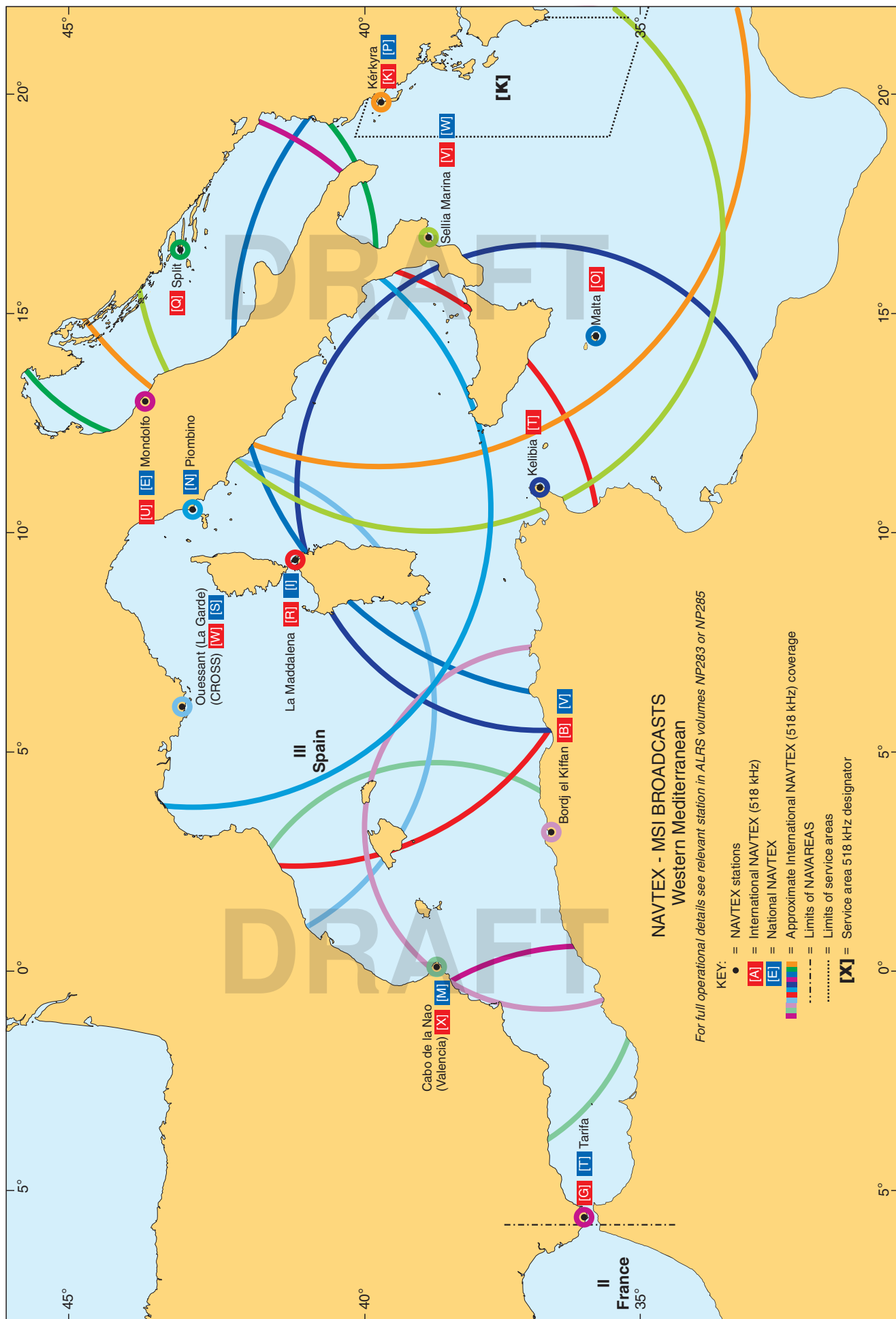


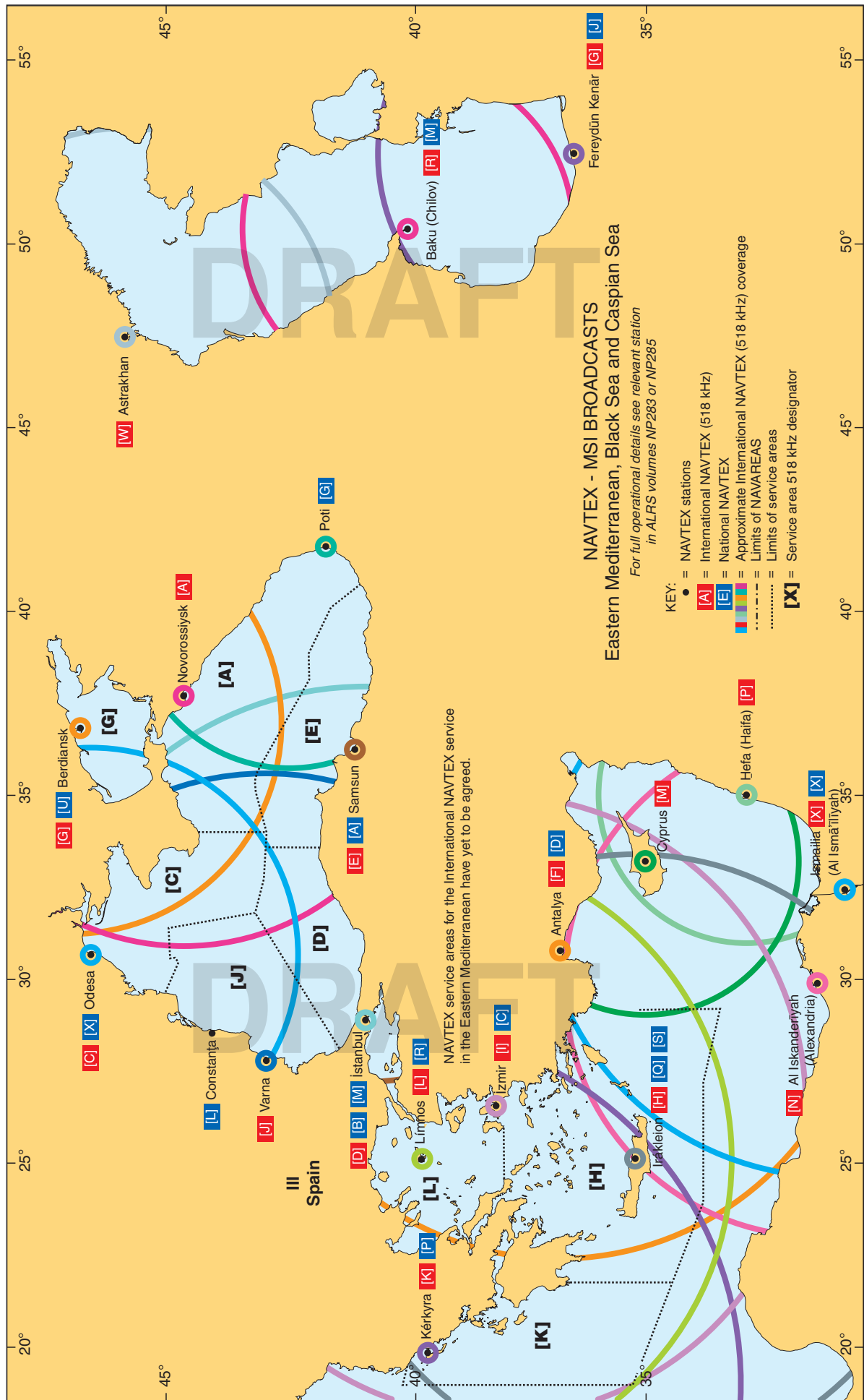
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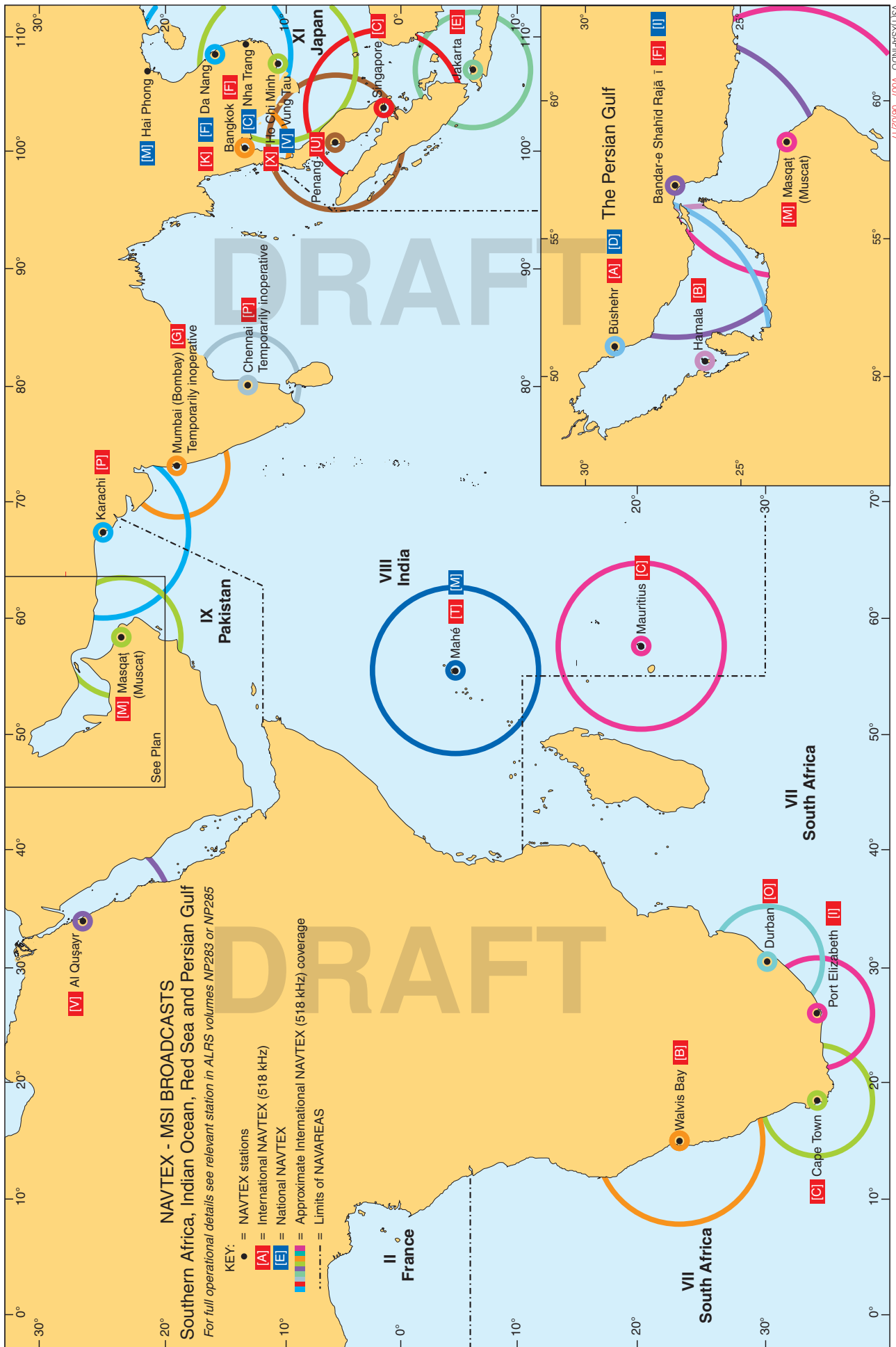




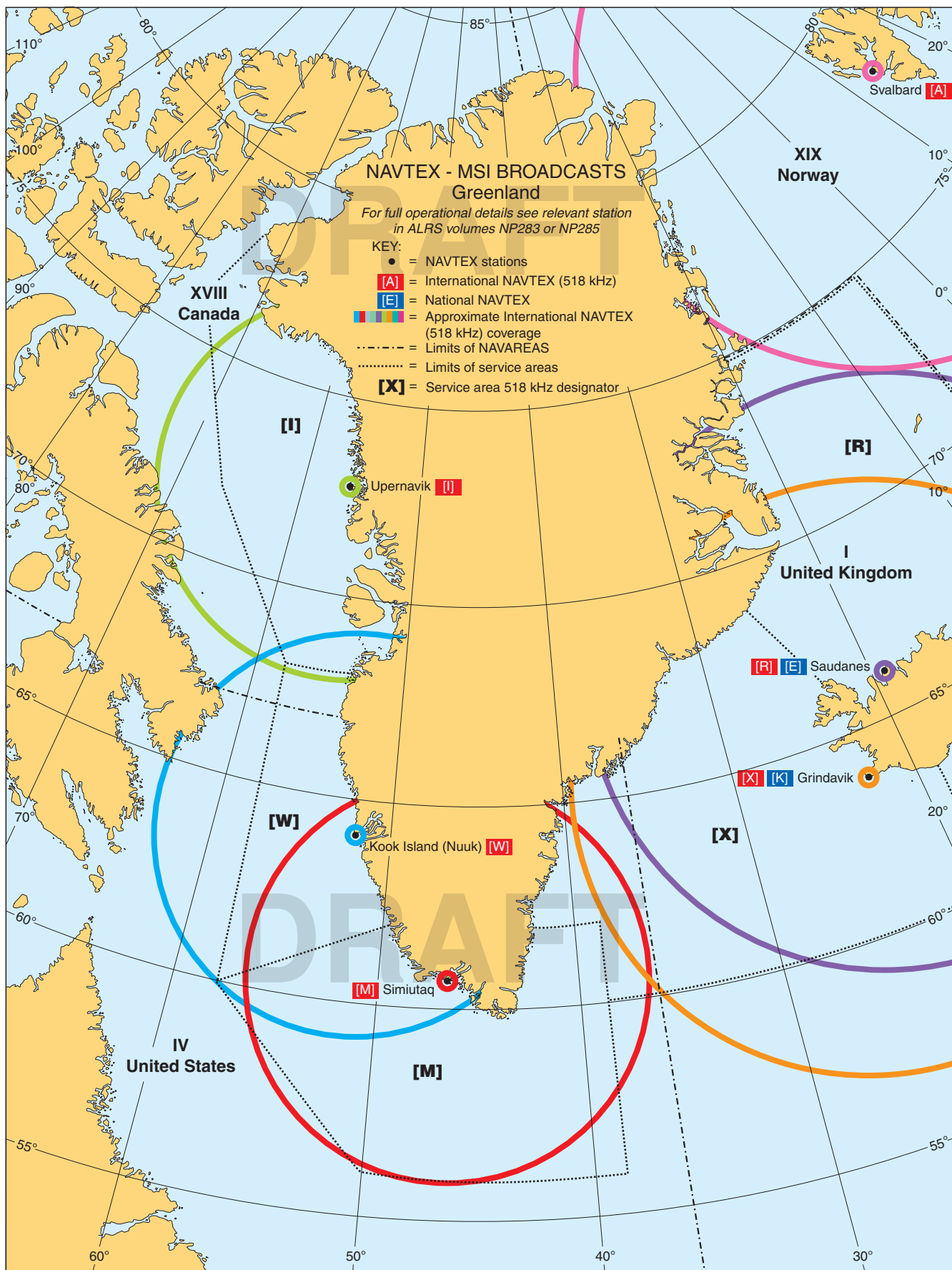
X3



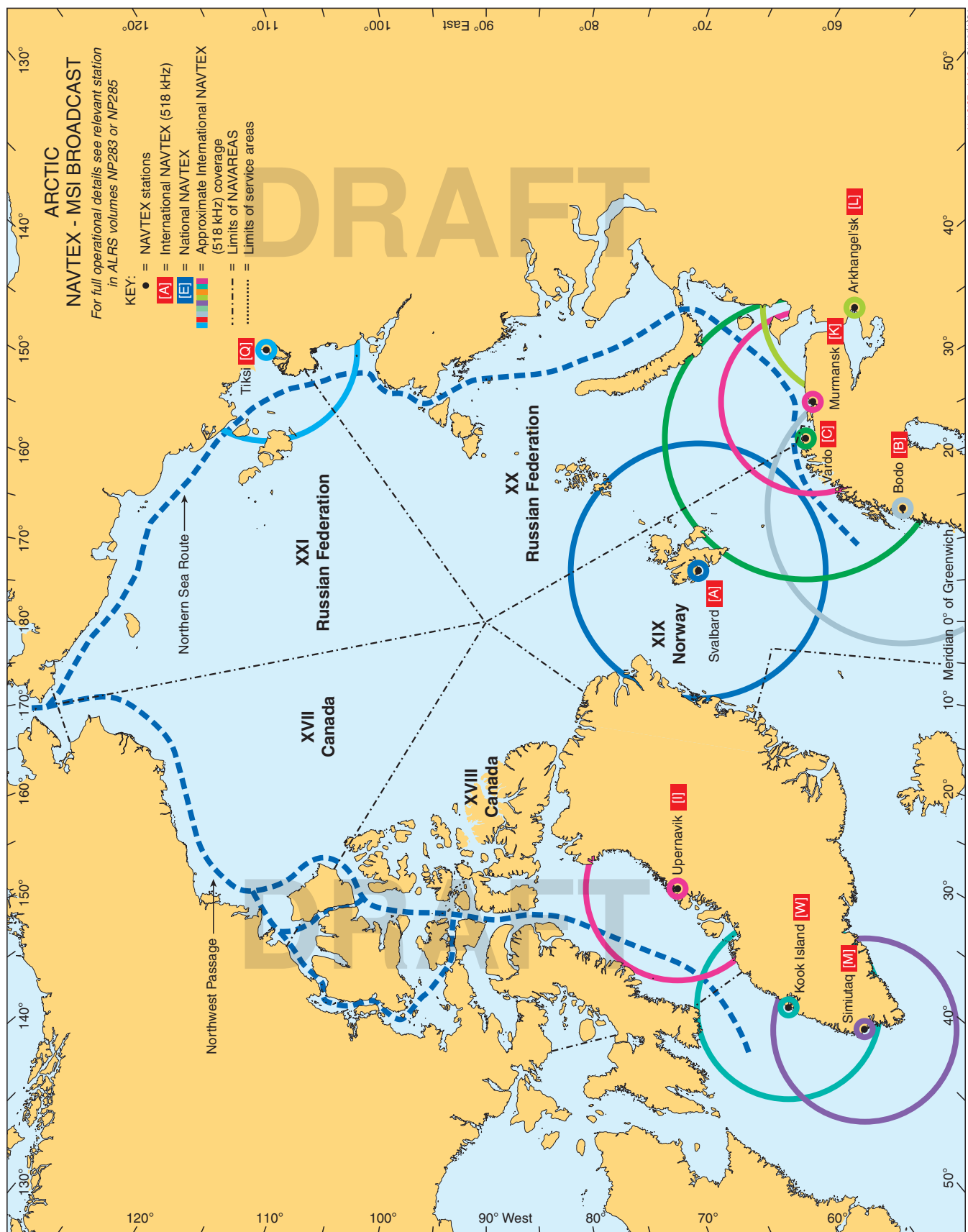








X12



RADIO-FACSIMILE

INTRODUCTION

These entries relate to facsimile transmissions of weather maps, ice charts and other information of interest to mariners.

Details are given of the frequencies employed, the times of the transmissions, the scale and limits of the map and the type of information broadcast.

EXAMPLE:

①

MURMANSK

68°52'·50N 33°05'·88E

②

(A)	(B)	(C)	(D)
A	6446	Resolute	H24
B	7470	IMB 56	1900- 0600
	7907		Summer
	8444		
DIAGRAM: page 40			

③

Map Areas			
B	1:53,000,000 (a) 20°N.90°W 20°N.20°E 70°N.90°E 70°N.20°W	3 1:15,000,000 (c) 52°N.31°W 45°N.61°E 24°N.10°W 21°N.37°E	WORLD (a) 70°N- 70°S covering all longitudes

④

(A)	(B)	(C)	(D)
Schedule			
3	48 hour surface wind forecast	0020(12) 1220(00)	120/576
B	36 hour forecast of surface pressure	0700(00)	
	Schedule chart	1850	90/576
WORLD	Weekly sea surface temperatures	1900	120/576

EXPLANATION:

①

MURMANSK 68°52'·50N 33°05'·88E

Station name and position

②

(A)

A
B

Letter designators are used to identify frequencies within the frequency table.

(B)

6446
7470
8444

Frequencies are expressed in kHz. Frequencies refer to the centre value about which the frequency shift takes place. This shift is generally ± 400 Hz and is not stated. Other shifts are shown by means of a footnote.

(C)

Resolute
IMB 56

Name / callsign of station.

(D)

H24
1900- 0600
Summer

Hours of operation on the given frequency relate to UTC. The absence of an entry should not be taken to imply that the service is continuous. If a frequency is used for only a part of the year the period of operation may be given.

DIAGRAM: page 40

Diagrams: An index diagram showing the coverage of **Map Areas** is included when possible.

- ③ 1:53,000,000 (a)
1:15,000,000 (c)
- ④ ③ 67°N.32°W 72°N.74°E
51°N.4°W 53°N.47°E
- ④ ③ B
3
WORLD
- ④ ③ 48 hour surface wind forecast
36 hour forecast of surface pressure
Schedule chart
- ④ ③ 0700(00)
0800(06)
1400(12)
- ④ ③ 120/576
90/576
- Map Areas:** Indicates the scale of the maps. The letter in parentheses following the scale identifies the projection:
(a) = Mercator
(b) = Lambert's Conical Orthomorphic
(c) = Polar Stereographic
In the case of (a) and (b) the scale is that at the standard parallel(s) of the map.
Geographical coordinates of the map corners are usually stated.
- The letters, numbers or words identify the map area.
- Content** of transmissions.
- Transmission times** may be followed by observation times in parentheses.
- The numbers relate to the drum speed, in revolutions per minute, and the Index of Co-operation, which is generally 576, although 288 with alternate line scanning is sometimes used.

NOTE: **Millibars / Hectopascals:** In order to conform to the WMO's decision to adopt the hectopascal (hPa), as the International Unit for Atmospheric Pressure Measurement, the abbreviation hPa will now appear in schedules. It should be noted that: 1 hPa = 1 millibar.

SYMBOLS AND DEPICTIONS USED ON RADIO-FACSIMILE CHARTS FOR MARINE PURPOSES

1301/FAXSYMS V003 14/01/10

TYPICAL SYMBOLS USED FOR MARINE METEOROLOGICAL PURPOSES

(a) Selections from the Manual on the Global Data-Processing System (WMO-No.485)

	Cold front at the surface
	Warm front at the surface
	Occluded front at the surface
	Quasi-stationary front at the surface
	Convergence line
	Inter-tropical convergence line (ITCZ)
	Centre of tropical cyclonic circulation (maximum winds 34-63 knots)
	Centre of tropical cyclonic circulation (maximum winds 64 knots)
	Fog

(b) Additional symbols

	Ice accretion:
	Ice building slowly
	Ice building rapidly

DEPICTION OF LINES AND SYSTEMS ON SPECIFIC CHARTS

(a) Model S - surface - chart

Continuous lines	Isobars labelled in hectopascals
Crossed line segments	Position of centre high or low pressure given on hectopascals
	Low pressure
	High pressure
	Direction of movement of centres and fronts with speed in knots

***NOTE:** The appropriate letter from the alphabet of the issuing country may be used, provided that the chart contains explicitly the correspondence to the appropriate English letters.

(b) Model W - wave - chart

Continuous lines	Significant wind height (sea), or composite wind wave and swell height, where so drawn, labelled in metres
Dashed lines	Significant swell height labelled in metres
MAX	Centre of maximum wave height
MIN	Centre of minimum wave height
	Direction of sea waves
	Direction of swell waves

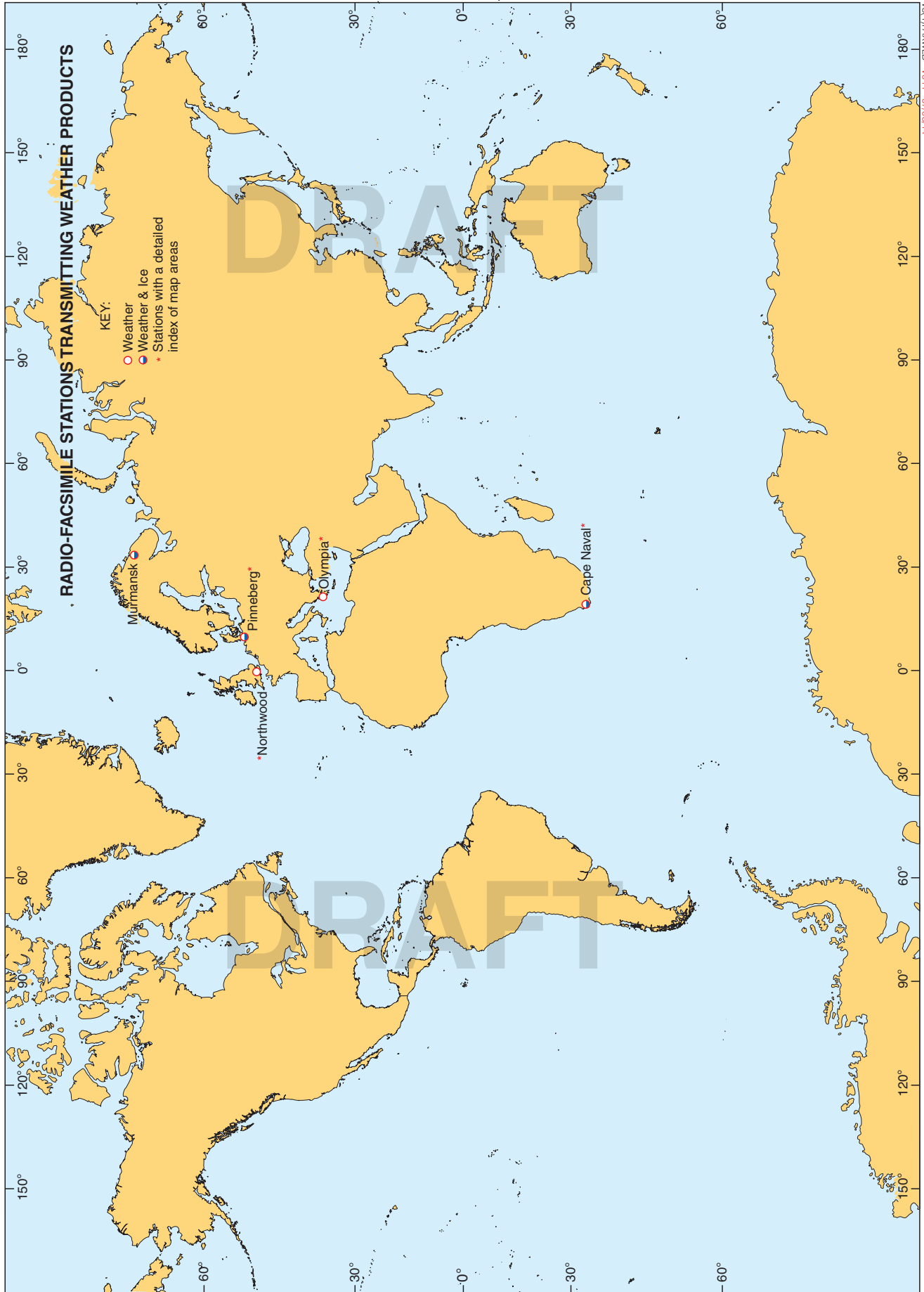
(c) Model SST - sea-surface temperature - chart

Continuous lines	Isotherms labelled in degrees Celsius
------------------	---------------------------------------

NOTE: Broken lines may be used to avoid confusion with other analysed parameters.

(d) Model SI - sea-ice information - chart

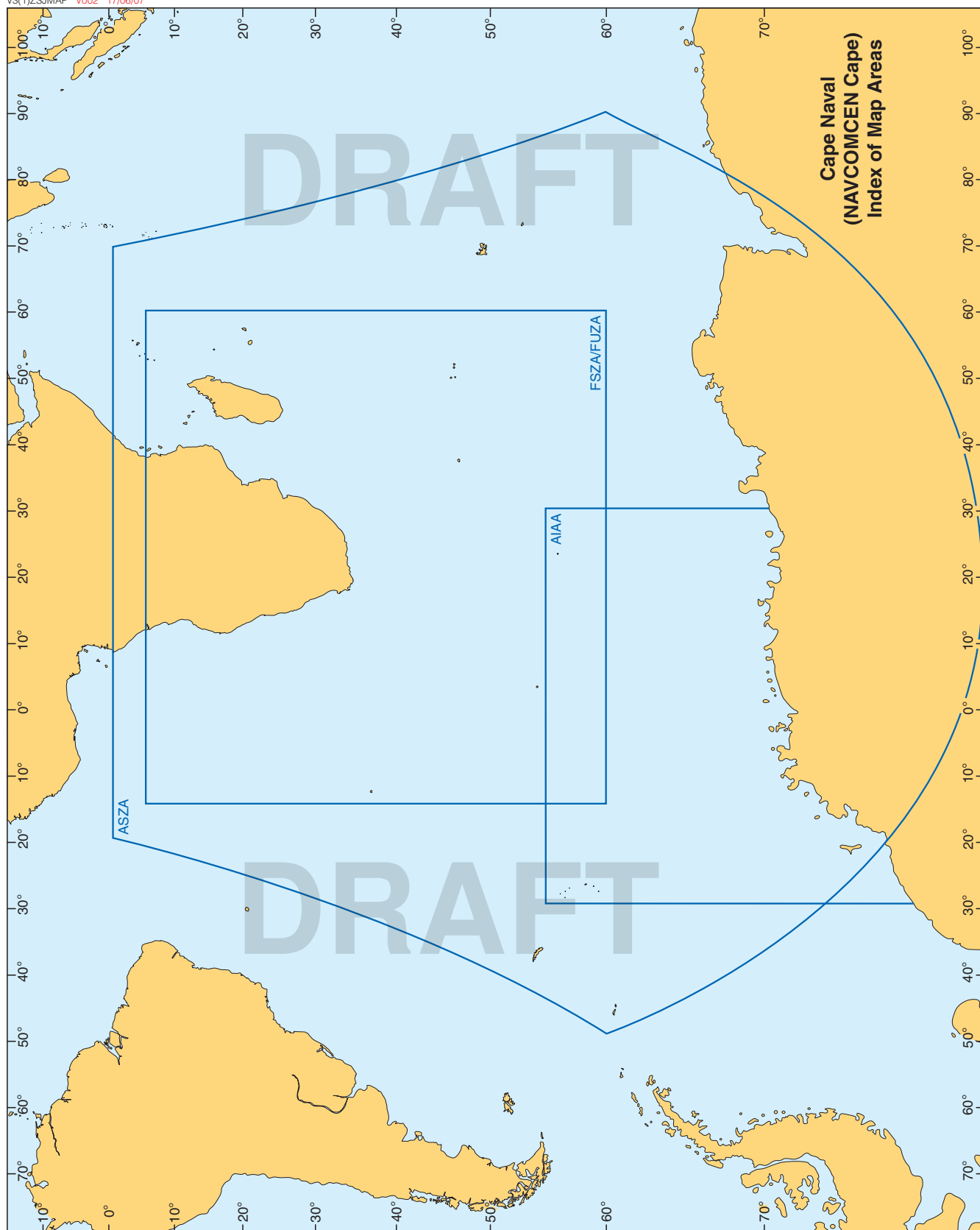
The international system of sea-ice symbols adopted by WMO should be used.



SERVICE DETAILS

CAPE NAVAL (ZSJ)				33°40′.96S 18°43′.09E	
	4014			1600-0600	
	7508			H24	
	13538				
	18238			0600-1600	
Diagrams pages 44 and 46					
Map Areas					
ASZA		(b) FSZA / FUZA	(a) AIAA	(c)	
0°.20°W 0°.70°E 60°S.50°W 60°S.90°E (Shipping Chart)		5°S.15°W 5°S.60°E 60°S.15°W 60°S.60°E (forecast area for Numerical Model)	30°W to 30°E Antarctic Coast to edge of Pack Ice		
Schedule					
	Schedule ¹		0430		120/576
ASZA	Surface analysis (shipping)		0500(00) 1530(12)		
FUZA	Upper air prognosis (previous day's run)		0630(12)		
FSZA	Surface prognosis (previous day's run)		0730(12)		
AIAA	Antarctic ice limits (only broadcast between October and March) ²		0800		
ASZA	Surface analysis (shipping)		1030(06) 2230(18)		
FSZA	Surface prognosis		1100(00)		
NOTES: (1) Due to operational requirements, broadcasts may be adjusted without notification. (2) Information updated every two weeks from the National Ice Center (US).					

MURMANSK				68°52'50N 33°05'88E	
	6446			H24	
	7907			1900-0600	
	8444			HN	
Diagram page 44					
Map Areas					
A 1:5,000,000 67°N.32°W 72°N.74°E 51°N.04°W 53°N.47°E		B 1:3,000,000 (a) 79°N.10°E 74°N.40°E 79°N.40°E 74°N.10°E		C 1:5,000,000 (a) 78°N.10°E 66°N.70°E 78°N.70°E 66°N.10°E	
Schedule					
A	36 hour surface prognosis		0700(00)		120/576
C	Sea state analysis		0800(06)		
B	Surface temperature analysis / iceberg positions		1400(12)		
C	Analysis of iceberg positions for past 24 hours				
	24 hour sea state prognosis		1430(12)		
	Broadcast schedule		1850		90/576
	Iceberg prognosis		2000		120/576
NOTE: Basic coverage area is for Barents Sea Map Areas.					





RADIO-FACSIMILE

NORTHWOOD			51°37'00N 0°25'00W	
	2618-5		2000-0600	
	4610		H24	
	8040			
	11086-5		0600-2000	
Diagrams pages 44 and 47				
Map Areas				
North Atlantic 52-25°N.90-30°W 26-00°N.58-20°W 60-00°N.21-00°E 28-30°N.7-00°W				
Schedule				
	Surface analysis	0000(18)	1200(06)	120/576
	24 hour surface prognosis	0012(18)	1212(06)	
	12 hour precipitation and reduced visibility	0024(18)	1224(06)	
	24 hour precipitation and reduced visibility	0036(18)	1236(06)	
	Surface analysis	0048(18)	1248(06)	
	24 hour surface prognosis	0100(18)	1300(06)	
	48 hour sea and swell	0112(18)		
	24 hour surface winds		1312(06)	
	72 hour sea and swell	0124(18)		
	Gale warning		1324(06)	
	Ocean fronts	0136	1336	
	24 hour sea and swell	0148(18)	1348(06)	
	Surface analysis	0200(18)		
	Sea surface temperature	0212(00)	1400(00)	
	24 hour surface prognosis	0224(18)		
	Surface analysis	0236(00)	1412(06)	
	24 hour surface prognosis		1424(06)	
	Surface analysis	0300(00)	1436(12)	
	Surface analysis		1500(12)	
	24 hour surface winds	0324(18)		
	24 hour ANPS prognosis	0336(00)	1512(00)	
	72 hour ANPS prognosis	0348(00)		
	120 hour ANPS prognosis		1524(00)	
	48 hour sea and swell		1536(06)	
	Surface analysis	0400(00)	1600(12)	
	24 hour surface winds	0424(18)	1624(06)	
	24 hour surface prognosis	0436(00)	1636(12)	
	48 hour surface winds	0448(18)	1648(06)	
	Surface analysis	0500(00)	1700(12)	
	24 hour surface prognosis	0512(00)	1712(12)	
	48 hour surface prognosis	0524(00)	1724(12)	

Continued on next page

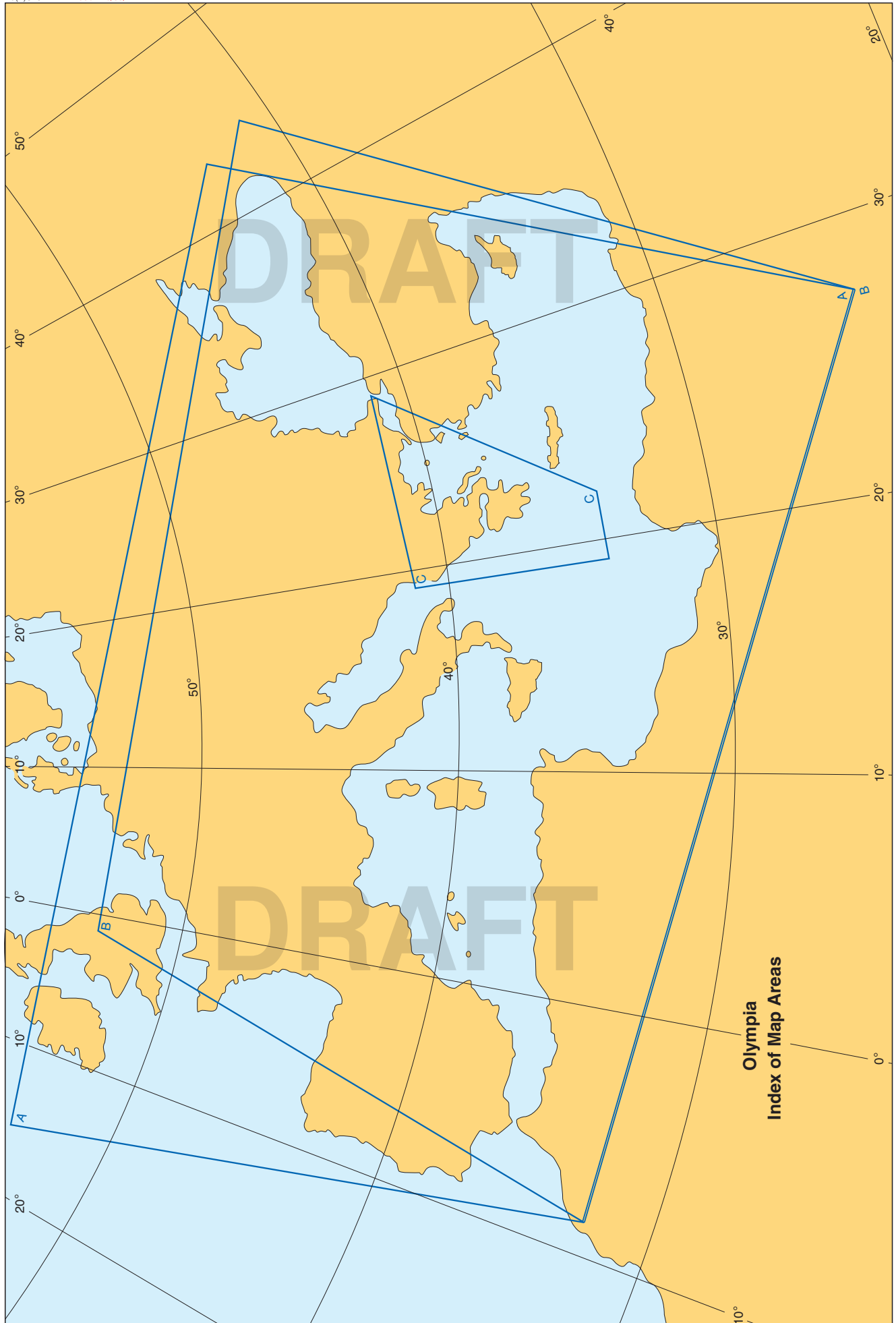
RADIO-FACSIMILE

Northwood (Continued)

	Gale warning	0548(06)	120/576
	72 hour sea and swell	1748(06)	
	Surface analysis	0612(00) 1800(12)	
	24 hour surface prognosis	0624(00) 1812(12)	
	Surface analysis	1824(12)	
	24 hour surface prognosis	1836(12)	
	Surface analysis	0636(00) 1848(12)	
	24 hour surface prognosis	0648(00) 1900(12)	
	Surface analysis	0700(00)	
	24 hour surface prognosis	0712(00)	
	48 hour surface prognosis	0724(00) 1924(12)	
	72 hour surface prognosis	0736(00) 1936(12)	
	96 hour surface prognosis	0748(00) 1948(12)	
	120 hour surface prognosis	0800(00) 2012(12)	
	48 hour surface prognosis	0812(00) 2024(12)	
	12 hour precipitation and reduced visibility	0824(00) 2036(12)	
	24 hour precipitation and reduced visibility	0836(00)	
	24 hour surface prognosis	0848(00) 2048(12)	
	Surface analysis	0900(06) 2100(18)	
	24 hour precipitation and reduced visibility	2112(12)	
	24 hour ANPS prognosis	0924(00) 2124(00)	
	120 hour ANPS prognosis	0936(00) 2136(00)	
	Surface analysis	1000(06) 2200(18)	
	24 hour surface prognosis	1012(06) 2212(18)	
	24 hour ANPS prognosis	1036(00) 2236(00)	
	Surface analysis	1100(06) 2300(18)	
	24 hour surface prognosis	1112(06) 2312(18)	
	24 hour sea and swell	1124(06) 2324(18)	
	24 hour surface prognosis	1136(06) 2336(18)	
	24 hour sea and swell	1148(06) 2348(18)	
NOTE: Abbreviations used above: ANPS = Ambient Noise Prediction System			

OLYMPIA				37°36'·00N 21°29'·17E			
		4481					
		8105					
Diagrams pages 44 and 50							
Map Areas							
A		(c) B		(c) C		(c)	
54°N.16°W 43°N.43°E		53°N.1°W 41°N.44°E		41°N.19°E 41°N.29°E			
32°N. 9°W 24°N.27°E		32°N.9°W 24°N.27°E		34°N.19°E 34°N.22°E			

Continued on page 51



Schedule			
A	Surface analysis	0845(06)	120/576
	24 hour surface prognosis	0857(06)	
	48 hour surface prognosis	0909(06)	
B	30 hour sea state prognosis	0921(12)	
	36 hour sea state prognosis	0933(12)	
	42 hour sea state prognosis	0945(12)	
	48 hour sea state prognosis	0957(12)	
C	30 hour sea state prognosis	1009(12)	
	36 hour sea state prognosis	1021(12)	
	42 hour sea state prognosis	1033(12)	
	48 hour sea state prognosis	1045(12)	

PINNEBERG - SUMMER SCHEDULE

53°43'00N 9°55'00E

	3855		
	7880		
	13882-5		

Diagrams pages 44, 52 and 53

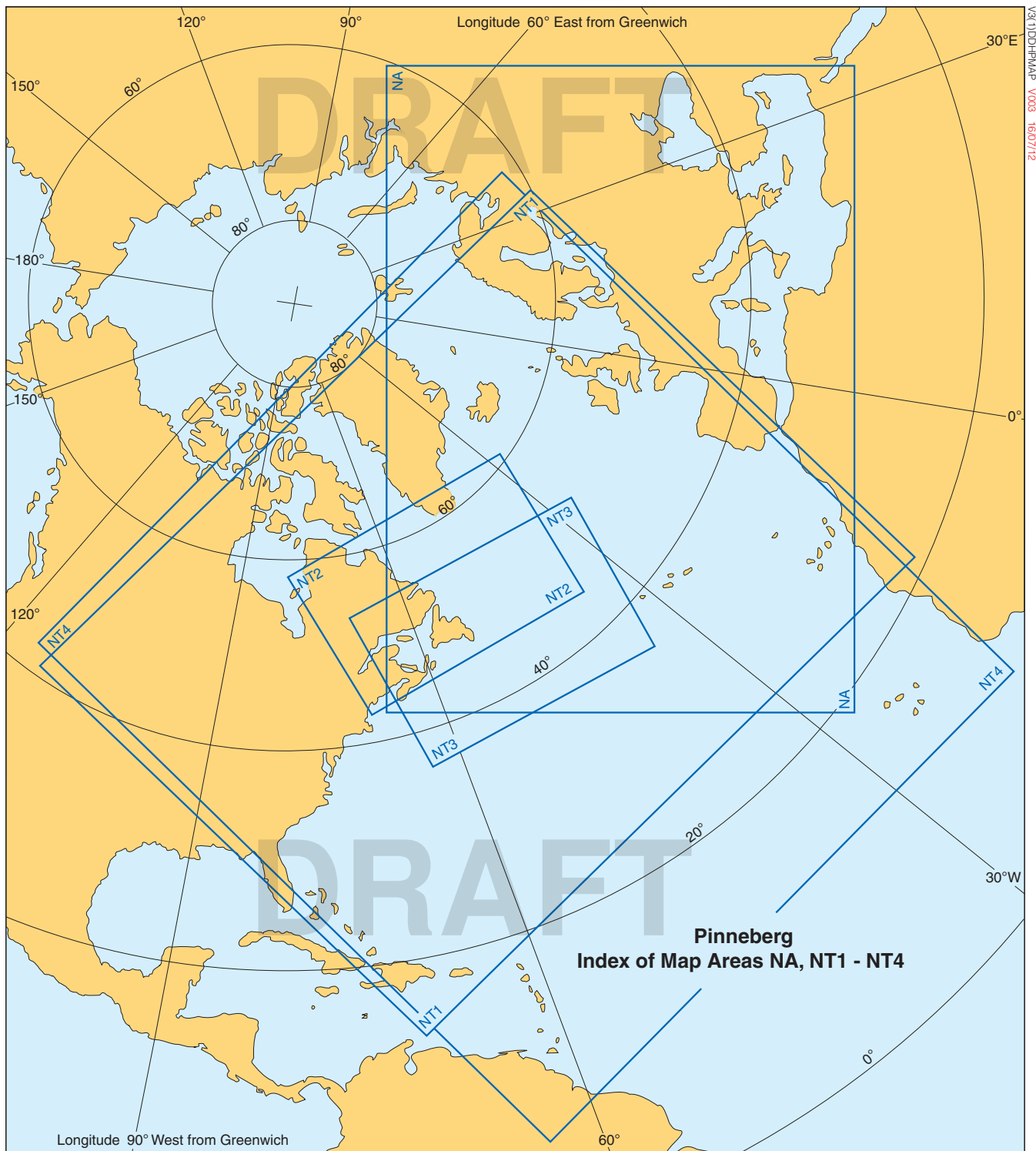
Map Areas

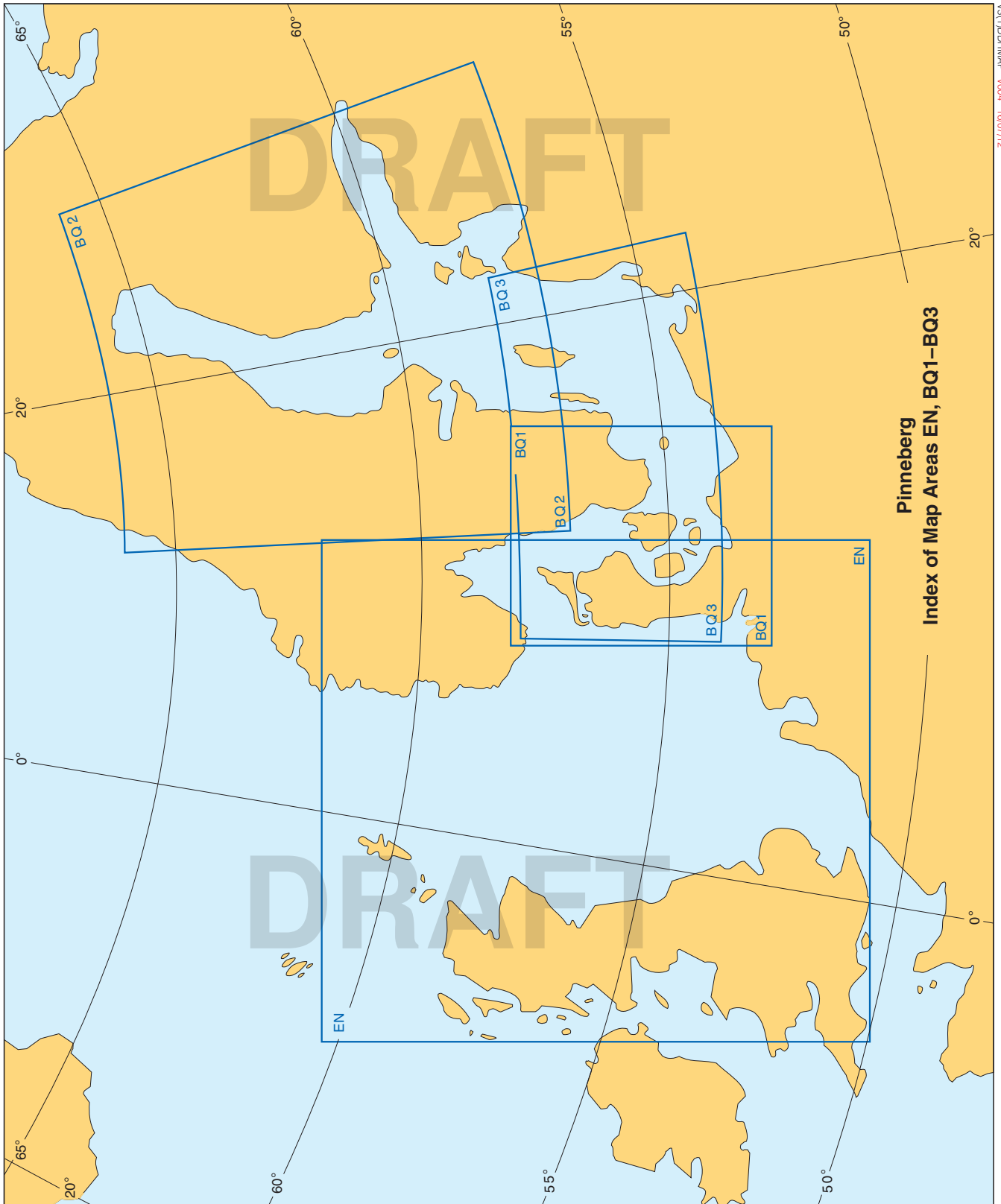
BQ1	(c)	BQ2	(a)	BQ3	(a)	EN	1:2,000,000 (c)
58°N.08°E 58°N.16°E		66°N.12°E 66°N.30°E		58°N.08°E 58°N.22°E		60°N.09°W 62°N.12°E	
53°N.08°E 53°N.16°E		57°N.12°E 57°N.30°E		54°N.08°E 54°N.22°E		50°N.04°W 51°N.12°E	
NA	1:20,000,000 (c)	NT1	1:15,000,000 (c)	NT2	(c)	NT3	(c)
1:15,000,000 (c)		41°N.114°W 60°N. 36°E		59°N.82°W 61°N.28°W		53°N.70°W 52°N.26°W	
43°N.67°W 61°N.79°E		14°N. 70°W 21°N.13°W		43°N.70°W 44°N.35°W		36°N.63°W 36°N.33°W	
19°N.27°W 27°N.33°E							
NT4	1:15,000,000 (c)						
48°N.117°W 63°N. 42°E							
5°N. 63°W 10°N.18°W							

Schedule

	H+96 (GSM) sea and swell, wind direction (10m)	1212(00)	120/576
	Northwest Atlantic ice chart	1224(00)	
	Western Baltic Sea ice chart (only if required by ice conditions) or special ice chart	1236(00)	
	Rebroadcast of 0512 chart	1257(18)	
	Rebroadcast of 0730 chart	1314(00)	
	Rebroadcast of 0830 chart	1325(00)	
	Rebroadcast of 0855 chart	1337(00)	
	Rebroadcast of 0931 chart	1349(00)	
	Western Baltic Sea ice chart (only if required by ice conditions) or special ice chart	1520(09)	
	European Arctic ice chart	1540(09)	
	Surface weather chart North Atlantic, Europe	0430(00) 1600(12)	
	H+00, H+24 (ECMF) surface pressure, wind (10m)	0500(12)	
	H+30 (GME) surface pressure (model from previous day)	0512(18)	

Continued on page 54





PINNEBERG - Summer Schedule (Continued)

Surface pressure analysis for North Atlantic, with arrows showing the movement of pressure systems, significant weather, ice.	0525(00)	1800(12)	120/576
Information about tropical storms, North Atlantic (seasonal)	0546(03)	1821(15)	
H+24 (GME) surface pressure		1834(12)	
H+48 (GME) surface pressure		1847(12)	
H+84 (GME) surface pressure		1900(12)	
H+00, H+24 (ECMF) surface pressure, wind (10m) ³		1912(12)	
Analysis 500 hPa H (ECMF) ³		1924(12)	
H+36, H+48 (ECMF) surface pressure, wind (10m) ³		1936(12)	
H+12, H+24 (GME) 500 hPa H+T, surface pressure	0559(00)		
H+12, H+24 (GME) 850 hPa H+T, 700 hPa relative humidity	0612(00)		
H+36, H+48 (GME) 500 hPa H+T, surface pressure	0625(00)		
H+36, H+48 (GME) 850 hPa H+T, 700 hPa relative humidity	0638(00)		
H+60, H+72 (GME) 500 hPa H+T, surface pressure	0651(00)		
H+60, H+72 (GME) 850 hPa H+T, 700 hPa relative humidity	0704(00)		
Rebroadcast of 0512 chart	0717(18)		
H+48 (GME) surface pressure	0730(00)		
Rebroadcast of 0525 chart	0743(00)		
H+84 (GME) surface pressure	0804(00)		
H+108 (GME) surface pressure	0817(00)		
H+00, H+24 (ECMF) surface pressure, wind (10m) ³	0830(00)		
Analysis 500 hPa H (ECMF) ³	0843(00)		
H+36, H+48 (ECMF) surface pressure, wind (10m) ³	0855(00)		
H+24 (ECMF) 925 hPa, relative humidity 700 hPa ³	0907(00)	1948(12)	
H+36 (ECMF) 925 hPa, relative humidity 700 hPa ³	0919(00)	2000(12)	
H+72, H+96 (ECMF) surface pressure, wind (10m) ³	0931(00)	2012(12)	
H+24 (GSM) sea and swell, wind direction (10m)	0943(00)	2024(12)	
Sea surface temperature, North Sea	0955(00)		
H+48 (GSM) sea and swell, wind direction (10m)	1016(00)	2036(12)	
H+72 (GSM) sea and swell, wind direction (10m)	1028(00)	2048(12)	
Northwest Atlantic ice chart		2100(12)	
Baltic Sea ice chart (only if required by ice conditions)		2115(15)	
H+48 wave prediction, North Atlantic	1040(00)	2137(12)	
Surface weather chart North Atlantic, Europe	1100(06)	2200(18)	
Transmission Schedule part 1	1120		
Transmission Schedule part 2	1139		
Rebroadcast of 1100 chart	1152(06)		

NOTES: (1) To determine the exact dates of the Winter/Summer schedules it will be necessary, on an annual basis, to check the German Weather Service website www.dwd.de and select the links for 'Special Users', 'Shipping' and finally 'Radio Broadcasts'. The dates are shown in the links for downloading PDF files of the schedules and in their headings.

(2) Abbreviations used above: ECMF = European Forecast Model, GME = Global Model, GSM = Global Wave Model, H+T = height + temperature.

(3) Special programmes for German research vessels.

(4) See also Pinneberg - Winter Schedule.

RADIO-FACSIMILE

PINNEBERG - WINTER SCHEDULE				53°43'00N 9°55'00E
	3855			
	7880			
	13882-5			
Diagrams pages 44, 52 and 53				
Map Areas				
BQ1	(c)	BQ2	(a)	BQ3 (a) EN 1:2,000,000 (c)
58°N.08°E 58°N.16°E		66°N.12°E 66°N.30°E		58°N.08°E 58°N.22°E 60°N.09°W 62°N.12°E
53°N.08°E 53°N.16°E		57°N.12°E 57°N.30°E		54°N.08°E 54°N.22°E 50°N.04°W 51°N.12°E
NA	1:20,000,000 (c)	NT1	1:15,000,000 (c)	NT2 (c) NT3 (c)
1:15,000,000 (c)		41°N.114°W 60°N. 36°E		59°N.82°W 61°N.28°W 53°N.70°W 52°N.26°W
43°N.67°W 61°N.79°E		14°N. 70°W 21°N.13°W		43°N.70°W 44°N.35°W 36°N.63°W 36°N.33°W
19°N.27°W 27°N.33°E				
NT4	1:15,000,000 (c)			
48°N.117°W 63°N. 42°E				
5°N. 63°W 10°N.18°W				
Schedule				
	Rebroadcast of 1050 chart		1236(06)	120/576
	Rebroadcast of 0512 chart (model from previous day)		1256(00)	
	Rebroadcast of 0730 chart		1308(00)	
	Rebroadcast of 0743 chart		1320(00)	
	Rebroadcast of 0804 chart		1332(00)	
	Rebroadcast of 0817 chart		1344(00)	
	Rebroadcast of 1050 chart		1356(06)	
	Transmission schedule part 1		1425(00)	
	Transmission schedule part 2		1445(00)	
	Ice conditions chart northwest Atlantic, Canadian Ice Service or International Ice Patrol		1508(00)	
	Baltic Sea ice chart or special area (only if required by ice conditions)		1520(09)	
	European Arctic ice chart or special area		1540(09)	
	Surface weather chart North Atlantic, Europe	0430(00)	1636(12)	
	H+36 (GME) surface pressure	0512(00)		
	Surface pressure analysis with arrows showing the movement of pressure systems, significant weather, ice.	0525(00)	1800(12)	
	Information about tropical storms, North Atlantic (seasonal)	0638(03)	1821(15)	
	H+12, H+24 (GME) 500 hPa H+T, surface pressure	0651(00)		
	H+12, H+24 (GME) 850 hPa H+T, 700 hPa relative humidity	0704(00)		
	Rebroadcast of 0512 chart	0717(00)		
	H+24 (GME) surface pressure		1834(12)	
	H+48 (GME) surface pressure	0730(00)	1847(12)	
	H+60 (GME) surface pressure	0743(00)		
	H+84 (GME) surface pressure	0804(00)	1900(00)	
	H+108 (GME) surface pressure	0817(00)		
	H+24 (GSM) significant height of combined wind, sea and swell, wind direction (10m)	0830(00)	1913(12)	
	H+48 (GSM) significant height of combined wind, sea and swell, wind direction (10m)	0842(00)	1926(12)	

Continued overleaf

PINNEBERG - WINTER SCHEDULE (Continued)

H+72 (GSM) significant height of combined wind, sea and swell, wind direction (10m)	0854(00)	1939(12)	120/576
H+96 (GSM) significant height of combined wind, sea and swell, wind direction (10m)	0906(00)		
H+36, H+48 (GME) 500 hPa H+T, surface pressure	0930(00)		
Ice chart Northwest Atlantic		2100(12)	
Sea surface temperature North Sea	0945(00)		
Western Baltic Sea ice chart or special area (only if required by ice conditions)	1007(00)		
Baltic Sea ice chart or special area (only if required by ice conditions)		2115(15)	
H+48 wave prediction and surface weather chart for North Atlantic	1029(00)	2136(12)	
Surface weather chart North Atlantic, Europe	1050(06)	2200(18)	
H+36, H+48 (GME) 850 hPa H+T, 700 hPa relative humidity	1111(00)		
H+60, H+72 (GME) 500 hPa H+T, surface pressure	1123(00)		
H+60, H+72 (GME) 850 hPa H+T, 700 hPa relative humidity	1135(00)		

NOTES: (1) To determine the exact dates of the Winter/Summer schedules it will be necessary, on an annual basis, to check the German Weather Service website www.dwd.de and select the links for 'Special Users', 'Shipping' and finally 'Radio Broadcasts'. The dates are shown in the links for downloading PDF files of the schedules and in their headings.
(2) Abbreviations used above: GME = Global Model, GSM = Global Wave Model, H+T = height + temperature.
(3) See also Pinneberg - Summer Schedule.

RADIO WEATHER SERVICES AND NAVIGATIONAL WARNINGS

INTRODUCTION

Countries and radio stations are arranged in alphabetical order. Countries are subdivided into their respective regions, e.g. FRANCE (Atlantic Coast), FRANCE (Mediterranean Coast) etc. The details of services are arranged in the following manner:

①

CANARIAS, ISLAS (Spain)

FAROE ISLANDS (Denmark)

GERMANY

②

NAVTEX

TENERIFE MRCC

TÓRSHAVN (OXJ)

BBC RADIO 4

③

Ⓐ

Ⓑ

Ⓒ

Ⓓ

Ⓔ

Ⓕ

A	1644	RT (MF)		
B	8755 (<i>Ch 813</i>)	RT (HF)		
C	Ch 25	VHF	Mykines	62°06'·28N 7°35'·18W
D	Ch 26		Tórshavn	62°01'·15N 6°49'·75W
E	Ch 23		Hesturin	61°25'·42N 6°45'·29W

DIAGRAM: page 86

④

Ⓐ

Ⓑ

Weather Bulletins	
A: 0105 0640 1105 B: On request	Weather forecasts for Sea Areas 22–25.
A: 0105 0640 1105	Met codes: FM 61-IV MAFOR.
Navigational Warnings	
A–E: On receipt A: 0105 0640 1105	Navigational Warnings in English.
C–E: Every even H+35	Navigational Warnings in Færøese and English.
A–E: On receipt	Storm and gale warnings for Sea Areas 22–25 in English.
C–E: Every even H+35	Storm and gale warnings for Sea Areas 22–25 in Færøese and English.
A: 0105 0640 1105	Ice reports for the German Bight, Western Baltic and North Sea / Kiel Canal in German.

EXPLANATION:

- ① **CANARIAS, ISLAS (Spain)**
FAROE ISLANDS (Denmark)
GERMANY
- The name of the country or geographical area in which a station is located appears in the centre of the page at the beginning of the section and at the head of subsequent pages.
- ②
- | |
|----------------|
| NAVTEX |
| TENERIFE MRCC |
| TÓRSHAVN (OXJ) |
| BBC RADIO 4 |
- The station name may be followed by its call sign and its four digit station identity number (SELCAL). Alternative names by which a station is known may also be shown. Red indicates a Maritime Rescue Co-ordination Centre or an International NAVTEX station. Blue indicates any other Maritime Radio Station or National NAVTEX station. Green indicates a commercial broadcast station. The 'Control Centre' position, if shown below this strapline, is that of the manned operations station. This position may have a co-located aerial, but regardless, the approximate locations of all aeriels are shown under E, if known.
- ③
- ④
- A
B
- Letter designators are used to identify frequencies within the frequency table.
- ⑤
- 1641
8755
Ch 25
Ch 26
Ch 23
- VHF frequencies are identified by the International Maritime VHF Service Channel (Ch) designator. MF and HF frequencies are expressed in kHz. In the case of single sideband emissions the carrier frequency is quoted; in the case of Radio-Telex Services frequencies shown are assigned (mid-point of the F1B emissions), and care should be taken to ensure that the frequency of the suppressed carrier is set correctly, either 1.7 or 1.5 kHz below the assigned frequency, depending upon the equipment used.
- ⑥
- (Ch 813)
- International channel numbers for RT (HF) and Radio-Telex paired frequencies are shown in italic.
- ⑦
- VHF
RT (MF)
RT (HF)
RADIO-TELEX
AM
FM
- Mode of Transmission
VHF indicates Very High Frequency F3E speech
RT (MF) and RT (HF) indicates Radio Telephone SSB Upper Sideband, Medium Frequency and High Frequency respectively.
RADIO-TELEX indicates F1B Narrow Band Direct Printing.
AM – Amplitude Modulation (Long, Medium and High Frequency broadcasts)
FM – Frequency Modulation (VHF broadcasts)
- ⑧
- Mykines
Tórshavn
Hesturin
- Where a station has remote transmitting sites, the site names and positions are given together with the appropriate frequencies.
- ⑨
- 62°06'·32N 7°35'·05W
- The position of a transmitting site.
- ⑩
- H24
1000- 1500
- Hours of operation on the given frequency relate to UTC. These are only given when the station transmits at non-scheduled times, e.g. on receipt. In many instances the hours may not be known and the absence of an entry should not be taken to imply that the service is continuous. If a frequency is used for only a part of the year the period of operation may be given.
- DIAGRAMS: pages 69, 76, 244 and 245
- The diagrams referred to are those on which the Sea Areas covered by the weather bulletins, Navigational Warnings and ice broadcasts are depicted. It should be noted that a broadcast may not relate to all the Sea Areas on a diagram.
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Weather Bulletins

Weather Bulletins	
A: 0105 0640 1105 B: On request	Weather forecasts for Sea Areas 22–25
A: 0105 0640 1105	Met codes: FM 61-IV MAFOR

Weather Bulletins

These entries relate to routine weather bulletin transmissions. Details are given of the frequencies employed (identified by the letter designators used in the frequency table above), the times of the transmissions, the message content, the language used and the Sea Areas covered. Dates are added if the service is limited to a period of the year. Where a transmission is not qualified by a letter it takes place on all the quoted frequencies.

Met codes

These entries relate to coded meteorological information transmitted independently of plain language weather messages. Transmission times may be followed by observation times in parentheses. See "Meteorological Codes".

Navigational Warnings

Navigational Warnings	
A-E: On receipt A: 0105 0640 1105	Navigational warnings in English.
C-E: Every even H+35	Navigational warnings in Færøese and English.
A-E: On receipt A: Every odd H+50	Storm and gale warnings for Sea Areas 22–25 in English.
C-E: Every even H+35	Storm and gale warnings for Sea Areas 22–25 in Færøese and English.
A: 0105 0640 1105	Ice reports, for the German Bight, Western Baltic and North Sea / Kiel Canal in German.

The content of transmissions is set out under section headings. The general heading of Navigational Warnings may include specific types of warnings, e.g. Firing Practice, Ice Warnings, if they are broadcast together with Navigational Warnings. Where specific warnings are transmitted independently, an appropriate heading is used.

Details are given of the frequencies employed, the times of transmissions, the type of warning, the language used and the Sea Areas covered. The frequency on which a service is transmitted is referred to by the letter designators used in the frequency table above. Where a transmission is not qualified by a letter it takes place on all the quoted frequencies.

Storm warnings

These entries relate to storm warnings which are transmitted independently of other meteorological information. The wind force, if quoted, is the minimum necessary for the issue of a warning.

Ice reports

As shown in the above table under "Navigational Warnings"

Firing and Practice Exercise Areas

Firing and bombing practices, and defence exercises, take place in a number of coastal areas. These areas are only in force over limited periods, and information concerning them will normally be broadcast by local Coast Radio Stations. See "Firing and Practice Exercise Areas", for information on the broadcast of warnings for certain areas around the United Kingdom.

SERVICE DETAILS

AÇORES (Portugal)

INTERNET WEATHER SERVICES

Instituto Português do Mar e da Atmosfera
www.ipma.pt

Weather forecast for Portugal, Açores and Madeira in Portuguese and English.

NAVTEX

F	CENCOMARACORES (São Miguel)	518 kHz	37° 48' .50N 25° 33' .20W
J		490 kHz	
Diagrams pages 34 and 61			
Weather Bulletins			
F:	0050 0450 0850 1250 1650 2050	Storm and severe weather warnings, synopsis and 24 hour forecast for Sea Areas 3, 5, 7, 30 and 31 in English.	
J:	0130 0530 0930 1330 1730 2130	Storm and severe weather warnings, synopsis and 24 hour forecast for Sea Areas 3, 5, 7, 30 and 31 in Portuguese.	
Navigational Warnings			
F:	0050 0450 0850 1250 1650 2050	Navigational Warnings for Sea Areas 3, 5, 7, 30 and 31 in English.	
F:	0050 0450 0850 1250 1650 2050	Coastal Navigational Warnings in English.	
J:	0130 0530 0930 1330 1730 2130	Navigational Warnings for Sea Areas 3, 5, 7, 30 and 31 in Portuguese	
J:	0130 0530 0930 1330 1730 2130	Coastal Navigational Warnings in Portuguese.	

CENTRO DE COMUNICAÇÕES DOS AÇORES (CENCOMARACORES) & DELGADA MRCC

Control Centre: 37°44'26N 25°40'27W

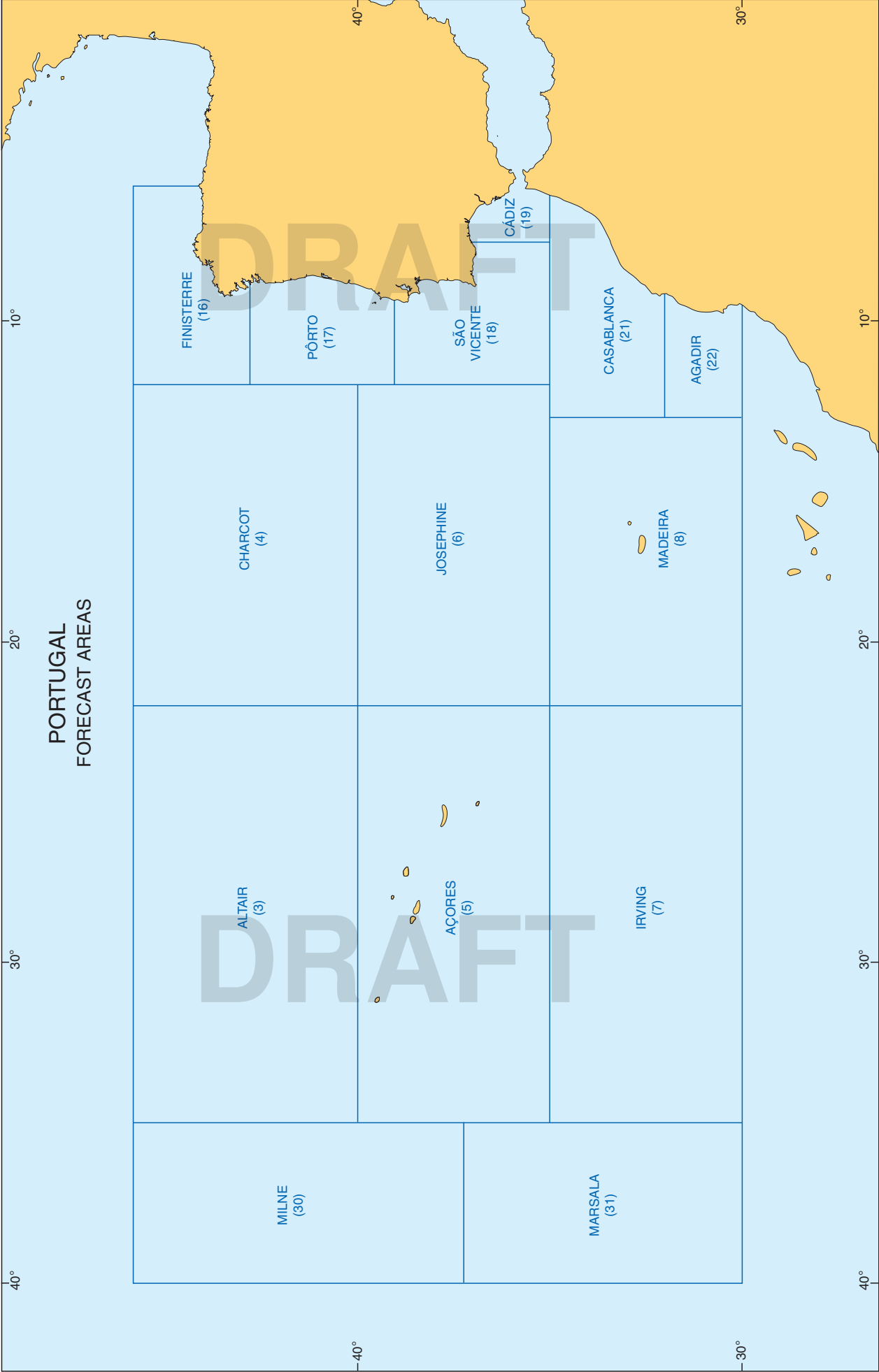
A	2657	RT (MF)	
B	Ch 11	VHF	
Diagrams pages 61 and 62			
Weather Bulletins			
A: 0935 2135	Storm and severe weather warnings, synopsis and 24 hour forecast for Sea Areas 3, 5, 7, 30 and 31 and within 200m of the islands in Portuguese and repeated in English where possible.		
B: 0830 2000 LT	Storm and severe weather warnings, synopsis and 24 hour forecast within 20 n miles of Santa Maria and São Miguel in Portuguese and repeated in English where possible.		
B: 0900 2100 LT	Storm and severe weather warnings, synopsis and 24 hour forecast within 20 n miles of Faial, Graciosa, Pico, São Jorge and Terceira in Portuguese and repeated in English where possible.		
B: 1000 1900 LT	Storm and severe weather warnings, synopsis and 24 hour forecast within 20 n miles of Corvo and Flores in Portuguese and repeated in English where possible.		
Navigational Warnings			
A: 0935 2135	Navigational Warnings within 200 n miles of the Açores in Portuguese and repeated in English where possible.		
B: 0830 2000 LT	Local Navigational Warnings for Santa Maria and São Miguel in Portuguese and repeated in English where possible.		
B: 0900 2100 LT	Local Navigational Warnings for Faial, Graciosa, Pico, São Jorge and Terceira in Portuguese and repeated in English where possible.		
B: 1000 1900 LT	Local Navigational Warnings for Corvo and Flores in Portuguese and repeated in English where possible.		

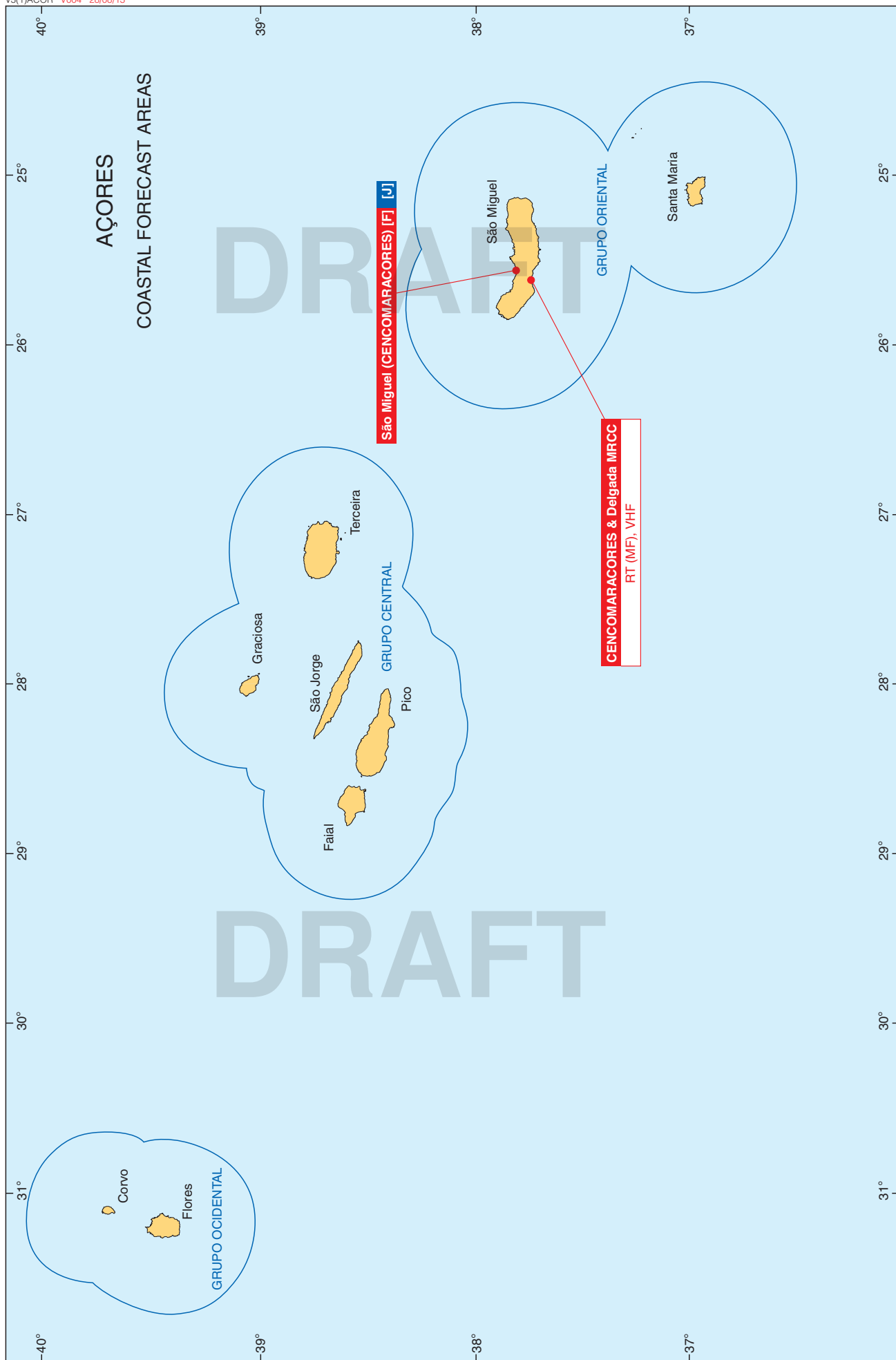
ALBANIA

AULONA (VLORË) (ZAV3)

Control Centre: 40°27'51N 19°29'25E

	Ch 18 85	VHF		
Weather Bulletins				
0600 1800	Weather forecasts in Albanian, English, Italian and Greek.			
Navigational Warnings				
0600 1800	Weather and Navigational Warnings in Albanian, English, Italian and Greek.			





ALGERIA

NAVTEX

B	Bordj-el-Kiffan	518 kHz	36°46'89N 3°15'61E
V		490 kHz	
Diagrams pages 20 and 35			
Weather Bulletins			
B: 0010 0410 0810 1210 1610 2010	Weather bulletins in English.		
V: 0330 0730 1130 1530 1930 2330	Weather bulletins in French.		
Navigational Warnings			
B: 0010 0410 0810 1210 1610 2010	Navigational Warnings in English.		
V: 0330 0730 1130 1530 1930 2330	Navigational Warnings in French.		

ALGER (7TA)

Control Centre: 36°44'60N 3°10'85E

A	1792	RT (MF)		
B	Ch 84	VHF		
Diagram page 20				
Weather Bulletins				
A: 0903 1703	Weather forecast for shipping for Sea Areas Alboran, Palos, Alger, Annaba, Sardaigne and Cabrera in French and English.			
B: 0730 2330	Weather forecast for Algerian Coast: Saidia-Cherchel-Algiers-Tabarka in French and English.			
Navigational Warnings				
A: 0903 1703	AVURNAVS broadcast in French and English.			
B: 0730 2330				

ANNABA (7TB)

Control Centre: 36°54'00N 7°46'00E

A	1911	RT (MF)		
B	Ch 24	VHF		
Diagram page 20				
Weather Bulletins				
A: 0850 1850	Weather forecast for shipping for Sea Areas Alboran, Palos, Alger, Annaba, Sardaigne and Cabrera in French and English.			
B: 0703 2303	Weather forecast for Algerian Coast: Saidia-Cherchel-Algiers-Tabarka in French and English.			
Navigational Warnings				
A: 0850 1850	AVURNAVS broadcast in French and English.			
B: 0703 2303				

BEJAÏA (7TG)

Control Centre: 36°45'00N 5°04'00E

	Ch 26	VHF		
Diagram page 20				
Weather Bulletins				
0733 2333	Weather forecast for shipping for Sea Areas Alboran, Palos, Alger, Annaba, Sardaigne and Cabrera in French and English.			
	Weather forecast for Algerian Coast: Saidia-Cherchel-Algiers-Tabarka in French and English.			

ORAN (7TO)

Control Centre: 35°44'82N 0°34'33W

A	2719	RT (MF)		
B	Ch 24	VHF		
Diagram page 20				
Weather Bulletins				
A: 0835 1835	Weather forecast for shipping for Sea Areas Alboran, Palos, Alger, Annaba, Sardaigne and Cabrera in French and English.			
B: 0703 2303	Weather forecast for Algerian Coast: Saidia-Cherchel-Algiers-Tabarka in French and English.			

Continued overleaf

ALGERIA

ORAN (7TO) (Continued)

Navigational Warnings	
A: 0835 1835	AVURNAVS broadcast in French and English.
B: 0703 2303	

RADIODIFFUSION-TÉLÉVISION ALGERIENNE				
Control Centre: 36°45'20N 3°03'54E				
Arabic language broadcasts				
A	980 kHz	AM	Alger	36°47'72N 3°01'00E
	529 kHz		Constantine	36°23'00N 6°38'00E
	1142 kHz			
	548 kHz		Oran	35°44'82N 0°34'33W
	1142 kHz			
B	9510 kHz		Alger	36°47'72N 3°01'00E
C	11810 kHz			
French language broadcasts				
D	890 kHz	AM	Alger	36°47'72N 3°01'00E
	1304 kHz		Constantine	36°23'00N 6°38'00E
			746 kHz	Oran
E	6080 kHz		Tlemcen	34°54'00N 1°19'00W
F	11715 kHz		Alger	36°47'72N 3°01'00E
G	11835 kHz			
Kabyl language broadcasts				
H	9685 kHz 11421 kHz	AM	Alger	36°47'72N 3°01'00E
	692 kHz		Michelet	36°34'00N 4°19'00E
Diagram page 20				
Weather Bulletins				
A-C:	1300	Storm warnings, forecast and supplementary forecast for coastal shipping and fishing for N Africa and W Mediterranean in Arabic.		
A, C:	2000	Storm warnings and forecast for N Africa and W Mediterranean in Arabic.		
D, F, G:	1300	Storm warnings, forecast and supplementary forecast for coastal shipping and fishing for N Africa and W Mediterranean in French.		
D-F:	2000	Storm warnings and forecast for N Africa and W Mediterranean in French.		
H:	1300	Storm warnings, forecast and supplementary forecast for coastal shipping and fishing for N Africa and W Mediterranean in Kabyl.		
H:	2000	Storm warnings and forecast for N Africa and W Mediterranean in Kabyl.		

SKIKDA (7TS)				
Control Centre: 36°52'00N 6°54'00E				
	Ch 26	VHF		
Diagram page 20				
Weather Bulletins				
0703 2303	Weather forecast for shipping for Sea Areas Alboran, Palos, Alger, Annaba, Sardaigne and Cabrera in French and English. Weather forecast for Algerian Coast: Saidia-Cherchel-Algiers-Tabarka in French and English.			

TÉNÈS (7TN)				
Control Centre: 36°30'00N 1°19'32E				
	Ch 25	VHF		
Diagram page 20				
Weather Bulletins				
0733 2333	Weather forecast for shipping for Sea Areas Alboran, Palos, Alger, Annaba, Sardaigne and Cabrera in French and English. Weather forecast for Algerian Coast: Saidia-Cherchel-Algiers-Tabarka in French and English.			

ANTARCTICA

GENERAL NOTES

Navigational Warnings and Weather Bulletins for NAVAREA/METAREA VII are broadcast on request via SafetyNET and RT (HF), by the South African NAVAREA Coordinator in English. NAVAREA/METAREA VI information is broadcast via SafetyNET and Radio-Telex, by the Argentine NAVAREA Coordinator. The Argentine transmissions include information regarding the sea-ice edge, position of icebergs and their limits, and are broadcast in both Spanish and English. The mariner should consult EGC SafetyNET System table and other relevant sections/diagrams, in both parts of NP283, for full information on these broadcasts.

INTERNET WEATHER SERVICES

Australian Bureau of Meteorology www.bom.gov.au	Select the 'Antarctica' link on the Home page to access to high seas forecasts, weather, wave and sea-ice charts for Antarctic waters, in English.
Argentinian National Meteorological Service www.smn.gov.ar	Select the 'Meteorología Antártica' link under 'Productos Elaborados' to access maritime forecasts for Metarea VI and other related information, in Spanish.
Chilean Naval Meteorological Service http://meteoarmada.directemar.cl/site/pronosticos/pronostico_antartico.html	Maritime forecast for Metarea IX, in Spanish.
Chilean Naval Meteorological Service http://web.directemar.cl/met/jturno/indice/english.htm	Low bandwidth website containing ice charts, reports, weather station data, satellite imagery etc., in English and Spanish.
Brazilian Naval Meteorological Service https://www.mar.mil.br/dhn/chm/meteo/prev/antartica/antarticaing.htm	Synoptic weather and wave prediction charts, together with links to other Antarctic meteorological services, in English.
Servicio de Hidrografía Naval www.hidro.gob.ar	Maritime forecasts, navigational warnings, ice-charts and wave data, in Spanish and English.
U.S National Ice Center/Naval Ice Center www.natice.noaa.gov/index.html	Interagency portal that draws together information and links to various agencies concerned with both Arctic/Antarctic Ice conditions, in English. Various products and services are provided including: daily ice analysis data, ice edge information and forecasts, in a wide variety of downloadable formats.

AZERBAIJAN

NAVTEX

R	Baku (Chilov)	518 kHz	40°19'63N 50°36'73E
M		490 kHz	
Diagram page 36			
Weather Bulletins			
R: 0250 0650 1050 1450 1850 2250	Weather bulletins in English.		
M: 0200 0600 1000 1400 1800 2200	Weather bulletins in Azerbaijani.		
Navigational Warnings			
R: 0250 0650 1050 1450 1850 2250	Navigational Warnings in English.		
M: 0200 0600 1000 1400 1800 2200	Navigational Warnings in Azerbaijani.		

BAKU

Control Centre: 40°21'21N 49°49'87E				
A	2098-8	RT (MF)	Baku	40°21'35N 49°50'45E
B	Ch 13	VHF		
Weather Bulletins				
A: 0850 1550 B: 0635 1035 1435 1835 2035	Local Weather Bulletins for coastal areas in English.			
A: 0855 1555 B: 0640 1040 1440 1840 2240	Local Weather Bulletins for coastal areas in Azerbaijani.			

BAHRAIN**INTERNET WEATHER SERVICES**

Bahrain Meteorological Directorate
www.bahrainweather.gov.bh/web/guest/weather-bulletins

Marine weather bulletins for next 24 hrs, covering coastal and offshore areas, available as PDF file downloads in English.

NAVTEX

B	Hamala	518 kHz	26°09′.40N 50°28′.61E
Diagram page 37			
Weather Bulletins			
B: 0410 1610	Synopsis and 24 hour forecast for the Persian Gulf, Strait of Hormuz and Gulf of Oman.		
Navigational Warnings			
B: 0010 0410 0810 1210 1610 2010	Navigational Warnings and weather warnings for the Persian Gulf and approaches.		

BANGLADESH**INTERNET WEATHER SERVICES**

Bangladesh Meteorological Department
www.bmd.gov.bd

Select the 'Forecast' menu and then 'Marine Forecast', to access bulletins for coastal waters and high seas. The site also provides synoptic weather charts, Marine Warnings and Special Weather Bulletins, in English.

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

http://bnhoc.navy.mil.bd/	Bangladesh Navy Hydrographic and Oceanographic Centre	Notices to Mariners, Weather Bulletins and tidal information, in English.
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FIRING PRACTICE AREAS

The Bangladesh Navy carries out firing practice and exercises in a number of areas off the coast. The dates and times of any exercise are promulgated by Notice to Mariners, published by the Bangladesh Navy Hydrographic and Oceanographic Centre (BNHOC) – see 'Maritime Safety Information (MSI) on the Internet' entry. Further information may be obtained by contacting the Bangladeshi Navy on:

Tel: +880 31 740391-9 ext 4170
 Mobile: +880 1769 724170
 Fax: +880 31 741162
 E-mail: bnhoc@navy.mil.bd
 Website: www.navy.mil.bd

BELGIUM**INTERNET WEATHER SERVICES**

Oceanographic Meteorological Station
www.kustweerbericht.be

Marine weather synopsis and forecasts for up to five days in advance.

NAVTEX

T	Oostende	518 kHz	51°04'44N 3°20'08E
V			
B		490 kHz	
Diagrams pages 33, 216, 217 and 304			
Weather Bulletins			
T: 0710 1910	Weather forecast for Sea Areas Dover and Thames in English.		
B: 0810 1210 1610 2010	Weather bulletins for coastal areas and River Scheldt in Dutch and occasionally in English.		
Navigational Warnings			
T: 0310 0710 1110 1510 1910 2310	Navigational Warnings and gale warnings for Sea Areas Dover and Thames in English.		
V: 0330 0730 1130 1530 1930 2330	UK Coastal (WZ) Navigational Warnings in English.		
B: 0010 0410 0810 1210 1610 2010	Local Navigational Warnings and gale warnings in Dutch, sometimes in English.		

Continued on next page

Ice Warnings and Reports	
T: 0310 0710 1110 1510 1910 2310	Baltic Ice Code for Netherlands Area Group GG in English.

FIRING PRACTICE AREAS

Approximate Position: 51°08'62N 2°46'15E

Firing information for the Nieuwpoort firing sectors is available on VHF Ch 67 callsign **SN** during firing practices between 0800 LT and 1530 LT during working days. Alternatively, it is possible to contact the Nieuwpoort firing sector on Tel: +32(0) 244 23726. More detailed information can be found on the MOD website: <http://www.mil.be/nl/zeewaartse-schietoefeningen>.

OOSTENDE (OSU)

Control Centre: 51°14'03N 2°55'75E

A	2761	RT (MF)	Ruiselede (Wingene)	51°04'44N 3°20'08E
	Ch 27	VHF	Middelkerke (Lombardsijde)	51°11'00N 2°48'38E
B	Ch 24		Antwerpen (Zwijndrecht)	51°12'52N 4°18'80E

Diagrams pages 216, 217 and 304

Weather Bulletins**A¹:** 0720 LT 0820 1720 Weather forecast for Sea Areas Dover and Thames in English and Dutch.**Navigational Warnings****A²:** On receipt Storm warnings when wind speed is expected to reach Beaufort Force 8 or above.

A²: On receipt then after the first H+03 H+33.
Repeated at: 0233
0633 1033 1433 1833
2233
Navigational Warnings in English and Dutch.

A²: 0103 0503 0903 1303
1703 2103
Ice reports for Netherlands Area Group GG in English.

A³: On receipt Warnings of unexpected storms for coastal fishing in Dutch.**B⁴:** On receipt and once after the first H+48 Navigational Warnings for the Schelde in English and Dutch.

B⁴: On receipt and twice more at H+48
Storm warnings for the Schelde when wind speed is expected to reach Beaufort Force 6 or above in English and Dutch.

¹ After prior announcement on 2182 kHz and VHF Ch 16 in English and Dutch and 2484 kHz in Dutch.² After prior announcement on DSC VHF Ch 70 and 2187.5 kHz; 2182 kHz and VHF Ch 16 in English and Dutch and 2484 kHz in Dutch.³ After prior announcement on 2182 kHz and VHF Ch 16.⁴ After prior announcement on DSC VHF Ch 70 and Ch 16.

NOTE(S): DSC Channels 2187.5 kHz and VHF Ch 70 are only used for announcing the first broadcast.

ZANDVLIET TRAFFIC CENTRE

Control Centre: 51°20'83N 4°17'15E

	Ch 12	VHF	Zandvliet	51°20'83N 4°17'15E
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Weather Bulletins

H+30 LT Weather Bulletins for the following areas: Antwerp, Hansweert, Terneuzen and Flushing, as far as the eastern limit of the Precautionary Area of Flushing roads, in Dutch.

Navigational Warnings

H+30 LT Navigational and traffic information for the following areas: Antwerp, Hansweert, Terneuzen and Flushing, as far as the eastern limit of the Precautionary Area of Flushing roads, in Dutch.

ZEEBRUGGE TRAFFIC CENTRE

Control Centre: 51°21'65N 3°11'04E

A	Ch 69	VHF	Zeebrugge	51°21'65N 3°11'04E
B	Ch 04			

Weather Bulletins**A:** H+10 LT Weather Bulletins for Zeebrugge and Flushing, as far as the eastern limit of the Precautionary Area of Flushing roads, in Dutch.**B:** H+15 LT Weather Bulletins for Zeebrugge and Flushing, as far as the eastern limit of the Precautionary Area of Flushing roads, in English.

Continued overleaf

BELGIUM**ZEEBRUGGE TRAFFIC CENTRE (Continued)**

Navigational Warnings	
A: H+10 LT	Navigational and traffic information for the area Zeebrugge and Flushing, as far as the eastern limit of the Precautionary Area of Flushing roads, in Dutch.
B: H+15 LT	Navigational and traffic information for the area Zeebrugge and Flushing, as far as the eastern limit of the Precautionary Area of Flushing roads, in English.
A: H+40 LT	Navigational and traffic information for Deep Draft Vessels only, for the area Zeebrugge and Flushing, as far as the eastern limit of the Precautionary Area of Flushing roads, in English.

BJØRNØYA (Norway)**BJØRNØYA**

Control Centre: 74°30'23N 18°59'90E

NOTE(S): Remotely controlled by Bodø.

BULGARIA**INTERNET WEATHER SERVICES**
Bulgarian National Institute of Meteorology and Hydrology – Varna branch
<http://varna.meteo.bg/navtex.html>

Latest NAVTEX weather bulletin for the western Black Sea (area Juliette), in English.

NAVTEX

J	Varna	518 kHz	43°04′.01N 27°47′.19E
Diagram page 36			
Weather Bulletins			
J: 0530 1730	Weather summary and 12 hour forecast for coastal waters of Bulgaria and central part of western Black Sea, Sea Area J.		
J: 0930 2130	Weather summary and 12 hour forecast for coastal waters of Bulgaria and central part of western Black Sea, Sea Area J. On behalf of Romania, received from Constanta.		
Navigational Warnings			
J: 0130 0530 0930 1330 1730 2130	Navigational Warnings for central part of western Black Sea, Sea Area J.		
J: 0530 1730	Storm warnings for coastal waters of Bulgaria and central part of western Black Sea, Sea Area J.		

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.bgports.bg	Bulgarian Ports Infrastructure Co.	Weather Bulletins, Navigation Warnings and actual weather conditions for the Bulgarian coast and Danube River, in English and Bulgarian.
www.vtmis.bg	Directorate Vessel Traffic Management – Black Sea	Weather Bulletins and Navigation Warnings in English and Bulgarian. These can currently be found by selecting the link in the top right-hand column. However, please note that with the exception of the above information, the website is almost entirely in Bulgarian.

VARNA (LZW)

Control Centre: 43°04'01N 27°47'19E

A	3740	RT (MF)		
B	Ch 26	VHF		
Weather Bulletins				
A: 0703 1303 1903 B: 0733 1333 1933	Weather bulletins and forecast for coastal waters of Bulgaria and central western region of Black Sea in Bulgarian and English.			
Navigational Warnings				
A: On receipt and then 0703 1303 1903 B: On receipt and then 0733 1333 1933	Storm and gale warnings for coastal waters of Bulgaria and central western region of Black Sea in Bulgarian and English.			

Continued on next page

BULGARIA**VARNA (LZW) (Continued)**

A: 0703 1903 B: 0733 1933	Navigational Warnings for central western region of Black Sea, Sea Area J in Bulgarian and English.
NOTE(S): After prior announcement on DSC 2187.5 kHz, DSC Ch 70 and Ch 16.	

BURMA**INTERNET WEATHER SERVICES**

Myanmar Department of Meteorology and Hydrology
www.dmh.gov.mm/sea-route-forecast

Marine weather bulletins and warnings, in English and Myanmar.

MYEIK

Control Centre: 12°26'00N 98°36'00E

	Ch 12 16	VHF		
Weather Bulletins				
0915 1715	Weather bulletins			
Navigational Warnings				
On receipt	Cyclone warnings			
0915 1715	Navigational Warnings			

YANGON (XYR)

Control Centre: 16°42'00N 96°17'00E

	Ch 12 16	VHF		
Weather Bulletins				
0915 1715	Weather bulletins			
Navigational Warnings				
On receipt	Cyclone warnings and Navigational Warnings			
0915 1715	Navigational Warnings			

CANARIAS, ISLAS (Spain)**GENERAL NOTES****Maritime Safety Information Broadcasts**

Storm Warnings, Weather Bulletins and Navigational Warnings are announced by Coast Radio Stations and MRCCs on 2182 kHz and VHF Ch 16, before being broadcast on the scheduled frequency or channel number.

INTERNET WEATHER SERVICES

Agencia Estatal de Meteorología
www.aemet.es/en/eltiempo/prediccion/maritima

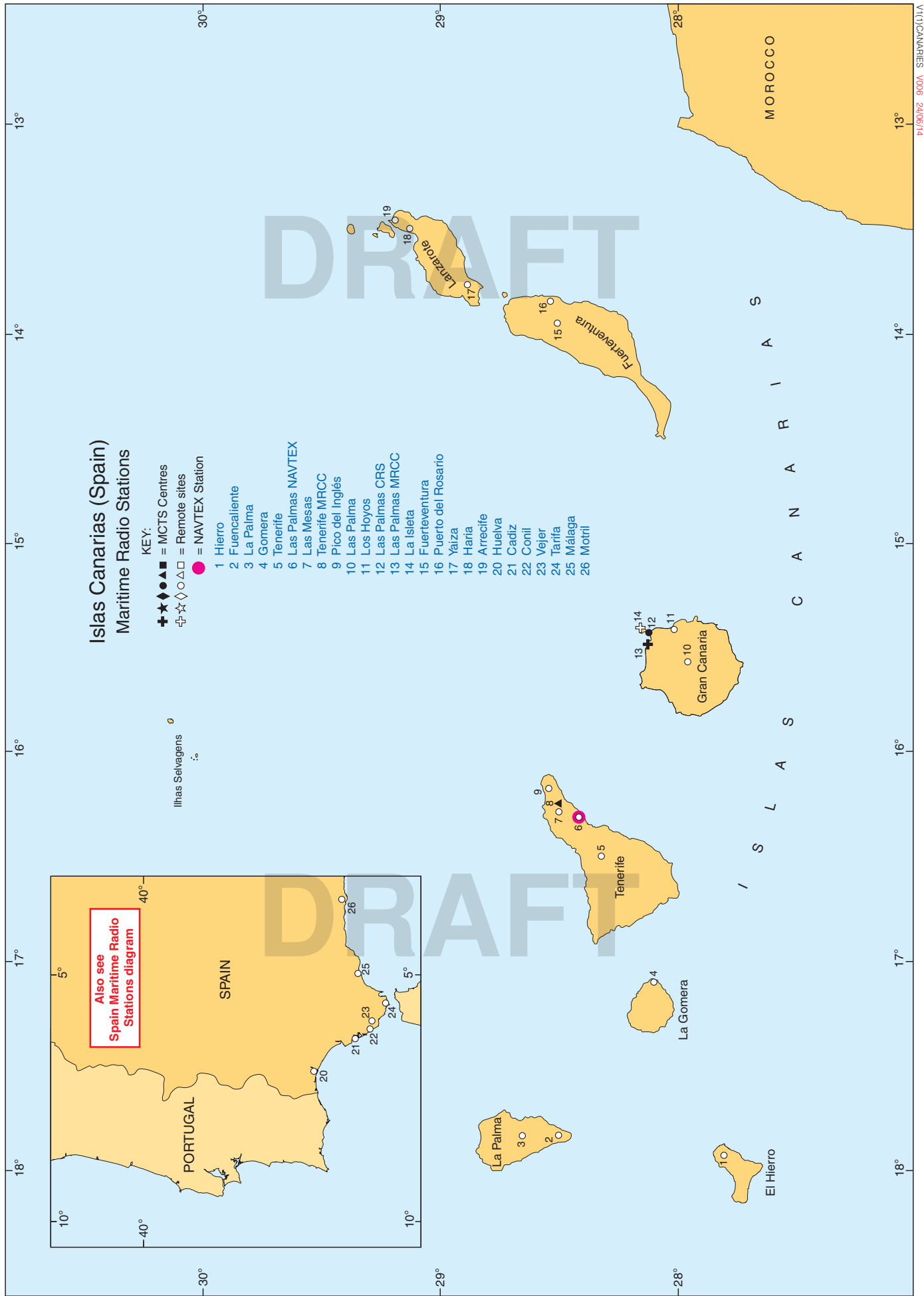
Marine weather forecast for coastal areas and high seas around Spain, Islas Canarias, western Mediterranean and Atlantic in English and Spanish.

Agencia Estatal de Meteorología
http://meteonav.aemet.es/MeteoNav/MeteoNav_en.html

Interactive weather service which lets the user plot a track, time of departure/arrival and then receive wind and sea state predictions, instructions in English and Spanish.

NAVTEX

I	Las Palmas	518 kHz	28°25′.97N 16°20′.17W
A		490 kHz	
Diagrams pages 34, 70 and 194			
Weather Bulletins			
I: 0920 1320 2120	Weather bulletins for Sea Areas Madeira, Casablanca, Agadir, Canarias, Tarfaya and Cap Blanc in English.		
A: 0000 1200 1600	Weather bulletins for Sea Areas Madeira, Casablanca, Agadir, Canarias, Tarfaya and Cap Blanc in Spanish.		
Navigational Warnings			
I: 0120 0520 0920 1320 1720 2120	Navigational Warnings in English.		
A: 0000 0400 0800 1200 1600 2000	Navigational Warnings in Spanish.		



CANARIAS, ISLAS (Spain)

LAS PALMAS					
Control Centre: 28°09′.44N 15°24′.85W					
Arrecife (Lanzarote)					
A	1644	RT (MF)	Puerto del Rosario	28°32′.62N 13°52′.68W	
Las Palmas (Gran Canaria)					
A	1689	RT (MF)	Las Mesas	28°28′.97N 16°16′.17W	
Tarifa					
B	1656	RT (MF)	Huelva	37°12′.42N 7°01′.20W	
C	Ch 22	VHF	Fuerteventura	28°24′.41N 14°02′.68W	
	Ch 24		Gomera	28°04′.98N 17°07′.10W	
	Ch 23		Hierro	27°47′.65N 17°56′.17W	
	Ch 20		La Palma	28°38′.89N 17°49′.55W	
	Ch 26		Las Palma	27°57′.52N 15°33′.49W	
	Ch 25		Orzola	29°13′.01N 13°28′.70W	
	Ch 27		Tenerife	28°18′.40N 16°30′.15W	
	Ch 03		Yaiza	28°55′.12N 13°47′.04W	
D	Ch 26		VHF	Málaga	36°29′.22N 5°12′.38W
	Ch 81			Motril	36°49′.02N 3°24′.36W
E	Ch 28	Cádiz		36°38′.18N 6°09′.09W	
	Ch 26	Huelva		37°12′.42N 7°01′.20W	
	Ch 83	Tarifa		36°07′.52N 5°45′.80W	
Diagrams pages 70, 193, 194, 195 and 196					
Weather Bulletins					
A:	1040 1603 2233	Storm warnings, general synopsis and forecasts for Atlantic sea areas south of 35°N.			
B:	0903 1503 2303	Storm warnings, general synopsis and forecasts for Atlantic sea areas north of 30°N, as well as Mediterranean sea areas Alboran and Palos.			
C:	0340 1340 1903	Weather bulletins for coastal areas of the Canary Islands.			
D:	0200 1115 1633	Weather bulletins for coastal areas of the western Mediterranean.			
E:	0200 1115 1633	Weather bulletins for coastal areas of south-western Spain.			
Navigational Warnings					
A:	0633 2110	Navigational Warnings for Atlantic sea areas south of 35°N, including coastal areas of the Canary Islands.			
B:	0840 2003	Navigational Warnings for sea area Cabo Trafalgar to 4°W.			
C:	0340 1903	Navigational Warnings for coastal areas of the Canary Islands.			
D:	0200 1633	Navigational Warnings for coastal areas of the western Mediterranean.			
E:	0200 1633	Navigational Warnings for coastal areas of south-western Spain.			

TENERIFE MRCC				
Control Centre: 28°28'91N 16°14'39W				
	Ch 15 72	VHF		
Diagrams pages 70, 193, 194, 195 and 196				
Weather Bulletins				
0015 0415 0815 1215 1615 2015	Gale warnings, weather synopsis and forecast for Anaga-Agaete channel and the coasts of La Palma, El Hierro, La Gomera and Tenerife in Spanish and English.			

CAPE VERDE			
NAVTEX			
U	São Vicente	518 kHz	16°51'47N 25°00'04W
P		490 kHz	
Diagrams pages 34 and 38			
Weather Bulletins			
U:	0320 0720 1120 1520 1920 2320	Weather bulletins in English.	
P:	0230 0630 1030 1430 1830 2230	Weather bulletins in Portuguese.	

Continued overleaf

CAPE VERDE

NAVTEX (Continued)

Navigational Warnings	
U: 0320 0720 1120 1520 1920 2320	Navigational Warnings in English.
P: 0230 0630 1030 1430 1830 2230	Navigational Warnings in Portuguese.
NOTE: Temporarily inoperative	

CHANNEL ISLANDS (UK)

INTERNET WEATHER SERVICES

Jersey Meteorological Department www.gov.je/weather/Pages/Shipping.aspx	Shipping forecast and other related information, for the area bounded by latitude 50°N, the French coast between Cap de la Hague and the Île de Bréhat and longitude 3°W. The information includes general situation, 24 hour forecast (wind, sea state, weather, visibility and swell) and outlook for a further 24 hours. A recording of the Channel Islands Shipping Forecast is available by Tel: 0900 669 0022. Forecasts are also available as an e-mail subscription; for details call Tel: 01534 448780 or e-mail enquiries@jerseymet.gov.je .
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MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

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www.harbours.gg/Guernsey-Navigation-Warnings-Notices	Guernsey Harbours Authority	Local Navigation Warnings and other related information, in English.
www.ports.je/jerseyharbours/RegulationGuidance/Pages/NoticeMariners.aspx	Jersey Harbours Authority	

BBC RADIO JERSEY

Control Centre: 49°14'·76N 2°06'·08W

	1026 kHz	AM		
	88.8 MHz	FM		

Diagrams pages 216 and 217

Weather Bulletins

0625 1825 LT ¹ 0725 LT ²	Shipping forecast.
0725 0825 1725 LT ¹ 0725 0825 LT ²	Local weather (wind and tidal information).

¹ Mon-Fri² Sat, Sun

GUERNSEY COASTGUARD

Control Centre: 49°26'·18N 2°35'·84W

	Ch 20	VHF		
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Weather Bulletins

On request	Weather bulletins for Guernsey.
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Navigational Warnings

On receipt On request	Local Navigational Warnings for Guernsey.
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JERSEY COASTGUARD MRCC (GUD)

Control Centre: 49°10'·84N 2°06'·84W

	Ch 82 ¹	VHF		
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Diagrams pages 216 and 217

Weather Bulletins

0645 LT ² 0745 LT ² 0845 LT ² 1245 1845 2245	Gale warnings and weather synopsis, 24 hour forecast and outlook for a further 24 hours for Channel Islands; S of 50°N, E of 3°W. Reports from meteorological observation stations.
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Continued on next page

CHANNEL ISLANDS (UK)

JERSEY COASTGUARD MRCC (GUD) (Continued)

Navigational Warnings	
On receipt and then at 0307 0907 1507 2107	Gale Warnings for Channel Islands; S of 50°N, E of 3°W.
On receipt and then at 0433 0645 LT ² 0745 LT ² 0833 1245 1633 1845 2033 2245	Navigational Warnings for Channel Islands.
¹ After prior announcement on VHF Ch 16. ² Broadcasts given 1 hour earlier when DST is in force (see ALRS Volume 2 (NP282) for dates).	

SAINT HELIER VTS

Control Centre: 49°10'57N 2°06'88W

	Ch 18	VHF	
Weather Bulletins			
Continuous broadcast	Automatic wind information broadcast every 2 minutes, comprising 10 minute mean wind speed / gust / direction.		

CONGO

POINTE-NOIRE (TNA)

Control Centre: 4°46'95S 11°51'61E

	2705	RT (MF)	
Navigational Warnings			
0610 0810 1010 1410 1610	Navigational Warnings for coastal waters of Congo in French.		

CROATIA

INTERNET WEATHER SERVICES

Meteorological and Hydrological Service
www.meteo.hr

Marine forecast for the Adriatic Sea in Croatian and English.

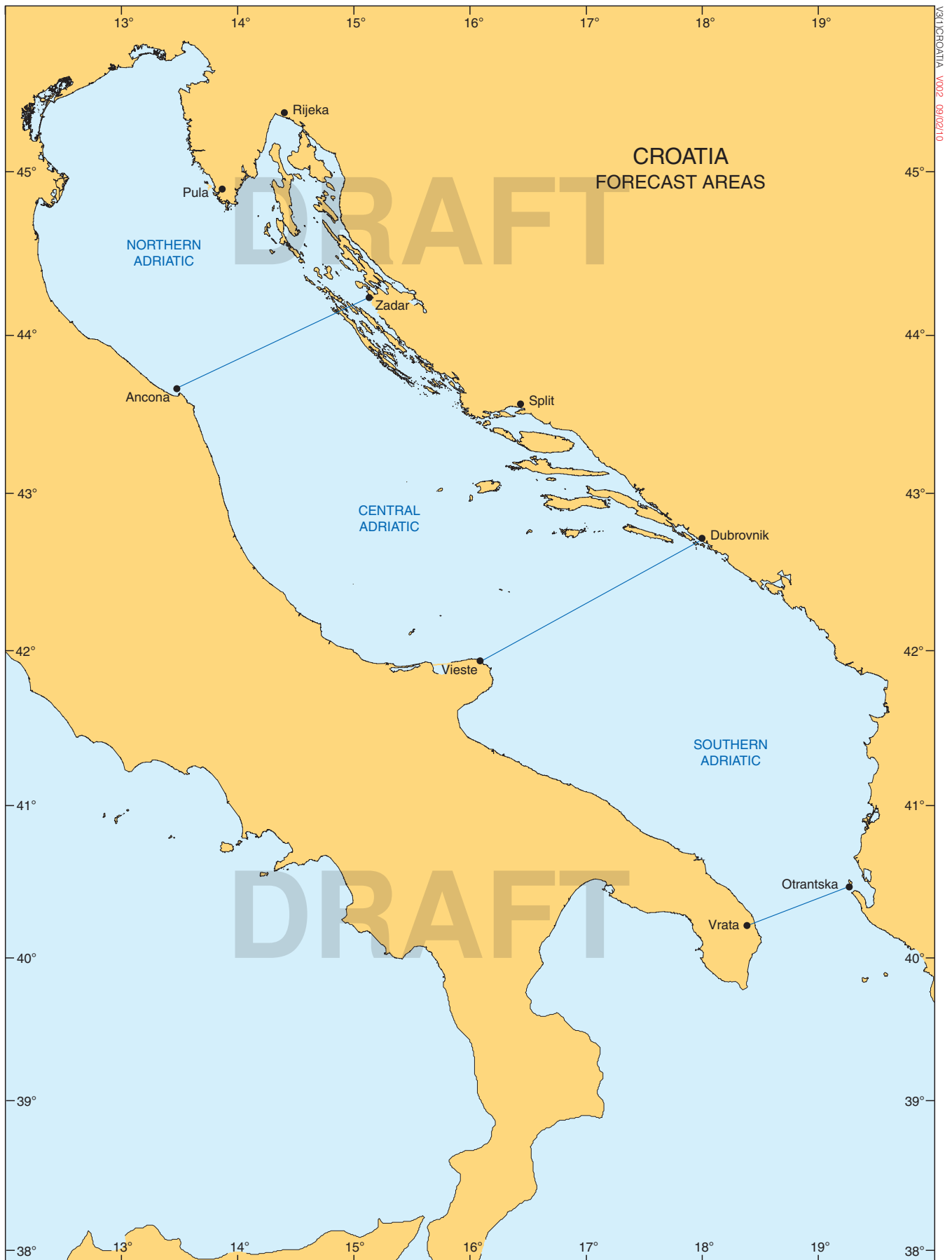
NAVTEX

Q	Split (Hvar I.)	518 kHz	43°10'91N 16°25'34E
Diagrams pages 35 and 74			
Weather Bulletins			
Q: 0240 0640 1040 1440 1840 2240	Weather synopsis and 24 hour forecast for Adriatic Sea and Strait of Otranto in English.		
Navigational Warnings			
Q: 0240 0640 1040 1440 1840 2240	Gale warnings and Navigational Warnings for coastal waters of Croatia in English.		

CONTINUOUS VHF WEATHER BROADCAST

Taped-voice weather information in Croatian, English, Italian and German for the coastal waters of Croatia is broadcast continuously from the Croatian VTS facilities shown in the table below. Broadcasts are made throughout the year and are repeated approximately every 15 minutes, the tape is updated at 0800 and 1300 LT. Information broadcast includes a brief situation report, 24 hour short forecast and a barometric pressure report.

Location	VHF Ch	VHF coverage area	Approximate position
Sv.Martin	73	Northern Adriatic – west coast of Istria	45°07'56N 13°44'33E
Osoršćica	69	Northern Adriatic – east part	44°39'99N 14°21'88E
Dugi Otok	73	Central Adriatic – east part	43°59'38N 15°03'43E
Vis	67	Central Adriatic – east part	43°01'79N 16°06'57E
Dubrovnik	73	Southern Adriatic – east part	42°39'60N 18°05'23E



DUBROVNIK (9AD)				
Control Centre: 42°39'50N 18°05'23E				
	Ch 19	VHF	Gorica Sv.Vlaha (Dubrovnik)	42°38'83N 18°04'73E
	Ch 85		Hum (Lastovo Island)	42°45'00N 16°51'50E
	Ch 28		Ilijino Brdo (Cista Gora)	42°29'92N 18°23'28E
	Ch 07		Srd	42°39'02N 18°06'62E
	Ch 04		Uljerje	42°53'65N 17°28'67E
Diagram page 74				
Weather Bulletins				
0120 0620 1320 2020	Weather bulletins and 24 hour forecast for the Adriatic Sea and Strait of Otranto in Croatian and English.			
Navigational Warnings				
0120 0620 1320 2020	Navigational Warnings for coastal waters of Croatia in Croatian and English, immediately following the weather bulletins.			
On receipt then 0320 0820 1520 2220	Current weather warnings in Croatian and English.			
NOTE(S): Weather warnings are determined using the following criteria: sea state ≥ 6, wind > 50 knots, visibility < 200m.				

RIJEKA (9AR)				
Control Centre: 45°19'43N 14°26'46E				
	Ch 04	VHF	Kamenjak	44°46'38N 14°47'37E
	Ch 19		Osoršćica	44°39'90N 14°21'98E
	Ch 81		Savudrija	45°29'41N 13°29'46E
	Ch 20		Susak	44°30'88N 14°18'09E
	Ch 24		Učka	45°17'25N 14°12'18E
Diagram page 74				
Weather Bulletins				
0030 0530 1230 1930	Weather bulletins and 24 hour forecast for the Adriatic Sea and Strait of Otranto in Croatian and English.			
Navigational Warnings				
0030 0530 1230 1930	Navigational Warnings for coastal waters of Croatia in Croatian and English, immediately following the weather bulletins.			
On receipt then 0230 0730 1430 2130	Current weather warnings in Croatian and English.			
NOTE(S): Weather warnings are determined using the following criteria: sea state ≥ 6, wind > 50 knots, visibility < 200m.				

SPLIT (9AS)				
Control Centre: 43°30'40N 16°26'37E				
	Ch 28	VHF	Čelavac	44°15'60N 15°47'40E
	Ch 81		Hum (Vis Island)	43°01'79N 16°06'83E
	Ch 21		Labištica	43°34'70N 16°12'90E
	Ch 84		Sv. Jure (Biokovo)	43°20'50N 17°03'52E
	Ch 07		Ugljan	44°04'30N 15°09'57E
	Ch 23		Vidova Gora	43°16'77N 16°37'07E
Diagram page 74				
Weather Bulletins				
0045 0545 1245 1945	Weather bulletins and 24 hour forecast for the Adriatic Sea and Strait of Otranto in Croatian and English.			
Navigational Warnings				
0045 0545 1245 1945	Navigational Warnings for coastal waters of Croatia in Croatian and English, immediately following the weather bulletins.			
On receipt then 0300 0800 1500 2200	Current weather warnings in Croatian and English.			
NOTE(S): Weather warnings are determined using the following criteria: sea state ≥ 6, wind > 50 knots, visibility < 200m.				

CYPRUS**INTERNET WEATHER SERVICES**

Cypriot Department of Meteorology
www.moa.gov.cy/moa/ms/ms.nsf/DMLforecast_en/DMLforecast_en?OpenDocument

Maritime weather forecast for the next 24 hours, available in English and Greek.

NAVTEX

M	Cyprus	518 kHz	35°02′.95N 33°17′.07E
Diagram page 36			
Weather Bulletins			
M: 0200 0600 1000 1400 1800 2200	Weather forecast for Eastern Mediterranean in English.		
Navigational Warnings			
M: 0200 0600 1000 1400 1800 2200	Gale warnings and Navigational Warnings for Eastern Mediterranean in English.		

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.mod.gov.cy/mod/CJRCC.nsf/index_en/index_en?OpenDocument

Cyprus Joint Rescue
Coordination Centre

Navigation Warnings, Notices to Mariners and links other
related information in English and Greek

CYPRUS (5BA)

Control Centre: 35°02'·95N 33°17'·07E

A	2700	RT (MF)		
B	Ch 24	VHF		
C	Ch 25			
D	Ch 26			
E	Ch 27			

Diagram page 77

Weather Bulletins

B: 0600 1000 1600 2200	Weather bulletins for western coastal areas of Cyprus, in English and Greek.
C: 0600 1000 1600 2200	Weather bulletins for southern coastal areas of Cyprus, in English and Greek.
D: 0600 1000 1600 2200	Weather bulletins for eastern coastal areas of Cyprus, in English and Greek.
E: 0600 1000 1600 2200	Weather bulletins for northern coastal areas of Cyprus, in English and Greek.

Navigational Warnings

A-E: On receipt	Gale and Navigational Warnings for Eastern Mediterranean.
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NOTE(S): 1. VHF broadcasts are made after prior announcement on VHF Ch 16.
 2. Weather Bulletins broadcast on VHF Ch 16 and RT (MF) 2182 kHz on request.

DENMARK**INTERNET WEATHER SERVICES**

Danmarks Meteorologiske Institut (DMI)
www.dmi.dk/en/hav/#danmark

Marine weather forecast for Danish waters, together with associated information
such as tidal data, in English and Danish.

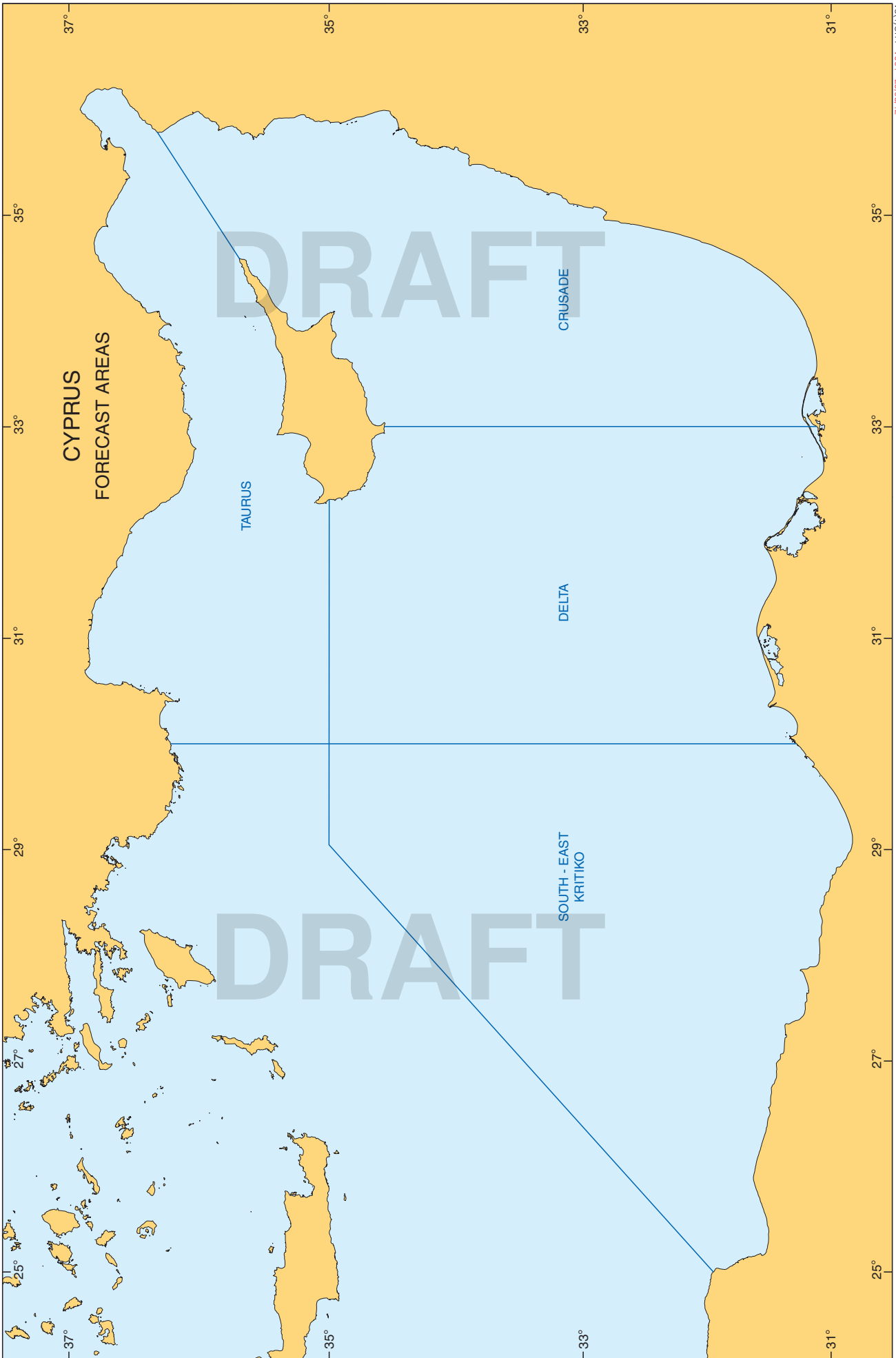
MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

https://www.dma.dk/SikkerhedTilSoes/Sejladsinformation/nautisk_information/Sider/nautisk_information.aspx

Danish Maritime Authority

Navigation Warnings and other related information in
English and Danish



DENMARK

FIRING PRACTICE AREAS

Diagram page 79

Firing times and other safety information for the areas shown on the diagram and in the table below, are available from the following sources:

1. Monthly in advance in the Danish Notices to Mariners
2. In Navigational Warnings daily over Danmarks Radio on 243 kHz (LW) immediately after the weather forecast starting at 1745. Firing times are announced daily on the teletext of Danmarks Radio, page 428
3. Through the VHF Channel and/or telephone number of each safety office.
4. Through the following website links:
 - (a) www.flv.dk/milais/navwarframe.html
 - (b) https://www.dma.dk/SikkerhedTilSoes/Sejladsinformation/nautisk_information/Sider/nautisk_information.aspx
 - (c) <http://nautiskinformation.soefartssstyrelsen.dk/index.html#/publications>

NOTE: VHF radio is open from 1 hour before firing until cessation.

Area Name	VHF Channel	Contact information	Position
EK D 371 Marstal Bugt		Joint Operations Centre, Tel: +45 72850000	54°42'00N 10°27'00E
ES D 140 Bornholm W			55°00'00N 13°55'00E
ES D 138 Bornholm N			55°20'00N 15°30'00E
ES D 139 Bornholm E			55°05'00N 15°40'00E
EK D 395 Raghammer Odde EK D 396 Hullebæk	Call: Raghammer VHF Chs 16; 06 08 77	Safety Office, Tel: +45 56978106 or +45 20106551	55°01'00N 14°55'00E
EK R 44 Halk		Firing Safety Oksbøl provides information regarding practices in this area, Tel: +45 72839550 Halk Safety Office, Tel: +45 74571137 Website: www.forsvaret.dk/oksbl	55°11'00N 9°38'00E
14 Hyby Fælled		Local Support Element Fredericia, Tel: +45 72813673 or +45 72813681 Website: www.forsvaret.dk/tgr	55°35'00N 9°48'00E
EK D 352 Lysegrund N EK D 353 Lysegrund S		Joint Operations Centre, Tel: +45 72850000	56°17'00N 11°50'00E
EK R 17 Isefjord EK R 18 Jægerspris	Call: Jægerspris VHF Chs 16; 06 08 67	Camp Jægerspris, Tel: +45 72839730 Website: www.forsvaret.dk/JPL	55°52'00N 11°57'00E
11 Bredetved			55°42'00N 11°48'00E
EK R 11 Sjællands Odde W EK R 12 Gniben EK R 13 Sjællands Rev EK R 14 Sjællands Odde E EK R 19 MULTEX EK R 20 Yderby EK D 350 Yderflak EK D 351 Schultz Grund	Call: Gniben Radio VHF Chs 16; 06	Naval Weapon Centre, Tel: +45 72855500 Control tower (during practice), Tel: +45 72855514	56°00'00N 11°17'00E Gniben
EK R 15 Sejersø E EK R 16 Sejersø W	Call: Stold VHF Chs 16; 06	Camp Jægerspris, Tel: +45 72839730 Website: www.forsvaret.dk/JPL	55°45'00N 11°17'00E Stold
EK R 45 Hevring		Camp Hevring, Tel: +45 72839689 Website: www.forsvaret.dk	56°32'00N 10°26'00E
EK D 389 Skagen N		Joint Operations Centre, Tel: +45 72850000	58°15'00N 10°30'00E
EK R 48 Tranum S EK D 370 Blokhus	Call: Tranum VHF Chs 16; 09 12 13	Tranum, Tel: +45 72839699	57°12'00N 9°29'00E
15 Nymindégab	Call: Nymindégab VHF Chs 16; 06 08	Firing Safety, Camp Oksbøl, Tel: +45 72839550 (working hours) or +45 50587178 (during firing practice) Website: www.forsvaret.dk/oksbl	55°50'00N 8°10'00E
EK R 33 Vejers EK D 380 Kallesmærsk E EK D 381 Kallesmærsk W	Call: Oksbøl VHF Chs 16; 06 08 Lyngby Radio broadcasts firing warnings at 0705 1705	Firing Safety, Camp Oksbøl, Tel: +45 72839550 (working hours) Website: www.forsvaret.dk/oksbl	55°35'00N 8°06'00E

Continued on page 80



DENMARK

Firing Practice Areas (Continued)

Area Name	VHF Channel	Contact information	Position
EK R 53 Juvre	Call: Fly Rømo VHF Chs 16; 11	Firing Safety, Camp Oksbøl, Tel: +45 72839550 (working hours) or +45 73755219 and +45 21487290 (during firing practice)	55°12'00N 8°31'00E
EK D 373 Rømo W		Skrydstrup Airbase, Tel: +45 72848121 or +45 73755219	55°10'00N 8°17'00E

DR (DANMARKS RADIO)

Control Centre: 55°40'55N 11°04'24E

	243 kHz	AM	Kalundborg
Diagrams pages 79, 81, 82, 217 and 290			
Weather Bulletins			
0545 0845 1145 1745 LT	Gale and storm warnings, weather synopsis and forecast for Danish waters. Latest wind and weather observations from Danish and foreign stations.		
0545 0845 1745 LT	7 day forecast for Sea Areas 2–6, 8, 9 and 5 day forecast for Sea Areas 2–6, 8, 9 and the North Sea.		
Navigational Warnings			
1803 LT	Navigational Warnings.		
1745 LT ¹	Firing practice warnings.		
1800	Ice bulletins are broadcast for Danish and adjacent waters.		
¹ After the weather forecast			

LYNGBY (OXZ)

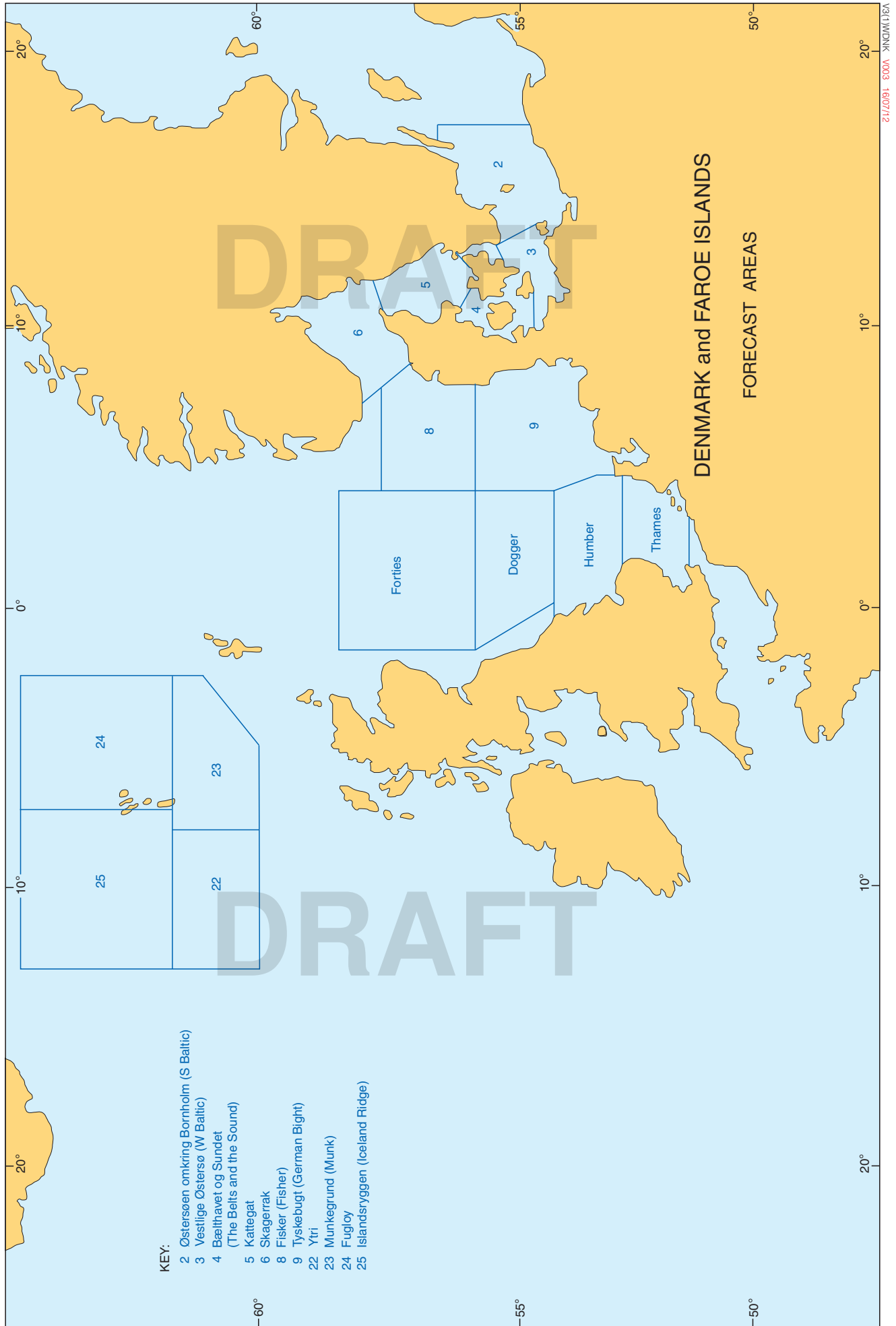
Control Centre: 55°46'00N 12°26'00E

A	1734	RT (MF)	Blåvand ¹	55°39'42N 8°40'28E
			Bovbjerg ²	56°31'72N 8°10'10E
B	2586		Rønne	55°02'53N 15°06'93E
	1758		Skagen	57°44'35N 10°34'55E
C	Ch 62	VHF	Als	54°57'92N 9°33'25E
	Ch 07		Anholt	56°42'98N 11°30'94E
	Ch 01		Årsballe (Bornholm)	55°08'95N 14°52'73E
	Ch 66		Fornæs	56°26'84N 10°56'72E
	Ch 03		Frejlev	57°00'25N 9°49'58E
	Ch 01		Hanstholm	57°06'55N 8°39'00E
	Ch 63		Hirtshals	57°31'45N 9°57'88E
	Ch 07		Karleby	54°52'35N 11°11'83E
	Ch 03		København/Lynetten	55°41'83N 12°36'80E
	Ch 64		Læsø	57°16'14N 11°03'16E
	Ch 02		Mern (Møn)	55°03'18N 11°59'37E
	Ch 01		Røsnæs	55°44'15N 10°55'12E
	Ch 05		Silkeborg	56°10'05N 9°31'55E
	Ch 04		Skagen	57°44'35N 10°34'55E
	Ch 18		Svendborg	55°01'72N 10°36'90E
	Ch 63		Vejby	56°04'72N 12°07'76E
	Ch 65		Vejle	55°40'55N 9°30'25E
D	Ch 07		Blåvand	55°39'42N 8°40'28E
	Ch 02		Bovbjerg	56°31'72N 8°10'10E

Diagrams pages 79, 81, 82 and 290

Weather Bulletins**A-D:** On request Weather forecast for all Sea Areas in Danish and English.

Continued on page 83





Navigational Warnings		
A³, B³, C³, D³:	On receipt	Gale, storm and ice accretion warnings in Danish and English for the following Sea Areas: Sea Area 2 on VHF Ch 01, 02 Sea Area 3 on VHF Ch 01, 02, 03, 07, 18, 62 Sea Area 4 on VHF Ch 01, 02, 03, 07, 18, 62, 63, 65, 66 Sea Area 5 on VHF Ch 1, 03, 04, 07, 63, 64, 65, 66 Sea Area 6 on VHF Ch 01, 02, 04, 63, 64 Sea Area 8 on VHF Ch 01, 02, 07, 63 Sea Area 9 on VHF Ch 02, 07
A-D:	On receipt H+03 or H+33 then at 0133 0533 0933 1333 1733 2133	Navigational Warnings in Danish and English.
A-D:	1305	Ice Report.
A⁴, B⁴, C⁴, D⁴:	Odd H+03 while in force	Ice warnings in Danish and English.
A, D:	0705 1705	Firing practice warnings for the following ranges: EK R 33 Vejers, EK D 380 Kallesmærsk E and EK D 381 Kallesmærsk W.
¹ Secondary MSI transmission site. ² Primary MSI transmission site. ³ After prior announcement on DSC MF 2187.5 kHz and VHF Ch 16 and repeated on RT (MF) 2182 kHz and VHF Ch 16 H+03 or H+33 at least half an hour later. ⁴ After prior announcement on RT (MF) 2182 kHz and VHF Ch 16.		

EGYPT

INTERNET WEATHER SERVICES

Egyptian Meteorological Authority www.nwp.gov.eg/index.php/reports/marine-forecast	Marine forecast for the next 24 hours, covering the sea areas of North Africa and the eastern Mediterranean. Includes wind, wave/swell, pressure outlook and astronomical data for the next five days, in English.
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NAVTEX

N	Al Iskanderiyah (Alexandria)	518 kHz	31°11'96N 29°51'88E
V	Al Quşayr		26°06'40N 34°17'04E
X	Ismailia (Al Ismā'īliyah)	4209.5 kHz	30°28'00N 32°22'00E
X			

Diagrams pages 36, 37 and 85

Weather Bulletins

N:	1010 2210	12 hour forecast for Sea Areas A, B, C and D in English.
V:	0330 1530	Weather forecast for Sea Areas E and F in English.
X:	0750 1950	Weather forecast for Sea Areas E and F.
X:	0750	Weather forecast for Sea Areas E and F.

Navigational Warnings

N:	0210 0610 1010 1410 1810 2210	Navigational Warnings in English.
N:	1010 2210	Storm warnings for Sea Areas A, B, C and D in English.
V:	0330 0730 1130 1530 1930 2330	Navigational Warnings including rig movements in English.
X:	0350 0750 1150 1550 1950 2350	Navigational Warnings for Port Said (Būr Sa'id), Gulf of Suez (N of Safaja) and Gulf of Aqaba including rig movements in English.
X:	0750 1150	Navigational Warnings for Port Said (Būr Sa'id), Gulf of Suez (N of Safaja) and Gulf of Aqaba including rig movements in English.

EGYPT (Suez Canal)**SERAPEUM (ISMAILIA) (SUZ)**

Control Centre: 30°28'·00N 32°22'·00E

A	4210	RADIO-TELEX		
B	6314			
C	8416.5			
Diagram page 85				
Weather Bulletins				
A: 0630	Weather forecasts for sea areas A, B, C and D.			
B: 1030	Weather forecasts for sea areas E and F.			
C: 1430	Weather forecasts for sea areas A, B, C and D.			
Navigational Warnings				
A: 0630	Navigational Warnings for sea areas A, B, C and D.			
B: 1030	Navigational Warnings for sea areas E and F.			
C: 1430	Navigational Warnings for sea areas A, B, C and D.			

ESTONIA**INTERNET WEATHER SERVICES**

Estonian Meteorological and Hydrological Institute www.emhi.ee	Shipping weather in Estonian, Russian and English.
Estonian Meteorological and Hydrological Institute www.ilmateenistus.ee	Shipping weather in Estonian, Russian and English.

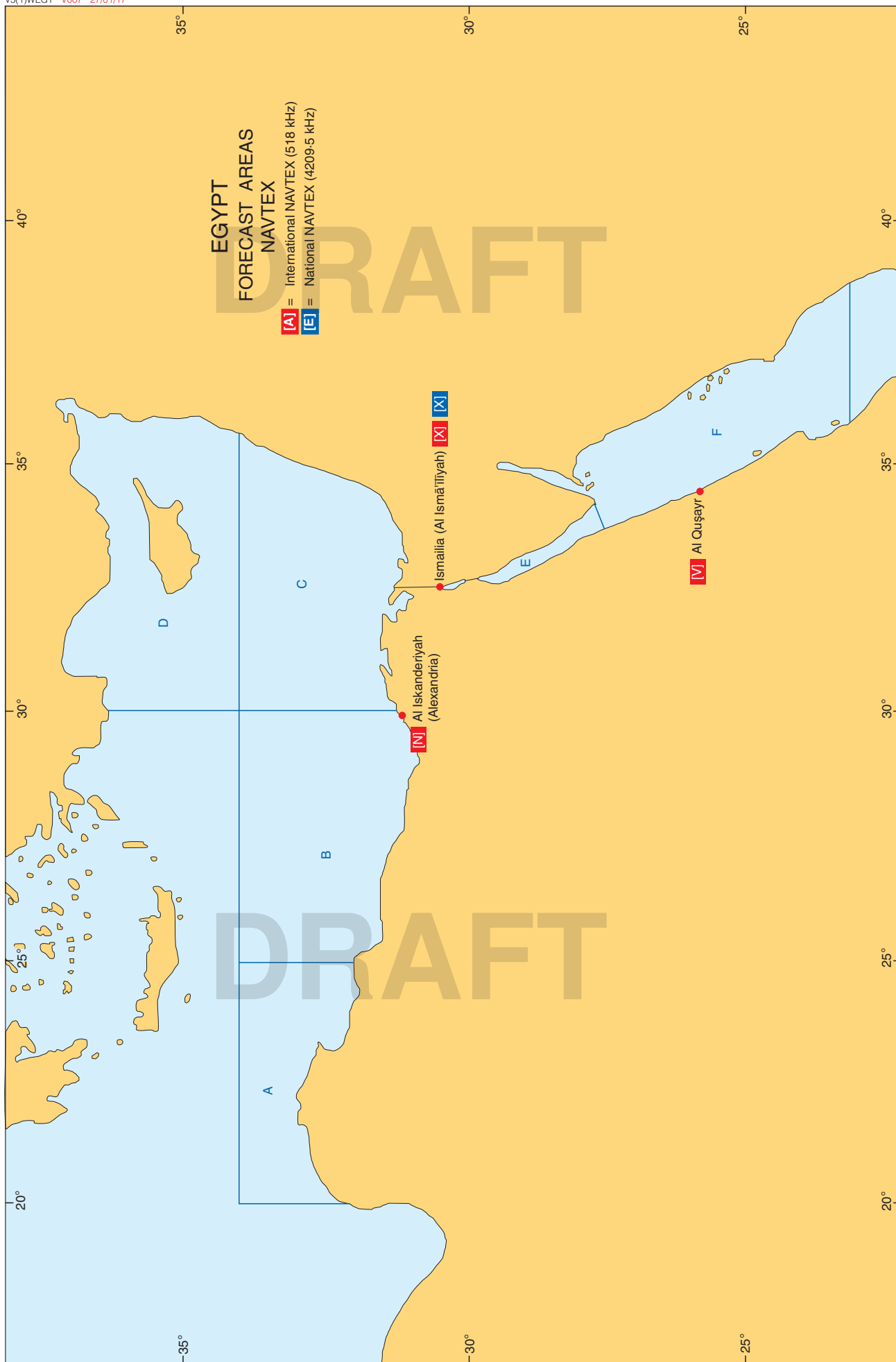
NAVTEX

U	Tallinn	518 kHz	59°27'·84N 24°21'·42E
Diagrams pages 33, 173 and 292			
Weather Bulletins			
U: 0720 1920	Forecast for Baltic Sea in English.		
Navigational Warnings			
U: 0320 0720 1120 1520 1920 2320	Gale warnings and Navigational Warnings for Sea Areas B4–B8 in English.		
Ice Warnings and Reports			
U: 1120	Baltic ice information in English.		
NOTE: Broadcasts relayed by MSI Sweden/Stockholm Radio.			

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.vta.ee/notices-to-mariners	Estonian Maritime Administration	Notice to Mariners, local and NAVTEX Navigation Warnings, together with other related information, in English and Estonian.
http://gis.vta.ee/navhoiatused/en.html		Navigational Warnings depicted in an interactive map view, in English and Estonian.



ESTONIA

TALLINN (ESA)				
Control Centre: 59°27'·84N 24°21'·42E				
A	1650	RT (MF)	Tallinn	59°27'·84N 24°21'·42E
B	3310			
C	Ch 27	VHF	Aabla	59°35'·12N 25°31'·45E
	Ch 26		Dirhami	59°12'·43N 23°30'·35E
	Ch 03		Eisma	59°33'·60N 26°17'·53E
	Ch 20		Kõpu	58°55'·12N 22°11'·89E
	Ch 27		Merivälja	59°29'·70N 24°50'·58E
	Ch 20		Orissaare	58°33'·51N 23°04'·00E
	Ch 03		Pärnu	58°22'·66N 24°34'·54E
	Ch 07		Ruhnu	57°48'·24N 23°15'·50E
	Ch 01		Suuremõisa	58°52'·10N 22°57'·53E
	Ch 26		Suurupi	59°27'·68N 24°22'·63E
	Ch 01		Toila	59°24'·90N 27°31'·78E
			Torgu	57°58'·67N 22°04'·75E
			Tõstamaa	58°18'·43N 23°59'·72E
			Undva	58°30'·89N 21°55'·29E
Diagram page 173				
Weather Bulletins				
A, C: 0433 1333	Local weather forecasts (including ice information) in English and Estonian.			
Navigational Warnings				
B, C: 0233 0633 1033 1433 1833 2233	Navigational Warnings in English and Estonian.			
B, C: After silence period	Storm warnings in English and Estonian.			
NOTE(S): Broadcasts are made after prior announcement on VHF Ch 16 or 2182 kHz as appropriate.				

FAROE ISLANDS (Denmark)

INTERNET WEATHER SERVICES

Danmarks Meteorologiske Institut (DMI) www.dmi.dk/en/faeroeerne/hav/farvandsudsig	Marine weather forecast for the Faroe Islands Sea Areas, together with links to associated information such as tidal data, in English and Danish.
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NAVTEX

D	Tórshavn	518 kHz	62°00'·87N 6°48'·01W
Diagrams pages 32 and 33			
Weather Bulletins			
D: 0030 1230	Weather bulletins.		
Navigational Warnings			
D: 0030 0430 0830 1230 1630 2030	Navigational Warnings.		

TÓRSHAVN (OXJ)

Control Centre: 62°00'·87N 6°48'·01W				
	1641	RT (MF)	Tórshavn	62°00'·87N 6°48'·01W
	Ch 63	VHF	Eiðiskollur	62°18'·91N 7°06'·27W
	Ch 61		Hálsurin	62°13'·53N 6°36'·82W
	Ch 23		Hesturin	61°25'·42N 6°45'·29W
	Ch 24		Klubbin	62°20'·38N 6°19'·32W
	Ch 25		Mykines	62°06'·28N 7°35'·18W
	Ch 62		Slættafjall	62°20'·01N 6°47'·44W

Continued on next page

FAROE ISLANDS (Denmark)

TÓRSHAVN (OXJ) (Continued)

	Ch 26	VHF	Sornfelli	62°04'·09N 6°58'·05W
	Ch 60		Støðlafjall	62°10'·22N 6°44'·75W
Diagram page 81				
Weather Bulletins				
On request	Weather forecast for Sea Areas 22–25.			
Navigational Warnings				
On receipt	Storm and gale warnings for Sea Areas 22–25 and Navigational Warnings in English.			
Every even H+35	Storm and gale warnings for Sea Area 22–25 and Navigational Warnings in Faroese and English.			

FINLAND

GENERAL NOTES

Meteorological and Hydrological Information transmitted through the Automatic Identification System (AIS)

The Finnish Transport Agency transmits AIS messages containing meteorological and hydrological information in all sea areas within VHF range of the Finnish AIS base network.

The message contains weather data from the wind and water level gauges closest to the vessel receiving the message. Receipt of the message on AIS is possible only if the AIS device contains a program with the required specification.

INTERNET WEATHER SERVICES

Finnish Meteorological Institute http://en.ilmatieteenlaitos.fi/weather-and-sea	Marine weather forecasts and associated information such as: tidal, wave and ice conditions, in Finnish, English and Swedish.
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MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

https://extranet.liikennevirasto.fi/pooki_www/merivaroitukset/list_en.html	Finnish Transport Agency	Navigation Warnings in English.
https://extranet.liikennevirasto.fi/pooki_www/merivaroitukset/list_fi.html		Navigation Warnings in Finnish.
http://puolustusvoimat.fi/en/current-issues/firings-and-noise	Finnish Defence Forces	Firing Practice Warnings and range safety office contact details.

FIRING PRACTICE AREAS

Firing practice exercises are not generally announced to merchant vessels as Radio Navigational Warnings. However, dates and times of current or planned gunnery exercises, together with contact details for the range safety offices involved, are available on the Finnish Defence Forces website <http://puolustusvoimat.fi/en/current-issues/firings-and-noise>. By clicking on the 'Subscribe' menu, one can also choose to receive automated e-mails regarding practices in specific areas in English, Finnish or Swedish.

Firing information can also be obtained by calling the Maritime Operations Centre Control Room on Tel: +358 (0)299300666 or by e-mail: tilannekeskus.merive@mil.fi

RADIO SUOMI

Control Centre: 60°09'00N 24°52'00E				
	96.9 MHz	FM	Anjalankoski / Sippola	60°41'00N 27°03'00E
	94 MHz		Espoo - Esbo	60°10'66N 24°38'41E
	94.8 MHz		Eurojoki - Euraäminne	61°16'88N 21°41'90E
	97 MHz		Fiskars (Pohja - Pojo)	60°08'00N 23°30'00E
	94.3 MHz		Kaarina (Turku - Åbo)	60°22'61N 22°20'10E
	94.2 MHz		Kristinankaupunki - Kristinestad / Pyhävuori	62°17'23N 21°38'30E
	97.2 MHz		Kruunupyy - Kronoby	63°44'10N 23°30'55E
	97.6 MHz		Lapua - Lappo	62°57'00N 22°57'00E
	93.1 MHz		Mustasaari (Vaasa - Vasa)	63°12'52N 21°32'01E
	94.8 MHz		Oulu - Uleåborg (Kiiminki)	65°02'00N 25°51'00E
	97.3 MHz		Pernaja - Pernä (Loviisa)	60°34'00N 25°55'00E
	95 MHz			

Continued overleaf

FINLAND

RADIO SUOMI (Continued)

	90.3 MHz	FM	Porvoo - Borgå	60°21'·26N 25°31'·33E
	102.5 MHz		Raahe - Brahestad	64°40'·99N 24°32'·05E
	100.3 MHz		Sund (Smedsböle)	60°12'·80N 20°08'·10E
	95.6 MHz		Tervola	66°07'·00N 24°42'·00E
Diagrams pages 173, 295 and 296				
Weather Bulletins				
0550 0750 1245 1850 2150 LT ¹ 0750 1245 1850 2150 LT ²	Storm warnings, weather summary, wind direction and strength and visibility for Sea Areas B1–B5 and B7 in Finnish.			
Navigational Warnings				
1245 LT	Ice reports in Finnish.			
¹ Mon–Fri ² Sat–Sun				

RADIO VEGA

Control Centre: 60°09'·00N 24°52'·00E

	99.5 MHz	FM	Anjalankoski / Sippola	60°41'·00N 27°03'·00E
	101.1 MHz		Espoo - Esbo	60°10'·66N 24°38'·41E
	103 MHz		Eurojoki - Euraâminne	61°16'·88N 21°41'·90E
	99.7 MHz		Fiskars (Pohja - Pojo)	60°08'·00N 23°30'·00E
	101.4 MHz		Kaarina (Turku - Åbo)	60°22'·61N 22°20'·10E
	102.6 MHz		Kristiinankaupunki - Kristinestad / Pyhävuori	62°17'·23N 21°38'·30E
	102.7 MHz		Kruunupyy - Kronoby	63°44'·10N 23°30'·55E
	101.5 MHz		Lapua - Lappo	62°57'·00N 22°57'·00E
	101 MHz		Mustasaari (Vaasa - Vasa)	63°12'·52N 21°32'·01E
	100.3 MHz		Oulu - Uleåborg (Kiiminki)	65°02'·00N 25°51'·00E
	98.3 MHz		Pernaja - Pernå (Loviisa)	60°34'·00N 25°55'·00E
	95.9 MHz		Porvoo - Borgå	60°21'·26N 25°31'·33E
	93.1 MHz		Sund (Smedsböle)	60°12'·80N 20°08'·10E
Diagrams pages 173, 295 and 296				
Weather Bulletins				
0600 0800 1245 1900 2200 LT ¹ 0700 0800 1245 1900 2200 LT ²	Weather reports for Sea Areas B1–B5 and B7 in Swedish.			
Navigational Warnings				
1245 LT	Ice reports in Swedish.			
¹ Mon-Sat ² Sun				

TURKU (OFK)

Control Centre: 60°09'·78N 21°42'·55E

	Ch 04	VHF	Espoo	60°10'·66N 24°38'·41E
	Ch 26		Eurajoki	61°16'·88N 21°41'·90E
	Ch 05		Geta	60°23'·20N 19°50'·85E
	Ch 07		Hammarland	60°11'·37N 19°44'·28E
	Ch 03		Hanko	59°50'·24N 22°56'·09E
	Ch 25		Järsö	60°01'·14N 20°00'·06E
	Ch 24		Kotka	60°27'·27N 26°56'·98E
	Ch 28		Kristiinankaupunki	62°16'·63N 21°24'·10E
			Kruunupyy	63°44'·10N 23°30'·55E

Continued on page 90



FINLAND

TURKU (OFK) (Continued)

	Ch 26	VHF	Li	65°32'·33N 25°15'·66E
	Ch 25		Mustasaari	63°12'·52N 21°32'·01E
	Ch 84		Raahe	64°40'·99N 24°32'·05E
	Ch 23		Turku Radio (Nauvo)	60°09'·78N 21°42'·55E
	Ch 24		Utö	59°46'·85N 21°22'·08E
	Ch 01		Uusikaupunki	60°48'·40N 21°29'·00E
	Ch 24		Virolahti	60°36'·32N 27°50'·20E
Diagrams pages 89, 173, 295 and 296				
Weather Bulletins				
0633 1833	Weather forecast for Sea Areas B1–B5 and B7 including wave heights in the Northern Baltic in English.			
Navigational Warnings				
On receipt	Gale warnings for Sea Areas B1–B5 and B7 in English.			
0233 0633 1033 1433 1833	Gale warnings for Sea Areas B1–B5 and B7 and coastal Navigational Warnings in English.			
2233	Local Navigational Warnings in English.			
0803	Icebreaker positions in English during the season.			
1033 1833	Ice reports in English during the season.			
NOTE(S): On request, Navigational Warnings may also be broadcast in Finnish or Swedish on Turku Radio's working channels.				

FRANCE

GENERAL NOTES

Centres Régionaux Opérationnels de Surveillance et de Sauvetage (CROSS) and Sémaphores

The Centres Régionaux Opérationnels de Surveillance et de Sauvetage (CROSS) are centres for marine rescue coordination and come under the jurisdiction of the Ministry of the Environment, Energy and the Sea (a CROSS is an MRCC: Maritime Rescue Coordination Centre; a Sous-CROSS is an MRSC: Maritime Rescue Coordination Sub-Centre).

Sémaphore stations (referred to in ALRS publications as Signal Stations), come under the jurisdiction of the French Navy and have a diverse range of responsibilities including: promulgating AVURNAV and Weather Bulletins, traffic control of the main commercial ports, monitoring for navigational infringements, pollution, maritime surveillance and meteorological observations etc. They work closely with the CROSS and immediately forward any distress messages received.

Maritime Safety Information broadcasts

Storm Warnings, Weather Bulletins, Navigational Warnings and Fog Warnings are announced by **Centres Régionaux Opérationnels de Surveillance et de Sauvetage** (CROSS), on 2182 kHz or VHF Ch 16, before being broadcast on the scheduled frequency or channel number.

Storm Warnings/Weather Bulletins

All products broadcast by CROSS originate from Météo France. There are regular meteorological bulletins (see station entries **Weather Bulletins** sections) and special high winds bulletins (Bulletins Météorologique Spéciaux – BMS) (see station entries **Navigational Warnings** sections).

Regular morning/evening bulletins (or **Weather Bulletins**) are broadcast at fixed times. They consist of a repeat of any BMS warnings in force, a description of the general situation, a detailed forecast for the following 24 hours (actual situation, wind, sea state, visibility), further weather trends dependent on the forecast and where appropriate reports from signal stations. Regular bulletins are classed as follows:

- Département 'Inshore' Bulletins
- 'Coastal Waters' Bulletins (up to 20 n miles from the coast)
- 'High Seas' Bulletins (up to 200 n miles)
- 'Distant Waters' Bulletins (over 200 n miles)

High Winds Bulletins, BMS (**Storm Warnings**), are included in any 'coastal waters', 'high seas' or 'distant waters' bulletins. BMS are broadcast whenever the wind has risen to or is forecast to rise to Gale force 7 within coastal waters (BMS Coastal) or Gale force 8 in high seas and distant waters (BMS Offshore).

Recorded Telephone Weather Bulletin Service

Météo-France provides a recorded marine weather bulletin service by calling +33 (0)892 680808 (chargeable). The service is accessible from within France or neighbouring countries and provides forecasts up to 7 days ahead. The exact type of bulletin required is selected via the telephone's keypad, the choice being forecasts up to 2 n miles offshore, 20 n miles offshore or high seas. A 'voice controlled' menu option is available by calling +33 (0)892 680877, the type of bulletin being selected by saying the word 'STOP' after the statement of the title. The high seas or 'Large' bulletins, contain details of near gale, gale or storm force winds, general situation and developments, forecasts up to 7 days ahead, with a confidence index. There are three areas to choose from: English Channel and southern North Sea, Atlantic Ocean (Bay of Biscay) and Western Mediterranean north.

INTERNET WEATHER SERVICES

Meteo France
www.meteofrance.com/previsions-meteo-marine/bulletin

Marine weather information in French.

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

<http://diffusion.shom.fr/navarea-en-vigueur>

SHOM

NAVAREA II Warnings, in English and French.

FIRING PRACTICE AREAS

Area Name	VHF Channel	Firing Practice Information	Position
Centre d'Essais de Lancement de Missiles (CELM) – Biscarrosse	A: Ch 06 08 (After prior announcement on Ch 16)	A: Mon–Thurs (between 0800–1700 LT): On request or 0815 LT (for firing times that day) 1615 LT (for firing times the following day). A: Fri (between 0800–1100 LT): On request or 0815 LT (for firing times that day) 1030 LT (for firing times the following day).	CELM 44°25'99N 1°14'78W
	B: Ch 10 (After prior announcement on Ch 16)	B: On receipt, then broadcast by either Cap Ferret 0830 1630 LT and/or Messanges 0845 1645 LT.	Cap Ferret 44°37'N 1°15'W Messanges 43°48'N 1°23'W

NOTE(S) CELM Biscarrosse:

1. When transiting these areas, a continuous watch on VHF Ch 16 is compulsory.
2. Recorded announcements for CELM Biscarrosse are also available H24 on the following telephone numbers: +33 (0)558 822242 and +33 (0)558 822243.
3. Firing practice warnings for the CELM Biscarrosse are contained within the AVURNAVS Brest broadcasts. From Thursday evening, these detail the active zones and times for the following week.
4. Further information on firing practice areas and times can be found on the Aeronautical Information Service website www.sia.aviation-civile.gouv.fr under the AIP (Aeronautical Information Publications) section. The website is available in French and English.

Firing Practice Areas Bay of Biscay and Quiberon/Gâvres	Ch 13 (After prior announcement on Ch 16)	Broadcasts from Signal Station Chassiron 0830 LT Broadcasts from Signal Station Cap Ferret 1430 LT	Approximate area centred on 47°N 5°W
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NOTE(S) Biscay and Quiberon/Gâvres:

1. Further information on firing practice areas and times can be found on the Aeronautical Information Service website www.sia.aviation-civile.gouv.fr under the AIP (Aeronautical Information Publications) section. The website is available in French and English.

Centre d'Essais de la Méditerranée – Île du Levant	Ch 16	On Request/ On Receipt: Dependent on the working hours of neighbouring signal stations. Contact the Centre on Ch 16 on approach and when within 20 n miles of Île du Levant.	43°02'00N 6°28'17E
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NOTE(S) CLEM Méditerranée:

1. When transiting these areas, a continuous watch on VHF Ch 16 is compulsory.
2. Firing Practice warnings are normally contained in the AVURNAV broadcasts on NAVTEX.
2. Further information on firing practice areas and times can be found on the Aeronautical Information Service website www.sia.aviation-civile.gouv.fr under the AIP (Aeronautical Information Publications) section. The website is available in French and English.

Diagrams pages 92, 93 and 94

RADIO FRANCE INTERNATIONAL

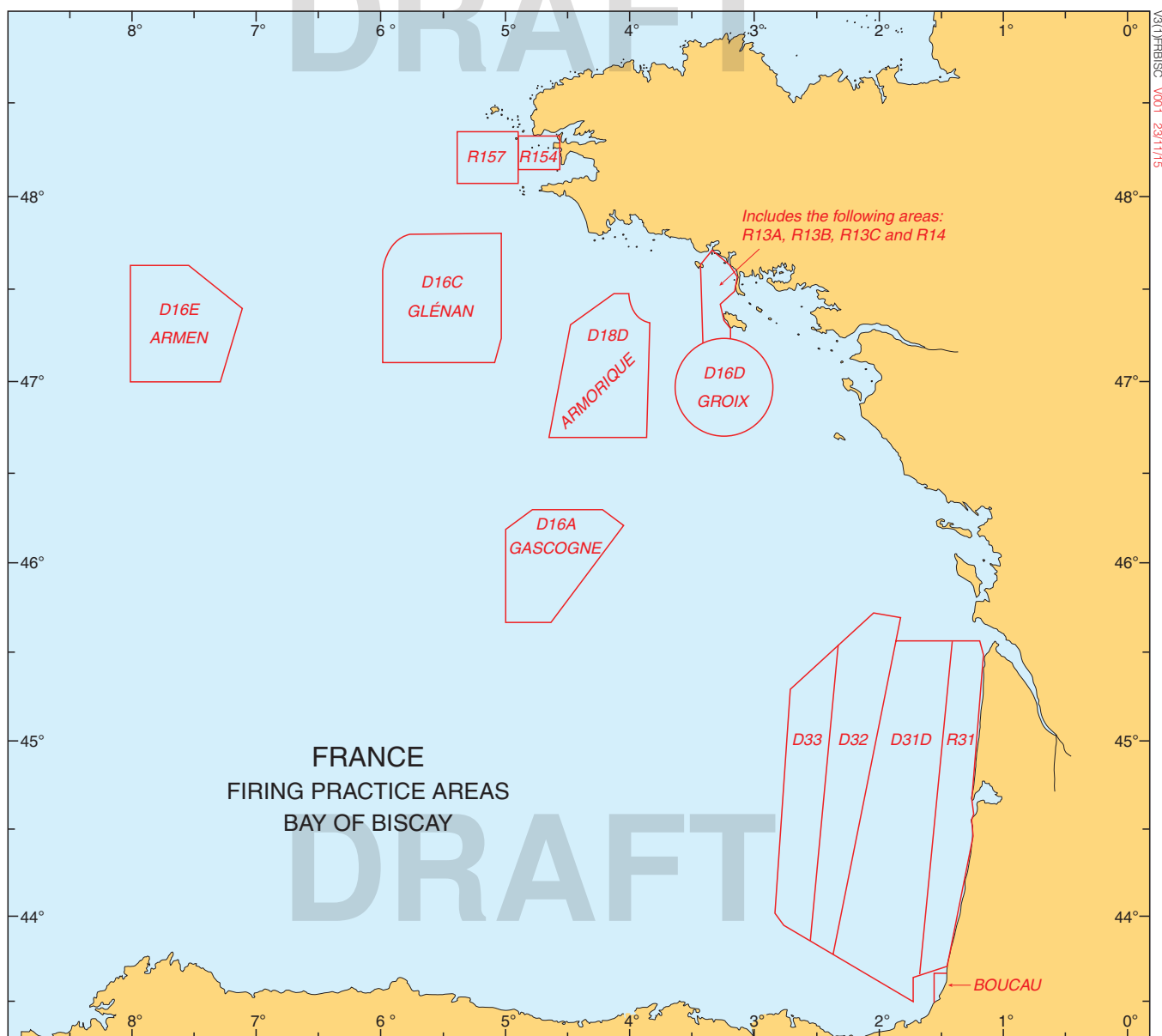
Control Centre: 48°51'50N 2°17'70E

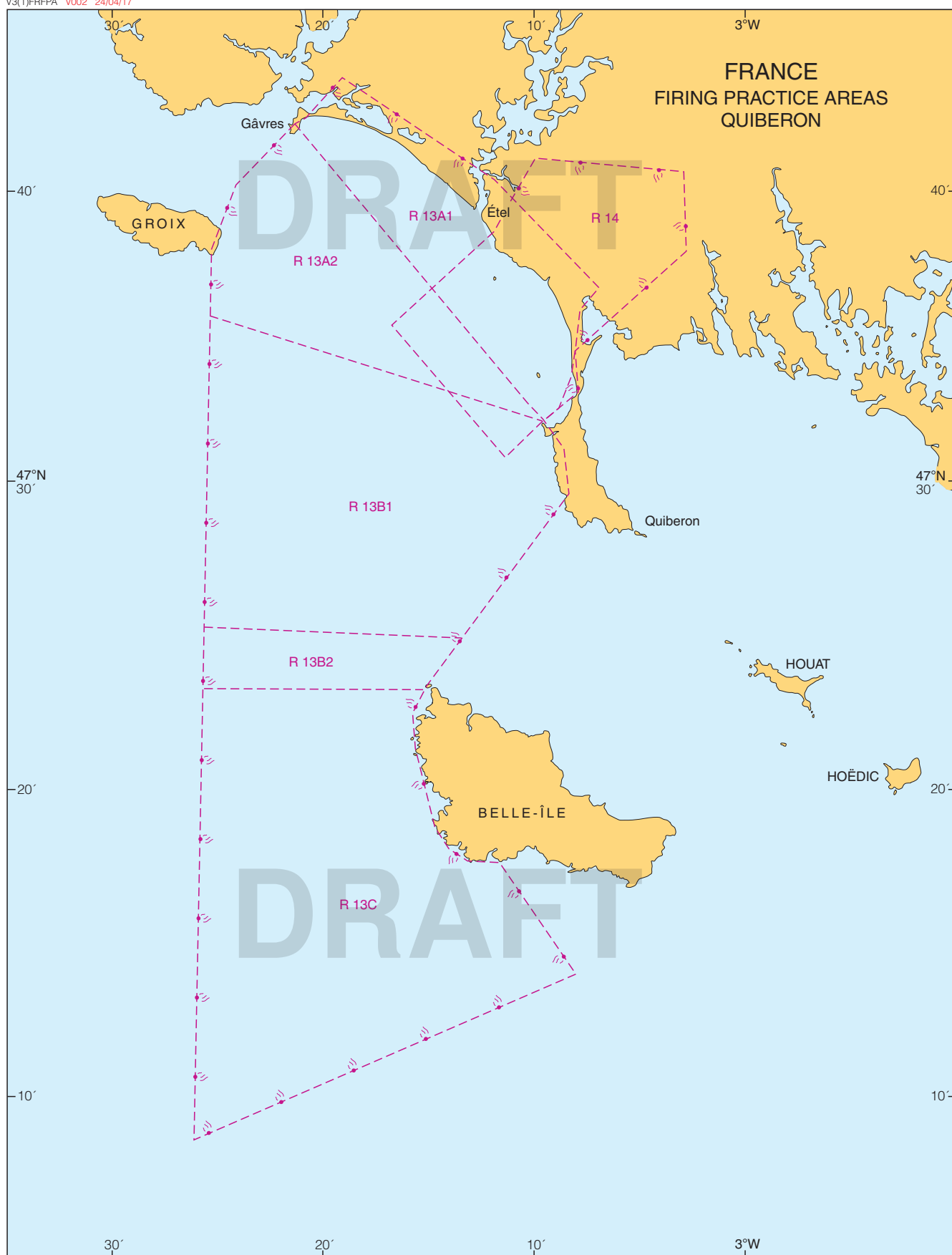
	6175 kHz	AM	Allouise	47°10'17N 2°12'27E
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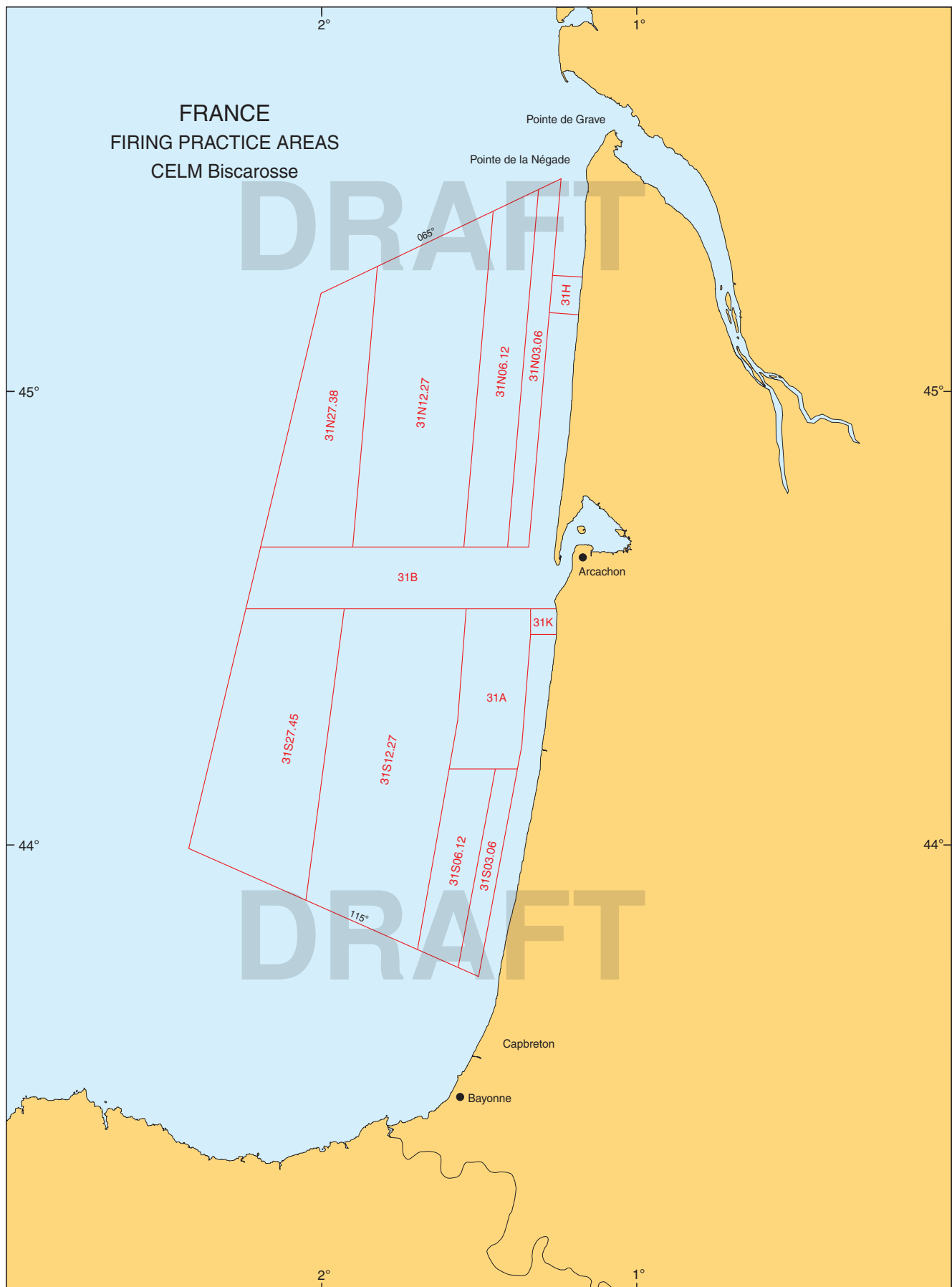
Diagrams pages 95 and 97

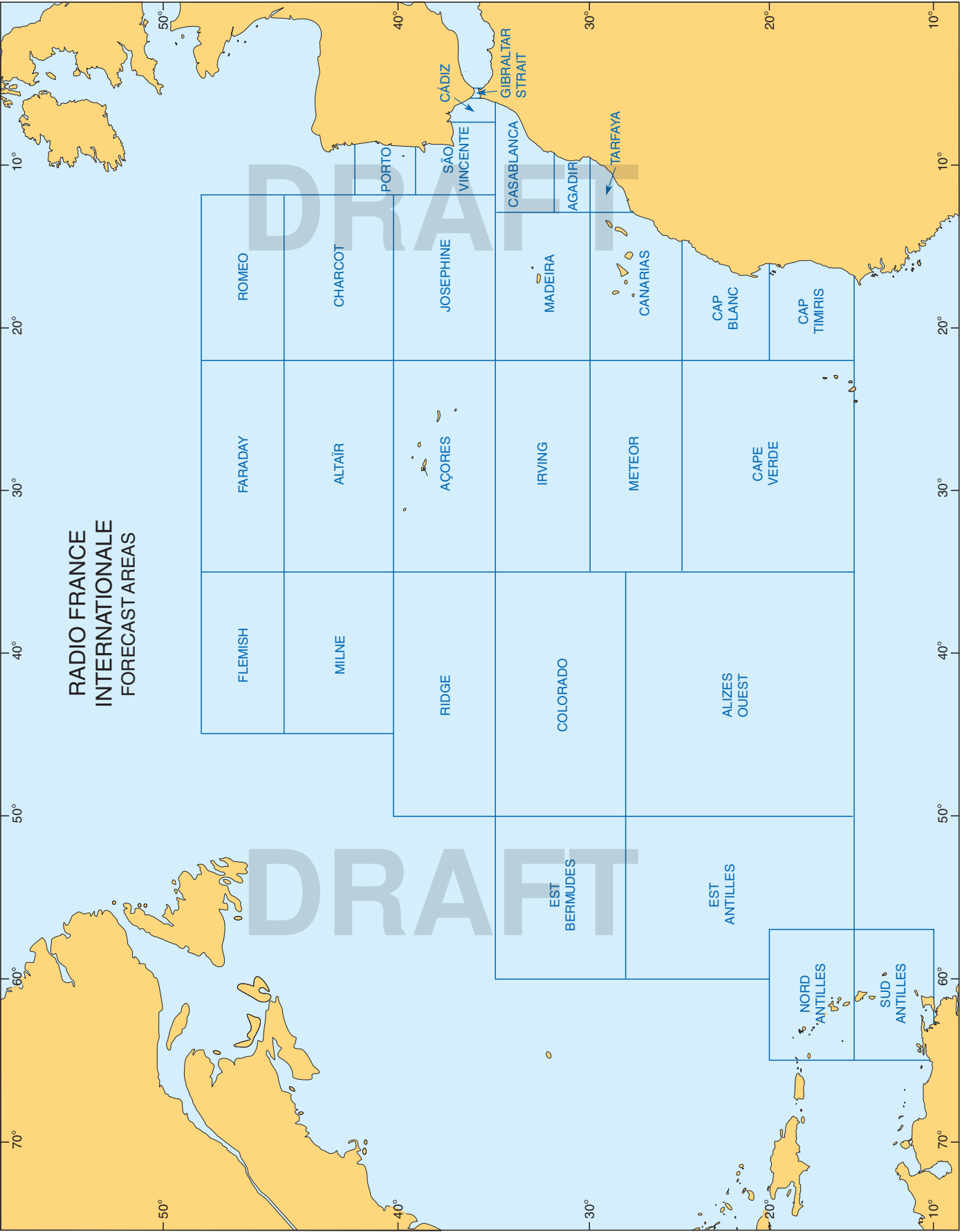
Weather Bulletins

1130 LT	Storm warnings, synopsis, development and 24 hour forecast in French for the Atlantic and North Sea.
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FRANCE (Atlantic and English Channel Coasts)**NAVTEX**

A	Corsen	518 kHz	48°28'56N 5°03'17W
K	Niton (UK) ¹		50°35'18N 1°15'28W
E	Corsen	490 kHz	48°28'56N 5°03'17W
T	Niton (UK) ¹		50°35'18N 1°15'28W

Diagrams pages 33, 34, 97, 98, 99 and 100

Weather Bulletins

A: 0000 1200	Weather synopsis and development and 24 hour forecast for Sea Areas 16–21 in English.
E: 0840 2040	Weather synopsis and development and 24 hour forecast for Sea Areas 16–21 in French.
T: 0710 1910	Weather synopsis and development and 24 hour forecast for Sea Areas 10–15 in French.

Navigational Warnings

A: 0000 0400 0800 1200 1600 2000	Storm warnings for Sea Areas 16–21 and AVURNAVS Brest in English.
K: 0140 0540 0940 1340 1740 2140	Coastal Navigational Warnings for Sea Areas 12–13 south of the Channel median in English.
E: 0040 0440 0840 1240 1640 2040	Storm warnings for Sea Areas 14–29 and AVURNAVS Brest in French.
T: 0710 1910	Gale or storm warnings for Sea Areas 10–15 in French.

¹ Broadcasts are remotely controlled by Falmouth and Humber Coastguards. There may be a delay in broadcast action if there is Search and Rescue in progress.**MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET**

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

NAVAREA I: www.premar-manche.gouv.fr/avis-urgents-aux-navigateurs.html	Préfet Maritime	Navigation Warnings in French
NAVAREA I & II: www.premar-atlantique.gouv.fr/avis-urgents-aux-navigateurs.html		

BRETAGNE 5

Control Centre: 48°27'00N 2°38'70W

	1593 kHz	AM	Saint Gouéno	48°16'10N 2°34'00W
Diagrams pages 97 and 99				
Weather Bulletins				
1330 LT	Weather Bulletins for coastal areas extending from the Cap de la Hague to L'anse de l'Aiguillon, in French.			
0740 2005 LT	Weather Bulletins for the Atlantic and North Sea, in French.			

CORSEN (CROSS) MRCC

Control Centre: 48°24'85N 4°47'28W

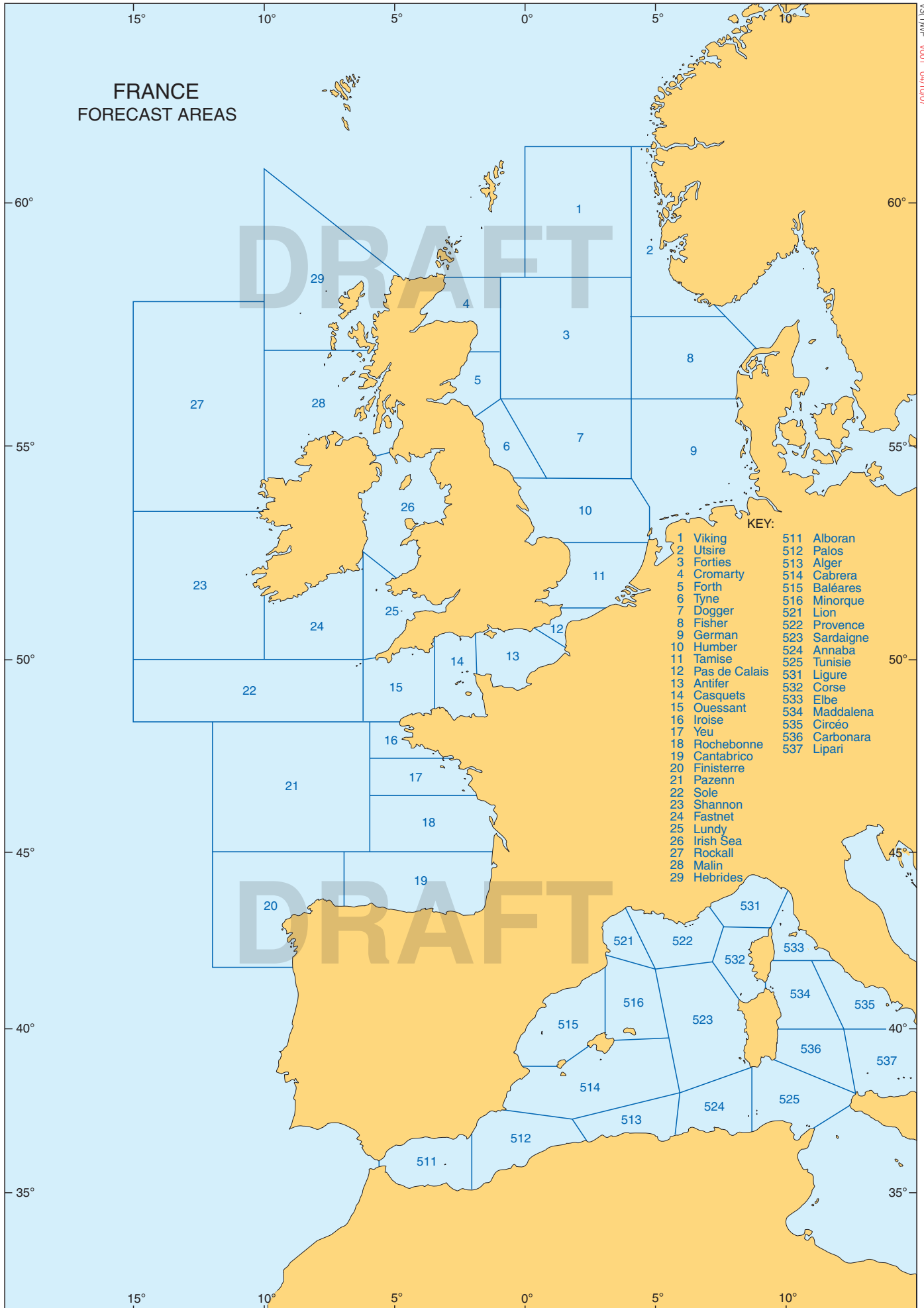
A	1650	RT (MF)	Corsen MF Aerial	48°24'85N 4°47'28W
B	2677			
C	Ch 79	VHF	Bodic	48°47'99N 3°02'86W
D			Cap Fréhel	48°41'05N 2°19'13W
E			Île de Batz	48°44'78N 4°00'69W
F			Stiff	48°28'56N 5°03'17W
G			Pointe du Raz	48°02'33N 4°43'91W

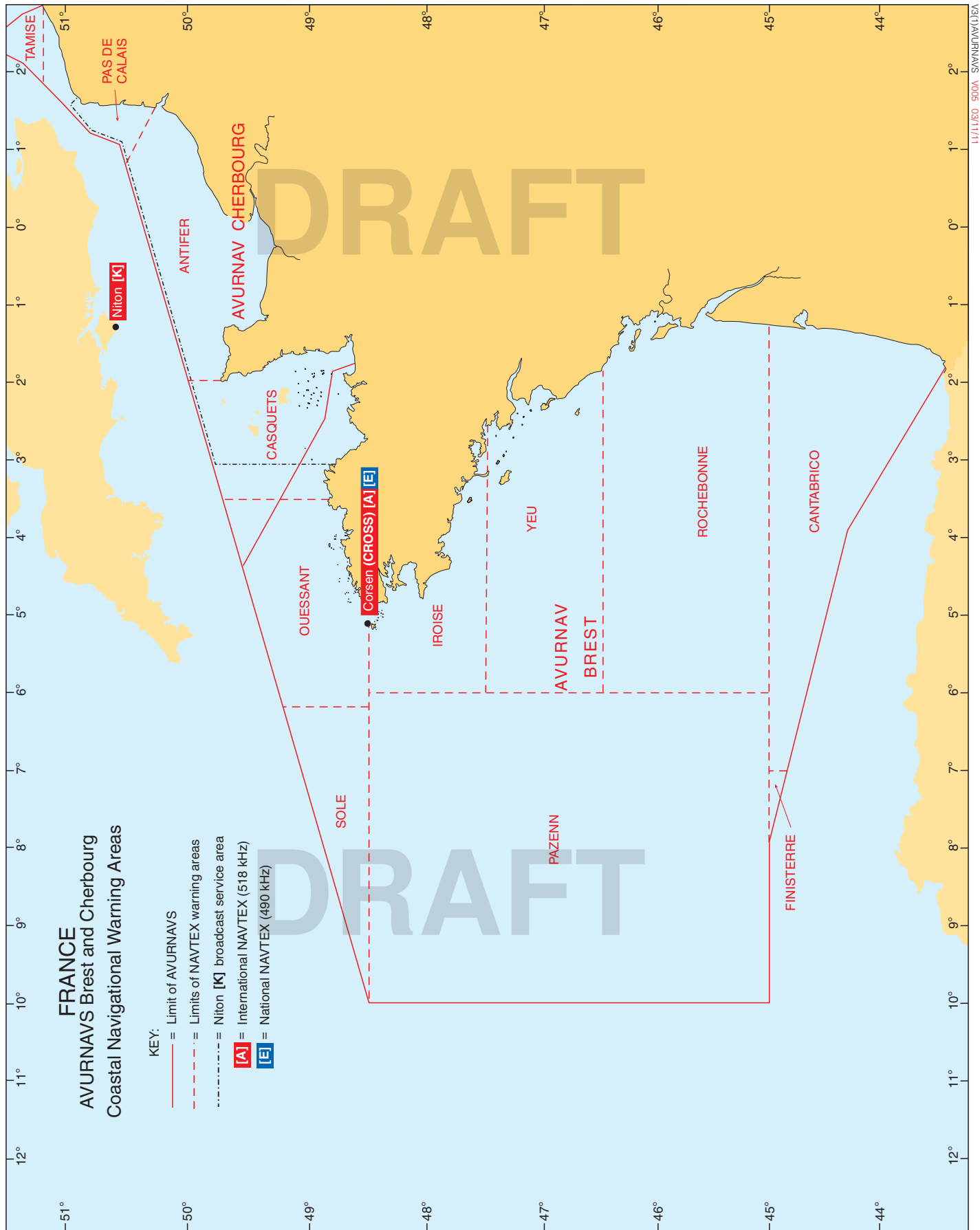
Diagrams pages 97, 98, 99 and 100

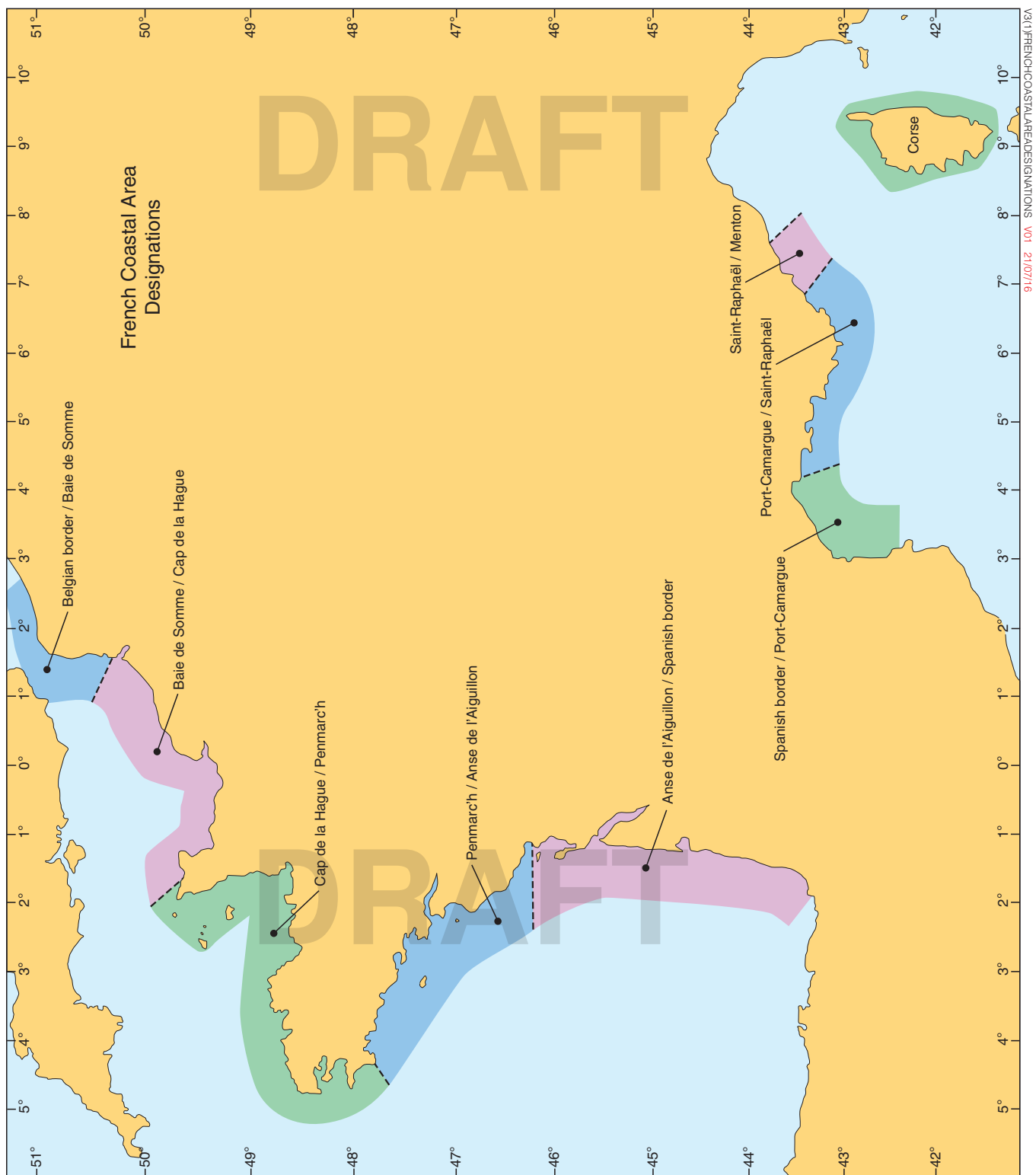
Weather Bulletins

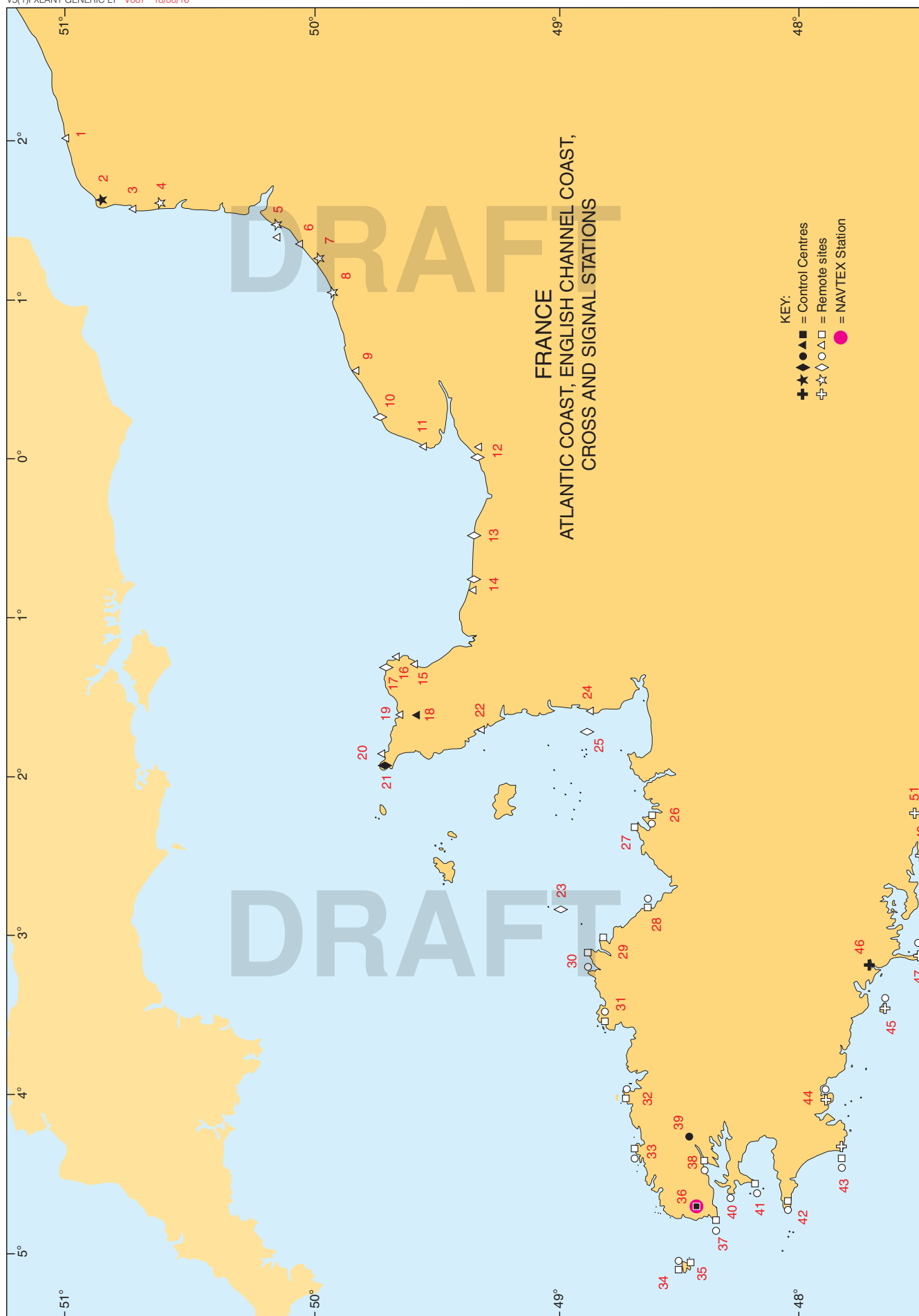
A: 1615 LT	72 hour forecast for Sea Areas 16–20 in French.
A, B: 0815 2015 LT	Weather situation, 24 hour forecast and outlook for Sea Areas 14–29 in French.

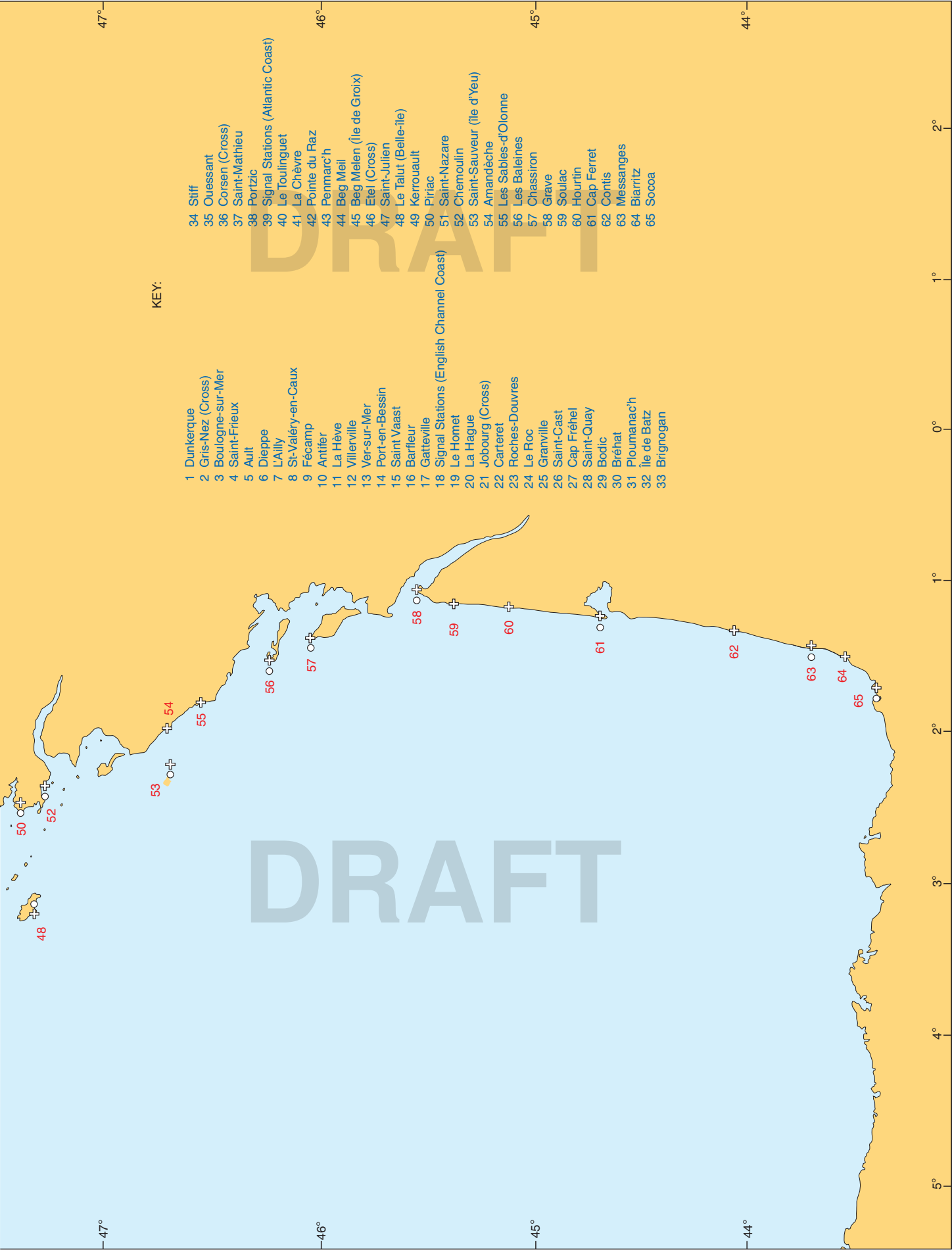
Continued on page 102











FRANCE (Atlantic and English Channel Coasts)

CORSEN (CROSS) MRCC (Continued)

C: 0533 0745 1345 1945 LT	Coastal bulletin, including BMS, 24 hour forecast and outlook, from Cap de la Hague to Penmarc'h in French.
D: 0545 0803 1403 2003 LT	
E: 0515 0733 1333 1933 LT	
F: 0503 0715 1315 1915 LT	
G: 0445 0703 1303 1903 LT	
DRAFT	
Navigational Warnings	
A, B: On receipt then every even hour H+03	Gale warnings for Sea Areas 14–29 in French.
C-G: On receipt then H+03	Coastal BMS in French, broadcast transmitter by transmitter, beginning at the stated time.
NOTE(S):	
1. Corsen (CROSS) area of responsibility covers Mont Saint-Michel to Pointe de Penmarc'h.	
2. After prior announcement on 2182 kHz and VHF Ch 16.	
3. If a SAR operation is in progress and is utilising a particular transmitter, routine weather broadcasts may be delayed or cancelled.	
4. Due to the variable length of bulletins, it may sometimes be prudent to begin a radio watch earlier than stated.	

ÉTEL (CROSS) MRCC

Control Centre: 47°39'·73N 3°12'·11W

Centre de la France - 12° 15' 00" N - 12° 15' 00" W				
A	Ch 80	VHF	Penmarc'h	47° 47'·85N 4° 22'·49W
B			Beg Melen (Île de Groix)	47° 39'·15N 3° 30'·11W
C			Le Talut (Belle-Île)	47° 17'·67N 3° 13'·10W
D			Saint-Nazaire (Chemoulin)	47° 28'·00N 2° 21'·00W
E			Saint-Sauveur (Île d'Yeu)	46° 41'·65N 2° 19'·80W
F			Les Sables-d'Olonne	46° 29'·86N 1° 47'·62W
G	Ch 79		Chassiron	46° 02'·82N 1° 24'·65W
H			Soulac	45° 30'·14N 1° 08'·27W
I			Cap Ferret	44° 37'·83N 1° 15'·12W
J			Contis	44° 05'·61N 1° 19'·01W
K			Biarritz	43° 29'·63N 1° 33'·23W
L	Ch 63		Étel	47° 39'·73N 3° 12'·11W
M			Chassiron	46° 02'·82N 1° 24'·65W
N	Ch 13		Étel	47° 39'·73N 3° 12'·11W

Diagrams pages 92, 93, 99 and 100

Weather Bulletins

A: 0703 1303 1903 LT B: 0715 1315 1915 LT C: 0733 1333 1933 LT D: 0745 1345 1945 LT E: 0803 1403 2003 LT F: 0815 1415 2015 LT L: Continuous	Coastal bulletin, including BMS, 24 hour forecast and outlook, from Penmarc'h to l'Anse de l'Aiguillon in French.
G: 0703 1303 1903 LT H: 0715 1315 1915 LT I: 0733 1333 1933 LT J: 0745 1345 1945 LT K: 0803 1403 2003 LT M: Continuous	Coastal bulletin, including BMS, 24 hour forecast and outlook, from l'Anse de l'Aiguillon to the Spanish border in French.

Continued on next page

FRANCE (Atlantic and English Channel Coasts)

ÉTEL (CROSS) MRCC (Continued)

Navigational Warnings		
A-M:	On receipt then every H+03	Coastal BMS in French, broadcast transmitter by transmitter, beginning at the stated time.
N:	On receipt 0830 1430 LT	Firing practice warnings for Gavres in French.
NOTE(S): 1. After prior announcement on VHF Ch 16. 2. If a SAR operation is in progress and is utilising a particular transmitter, routine weather broadcasts may be delayed or cancelled. 3. Due to the variable length of bulletins, it may sometimes be prudent to begin a radio watch earlier than stated.		

GRIS-NEZ (CROSS) MRCC

Control Centre: 50°52'09N 1°34'96E

A	1650	RT (MF)	Gris-Nez	50°52'09N 1°34'96E
B	2677			
C	Ch 79	VHF	Dunkerque	51°03'36N 2°20'35E
D			Saint-Frieux	50°36'52N 1°36'50E
E			St-Valéry-en-Caux	49°51'81N 0°41'99E

Diagrams pages 97, 98, 99 and 100

Weather Bulletins

A, B:	1633 LT	Weather situation, 72 hour forecast, outlook and BMS for Sea Areas 11–15 in French.
A, B:	0833 2033 LT	Weather situation, 24 hour forecast, outlook and BMS for Sea Areas 10–13 in French.
C:	0720 1320 1920 LT	Coastal bulletin, including 24 hr forecast and outlook, from the Belgian border to Baie de Somme in French.
D:	0710 1310 1910 LT	
E:	0703 1303 1903 LT	Coastal bulletin, including 24 hr forecast and outlook, from Baie de Somme to Cap de la Hague in French.

Navigational Warnings

A, B:	On receipt then every odd hour H+03	Gale warnings in French.
C-E:	On receipt then every H+03	Coastal BMS in French, broadcast transmitter by transmitter, beginning at the stated time.
C-E:	H+10	Bulletins for the Pas de Calais (Dover Strait) in English and French (vessel movements, infringements of movement regulations, distress messages, BMS, buoyage irregularities, dangers to navigation).

NOTE(S): 1. After prior announcement on 2182 kHz and VHF Ch 16.
2. Scheduled broadcasts may be suspended while SAR action is in progress.
3. Due to the variable length of bulletins, it may sometimes be prudent to begin a radio watch earlier than stated.

JOBourg (CROSS) MRCC

Control Centre: 49°41'04N 1°54'40W

A	Ch 80	VHF	Antifer	49°41'01N 0°09'92E
B			Granville	48°50'06N 1°36'81W
C			Jobourg	49°41'04N 1°54'40W
D			Port-en-Bessin	49°20'98N 0°46'37W

Diagrams pages 97, 98, 99 and 100

Weather Bulletins

B:	0703 1303 1903 LT	Coastal bulletin, including BMS, 24 hour forecast and outlook, from Cap de la Hague to Pointe de Penmarc'h in French.
C:	0715 1315 1915 LT	
A:	0803 1303 2003 LT	Coastal bulletin, including BMS, 24 hour forecast and outlook, from Baie de Somme to Cap de la Hague in French.
C:	0733 1333 1933 LT	
D:	0745 1345 1945 LT	

Continued overleaf

FRANCE (Atlantic and English Channel Coasts)

JOBOURG (CROSS) MRCC (Continued)

Navigational Warnings	
A-D: On receipt and then every H+03	Coastal BMS in French, broadcast transmitter by transmitter, beginning at the stated time.
C: On receipt and then every H+20 H+50	BMS for Sea Areas 13 and 14, including synopsis, 24 hour forecast by region and subsequent trends, in French and English.
A-D: On receipt and then H+20 H+50 On request	Bulletins for Casquets TSS and the area eastwards in French and English.
NOTE(S): 1. After prior announcement on VHF Ch 16. 2. Scheduled broadcasts may be suspended whilst SAR action is in progress. 3. Due to the variable length of bulletins, it may sometimes be prudent to begin a radio watch earlier than stated.	

SIGNAL STATIONS (ATLANTIC COAST)

Control Centre: 48°23'00N 4°29'00W

Control Centre: 48° 20' 00N 4° 20' 00W

A	Ch 10	VHF	Saint-Cast	48°38'58N 2°14'86W
B			Batz	48°44'78N 4°00'69W
			Beg Meil	47°51'27N 3°58'58W
			Cap Ferret	44°37'83N 1°15'12W
			Les Baleines	46°14'57N 1°33'72W
			Piriac	47°22'45N 2°33'48W
C			Beg Melen (Île de Groix)	47°39'15N 3°30'11W
			Brignogan	48°40'61N 4°19'85W
			Chassiron	46°02'82N 1°24'65W
			Chemoulin	47°14'04N 2°17'93W
			La Chèvre	48°10'20N 4°33'17W
			Messanges	43°48'73N 1°24'03W
			Saint-Quay	48°39'33N 2°49'66W
			Bréhat	48°51'33N 3°00'27W
			Grave	45°34'22N 1°03'94W
			Le Raz	48°02'33N 4°43'91W
D			Saint-Julien	47°29'70N 3°07'62W
			Saint-Sauveur (Île d'Yeu)	46°41'65N 2°19'80W
			Socoa	43°23'65N 1°41'21W
			Stiff	48°28'56N 5°03'17W
			Penmarc'h	47°47'85N 4°22'49W
E			Ploumanac'h	48°49'52N 3°28'37W
			Saint-Mathieu	48°19'78N 4°46'30W
F	Ch 11	Le Talut (Belle-Île)	47°17'67N 3°13'10W	
G	Ch 10	Portzic	48°21'50N 4°32'04W	
	Ch 08			

Diagrams pages 92, 93, 97, 98, 99 and 100

Navigational Warnings

A: On receipt 0830 1615 B: On receipt 0830 1630 C: On receipt 0845 1645 D: On receipt 0900 1700 E: On receipt 0915 1715 F: On receipt 0920 1720 G: On receipt 0930 1730	Local AVURNAVs for Brest.
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NOTE(S): 1. Operational Area: Mont Saint-Michel to the Spanish border.
2. After prior announcement on VHF Ch 16.

FRANCE (Atlantic and English Channel Coasts)

SIGNAL STATIONS (ENGLISH CHANNEL COAST)				
Control Centre: 49°38'·74N 1°38'·17W				
Ch 10	VHF	Ault	50°06'·30N 1°27'·22E	
		Barfleur	49°41'·82N 1°15'·93W	
		Boulogne-sur-Mer	50°43'·95N 1°35'·95E	
		Carteret	49°22'·39N 1°48'·42W	
		Dieppe	49°55'·96N 1°05'·33E	
		Dunkerque	51°03'·36N 2°20'·35E	
		Fécamp	49°46'·05N 0°22'·17E	
		La Hague	49°43'·58N 1°56'·31W	
		La Hève	49°30'·55N 0°04'·27E	
		Le Homet	49°39'·58N 1°37'·79W	
		Le Roc	48°50'·02N 1°36'·20W	
		Port-en-Bessin	49°20'·98N 0°46'·37W	
		Saint Vaast	49°34'·36N 1°16'·48W	
		Villerville	49°23'·17N 0°06'·48E	
Diagrams pages 97, 98, 99 and 100				
Navigational Warnings				
On receipt, then at the time of each tide		Local AVURNAVs for Cherbourg.		
NOTE(S): 1. Operational Area: Belgian border to Mont Saint-Michel. 2. After prior announcement on VHF Ch 16.				

FRANCE (Mediterranean Coast)

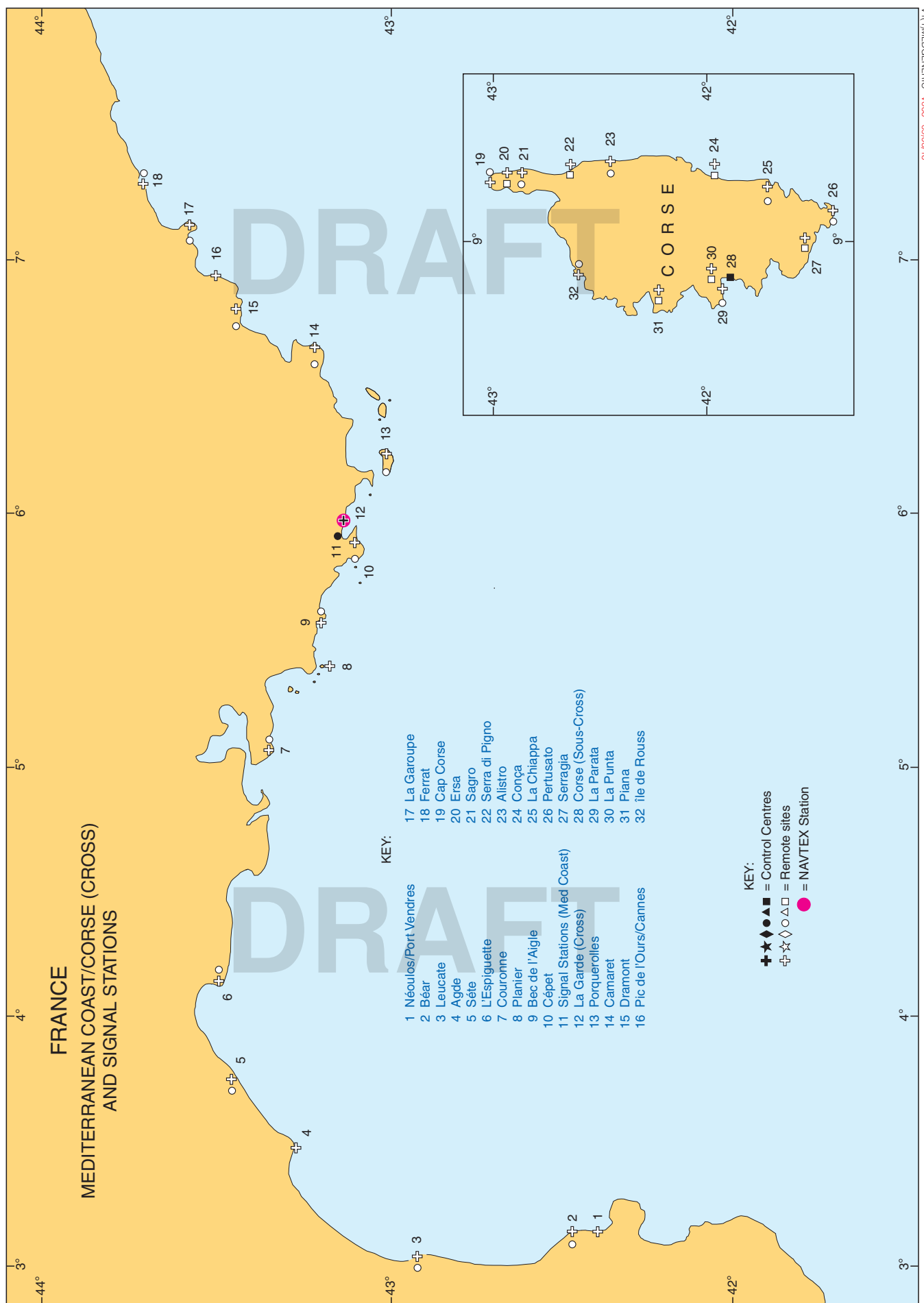
NAVTEX				
W		La Garde	518 kHz	43°06'·26N 5°59'·48E
S			490 kHz	
Diagrams pages 35, 97, 99, 106 and 107				
Weather Bulletins				
W: 1140 2340 (optional bulletin at 0340)		Weather synopsis and development and 24 hour forecast for Sea Areas 514 (Eastern part), 515, 516, 521–523, 531–534 in English.		
S: 1100 2300		Weather synopsis and development and 24 hour forecast for Sea Areas 514 (Eastern part), 515, 516, 521–523, 531–534 in French.		
Navigational Warnings				
W: 0340 0740 1140 1540 1940 2340		Storm warnings for Sea Areas 514 (Eastern part), 515, 516, 521–523, 531–534 and AVURNAVS Toulon in English.		
S: 0300 0700 1100 1500 1900 2300		Storm warnings for Sea Areas 514 (Eastern part), 515, 516, 521–523, 531–534 and AVURNAVS Toulon in French.		

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

NAVAREA III: www.premar-mediterranee.gouv.fr/avis-urgents-aux-navigateurs.html	Préfet Maritime	Navigation Warnings in French only.
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FRANCE (Mediterranean Coast)

LA GARDE (CROSS) MRCC				
Control Centre: 43°06'·26N 5°59'·48E				
A	1696	RT (MF)	La Garde	43°06'·26N 5°59'·48E
			Porquerolles	42°59'·06N 6°12'·38E
B	2677		La Garde	43°06'·26N 5°59'·48E
			Porquerolles	42°59'·06N 6°12'·38E
Languedoc Roussillon				
C	Ch 64	VHF	Néoulos / Port Vendres	42°29'·00N 2°57'·00E
D	Ch 79		Agde	43°17'·94N 3°30'·08E
Provence				
E	Ch 80	VHF	Planier	43°11'·93N 5°13'·84E
F	Ch 63		Coudon / Toulon	43°09'·63N 6°00'·49E
G	Ch 80		Cap Camarat	43°12'·05N 6°40'·49E
Cote d'Azur				
H	Ch 64	VHF	Pic de l'Ours / Cannes	43°28'·58N 6°54'·33E
Corse				
I	Ch 79	VHF	Ersa / Cap Corse	42°58'·15N 9°22'·80E
J			Serra di Pigno	42°41'·66N 9°23'·97E
K			Conça	41°44'·30N 9°23'·26E
L			Serragia	41°30'·89N 8°58'·67E
M			La Punta	41°57'·21N 8°41'·94E
N			Piana	42°14'·28N 8°37'·27E
Diagrams pages 97, 99, 106 and 107				
Weather Bulletins				
A:	1550 LT	72 hour forecast for Sea Areas 514 (Eastern part), 515–516, 521–523 and 531–534 in French.		
A, B:	1000 1600 2200 LT	Weather bulletins, including BMS, 24 hour forecast and outlook, for Sea Areas 514 (Eastern part), 515–516, 521–523 and 531–534 in French.		
C:	Every 15 minutes	Coastal bulletin, including synopsis, BMS, 24 hour forecast and outlook, from the Spanish border to Port-Camargue in French.		
D:	0715 1315 1915 LT			
E:	0733 1333 1933 LT	Coastal bulletin, including synopsis, BMS, 24 hour forecast and outlook, from Port-Camargue to Saint-Raphaël in French.		
F:	Every 15 minutes			
G:	0746 1346 1946 LT			
H:	Every 15 minutes	Coastal bulletin, including synopsis, BMS, 24 hour forecast and outlook, from Saint-Raphaël to Menton in French.		
I:	0733 1333 1933 LT	Coastal bulletin, including synopsis, BMS, 24 hour forecast and outlook, for the Corsican Coast in French.		
J:	0745 1345 1945 LT			
K:	0803 1403 2003 LT			
L:	0815 1415 2015 LT			
M:	0833 1433 2033 LT			
N:	0845 1445 2045 LT			
Navigational Warnings				
A, B:	On receipt 0103 0503 0903 1303 1703 2103 LT	BMS for Sea Areas 514 (Eastern part), 515–516, 521–523 and 531–534 in French.		
C-N:	On receipt and then every H+03	Coastal BMS for Mediterranean Coast of France and Corse in French, broadcast transmitter by transmitter, beginning at the stated time.		
NOTE(S): 1. After prior announcement on 2182 kHz and VHF Ch 16. 2. Scheduled broadcasts may be suspended whilst SAR action is in progress. 3. Due to the variable length of bulletins, it may sometimes be prudent to begin a radio watch earlier than stated.				

SIGNAL STATIONS (MEDITERRANEAN COAST)

Control Centre: 43°07'51N 5°55'00E				
A	Ch 13	VHF	Béar	42°30'97N 3°08'00E
			Cépet	43°04'77N 5°56'49E

Continued on next page

FRANCE (Mediterranean Coast)

SIGNAL STATIONS (MEDITERRANEAN COAST) (Continued)

A	Ch 13	VHF	Couronne	43°20'·00N 5°03'·13E
B			Pertusato	41°22'·44N 9°10'·69E
C			Cap Corse	43°00'·32N 9°21'·50E
D			Leucate	42°55'·05N 3°03'·60E
E			Sagro	42°47'·89N 9°29'·32E
F			Porquerolles	42°59'·06N 6°12'·38E
G			Sète	43°23'·82N 3°41'·54E
H			Alistro	42°15'·61N 9°32'·46E
I	Ch 15		Camarat	43°12'·05N 6°40'·49E
	Ch 13		Dramont	43°24'·85N 6°51'·17E
La Chiappa			41°35'·71N 9°21'·78E	
L'Espiguette			43°29'·27N 4°08'·43E	
La Garoupe			43°33'·87N 7°07'·99E	
La Parata			41°54'·52N 8°37'·10E	
Bec de l'Aigle			43°10'·48N 5°34'·45E	
Ferrat			43°40'·95N 7°19'·64E	
J			Île de Rousse	42°37'·99N 8°55'·35E

Diagrams pages 97, 99, 106 and 107

Navigational Warnings

A: On receipt 0915 1400
B: On receipt 0915 1415
C: On receipt 0930 1415
D: On receipt 0930 1430
E: On receipt 0945 1415
F: On receipt 0945 1430
G: On receipt 0945 1445
H: On receipt 1000 1445
I: On receipt 1015 1500
J: On receipt 1030 1515

Local AVURNAs for Toulon.

NOTE(S): 1. Operational Area: Spanish border to the Italian border, including Corse.
 2. After prior announcement on VHF Ch 16.

GEORGIA

NAVTEX

G				Poti	490 kHz	42°07'97N 41°39'66E
Weather Bulletins						
G: 0100 1300		Weather synopsis and forecast, in English.				
G: 0500 0900 1700 2100		Weather synopsis, in English.				
Navigational Warnings						
G: 0100 0500 0900 1300 1700 2100		Navigational and storm warnings as necessary.				

GERMANY

GENERAL NOTES

Deutschlandfunk (DLF) continues to broadcast storm warnings covering coastal areas on 88.7–107.4 kHz FM when required and after the news. However, it should be noted the transmissions no longer contain any specific maritime forecasts.

INTERNET WEATHER SERVICES

Deutschlandradio website www.deutschlandradio.de/seewetter	Shipping weather in German.
German Weather Service https://www.dwd.de/EN/specialusers/shipping/weatheratsea_en/weatheratsea_node.html	Maritime forecasts for North Sea, Baltic and Mediterranean, in German and English.

GERMANY

NAVTEX			
S	Pinneberg	518 kHz	53° 40'·50N 9° 48'·50E
L		490 kHz	
Diagrams pages 33 and 111			
Weather Bulletins			
S:	0700 1100 1500	Weather forecast for German coastal waters and navigational warning area in the North Sea in English.	
L:	0150 0950 1750	Weather forecast for 12 hours and outlook for a further 12 hours for German coastal waters and navigational warning area in the Baltic Sea in German.	
L:	0550 1350 2150	Weather forecast for 12 hours and outlook for a further 12 hours for German coastal waters and navigational warning area in the North Sea in German.	
Navigational Warnings			
S:	0300 1900 2300	Wind warnings and Navigational Warnings for German coastal waters and navigational warning area in the North Sea in English. The 1100 and 1500 broadcasts on Fridays, include list of Navigational Warnings still in force.	
L:	0150 0950 1750	Wind warnings and Navigational Warnings for German coastal waters and navigational warning area in the Baltic Sea in German. The 0950 broadcast on Fridays, includes the list of Navigational Warnings in force.	
L:	0550 1350 2150	Wind warnings and Navigational Warnings for German coastal waters and navigational warning area in the North Sea in German. The 1350 broadcast on Fridays, includes the list of Navigational Warnings in force.	
Ice Warnings and Reports			
S:	1100	If applicable ice reports in place of the weather forecasts in English.	
L:	0950	If applicable ice reports in place of the weather forecasts for German coastal waters and navigational warning area in the Baltic Sea in German.	
L:	1350	If applicable ice reports in place of the weather forecasts for German coastal waters and navigational warning area in the North Sea in German.	

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

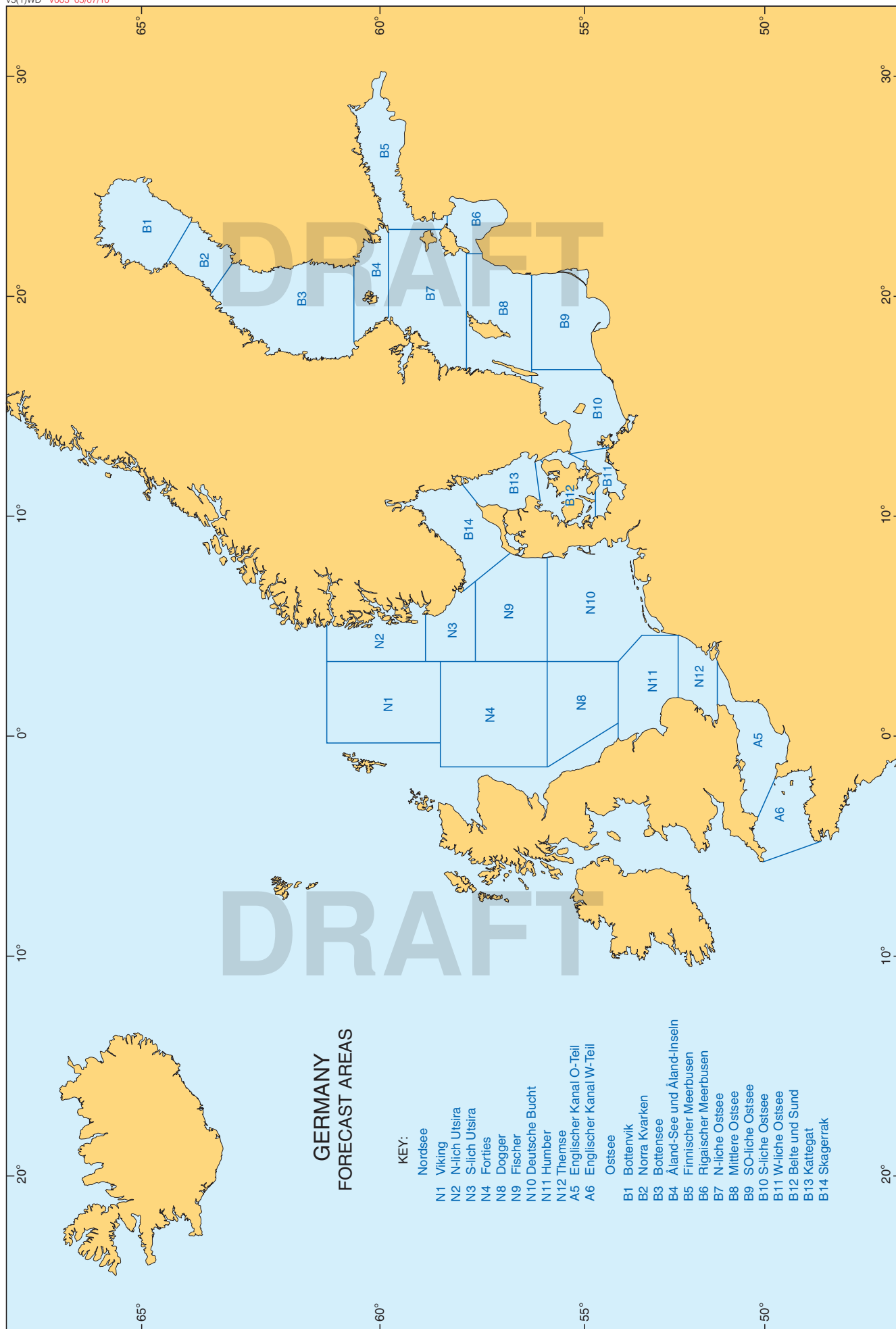
The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.bsh.de/en/Maritime_shipping/Commercial_shipping/Navigational_warnings/index.jsp	German Hydrographic Office	Navigation Warnings in English.
www.bsh.de/de/Schifffahrt/Berufsschifffahrt/Nautische_Warnnachrichten/index.jsp		Navigational Warnings in German.
www.bsh.de/aktdat/nwn/nwn-ost.pdf		Navigational Warnings for the German Baltic Sea area, in German and English, as a PDF file.
www.bsh.de/aktdat/nwn/nwn-nord.pdf		Navigational Warnings for the German North Sea area, in German and English, as a PDF file.

FIRING PRACTICE AREAS

Approximate Position: 54°21'·90N 10°34'·25E

The danger areas in Kieler Bucht, Hohwachter Bucht, Todendorf and Putlos should be avoided during firing exercises but vessels may pass through after permission has been granted by the Bundeswehr. The coast radio station Todendorf Naval transmits updated situation broadcasts concerning the danger areas on VHF Ch 11 from Monday to Friday at 0730, 1100 and 1530 LT and in exceptional cases also on Saturday at 0730 and 1100 LT. The situation broadcast will be announced 5 minutes in advance on VHF Ch 16.



GERMANY

DEUTSCHER WETTERDIENST (DWD) (GERMAN WEATHER SERVICE)

Maritime Weather Reports and Advice

Route recommendations for mariners world-wide are issued by the maritime adviser of the DWD. Requests should preferably be submitted 1 or 2 days prior to departure.

The following information is required to plan a route:

- (a) Vessel's name
- (b) Call sign
- (c) Speed
- (d) Vessel type
- (e) GT
- (f) Type of cargo
- (g) Loading on deck
- (h) Seakeeping and stability
- (i) Point of departure
- (j) Destination
- (k) ETD (DWD to be advised if there is more than a 4 hour delay)

The text can be in German or English and needs to include details of a means for communication e.g.: e-mail, Satcom, telex, facsimile.

The following information is provided to the vessel a few hours prior to departure:

- (a) Weather Synopsis
- (b) Movement of air pressure
- (c) Optimal route with way points
- (d) Weather outlook including expected weather for voyage
- (e) Alternate voyage routes in certain cases

Communication of on-board weather observations is necessary to allow changes to course to be recommended if the weather develops differently than has been expected.

For more information contact:

Deutscher Wetterdienst – Seeschiffahrtsberatung
 Keyword: Routenempfehlung (Route recommended)
 Bernhard-Nocht-Strasse 76,
 20359 Hamburg,
 Tel: +49(0)69 80626181, 80626116
 Fax: +49(0)69 80626180
 Telex: +41 211 291 HADWD
 e-mail: routing@dwd.de
 Inmarsat C, code 69

Charges are available on request. For vessels taking part in the weather observing programme charges are reduced.

SEEWIS Internet Service

Maritime weather information is available for the North Sea, Baltic and Mediterranean.

The following information can be accessed:

Detailed forecasts (graphics, text and meteograms) for selected harbours up to 5 days ahead in the German Bight and Western Baltic
 Forecasts for coastal and off-shore waters
 Meteorological charts for wind, sea-state and air pressure
 Weather observations

Registration applications:

Tel: +49(0)69 80626190
 Fax: +49(0)69 80626193
 e-mail: seewis-online@dwd.de
 Website: www.seewis.de

Telephone Weather Service

Free marine weather forecasts for the North and Baltic Seas are updated daily at 0700, 1300 and 2100 on +49(0)69 80625799. Please note that normal phone charges still apply.

Warning Telephone

The latest wind and storm warnings for individual areas of the German North Sea and Baltic Sea Coasts can be accessed via:

Tel: +49(0)69 80626101 (H24)

Warnings are given for Beaufort Force 6 or more for the Ostfriesische Coast, Elbe Estuary and Nordfriesische Coast or for the whole North Sea Coast or Baltic Sea Coast. If no warning is in operation a wind forecast for the German Bight, Western and Southern Baltic Sea is given.

GERMAN VTS CENTRES

VTS Centre	Area	VHF Channels	Broadcast Times
Bremen Weser Traffic	Lt buoy No 79 to Lt buoy No 93 Buoy No 93 to Km 25.5 Km 25.5 to Km 15 Km 15 to Km 1.37	Ch 21 Ch 19 Ch 78 Ch 81	Every H+30
Bremerhaven Weser Traffic	Neue Weser Lt buoy No 3a to Lt buoy No 19 and Alte Weser Lt buoy No A1 to Lt buoy No 16a/A16 Lt buoy No 19 to Lt buoy No 37 Lt buoy No 37 to Lt buoy No 47 Lt buoy No 47 to Lt buoy No 63 Lt buoy No 63 to Lt buoy No 58 Lt buoy No 58 to Lt buoy No 79 Lt buoy No 79 to Lt buoy No 93	Ch 22 Ch 02 Ch 04 Ch 07 Ch 05 Ch 82 Ch 21	Every H+20
Brunsbüttel Elbe Traffic	VTS Area	Ch 68	Every H+05
Cuxhaven Elbe Traffic	VTS Area	Ch 71	Every H+35
Ems Traffic	Westerems Lt buoy No 1, Riffgat Lt buoy and Osterems Lt buoy to Lt buoy No 35 Lt buoy No 35 to Lt buoy No 57 Lt buoy No 57 to Lt buoy No 86 Lt buoy No 86 to Papenburg	Ch 18 Ch 20 Ch 21 Ch 15	Every H+50
Fehmarn Belt Traffic	VTS Area	Ch 68	Every H+15
German Bight Traffic	VTS Area	Ch 80	Every H+00
German North Sea Traffic	VTS Area	Ch 11	Every H+20 (see Note)
Hunte Traffic	VTS Area	Ch 63	Every H+30
Jade Traffic	Lt buoy 1b/Jade 1 to Lt buoys Nos 33/34 Lt buoys Nos 33/34 to Lt buoy No 58	Ch 63 Ch 20	Every H+10
Kadetrenden Traffic	VTS Area	Ch 71	Every H+00
Kiel Kanal (Western section)	Brunsbüttel to Breiholz	Ch 02	Every H+15 and H+45
Kiel Kanal II (Eastern section)	Breiholz to Kiel-Holtenau	Ch 03	Every H+20 and H+50
Kiel Traffic	VTS Area	Ch 67	Every H+00
North Coast Traffic	VTS Area	Ch 79	Every H+00
Sassnitz Traffic	VTS Area	Ch 13	Every H+15
Stralsund Traffic	VTS Area	Ch 67	Every H+35
Trave Traffic	Trave/Lübecker Bucht	Ch 13	Every H+30
Warnemünde Traffic	VTS Area	Ch 73	Every H+15
Wismar Traffic	VTS Area	Ch 12	Every H+45
Wolgast Traffic	VTS Area	Ch 09	Every H+15

Diagram page 114

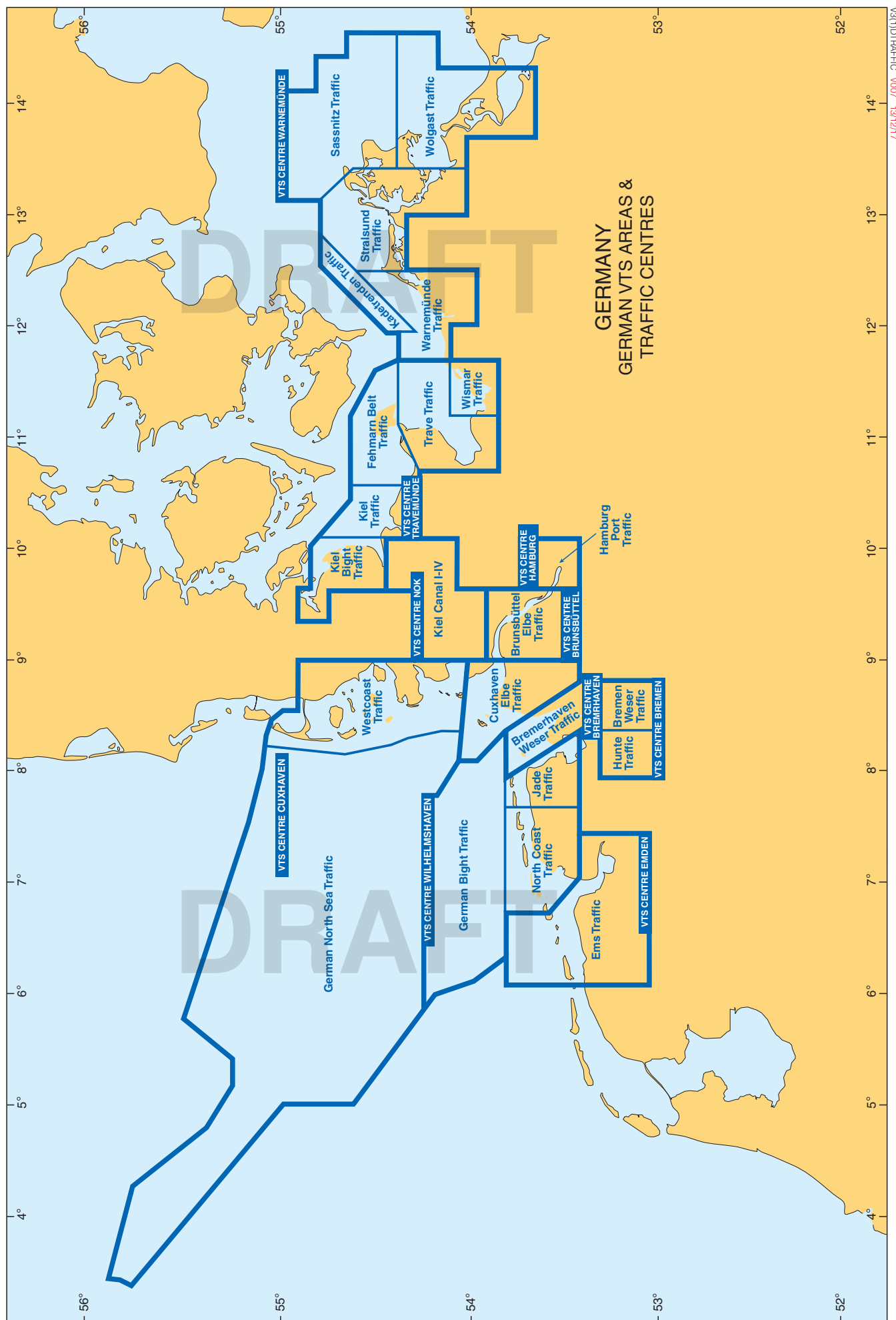
Weather Bulletins

Local storm warnings, weather bulletins, visibility and, when appropriate, ice reports are broadcast in German and English.

Navigational Warnings

Local Navigational Warnings in German and English.

NOTE(S): German North Sea Traffic broadcasts local Navigational Warnings in German if required/on request. English version on request only.



STORM SURGE WARNINGS AND WATER LEVEL PREDICTIONS**Water Level Forecast and Storm Surge Warning Service of the Bundesamt für Seeschifffahrt und Hydrographie (BSH)**

Water level forecasts and tide data are issued by the BSH. They are distributed through:

- (a) radio and TV stations;
- (b) internet at: www.bsh.de;
- (c) mobile telephone at: mobile.bsh.de (water level forecast for the North Sea coast, Baltic and 7 day tidal prediction).

Water level forecasts for the German Baltic coast, which differ from the local average water level, are issued twice daily.

Forecasts of the levels which the high water is expected to reach on the German North Sea coast, in Emden, Bremen and Hamburg are issued approximately 12 hours in advance. They state the expected difference between the high water level and the average high water level and thus update the tide predictions in the tide tables.

Storm surge warnings from the BSH are issued up to 12 hours in advance for the German North Sea coast including the harbours, and the German Baltic Sea coast, they are introduced by the words "Stormflutwarnung" (storm surge warning) and specify the Areas which are expected to be in danger and also specify the likely level of the storm surge. Flood warnings are also available on the internet at: www.bsh.de, www.bsh-wasserstand.de and www.bsh-sturmflut.de

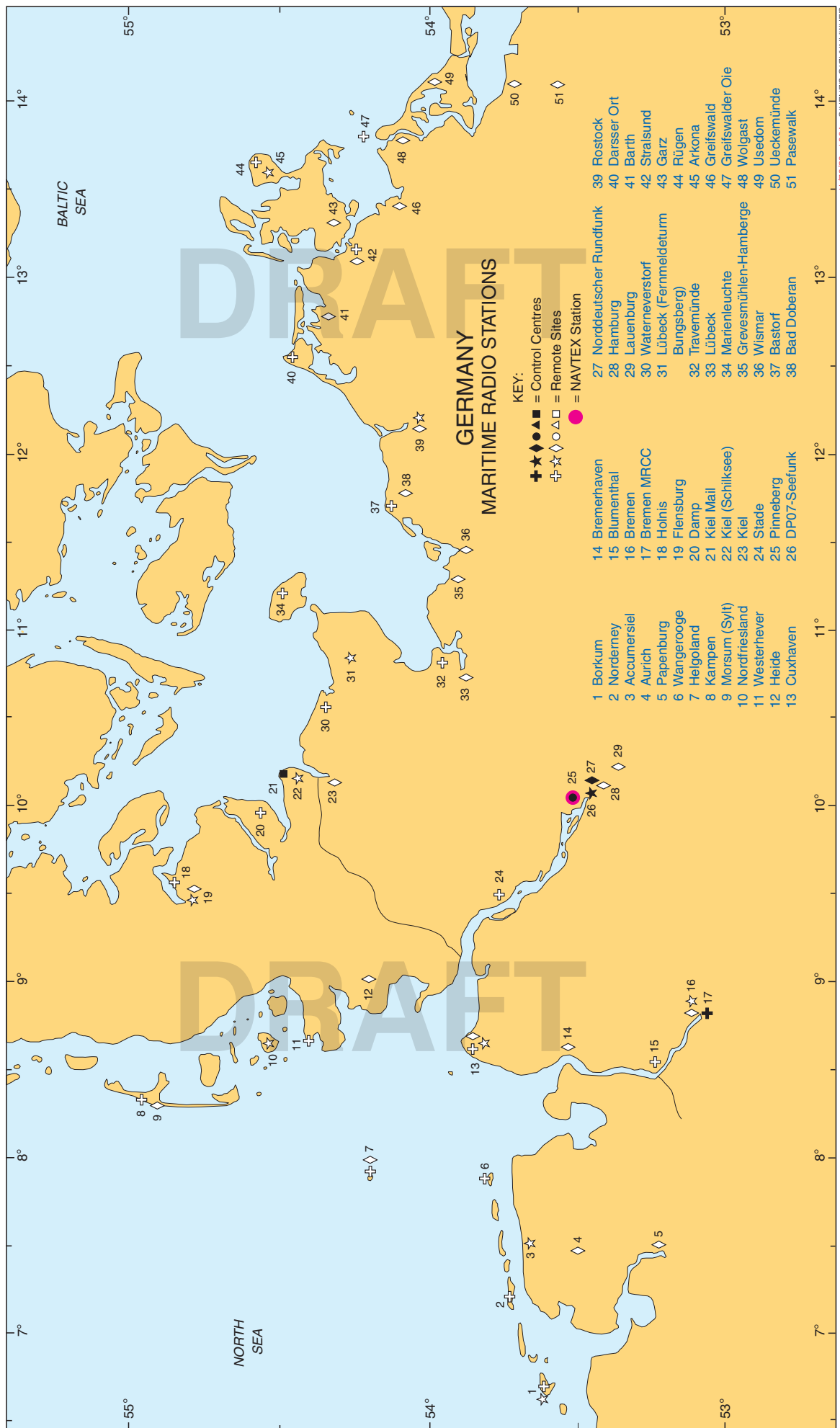
Warnings for the German North Sea area are issued if the water levels are expected to increase by 1.5 metres or more above the average high water level.

Warnings for the German Baltic Coast are issued if levels of 1 metre or higher above the average water level are expected.

All warnings include general information on the extent of the risk. A distinction is made between storm surges, severe storm surges and very severe storm surges depending on the storm surge levels and their impact on the coast.

Warnings prior to unusually low water levels are issued as Navigational Warnings.

BREMEN MRCC				
Control Centre: 53°04'·26N 8°48'·48E				
North Sea Coast				
	Ch 16	VHF	Blumenthal	53°11'·72N 8°33'·55E
			Borkum	53°35'·32N 6°39'·72E
			Cuxhaven	53°51'·83N 8°37'·58E
			Helgoland	54°10'·82N 7°52'·99E
			Kampen	54°56'·77N 8°20'·44E
			Norderney	53°42'·54N 7°13'·79E
			Stade	53°45'·47N 9°25'·00E
			Wangerooge	53°47'·41N 7°51'·43E
			Westerhever	54°22'·40N 8°38'·41E
Baltic Sea Coast				
	Ch 16	VHF	Bastorf	54°07'·91N 11°41'·61E
			Damp	54°35'·01N 10°01'·31E
			Darsser Ort	54°28'·49N 12°30'·26E
			Greifswalder Oie	54°14'·49N 13°54'·58E
			Holnis	54°51'·71N 9°34'·41E
			Marienleuchte	54°29'·71N 11°14'·30E
			Rügen	54°34'·32N 13°39'·49E
			Stralsund	54°18'·36N 13°07'·10E
			Travemünde	53°57'·72N 10°52'·87E
			Waterneverstorf	54°20'·00N 10°36'·17E
Diagrams pages 111 and 116				
Navigational Warnings				
On receipt Repeated every H+00 & H+30 until cancelled		Vital warnings for the Baltic and North Sea coasts of Germany.		



DOKUMENTE UND DEBATTEN (DDokDeb)				
	Ch 5C ¹	DAB+	Astra satellite ²	
Weather Bulletins				
0105 0640 1810 LT	Maritime weather bulletin including weather synopsis, observations and forecast for the next 12 hours, together with the outlook for a further 12 hours with regards to strong winds and storms. An additional 3-day outlook for the German North Sea and Baltic Sea areas is broadcast in the summer only.			
¹ 178-352 MHz ² Also available as a DVB-S digital TV broadcast via Astra satellite: 19.2° East.				
NOTE(S): 1. The weather bulletin can also be found on the following website, in German only: www.deutschlandradio.de/seewetter.275.de.html 2. A recorded telephone service is available in German on +49 (0)221 34529918.				

DP07-SEEFUNK (HAMBURG)				
Control Centre: 53°33′.00N 9°58′.00E				
Operations Centre				
	Ch 83	VHF	Hamburg	53°33′.00N 9°58′.00E
North Sea Coast				
	Ch 28	VHF	Accumersiel	53°40′.83N 7°29′.22E
	Ch 61		Borkum	53°34′.72N 6°40′.01E
	Ch 25		Bremen	53°05′.00N 8°48′.00E
	Ch 24		Elbe-Weser (Cuxhaven)	53°50′.02N 8°38′.90E
	Ch 26		Nordfriesland	54°30′.55N 8°39′.22E
Baltic Sea Coast				
	Ch 66	VHF	Arkona	54°33′.22N 13°35′.62E
	Ch 27		Flensburg	54°47′.83N 9°26′.22E
	Ch 23		Kiel	54°25′.13N 10°10′.67E
	Ch 24		Lübeck	54°13′.00N 10°44′.00E
	Ch 60		Rostock	54°08′.08N 12°06′.71E
Diagrams pages 111 and 116				
Weather Bulletins				
0745 0945 1245 1645 1945	Weather situation, 12h forecast, outlook for a further 12 hours and reports from observation stations, for Sea Areas B10–B12, N9–N12 and Eastern Boddenwässer in German. A summary is also broadcast in English.			
0945 1645 1945	Outlook for 4–5 days for North Sea and Baltic Sea in German. A summary is also broadcast in English.			
Navigational Warnings				
On receipt 0745 0945 1245 1645 1945	Gale and strong wind warnings, for Sea Areas B10–B12, N9–N12 and Eastern Boddenwässer in German. A summary is also broadcast in English.			
NOTE(S): Only during the period, end of March to the beginning of Oct, after announcement on VHF Ch 16.				

KIEL MAIL (DAO)			
Control Centre: 54°28'44N 10°09'11E			
	Transmits	Receives	
DAO23	12412-5	12762	
DAO24	4164-5	4242-5	
DAO25	5833	5833	
DAO26	6249-5	6357	
DAO28	8328-5	8510-4	
DAO34	4168-7	4263-7	
DAO36	6257-5	6434	
DAO38	8336-5	8637	

Continued overleaf

GERMANY

KIEL MAIL (DAO) (Continued)

Weather Bulletins	
On request (H24)	On connection to Kiel Mail local webserver for weather information, weather bulletins, weatherfaxes, Meteo France weather service and weather routing services.
NOTE(S): 1. Procedure: A fully automatic service is available by prior registration with Kiel Mail. Readiness to accept traffic on all channels is indicated by a transmission of an idle-signal followed by callsign DAO in Morse every 180 seconds. 2. Mailbox: For Ship-to-Shore and Shore-to-Ship traffic. Direct access to any e-mail box by Pactor-II and Pactor-III IP-Bridge (2.400 bps uncompressed). Weather, e-mail and data service.	

NORDDEUTSCHER RUNDFUNK (NDR)

Control Centre: 53°34'00N 9°59'00E

NDR 1 Radio MV

A	94.3 MHz	FM	Bad Doberan	54°06'52N 11°45'95E
	87.6 MHz		Barth	54°21'91N 12°42'54E
	102.5 MHz		Garz (Rügen)	54°19'42N 13°20'46E
	101 MHz		Greifswald	54°05'08N 13°23'76E
	100.7 MHz		Grevesmühlen-Hamberge	53°52'29N 11°14'00E
	97.6 MHz		Heringsdorf (Usedom)	53°57'37N 14°08'99E
	93.7 MHz		Pasewalk	53°28'90N 14°01'87E
	91 MHz		Rostock	54°04'30N 12°04'80E
	96.3 MHz		Stralsund	54°18'13N 13°02'22E
	90.1 MHz		Ueckermünde	53°43'58N 14°03'58E
	96.2 MHz		Wismar	53°53'95N 11°26'55E
	89 MHz		Wolgast	54°02'78N 13°45'28E

NDR Info1 (NDR Info Spezial)

B		DAB	Flensburg	54°48'47N 9°30'22E
			Hamburg	53°31'15N 10°06'17E

NDR Info

C	96.4 MHz	FM	Aurich	53°28'00N 7°30'00E
	95 MHz		Bremen	53°05'74N 8°47'51E
	98.9 MHz		Bremerhaven	53°32'31N 8°34'83E
	93.1 MHz		Cuxhaven	53°50'02N 8°38'89E
	87.7 MHz		Flensburg	54°48'47N 9°30'22E
	88.6 MHz		Garz (Rügen)	54°19'42N 13°20'46E
	92.3 MHz		Hamburg	53°31'15N 10°06'17E
	87.9 MHz		Heide	54°12'00N 9°06'00E
	92.5 MHz		Helgoland	54°10'82N 7°52'99E
	100.5 MHz		Heringsdorf (Usedom)	53°57'37N 14°08'99E
	99.7 MHz		Kiel	54°19'00N 10°08'00E
	96.8 MHz		Lauenburg	53°23'00N 10°34'00E
	95.9 MHz		Lübeck	53°51'51N 10°41'33E
	92.7 MHz		Morsum (Sylt)	54°54'52N 8°18'49E
	100.2 MHz		Papenburg	53°05'08N 7°23'46E
	102.8 MHz		Rostock	54°04'30N 12°04'80E

Diagrams pages 111 and 116

Weather Bulletins

B:	0005 0830 2205 LT	Maritime weather report (weather conditions, 12 hour forecast and outlook for a further 12 hours with reference to strong winds, storms and wave heights) for Sea Areas B8-B14, N2-N4 and N8-N12 and Boddengewässer Ost in German. Station reports from the North Sea and Baltic Sea as printed on Bordwetterkarte (on-board weather chart) No.9 in German.
C ¹ :	0005 LT	
C ² :	1006 1300 1906 LT	Wind forecasts for 12 to 30 hours in German.
A:	0900 1800 LT	Water level forecasts in German.
C:	0900 LT ³ 2200 LT	

Continued on next page

Navigational Warnings	
B: 0005 0830 2205 LT C¹: 0005 LT	Navigational Warnings in German.
¹ On VHF channels in Mecklenburg-Vorpommern ² After the news and at other times when free airtime is available ³ Sun after the news	
NOTE(S): Available on Digital Radio DAB+, DVB-S satellite radio, over the NDR Radio App and as a live stream on the Internet.	

PINNEBERG (DDK) (DDH)

Control Centre: 53°43'00N 9°55'00E

A	4583 (DDK 2) 7646 (DDH 7) 10100-8 (DDK 9)	RADIOTELEX	Programme 1	
B	147-3 (DDH 47) 11039 (DDH 9) 14467-3 (DDH 8)		Programme 2	

Diagrams pages 111 and 120

Weather Bulletins

A: 0005 0305 0535 0835 1135 1435 1735 2035	Weather report (weather situation, 12 hour forecast and outlook for a further 12 hours) for North Sea and Baltic Sea in English.
A: 0020 0320 0550 0850 1150 1450 1750 2050	Weather report (weather situation and 12 hour forecast) for the German North Sea and Baltic Sea coasts in English.
A: 0030 0603 1205 1803	Advice on the use of weather data in English.
A: 0035 0630 1210 1830	SYNOP (FM 12-XI Ext.), coded station reports from Europe, north America and north Africa.
A: 0200 0440 0735 1035 1335 1635 1935 2235	SHIP (FM 13-XI Ext.), coded ship reports from North Sea, north Polar Sea and Atlantic Sea.
A: 0330 1505	Medium range weather report (weather situation and 5 day forecast) for Baltic Sea in English.
A: 0355 1530	Medium range weather report (weather situation and 5 day forecast) for North Sea in English.
A: 0604 1804	Medium range weather report (5 day forecast) for eastern Atlantic in English.
A: 0815 2015	BUOY (FM 13-XI Ext.), coded buoy reports from north Polar Sea and Atlantic.
A: 0905 2105	Weather report (weather situation and 2 day forecast) for Norwegian Sea and Baltic Sea in English.
A: 0930 2130	Weather report (weather situation and 2 day forecast) for north Atlantic in English.
A: 0955 2155	Weather report (weather situation and 2 day forecast) for western European waters in English.
A: 1110	Notices in English.
B: 0005 0305 0505 0605 0905 1205 1505 1805 2105	Weather report (weather situation, 12 hour forecast and outlook for a further 12 hours) for North Sea and Baltic Sea in German.
B: 0020 0320 0520 0620 0920 1220 1520 1820 2120	Weather report (weather situation and 12 hour forecast) for the German North Sea and Baltic Sea coasts in German.
B: 0030 1035 2155	Medium range weather report (weather situation and 5 day forecast) for Baltic Sea in German.
B: 0055 1100 2235	Medium range weather report (weather situation and 5 day forecast) for North Sea in German.
B: 0125 0425 0530 0725 1025 1325 1625 1925 2225	Station reports for North Sea and Baltic Sea in German.
B: 0200 0734 1934	Medium range weather report (weather situation and 5 day forecast) for eastern Atlantic in German.
B: 0235	Advice on transmission problems notices.
B: 0325 0630	Weather report (weather situation and 2 day forecast) for Norwegian Sea and Baltic Sea (Route North Cape - Shetlands - The Quark - Gulf of Finland) in German.
B: 0350 0700	Weather report (weather situation and 2 day forecast) for north Atlantic (Route Pentlands - Southwest Greenland) in German.
B: 0755 1335 1955	SHIP (FM 13-XI Ext.), Coded ship reports from North Sea, north Polar Sea and Atlantic Sea.
B: 1010	Advice on the use of weather data, advice on transmission problems notices in German.
B: 1145	Special transmissions for research vessels (only if required).
B: 1230	Repeat of the 0630 weather report for Norwegian Sea and North Sea in German.
B: 1300	Repeat of the 0700 weather report for north Atlantic in German.
B: 1420	Repeat of the 0820 weather report for western European waters in German.
B: 1545	Repeat of the 1035 medium range weather report for Baltic Sea in German.
B: 1635	Repeat of the 1100 medium range weather report for North Sea and/or special broadcasts for research vessels in German.
B: 1830	Weather report for Norwegian Sea and Baltic Sea in German.

Continued on page 121



GERMANY

PINNEBERG (DDK) (DDH) (Continued)

B: 1900	Weather report for north Atlantic (Pentland Firth to southwest Greenland) in German.
B: 0820 2020	Weather report for western European waters in German.
Navigational Warnings	
A: 0000 0300 0600 0900 1200 1500 1800 2100 B: 0000 0300 0500 0600 0900 1200 1500 1800 2100	Strong wind, gale and storm warnings for German Bight, western and southern Baltic Sea, German North Sea and Baltic Sea coast in English and German.
A: 0515 1715 B: 0950 1715	Navigational Warnings for North Sea, Baltic Sea and German Coast in English and German.
A, B: On request	Navigational Warnings for North Sea and Baltic Sea in English and German.

GIBRALTAR (UK)

INTERNET WEATHER SERVICES

Gibraltar Port Authority www.gibraltarport.com/weather-and-tide	Forecast for inshore waters within 5 nm of Gibraltar, together with tidal information, provided by the Met Office (Gibraltar).
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GREECE

INTERNET WEATHER SERVICES

Hellenic National Meteorological Service www.hnms.gr/hnms/english/navigation/navigation_html	Marine bulletin in English and Greek.
Hellenic Centre for Marine Research http://poseidon.hcmr.gr/onlinedata.php	Weather, sea state and associated forecast models, gathered from the Poseidon network of observation buoys, in English and Greek.

NAVTEX

H	Irákleion	518 kHz	35°19'33N 25°44'92E
K	Kérkyra		39°36'43N 19°53'47E
L	Límnos		39°54'41N 25°10'84E
Q	Irákleion	490 kHz	35°19'33N 25°44'92E
P	Kérkyra		39°36'43N 19°53'47E
R	Límnos		39°54'41N 25°10'84E
S	Irákleion	4209.5 kHz	35°19'33N 25°44'92E

Diagrams pages 20, 35 and 36

Weather Bulletins

H: 0510 0910 1710 2110	Gale warnings, weather synopsis, 24 hour forecast and outlook for a further 12 hours for Sea Areas Saronikós, SE Aegean, SW Aegean, SW Kritiko and SE Kritiko in English.
K: 0540 0940 1740 2140	Gale warnings, weather synopsis, 24 hour forecast and outlook for a further 12 hours for Sea Areas South Adriatic Sea, North / South Ionian Sea, Patraikós, Korinthiakós and Kithira Sea in English.
L: 0550 0950 1750 2150	Gale warnings, weather synopsis, 24 hour forecast and outlook for a further 12 hours for Sea Areas North / South Aegean Ikaro, Samos Sea, Saronikós, South Evvoikos, Kafireas Strait, Central / North Aegean, Thrakiko and Thermaikós in English.
Q: 1040 1840 P: 1030 1830 R: 1050 1850 S: 1100 1900	Weather forecast in Greek.

Navigational Warnings

H: 0110 0510 0910 1310 1710 2110 L: 0150 0550 0950 1350 1750 2150	Navigational Warnings for the Aegean Sea 34°N–41°N, 22°30'E–30°E in English.
K: 0140 0540 0940 1340 1740 2140	Navigational Warnings for the Ionian Sea east to 22°30'E including Patraikós Kólpos and Korinthiakós Kólpos in English.

Continued overleaf

GREECE

NAVTEX (Continued)

Q: 0240 0640 1040 1440 1840 2240	Navigational Warnings in Greek.
P: 0230 0630 1030 1430 1830 2230	
R: 0250 0650 1050 1450 1850 2250	
S: 0300 0700 1100 1500 1900 2300	

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.hnhs.gr/en/online-2/2015-05-16-18-50-25	Hellenic Navy Hydrographic Service	Navigation Warnings and other related information in English and Greek.
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FIRING PRACTICE AREA - KRITIKO SEA

Approximate Position: 35°55'00N 25°25'00E

The practice area named 'Kriti' is used for missile and gunnery firing exercises, as well as target dropping, on a regular basis. Vessels transiting the area are requested to keep a listening watch on VHF Chs 16 and 12 for broadcasts from 'NAMFI CONTROL'.

OLYMPIA (SVO) [1780]

Control Centre: 37°36'00N 21°29'17E

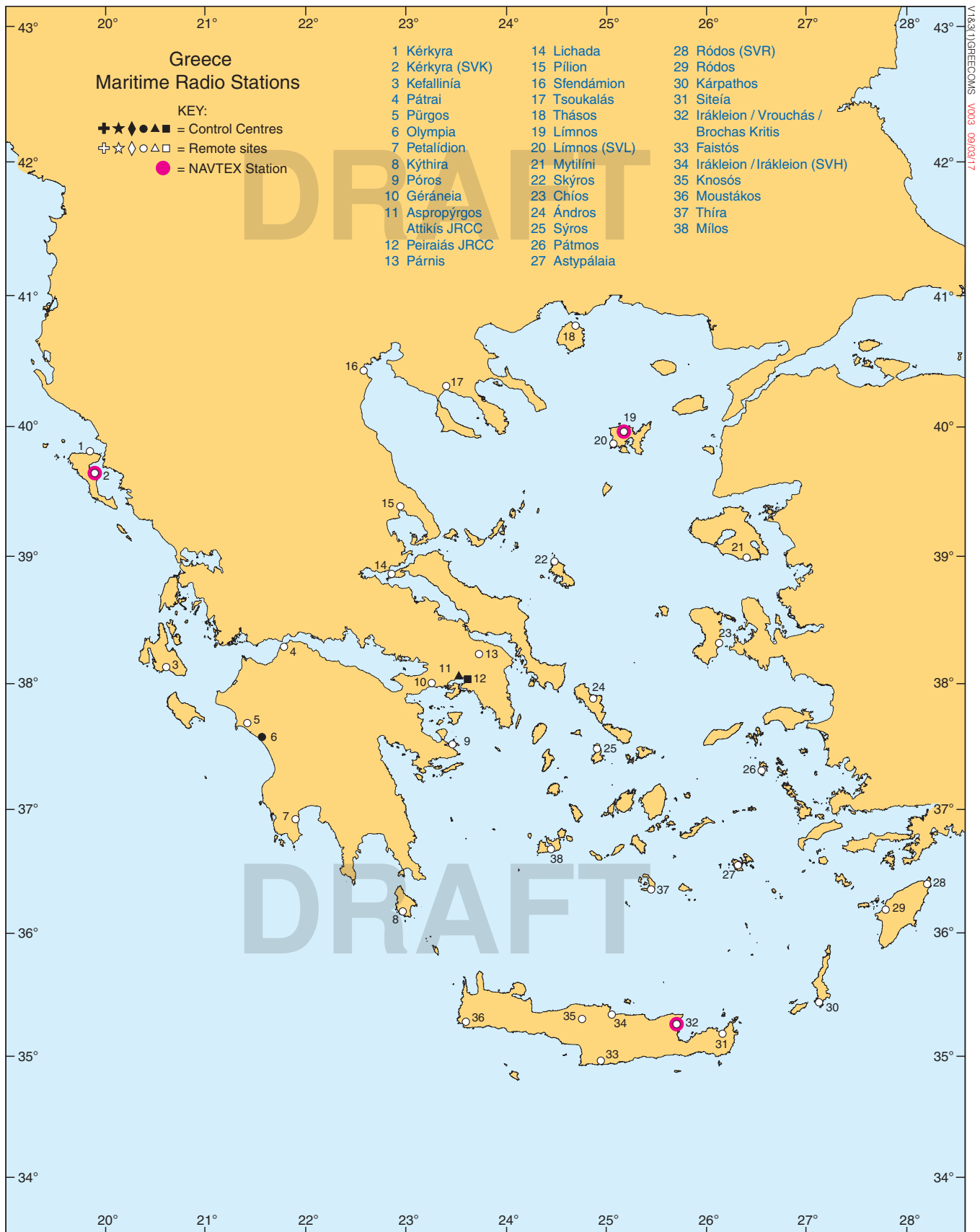
A	2799	RT (MF)	Irakleion (SVH)	35°20'33N 25°07'33E
B	2830		Kérkyra (SVK)	39°37'39N 19°54'74E
C	2730		Límnos (SVL)	39°52'14N 25°04'00E
D	2624		Ródos (SVR)	36°25'48N 28°13'43E
E	8424 (Ch 816)	RADIO-TELEX	Olympia (SVU4)	37°36'00N 21°29'17E
F	Ch 23	VHF	Astypálaia	36°35'98N 26°26'43E
	Ch 85		Chíos	38°22'57N 26°02'73E
	Ch 27		Faistós	34°59'62N 25°12'42E
	Ch 02		Kefallinía	38°08'47N 20°39'52E
	Ch 83		Kérkyra	39°44'80N 19°52'36E
	Ch 85		Knosós	35°16'87N 24°56'13E
	Ch 82		Kýthira	36°15'95N 23°02'83E
	Ch 04		Límnos	39°54'31N 25°04'76E
	Ch 01		Moustákos	35°18'69N 23°36'67E
	Ch 25		Mytilíni	39°04'37N 26°21'25E
	Ch 85		Párnis	38°10'27N 23°43'65E
	Ch 83		Pátrai	38°14'78N 21°46'12E
	Ch 60		Petalídion	36°55'75N 21°51'53E
	Ch 63		Pílion	39°24'27N 23°03'12E
	Ch 23		Ródos	36°16'25N 27°56'07E
	Ch 85		Sfendámion	40°25'15N 22°31'10E
	Ch 04		Siteia	35°04'23N 26°11'53E
	Ch 85		Sýros	37°27'45N 24°55'69E
			Thásos	40°43'85N 24°39'72E

Diagrams pages 20 and 123

Weather Bulletins

A-D: 0633 0903 1533 2133	Gale warnings, weather synopsis, 24 hour forecast and outlook for a further 12 hours for Sea Areas 18-53 in Greek and English.
E: 0930 2130	
F: 0600 1000 1600 2200	
On request on Ch 16	

Continued on page 124



GREECE

OLYMPIA (SVO) [1780] (Continued)

Navigational Warnings	
A, B, C, D, F: On receipt	Gale warnings for Sea Areas 18–53 in Greek and English.
A: 0703 1133 1733 2333 C: 0033 0703 1033 1633	Navigational Warnings for the Aegean Sea 34°N–41°N, 22°30'E–30°E in Greek and English.
B: 0033 0703 1033 1633	Navigational Warnings for the Ionian Sea east to 22°30'E including Patraikós Kólpos and Korinthiakós Kólpos in Greek and English.
D: 0703 1133 1733 2333	Navigational Warnings for the South Aegean Sea 34°N–38°N, 22°30'E–30°E in Greek and English.
F: On receipt 0500 1100 1730 2330 On request	Navigational Warnings in Greek and English.

NOTE(S): After preliminary announcement on VHF Ch 16 and DSC 2187.5 kHz

GREENLAND

INTERNET WEATHER SERVICES

Danmarks Meteorologisk Institut
www.dmi.dk/en/groenland/hav/sea-areas-forecast

Marine weather forecast for Greenland Sea Areas and links to associated information such as: wind data, tidal information, weather and ice charts, in English and Danish.

NAVTEX

X	Grindavik (Iceland)	518 kHz	63°49'99N 22°27'04W
W	Kook Island (Nuuk)		64°04'12N 52°00'51W
R	Saudanes (Iceland)		66°11'17N 18°57'12W
M	Simiutaq		60°41'20N 46°35'00W
I	Upernavik		72°46'98N 56°08'33W

Diagrams pages 39, 40, 125 and 126

Weather Bulletins

X: 0350 0750 1150 1550 1950 2350	Weather forecast for Areas 3–5.
W: 0340 0740 1140 1540 1940 2340	Weather forecast for Areas 9–11.
R: 0250 0650 1050 1450 1850 2250	Weather forecast for Areas 1–3.
M: 0200 0600 1000 1400 1800 2200	Weather forecast for Areas 5–8.
I: 0120 0520 0920 1320 1720 2120	Weather forecast for Areas 12–14.

Navigational Warnings

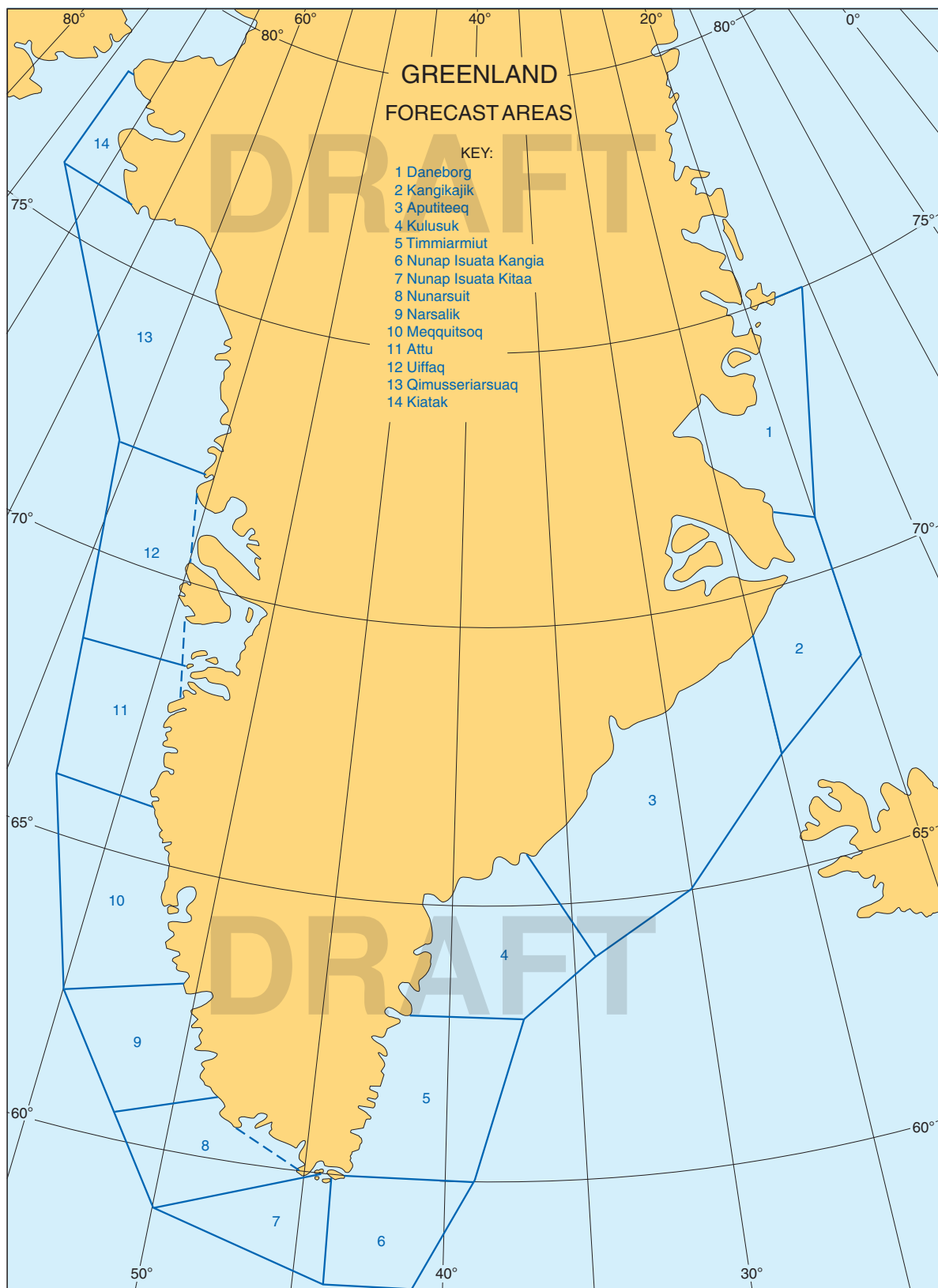
X: 0350 0750 1150 1550 1950 2350	Storm and Navigational Warnings and ice reports.
W: 0340 0740 1140 1540 1940 2340	
R: 0250 0650 1050 1450 1850 2250	
M: 0200 0600 1000 1400 1800 2200	
I: 0120 0520 0920 1320 1720 2120	

NOTE: Weather and Navigational Warnings for the east coast of Greenland are broadcast by Iceland where necessary - see relevant entry.

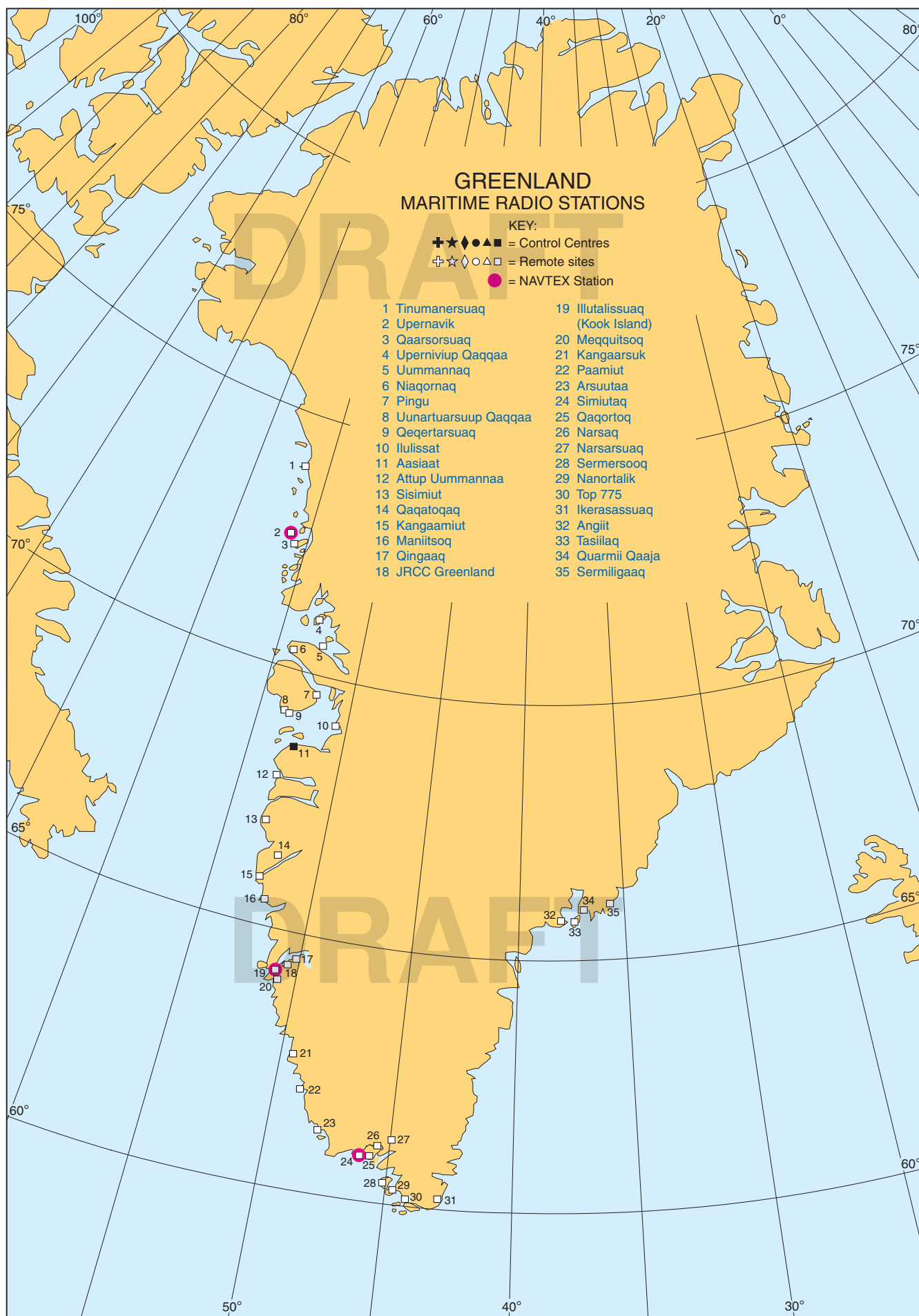
MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.dma.dk/ships/sider/greenlandwaters.aspx	Danish Maritime Authority	Links to MSI and other related information specific to navigation in Greenland waters, in English and Danish.
https://arcticweb.e-navigation.net		Web-based application which gives a single point of access to safety related information such as: Navigational Warnings, weather forecasts and ice charts, together with reporting facilities for GREENPOS and Coastal Control, for the Arctic waters around Greenland.



V312WIND V002 17/07/12



AASIAAT (OYR)						
Control Centre: 68°42'-66N 52°51'-36W						
A	2265	RT (MF)	Ikerasassuaq	60°03'-00N 43°09'-00W		
	2116		Illutalissuaq (Kook Island)	64°04'-12N 52°00'-50W		
	2400		Maniitsoq	65°25'-14N 52°54'-16W		
	2225		Paamiut	61°59'-75N 49°39'-00W		
	2304		Qeqertarsuaq	69°14'-67N 53°31'-60W		
	2129		Simiutaq	60°41'-20N 46°36'-00W		
	3125		Sisimiut	66°56'-03N 53°41'-90W		
	2250		Tasiilaq	65°36'-56N 37°38'-17W		
	3276		Upernavik	72°46'-98N 56°08'-33W		
	3280		Uummannaq	70°40'-99N 52°08'-10W		
	6522 (Ch 608) 4381 (Ch 409)		RT (HF)	Aasiaat	68°42'-00N 52°50'-65W	
	B		Ch 27	VHF	Angiit	65°39'-00N 38°11'-00W
Arsuutaa		61°08'-50N 48°22'-66W				
Attup Uummannaa		67°58'-00N 53°47'-00W				
Ikerasassuaq		60°03'-00N 43°09'-00W				
Illutalissuaq (Kook Island)		64°04'-12N 52°00'-50W				
Ilulissat		69°12'-65N 51°06'-30W				
Kangaamiut		65°49'-63N 53°20'-56W				
Kangaarsuk		62°58'-93N 50°31'-48W				
Maniitsoq		65°25'-14N 52°54'-16W				
Nanortalik		60°08'-45N 45°14'-55W				
Narsaq		60°53'-80N 46°01'-17W				
Narsarsuaq		61°09'-00N 45°26'-00W				
Niaqornaq		70°25'-00N 54°00'-00W				
Paamiut		61°59'-75N 49°39'-00W				
Pingu		69°46'-00N 52°02'-00W				
Qaarsorsuaq		72°42'-00N 56°05'-00W				
Qaqatoq		66°38'-00N 52°52'-00W				
Qaqortoq		60°43'-00N 46°01'-00W				
Qingaaq		64°23'-60N 51°06'-00W				
Quarmil Qaaja		65°44'-47N 37°02'-62W				
Sermersooq		60°13'-00N 45°22'-00W				
Sermiligaaq		65°54'-50N 36°22'-00W				
Simiutaq		60°41'-20N 46°36'-00W				
Sisimiut		66°56'-03N 53°41'-90W				
Tinumanersuaq		74°06'-65N 57°12'-53W				
Top 775		60°00'-00N 44°34'-00W				
Upernivup Qaqqaa		71°10'-00N 52°57'-00W				
Uummannaq		70°40'-99N 52°08'-10W				
Uunartuarsuup Qaqqaa		69°16'-50N 53°32'-00W				
Diagrams pages 125 and 126						
Weather Bulletins						
A, B: On request		Weather forecast and outlook for the next 18 hours in English, Greenlandic and Danish.				

Continued overleaf

GREENLAND

AASIAAT (OYR) (Continued)

Navigational Warnings		
A, B:	0605 1105 1605 2105 LT	Storm and gale warnings in English, Greenlandic and Danish.
A¹, B¹:	On receipt then 0035 0335 0635 0935 1235 1535 1835 2135	Navigational Warnings in English and Danish.
A, B:	On request	Ice reports in English, Greenlandic and Danish.
¹ After Traffic Lists until cancelled		
NOTE(S): Scheduled warnings will be announced on 2182 kHz and Ch 16, other warnings will be announced on DSC, then 2182 kHz and Ch 16 then read on the working frequencies. Repeated after the silence period more than half an hour from the first transmission.		

KALAALLIT NUNAATA RADIO (KNR)

Control Centre: 64°11'00N 51°43'00W

Center Centre: 64° 11' 30N 61° 46' 00W				
	570 kHz	AM	Illutalissuaq (Kook Island)	64° 04' · 12N 52° 00' · 50W
	650 kHz		Qeqertarsuaq	69° 14' · 67N 53° 31' · 60W
	720 kHz		Simiutaq	60° 41' · 20N 46° 35' · 00W
	90-5-104 MHz	FM		
Diagrams pages 125 and 126				
Weather Bulletins				
0630 0845 1840 2145 LT	Weather forecast for the next 24 hours, including gale, storm and ice accretion warnings, in Greenlandic and Danish.			
Navigational Warnings				
1700 LT ¹	Local Navigation Warnings, in Greenlandic and Danish.			
¹ One broadcast is made at a variable point between 1700 and 1800 LT on all frequencies.				

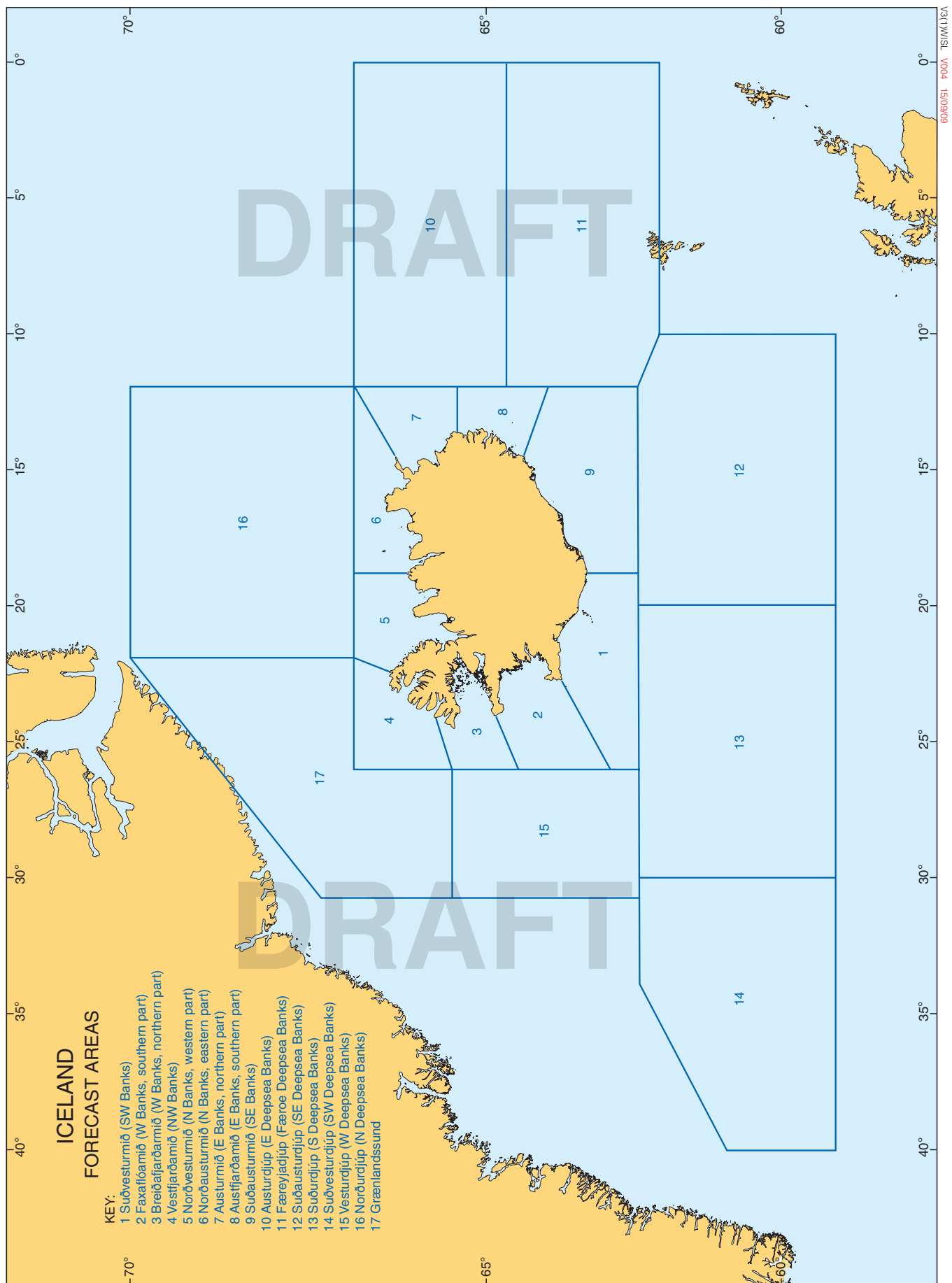
ICELAND

INTERNET WEATHER SERVICES

Icelandic Met Office http://en.vedur.is/weather/shipping/text	Shipping forecast for coastal, deep sea and Atlantic ocean areas, in Icelandic and English.
Icelandic Road and Coastal Administration www.vegagerdin.is/vs/Today.aspx	Weather and sea state observations, weather forecast/tidal charts and other associated information, in Icelandic and English.

NAVTEX

X	Grindavik	518 kHz	63°49'·99N 22°27'·04W
R	Saudanes		66°11'·17N 18°57'·12W
K	Grindavik	490 kHz	63°49'·99N 22°27'·04W
E	Saudanes		66°11'·17N 18°57'·12W
Diagrams pages 32, 33, 40 and 129			
Weather Bulletins			
X:	0350 0750 1150 1550 1950 2350	Weather synopsis and 24 hour forecast for east coast of Greenland in English.	
R:	0250 0650 1050 1450 1850 2250	Weather synopsis and 24 hour forecast for Sea Areas 1–9 in English.	
K:	0140 0540 0940 1340 1740 2140	Weather synopsis and 24 hour forecast for Sea Areas to west of Iceland and area within 400 nm of the transmitter in Icelandic.	
E:	0040 0440 0840 1240 1640 2040	Weather synopsis and 24 hour forecast for Sea Areas 1–9 in Icelandic.	
Navigational Warnings			
X:	0350 0750 1150 1550 1950 2350	Storm warnings and Navigational Warnings including ice reports for east coast of Greenland in English.	
R:	0250 0650 1050 1450 1850 2250	Storm warnings and Navigational Warnings including ice reports in English.	
K:	0140 0540 0940 1340 1740 2140	Storm warnings and Navigational Warnings including ice reports in Icelandic.	
E:	0040 0440 0840 1240 1640 2040		



ICELAND

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

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www.lhg.is/starfsemi/sjomaelingasvid/tts/	Icelandic Coast Guard	Notice to Mariners and links to other related navigational information, in English and Icelandic
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HORNAFJÖRDUR (COAST GUARD RADIO)

Control Centre: 64°15'08N 15°12'66W

	1659	RT (MF)	Hornafjörður	64°15'08N 15°12'66W
	Ch 24	VHF	Borgarhafnarfjall	64°11'45N 15°45'81W
	Ch 25		Háðxl	63°54'67N 16°37'82W
	Ch 26		Hvalnes	64°24'13N 14°32'41W

Diagram page 129

Navigational Warnings

On receipt Storm and gale warnings for Sea Areas 9, 11 and 12, Navigational Warnings and ice reports in Icelandic and English.

0205 0505 0805 1105 1405
1705 2005 2305 Storm and gale warnings for Sea Areas 9, 11 and 12 in Icelandic and English.

NOTE(S): 1. After preliminary announcement on 2187.5 kHz (DSC), 2182 kHz, VHF Ch 70 (DSC) and Ch 16.
2. Broadcasts remotely controlled from Reykjavík.

ÍSAFJÖRDUR (COAST GUARD RADIO)

Control Centre: 66°05'93N 23°02'32W

	2724	RT (MF)	Ísafjörður	66°05'93N 23°02'32W
	Ch 27	VHF	Bæir	66°05'76N 22°32'44W
	Ch 23		Bolafjall	66°10'69N 23°19'68W
	Ch 27		Laugabólshjall	65°42'55N 23°24'02W
	Ch 24		Tálknafjörðdúur	65°37'51N 23°49'47W
	Ch 25		Thverfjall	66°02'57N 23°18'45W

Diagram page 129

Navigational Warnings

On receipt Storm and gale warnings for Sea Areas 4 and 17, Navigational Warnings and ice reports in Icelandic and English.

0203 0503 0803 1103 1403
1703 2003 2303 Storm and gale warnings for Sea Areas 4 and 17 in Icelandic and English.

NOTE(S): 1. After preliminary announcement on 2187.5 kHz (DSC), 2182 kHz, VHF Ch 70 (DSC) and Ch 16.
2. Broadcasts remotely controlled from Reykjavík.

NESKAUPSTAÐUR (COAST GUARD RADIO)

Control Centre: 65°09'00N 13°42'00W

	1761	RT (MF)	Neskaupstaður	65°09'00N 13°42'00W
	Ch 25	VHF	Bjölfur	65°15'91N 14°03'62W
	Ch 26		Goðatindur	65°03'86N 13°52'42W
	Ch 27		Grænanipa	64°51'70N 13°46'36W
	Ch 23		Hellisheiði	65°42'02N 14°29'34W

Diagram page 129

Navigational Warnings

On receipt Storm and gale warnings for Sea Areas 7, 8, 10 and 11, Navigational Warnings and ice reports in Icelandic and English.

0203 0503 0803 1103 1403
1703 2003 2303 Storm and gale warnings in Icelandic and English for Sea Areas 7, 8, 10 and 11.

NOTE(S): 1. After preliminary announcement on 2187.5 kHz (DSC), 2182 kHz, VHF Ch 70 (DSC) and Ch 16.
2. Broadcasts remotely controlled from Reykjavík.

REYKJAVÍK (COAST GUARD RADIO)				
Control Centre: 64°05′.00N 21°50′.00W				
A	1876	RT (MF)	Reykjavík	64°05′.00N 21°50′.00W
B	2182			
C	Ch 25	VHF	Bláfjöll	63°58′.63N 21°38′.07W
	Ch 23		Fróðarheiði	64°50′.16N 23°28′.32W
	Ch 27		Miðfell	64°50′.83N 23°51′.87W
	Ch 25		Stykkishólmur	65°03′.03N 22°44′.51W
	Ch 26		Thorbjörn	63°51′.85N 22°26′.30W
			Urðarhjalli	65°36′.85N 24°16′.04W
Diagram page 129				
Weather Bulletins				
A, C: On Request		Weather Information in English.		
Navigational Warnings				
A-C: On Receipt		Storm and gale warnings for Sea Areas 1–3 and 15, Navigational Warnings and ice reports in Icelandic and English.		
A, C: 0205 0505 0805 1105 1405 1705 2005 2305		Storm and gale warnings for Sea Areas 1–3 and 15 in Icelandic and English.		
NOTE(S): After preliminary announcement on 2187.5 kHz (DSC), 2182 kHz, VHF Ch 70 (DSC) and Ch 16.				

SIGLUFJÖRDUR (COAST GUARD RADIO)				
Control Centre: 66°11'·22N 18°57'·05W				
	1883	RT (MF)	Siglufjörður	66°11'·22N 18°57'·05W
	Ch 24	VHF	Ennishöfði	65°34'·72N 21°19'·37W
	Ch 27		Grímsey	66°32'·76N 17°59'·54W
	Ch 26		Gunnólfsvíkurfjall	66°08'·65N 15°05'·32W
	Ch 23		Húsavík	66°02'·76N 17°18'·22W
	Ch 26		Steinnýjarstaðafjall	65°54'·72N 20°13'·49W
	Ch 23		Tindastóll	65°46'·86N 19°42'·68W
	Ch 25		Vaðlaheiði	65°44'·91N 18°00'·09W
	Ch 24		Viðarfjall	66°15'·60N 15°46'·46W
Diagram page 129				
Navigational Warnings				
On receipt	Storm and gale warnings for Sea Areas 5, 6 and 16, Navigational Warnings and ice reports in Icelandic and English.			
0205 0505 0805 1105 1405 1705 2005 2305	Storm and gale warnings for Sea Areas 5, 6 and 16 in Icelandic and English.			
NOTE(S): 1. After preliminary announcement on 2187·5 kHz (DSC), 2182 kHz, VHF Ch 70 (DSC) and Ch 16. 2. Broadcasts remotely controlled from Reykjavík.				

VESTMANNÆYJAR (COAST GUARD RADIO)				
Control Centre: 63°26′.00N 20°16′.00W				
	1713	RT (MF)	Vestmannaeyjar-Klif	63°26′.89N 20°17′.23W
	Ch 26	VHF	Háfell	63°26′.60N 18°52′.00W
	Ch 27		Klif	63°26′.89N 20°17′.22W
Diagram page 129				
Navigational Warnings				
On receipt	Storm and gale warnings for Sea Areas 1, 13 and 14, Navigational Warnings and ice reports in Icelandic and English.			
0203 0503 0803 1103 1403 1703 2003 2303	Storm and gale warnings for Sea Areas 1, 13 and 14 in Icelandic and English.			
NOTE(S): <div>1. After preliminary announcement on 2187.5 kHz (DSC), 2182 kHz, VHF Ch 70 (DSC) and Ch 16.</div> <div>2. Broadcasts remotely controlled from Reykjavík.</div>				

INDIA**INTERNET WEATHER SERVICES**

Indian Meteorological Department
www.imd.gov.in/pages/services_marine.php

Synopsis and 24 hr forecast for Indian coastal waters, together with current Met Area VIII weather bulletin, in English and Hindi.

NAVTEX

P	Chennai (Madras)	518 kHz	13°05′.05N 80°17′.23E
G	Mumbai (Bombay)		19°05′.00N 72°50′.00E
Diagrams pages 37 and 133			
Weather Bulletins			
P: 0630 1830	Forecast and sometimes balloon observations for Bay of Bengal and coastal Sea Areas 13, 14.		
G: 0900 2100	Forecast and sometimes balloon observations for Arabian Sea and coastal Sea Areas 2, 3.		
G: 0900 2100	FM 12-XIV SYNOP, FM 13-XIV SHIP for Sea Area I.		
Navigational Warnings			
P: 0230 1030	Navigational Warnings for the Bay of Bengal Coast.		
G: 0500 0900 1300 1700 2100	Navigational Warnings for the Arabian Sea Coast.		
NOTE: Temporarily inoperative.			

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.hydrobharat.gov.in/downloads/navarea_warnings_in_force.pdf	Indian Naval Hydrographic Office	Navigation Warnings in English.
www.hydrobharat.gov.in/views/index.php		Links to Notice to Mariners and other associated information, in English.

FIRING PRACTICE AREAS

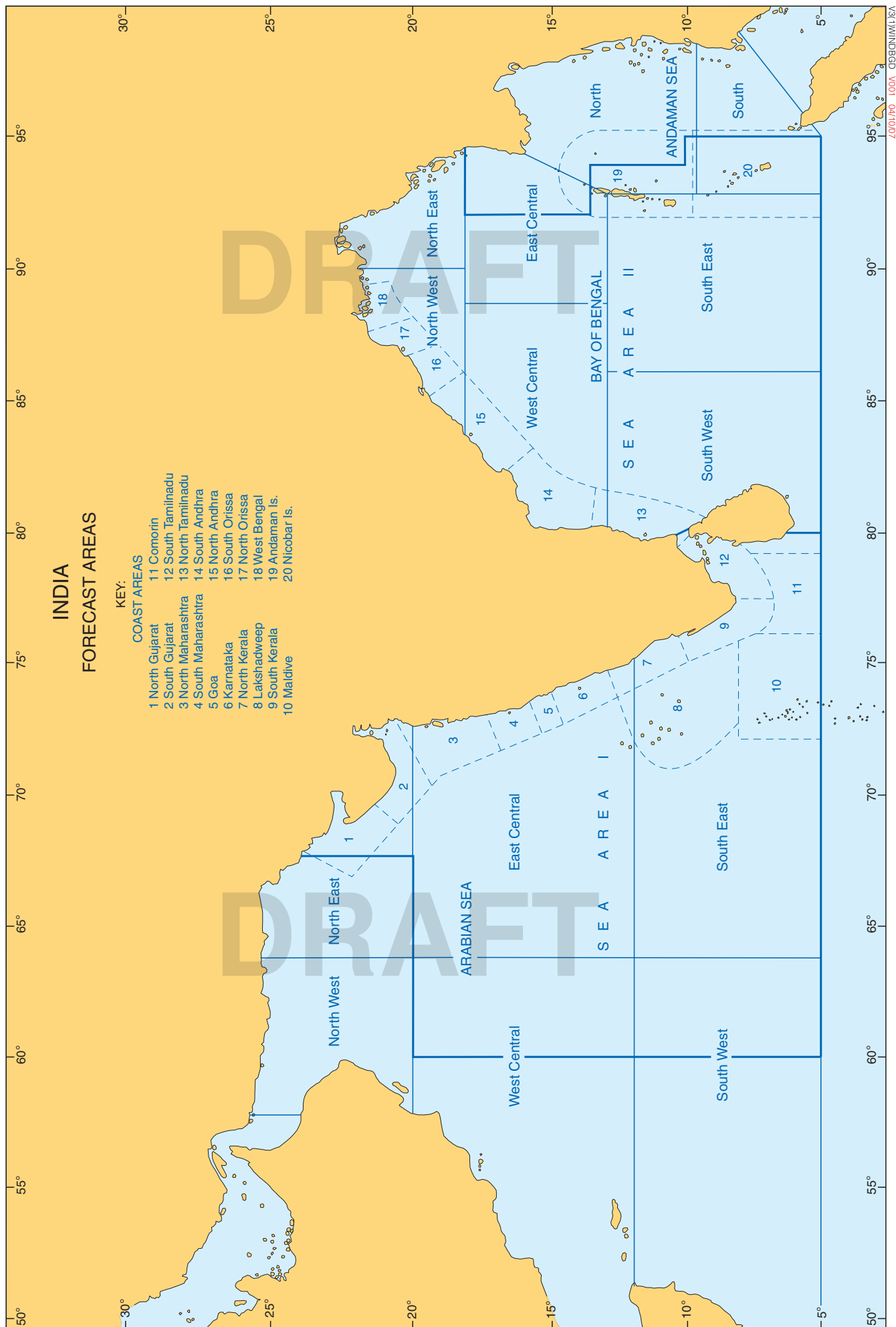
Information regarding firing practice areas and times, can be obtained from the Indian Hydrographic Office, using the following contact details:

Telephone: +91 135 2747368
 Fax: +91 135 2748373
 Tel/Fax: +91-22-22751049
 E-mail: msis-inho@navy.gov.in
inoh@navy.gov.in
ncdm-inho@navy.gov.in
 Web: www.hydrobharat.gov.in

IRAN**INTERNET WEATHER SERVICES**

Iranian Meteorological Organisation
www.irimo.ir/eng/wd/1214-Marine-Bulletin.html

Marine forecasts for the Persian Gulf, Strait of Hormuz and Gulf of Oman, together with wind/wave charts for the Persian Gulf and Caspian Sea, in English.



IRAN

NAVTEX			
F	Bandar-e Shahīd Rajā'ī	518 kHz	27°06'·15N 56°04'·41E
A	Būshehr		28°59'·02N 50°50'·03E
I	Bandar-e Shahīd Rajā'ī	490 kHz	27°06'·15N 56°04'·41E
D	Būshehr		28°59'·02N 50°50'·03E
Diagram page 37			
Weather Bulletins			
F:	0450 1250	Weather bulletins for the Strait of Hormuz and the Persian Gulf in English.	
A:	0800 1200	Weather bulletins for the northwest Persian Gulf in English.	
I:	0520 1320	Weather bulletins in Farsi.	
D:	0830 1230		
Navigational Warnings			
F:	0050 0450 0850 1250 1650 2050	Navigational Warnings for the Strait of Hormuz and the Persian Gulf in English.	
A:	0000 0400 0800 1200 1600 2000	Navigational Warnings for the northwest Persian Gulf in English.	
I:	0120 0520 0920 1320 1720 2120	Navigational Warnings in Farsi.	
D:	0030 0430 0830 1230 1630 2030		

BANDAR-E EMĀM KHOMEYNĪ (EQN)				
Control Centre: 30°25′·49N 49°03′·87E				
	Ch 18	VHF		
Weather Bulletins				
0430 1230	Weather bulletins for the northwest Persian Gulf in English and Farsi.			
Navigational Warnings				
0500 1300	Navigational Warnings for the northwest Persian Gulf in English and Farsi.			
NOTE(S): Broadcasts given 1 hour earlier when DST is in force. See ALRS Volume 2 (NP282) for dates.				

BANDAR-E SHAHĪD RAJĀ'Ī (EQI) [5300]				
Control Centre: 27°06'·15N 56°04'·41E				
	Ch 18	VHF		
Weather Bulletins				
0430 1230	Weather bulletins for the Strait of Hormuz and the Persian Gulf in English and Farsi.			
Navigational Warnings				
0500 1300	Navigational Warnings for the Strait of Hormuz and the Persian Gulf in English and Farsi.			
NOTE(S): Broadcasts given 1 hour earlier when DST is in force. See ALRS Volume 2 (NP282) for dates.				

BŪSHEHR (EQM)				
Control Centre: 28°58'·90N 50°50'·07E				
	Ch 18	VHF		
Weather Bulletins				
0430 1230	Weather bulletins for the northwest Persian Gulf in English and Farsi.			
Navigational Warnings				
0500 1300	Navigational Warnings for the northwest Persian Gulf in English and Farsi.			
NOTE(S): Broadcasts given 1 hour earlier when DST is in force. See ALRS Volume 2 (NP282) for dates.				

CHĀBAHĀR (EQJ)				
Control Centre: 25°17'·53N 60°37'·71E				
	Ch 18	VHF		
Weather Bulletins				
0430 1230	Weather bulletins for the Gulf of Oman and the northern part of the Indian Ocean in English and Farsi.			
Navigational Warnings				
0500 1300	Navigational Warnings for the Gulf of Oman and the northern part of the Indian Ocean in English and Farsi.			
NOTE(S): Broadcasts given 1 hour earlier when DST is in force. See ALRS Volume 2 (NP282) for dates.				

IRAN (Caspian Sea)

NAVTEX

G	Fereydūn Kenār	518 kHz	36°41′·70N 52°33′·70E
J		490 kHz	
Diagram page 36			
Weather Bulletins			
G: 0500 1300	Weather bulletins in English.		
J: 0530 1330	Weather bulletins in Farsi.		
Navigational Warnings			
G: 0100 0500 0900 1300 1700 2100	Navigational Warnings in English.		
J: 0130 0530 0930 1330 1730 2130	Navigational Warnings in Farsi.		

IRELAND

INTERNET WEATHER SERVICES

Met Éireann www.met.ie	Gale warnings, 24h sea area forecast, coastal reports, marine observations, outlook for a further 24h and Atlantic weather charts in English.
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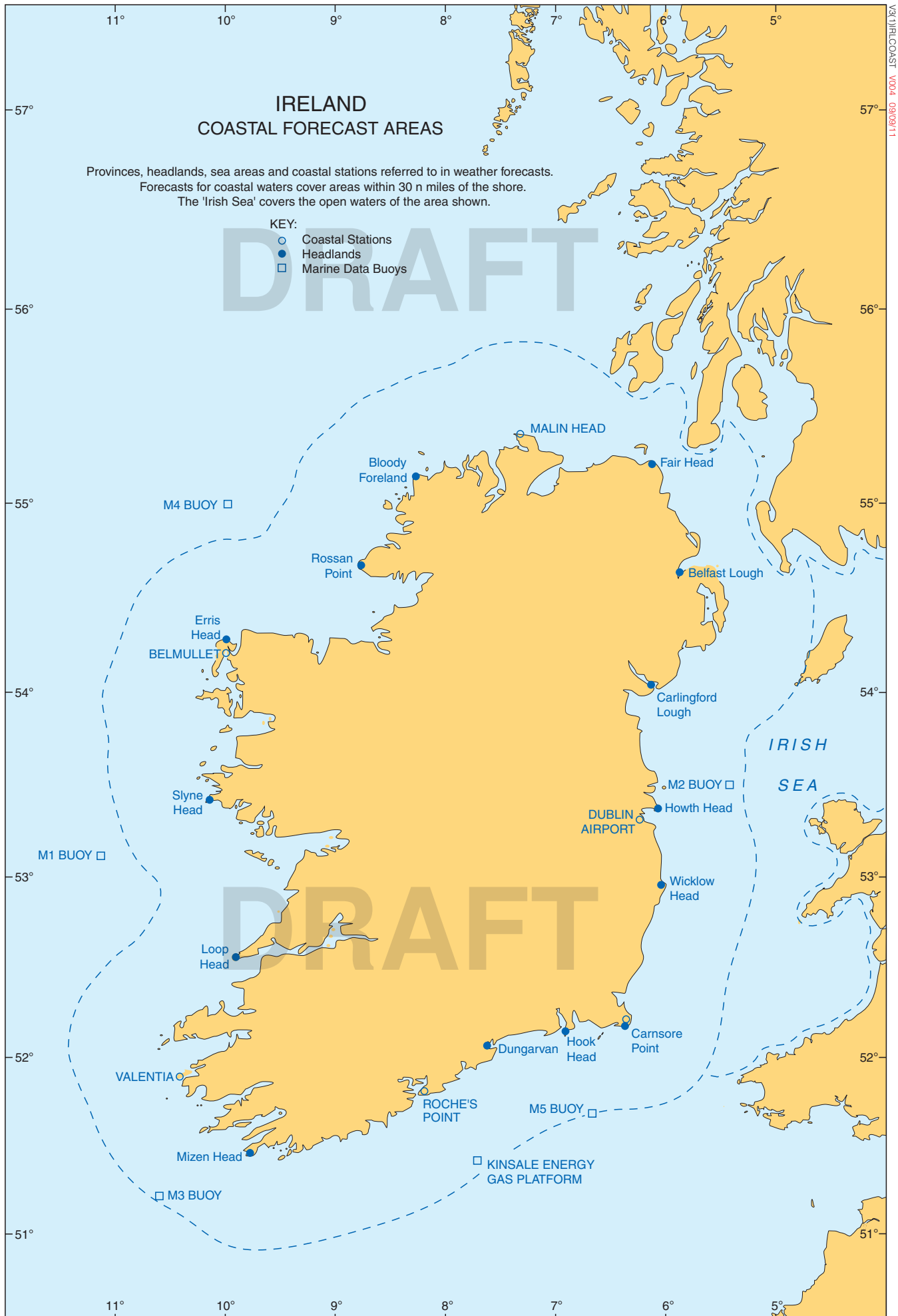
NAVTEX

Q	Malin Head	518 kHz	55°21'·80N 7°20'·39W
W	Valentia		51°55'·80N 10°20'·95W
A	Malin Head	490 kHz	55°21'·80N 7°20'·39W
Diagrams pages 18, 33, 136 and 217			
Weather Bulletins			
Q: 0640 1840	Weather synopsis and 24 hour forecast for Sea Areas Shannon, Rockall, Malin, Bailey and Hebrides.		
Q: 1040 2240	Weather synopsis and 24 hour forecast for Irish coastal waters up to 30 n miles offshore and Sea Areas Irish Sea, Atlantic-East Northern and East Central Sections.		
W: 0740 1940	Weather synopsis and 24 hour forecast for Irish coastal waters up to 30 n miles offshore and Sea Areas Irish Sea, Sole, Fastnet and Shannon.		
W: 1140 2340	Weather synopsis and 24 hour forecast for Sea Area Atlantic-East Central Section.		
A: 0000 0400 0800 1200 1600 2000	Inshore waters forecast for Sea Areas 13–17.		
Navigational Warnings			
Q: 0240 1040 1440 2240	Navigational Warnings for N, NW and W coasts of Ireland and approaches.		
Q: 0240 0640 1040 1440 1840 2240	Gale warnings for Irish coastal waters up to 30 n miles offshore and Sea Areas Irish Sea, Shannon, Rockall, Malin, Bailey and Hebrides.		
Q: 1040 2240	Gale warnings for Sea Areas Atlantic-East Northern and East Central Sections.		
W: 0340 1140 1540 2340	Navigational Warnings for S, SW and W coasts of Ireland and approaches.		
W: 0340 0740 1140 1540 1940 2340	Gale warnings for Irish coastal waters up to 30 n miles offshore and Sea Area Irish Sea.		
W: 0740 1940	Gale warnings for Sea Areas Irish Sea, Sole, Fastnet and Shannon.		

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.dttas.ie/maritime/english/maritime-radio-marine-notice	Department of Transport, Tourism and Sport	Marine Notices and other related information in English.
www.irishlights.ie/safety-navigation/notices-to-mariners.aspx	Commissioners of Irish Lights	Notices to Mariners, relating mainly to Aids to Navigation, in English.



MET ÉIREANN**Met Éireann Marine Weather Services****Weatherdial**

Telephone recorded sea area forecast and warnings of gales and heavy swell, Tel: 1550 123855.

Dublin Bay

Forecast of conditions on Dublin Bay is included with the Greater Dublin Area forecast, Tel: 1550 123854.

Weatherdial FAX

Sea Area Forecast (Code 0021) and Marine Product List (Code 0010) are available by Fax: 1570 131838 (follow voice prompts). Calls are chargeable.

DUBLIN (COAST GUARD MRCC)

Control Centre: 53°20'·16N 6°15'·30W

	Ch 04	VHF	Carlingford	54°04'·74N 6°19'·30W
	Ch 83		Dublin	53°22'·40N 6°04'·15W
	Ch 23		Mine Head	51°59'·55N 7°35'·19W
	Ch 02		Rosslare	52°14'·93N 6°20'·00W
			Wicklow Head	52°57'·93N 5°59'·93W

Diagrams pages 136 and 217

Weather Bulletins

0103 0403 0703 1003 1303 1603 1903 2203 LT	Weather synopsis and 24 hour forecast for Irish coastal waters up to 30 n miles offshore and Irish Sea.
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Navigational Warnings

On receipt 0033 0433 0833 1233 1633 2033	Navigational Warnings for the E, SE and S coasts of Ireland and approaches.
On receipt 0033 0633 1233 1833 LT	Gale warnings for Irish coastal waters up to 30 n miles offshore and Irish Sea. Small Craft Warning for Irish coastal waters if winds of Beaufort Force 6 are expected up to 10 n miles offshore.

NOTE(S): After preliminary announcement on VHF Ch 16.

MALIN HEAD (COAST GUARD MRSC) (EJM)

Control Centre: 55°21'·80N 7°20'·39W

A	1677	RT (MF)	Malin Head	55°21'·80N 7°20'·39W
B	Ch 83	VHF	Belmullet	54°15'·98N 10°03'·41W
	Ch 26		Clifden	53°30'·40N 9°56'·20W
	Ch 02		Donegal Bay	54°22'·00N 8°30'·00W
	Ch 24		Glen Head	54°43'·63N 8°42'·68W
	Ch 23		Malin Head	55°21'·80N 7°20'·39W

Diagrams pages 136 and 217

Weather Bulletins

B¹ : 0103 0403 0703 1003 1303 1603 1903 2203 LT	Weather synopsis and 24 hour forecast for Irish coastal waters up to 30 n miles offshore and Irish Sea.
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Navigational Warnings

A² : On receipt 0033 0433 0833 1233 1633 2033 B : On receipt 0033 0433 0833 1233 1633 2033	Navigational Warnings for North Channel, SW coast of Scotland, N, NW and W coasts of Ireland and approaches.
B¹ : On receipt 0033 0633 1233 1833 LT	Gale warnings for Irish coastal waters up to 30 n miles offshore. Small Craft Warning for Irish coastal waters if winds of Beaufort Force 6 are expected up to 10 n miles offshore.

¹ After preliminary announcement on VHF Ch 16.

² When 1677 kHz is engaged at the scheduled time of broadcast an alternative frequency will be announced on 2182 kHz.

IRELAND

RADIO TELEFÍS ÉIREANN — RADIO 1 (RTE — RADIO 1)

Control Centre: 53°18'91N 6°13'41W

	252 kHz	AM	Summerhill	53°27'72N 6°40'42W
	89.9 MHz		Achill	53°57'42N 10°01'62W
	89.6 MHz		Aranmore	54°59'00N 8°30'54W
	89.3 MHz		Athlone	53°25'41N 7°56'05W
	89.7 MHz		Ballybofey	54°47'46N 7°45'02W
	89.1 MHz		Ballydavid	52°11'71N 10°22'43W
	88.7 MHz		Bantry	51°39'95N 9°26'59W
	89.8 MHz		Cairn Hill	53°48'43N 7°42'93W
	88.4 MHz		Casla	53°17'45N 9°33'33W
	89.3 MHz		Castlebar	53°55'54N 9°22'40W
	88.3 MHz		Castletownbere	51°38'50N 10°00'02W
	87.8 MHz		Clermont Cairn	54°04'80N 6°19'29W
	89.5 MHz		Clifden	53°30'38N 9°56'23W
	88.3 MHz		Clonmel	52°20'43N 7°41'61W
	89.7 MHz		Collins Barracks	51°54'26N 8°28'13W
	88.2 MHz		Crosshaven	51°47'53N 8°17'73W
	88.5 MHz		Dungarvan	52°04'11N 7°44'08W
	89.8 MHz		Fanad	55°13'66N 7°39'82W
	89.4 MHz		Fermoy	52°08'74N 8°16'97W
	88.3 MHz		Gallows Hill	52°15'72N 7°07'90W
	89.5 MHz		Greystones	53°08'92N 6°06'05W
	89.2 MHz		Holywell Hill	54°59'94N 7°23'99W
	89.5 MHz	FM	Kilkeavereagh	51°52'13N 10°20'01W
	90.2 MHz		Killduff	52°50'11N 7°54'60W
	89 MHz		Kinsale	51°41'94N 8°29'92W
	89.1 MHz		Kippure	53°10'69N 6°19'90W
	89.2 MHz		Knockanore (Cnoc an Óir)	52°31'42N 9°36'39W
	88.4 MHz		Knockmoyle	52°12'74N 9°42'70W
	89.7 MHz		Lehinch	52°59'56N 9°22'40W
	88.7 MHz		Maamclassach	52°08'52N 10°25'54W
	88.8 MHz		Maghera	52°58'13N 8°43'11W
			Magheroarty	55°08'30N 8°10'63W
	88.9 MHz		Malin	55°19'53N 7°17'65W
	88.6 MHz		Mitchelstown	52°18'79N 8°18'42W
	88.9 MHz		Monaghan	54°11'12N 7°01'87W
	89.6 MHz		Mount Leinster	52°37'08N 6°46'81W
	88.3 MHz		Moville	55°13'18N 7°01'09W
	90 MHz		Mullaghanish	51°59'00N 9°08'65W
	89.2 MHz		Spur Hill	51°51'38N 8°31'00W
	89 MHz		Suir Valley	52°22'43N 7°15'95W
	88.5 MHz		Three Rock	53°14'67N 6°14'29W
	88.2 MHz		Truskmore	54°22'44N 8°22'25W
	89.4 MHz		Woodcock Hill	52°43'19N 8°41'54W
			Clermont Cairn	54°04'80N 6°19'29W
	227.36 MHz	DAB	Kippure	53°10'69N 6°19'90W
			Spur Hill	51°51'38N 8°31'00W

Continued on next page

IRELAND

RADIO TELEFÍS ÉIREANN — RADIO 1 (RTE — RADIO 1) (Continued)

	227.36 MHz	DAB	Three Rock	53°14'·67N 6°14'·29W
			Woodcock Hill	52°43'·19N 8°41'·54W
Diagrams pages 136 and 217				
Weather Bulletins				
Hourly news bulletins	Gale warnings included when required.			
0602 1253 2355 LT	Situation, forecast and coastal reports for Irish coastal waters and the Irish Sea. The forecasts will include: (a) Wind strength given in the Beaufort scale and wind direction using 16 point compass (b) Weather (c) Visibility (d) Swell warnings (e) Outlook for further 24 hours The coastal reports will include: (a) Wind direction using 16 point compass and speed in knots (b) Weather (c) Visibility in nautical miles and tenths thereof (d) Pressure in hectopascals (e) Pressure tendency, which describes the change in pressure Pressure change and Broadcast description: 0·0–0·4 hPa—steady 0·5–1·9 hPa — rising / falling slowly 2·0–3·4 hPa — rising / falling 3·5–5·9 hPa — rising or falling rapidly 6·0 hPa or greater — rising or falling very rapidly			

VALENTIA (COAST GUARD MRSC) (EJK)

Control Centre: 51°55'·80N 10°20'·95W

A	1752	RT (MF)	Valentia	51°55'·80N 10°20'·95W
B	Ch 23	VHF	Bantry	51°38'·57N 10°00'·11W
	Ch 26		Cork	51°50'·83N 8°27'·70W
	Ch 04		Galway	53°17'·51N 9°06'·75W
	Ch 28		Mizen Head	51°33'·44N 9°32'·46W
	Ch 24		Shannon	52°31'·44N 9°36'·38W
			Valentia	51°55'·80N 10°20'·95W

Diagrams pages 136 and 217

Weather Bulletins

B¹: 0103 0403 0703 1003 1303 1603 1903 2203 LT	Weather synopsis and 24 hour forecast for Irish coastal waters up to 30 n miles offshore and Irish Sea.
A: 0833 2033	Weather synopsis, 24 hour forecast, for Sea Areas Shannon and Fastnet.

Navigational Warnings

B¹: On receipt 0033 0633 1233 1833 LT	Gale warnings for Irish coastal waters up to 30 n miles offshore and Irish Sea. Small Craft Warning for Irish coastal waters if winds of Beaufort Force 6 are expected up to 10 n miles offshore.
A: On receipt 0303 0833 0903 1503 2033 2103	Gale warnings for Sea Areas Shannon and Fastnet.
A, B: On receipt 0233 0633 1033 1433 1833 2233	Navigational Warnings for S, SW and W coasts of Ireland and approaches.

¹ After preliminary announcement on VHF Ch 16.

ISRAEL**INTERNET WEATHER SERVICES**

Israel Meteorological Service
http://www.ims.gov.il/IMSENG/All_Tahazit/homepage.htm

24 hour maritime forecasts for coastal areas of Israel and the eastern Mediterranean Sea, in English and Hebrew.

NAVTEX

P	Hefa (Haifa)	518 kHz	32°54′.90N 35°07′.10E
Diagrams pages 20 and 36			
Weather Bulletins			
P: 0230 0630 1030 1430 1830 2230	Weather synopsis, 12 hour forecast and outlook for a further 12 hours for Sea Areas Delta, Taurus and Crusade.		
Navigational Warnings			
P: 0230 0630 1030 1430 1830 2230	Gale warnings for Sea Areas Delta, Taurus and Crusade.		
P: 0230 0630 1030 1430 1830 2230	Navigational Warnings.		
P: 0230 0630 1030 1430 1830 2230	Firing practice warnings, as required.		

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

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<http://asp.mot.gov.il/en/shipping/notice2mariners>

Israeli Administration of
Shipping and Ports

Notice to Mariners and other related information, in
English and Hebrew.

ITALY**GENERAL NOTES****Maritime Safety Information Broadcasts**

Storm Warnings, Weather Bulletins and Navigational Warnings are announced by Italian maritime radio stations on either RT(MF) 2182 kHz or VHF Ch 16, before being broadcast on the scheduled frequency or channel number.

VHF Ch 68 Continuous Broadcasts

Taped-voice weather bulletins are broadcast continuously, in Italian and English. Fresh gale warnings for the coastal waters of Italy, are broadcast on receipt; Weather bulletins are updated every 6 hours.

INTERNET WEATHER SERVICES

Aeronautica Militare Italiana Servizio Meteorologico
www.meteoam.it

Marine weather forecast for the Western Mediterranean in Italian and English.

NAVTEX

R	La Maddalena	518 kHz	41°13'·45N 9°23'·98E
U	Mondolfo		43°44'·85N 13°08'·55E
V	Sellia Marina ¹		38°52'·35N 16°43'·01E
I	La Maddalena	490 kHz	41°13'·45N 9°23'·98E
E	Mondolfo		43°44'·85N 13°08'·55E
N	Piombino		42°55'·32N 10°32'·60E
W	Sellia Marina ¹		38°52'·35N 16°43'·01E
Diagrams pages 35, 142 and 143			
Weather Bulletins			
R: 0650 1850	Weather forecasts in English.		
U: 0720 1920			
V: 0730 1930			
I: 0920 2120	Weather forecasts in Italian.		
E: 0840 2040			
W: 0740 1940			
N: 0610 1810	Weather forecasts in English.		

Continued on next page

Navigational Warnings	
R: 0250 1050 1450 2250	Navigational Warnings in English.
U: 0320 1120 1520 2320	
V: 0330 1130 1530 2330	
I: 0120 0520 1320 1720	Navigational Warnings in Italian.
E: 0040 0440 1240 1640	
W: 0340 1140 1540 2340	
N: 0210 1010 1410 2210	Navigational Warnings in English.
¹ Temporarily inoperative.	

FIRING PRACTICE AREAS

Tyrrhenian Sea and Eastern Sardinia Exercise Zones

Due to military exercises involving the launch of missiles and rockets, navigation, anchoring, fishing and similar activities may be prohibited in the following areas within the limits of the territorial waters and declared dangerous beyond this limit:

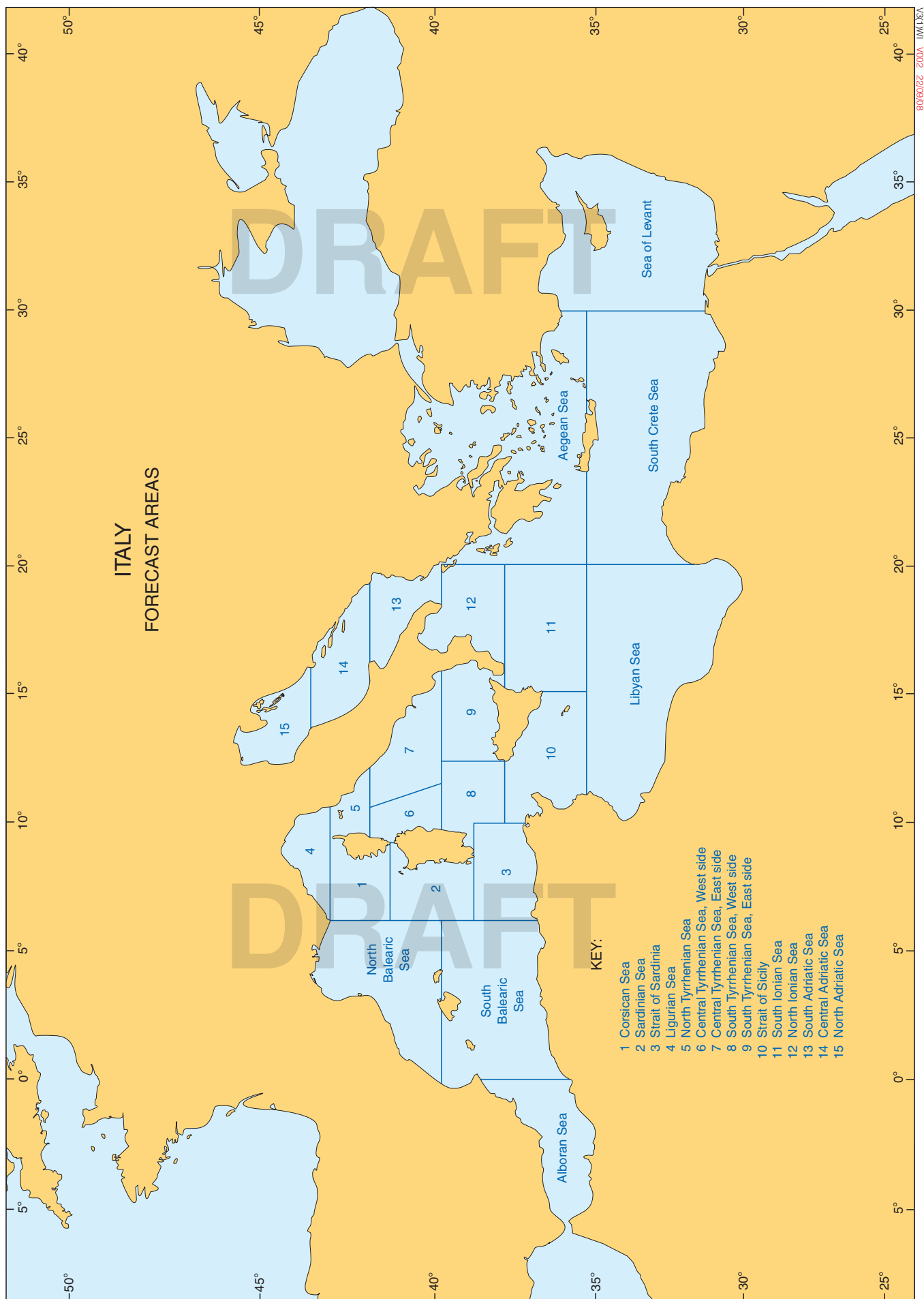
Zone 1		Zone 3	
a)	40°00'N – 010°00'E	a)	40°37'N – 009°50'E
b)	40°00'N – 010°30'E	b)	40°40'N – 010°35'E
c)	39°10'N – 010°30'E	c)	40°40'N – 010°50'E
d)	39°10'N – 010°00'E	d)	39°20'N – 010°50'E
e)	39°26'N – 009°38'E	e)	39°20'N – 009°47'E
f)	39°38'N – 009°38'E	f)	39°24'N – 009°40'E
Zone 2		Zone 4	
a)	40°15'N – 010°00'E	a)	40°37'N – 009°54'E
b)	40°15'N – 011°31'E	b)	40°42'N – 011°17'E
c)	40°11'N – 011°33'E	c)	40°11'N – 011°33'E
d)	39°32'N – 011°38'E	d)	39°46'N – 011°36'E
e)	38°52'N – 011°28'E	e)	39°02'N – 010°17'E
f)	39°10'N – 010°00'E	f)	39°04'N – 010°08'E
g)	39°28'N – 009°38'E	g)	39°26'N – 009°38'E
h)	39°43'N – 009°40'E		

From 21 July to 21 September the zones will only be active from Monday to Friday, excluding public holidays.

Appropriate clearance and AVURNAV orders are issued by the Maritime Authorities.

Vessels and craft in general which have to cross the prohibited zones in order to access the coast and in particular the port of Arbatax, must contact the Arbatax Maritime District Office on VHF Ch 16, between 0800 and 2000 each day and/or via Cagliari Radio H24, on telephone number 0782 667093.

ANCONA (IPA)	
Control Centre: 43°36'17N 13°28'25E	
	2656 RT (MF)
Diagrams pages 142 and 143	
Weather Bulletins	
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 14 & 15 in Italian and English. Reports from meteorological observation stations in Italian.
Navigational Warnings	
On receipt 0403 0803 1203 1603 2003	Near gale warnings for Sea Areas 14 & 15 in Italian and English. Navigational Warnings in Italian and English.





ITALY

AUGUSTA (IQA)				
Control Centre: 37°14'32N 15°14'40E				
	2628	RT (MF)		
Diagrams pages 142 and 143				
Weather Bulletins				
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 10 & 11 in Italian and English. Reports from meteorological observation stations in Italian.			
Navigational Warnings				
On receipt 0333 0833 1233 1633 2033	Near gale warnings for Sea Areas 10 & 11 in Italian and English. Navigational Warnings in Italian and English.			
BARI (IPB)				
Control Centre: 41°05'25N 17°00'02E				
	2579	RT (MF)		
Diagrams pages 142 and 143				
Weather Bulletins				
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 12 and 13 in Italian and English. Reports from meteorological observation stations in Italian.			
Navigational Warnings				
On receipt 0333 0833 1233 1633 2033	Near gale warnings for Sea Areas 12 and 13 in Italian and English. Navigational Warnings in Italian and English.			
CAGLIARI (IDC)				
Control Centre: 39°13'75N 9°14'07E				
	2680	RT (MF)		
Diagrams pages 142 and 143				
Weather Bulletins				
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 2, 3 & 6–9 in Italian and English. Reports from meteorological observation stations in Italian.			
Navigational Warnings				
On receipt 0403 0803 1203 1603 2003	Near gale warnings for Sea Areas 2, 3 & 6–9 in Italian and English. Navigational Warnings in Italian and English.			
CIVITAVECCHIA (IPD)				
Control Centre: 42°01'98N 11°50'01E				
	1888	RT (MF)		
Diagrams pages 142 and 143				
Weather Bulletins				
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 5–9 in Italian and English. Reports from meteorological observation stations in Italian.			
Navigational Warnings				
On receipt 0403 0803 1203 1603 2003	Near gale warnings for Sea Areas 5–9 in Italian and English. Navigational Warnings in Italian and English.			
CROTONE (IPC)				
Control Centre: 39°03'28N 17°07'70E				
	2663	RT (MF)		
Diagrams pages 142 and 143				
Weather Bulletins				
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 11 & 12 in Italian and English. Reports from meteorological observation stations in Italian.			

Continued on next page

Navigational Warnings	
On receipt 0333 0833 1233 1633 2033	Near gale warnings for Sea Areas 11 & 12 in Italian and English. Navigational Warnings in Italian and English.

GENOVA (ICB)	
Control Centre: 44°26'00N 8°56'00E	
	2642 RT (MF)
Diagrams pages 142 and 143	
Weather Bulletins	
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 1, 4 & 5 in Italian and English. Reports from meteorological observation stations in Italian.
Navigational Warnings	
On receipt 0403 0803 1203 1603 2003	Near gale warnings for Sea Areas 1, 4 & 5 in Italian and English. Navigational Warnings in Italian and English.

LAMPEDUSA (IQN)	
Control Centre: 35°30'00N 12°36'00E	
	1876 RT (MF)
Diagrams pages 142 and 143	
Weather Bulletins	
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Area 10 in Italian and English. Reports from meteorological observation stations in Italian.
Navigational Warnings	
On receipt 0333 0833 1233 1633 2033	Near gale warnings for Sea Area 10 in Italian and English. Navigational Warnings in Italian and English.

LIVORNO (IPL)	
Control Centre: 43°29'44N 10°21'40E	
	1925 RT (MF)
Diagrams pages 142 and 143	
Weather Bulletins	
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 4–7 in Italian and English. Reports from meteorological observation stations in Italian.
Navigational Warnings	
On receipt 0403 0803 1203 1603 2003	Near gale warnings for Sea Areas 4–7 in Italian and English. Navigational Warnings in Italian and English.

MAZARA DEL VALLO (IQQ)	
Control Centre: 37°41'00N 12°37'00E	
	2600 RT (MF)
Diagrams pages 142 and 143	
Weather Bulletins	
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Area 10 in Italian and English. Reports from meteorological observation stations in Italian.
Navigational Warnings	
On receipt 0333 0833 1233 1633 2033	Near gale warnings for Sea Area 10 in Italian and English. Navigational Warnings in Italian and English.

ITALY

MESSINA (IDF)				
Control Centre: 38°13'00N 15°33'00E				
	2789	RT (MF)		
Diagrams pages 142 and 143				
Weather Bulletins				
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 8, 9, 11 & 12 in Italian and English. Reports from meteorological observation stations in Italian.			
Navigational Warnings				
On receipt 0333 0833 1233 1633 2033	Near gale warnings for Sea Areas 8, 9, 11 & 12 in Italian and English. Navigational Warnings in Italian and English.			

NAPOLI (IQH)				
Control Centre: 40°52'·22N 14°10'·66E				
	2632	RT (MF)		
Diagrams pages 142 and 143				
Weather Bulletins				
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 6–9 in Italian and English. Reports from meteorological observation stations in Italian.			
Navigational Warnings				
On receipt 0333 0833 1233 1633 2033	Near gale warnings for Sea Areas 6–9 in Italian and English. Navigational Warnings in Italian and English.			

PALERMO (IPP)				
Control Centre: 38°11'00N 13°06'00E				
Adriatic Coast				
A	Ch 05	VHF	Abbate Argento	40°52'00N 17°17'00E
	Ch 27		Bari	41°05'55N 16°55'04E
	Ch 02		Monte Sardo	39°52'00N 18°20'00E
B	Ch 81		Casa d'Orso	41°49'10N 15°59'44E
	Ch 01		Monte Calvario	42°04'62N 14°39'63E
Sicilia				
C	Ch 85	VHF	Belvedere di Siracusa	37°05'55N 15°12'65E
	Ch 86		Campoloto Alto	37°16'50N 15°12'17E
	Ch 19		Monte Lauro	37°07'00N 14°50'00E
D	Ch 61		Cefalù	38°01'00N 13°57'00E
	Ch 81		Erice	38°02'14N 12°35'43E
	Ch 27		Monte Pellegrino	38°09'76N 13°21'50E
	Ch 84		Ustica	38°42'35N 13°10'50E
E	Ch 85		Forte Spuria	38°16'10N 15°37'32E
F	Ch 26		Gela	37°03'86N 14°14'99E
	Ch 25		Mazara del Vallo	37°40'65N 12°36'63E
	Ch 82		Monte San Calogero	37°31'00N 13°07'00E
Sicilian Channel				
G	Ch 22	VHF	Pantelleria	36°46'85N 12°00'29E
Isole Pelagie				
H	Ch 21	VHF	Lampedusa Grecale	35°31'09N 12°37'84E
	Ch 25		Lampedusa Ponente	35°31'00N 12°34'00E
South Coast				
I	Ch 20	VHF	Capo Colonna	39°01'88N 17°09'60E

Continued on next page

PALERMO (IPP) (Continued)

I	Ch 62	VHF	Capo dell'Armi	37°57'·35N 15°40'·82E
	Ch 79		Monte Titolo	39°59'·84N 16°35'·88E
	Ch 26		Monteparano	40°26'·49N 17°25'·16E
	Ch 84		Punta Stilo	38°26'·86N 16°34'·66E
Mediterranean Coast				
J	Ch 19	VHF	Monte Mancuso	39°00'·52N 16°13'·05E
K	Ch 27		Capri	40°32'·86N 14°14'·37E
	Ch 01		Posillipo (Napoli)	40°51'·60N 14°12'·03E
	Ch 25		Serra del Tuono	39°55'·17N 15°50'·03E
	Ch 62		Varco del Salice	40°17'·00N 15°02'·00E
Diagrams pages 142 and 143				
Weather Bulletins				
A-K: 0135 0735 1335 1935	Weather synopsis, 12 and 18 hour forecast and outlook for a further 12 hours, in Italian and English, on: A & B for Sea Areas 12 & 13 C for Sea Areas 10 & 11 D & G for Sea Areas 8–10 E & J for Sea Areas 8, 9, 11 & 12 F & H for Sea Area 10 I for Sea Areas 11 & 12 K for Sea Areas 6–9			
Navigational Warnings				
A-K: On receipt then 0135 0735 1335 1935	Near gale warnings, in Italian and English on: A & B for Sea Areas 12 & 13 C for Sea Areas 10 & 11 D & G for Sea Areas 8–10 E & J for Sea Areas 8, 9, 11 & 12 F & H for Sea Area 10 I for Sea Areas 11 & 12 K for Sea Areas 6–9			
A-K: On receipt then 0333 0833 1233 1633 2033	Navigational Warnings in Italian and English.			

PALERMO MF (IPP)

Control Centre: 38°11'·00N 13°06'·00E

		1852	RT (MF)		
Diagrams pages 142 and 143					
Weather Bulletins					
0135 0735 1335 1935		Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 8–10 in Italian and English. Reports from meteorological observation stations in Italian.			
Navigational Warnings					
On receipt 0333 0833 1233 1633 2033		Near gale warnings for Sea Areas 8–10 in Italian and English. Navigational Warnings in Italian and English.			

PORTO TORRES (IZN)

Control Centre: 40°50'·00N 8°24'·00E

	2719	RT (MF)		
Diagrams pages 142 and 143				
Weather Bulletins				
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 1, 2, 6 & 7 in Italian and English. Reports from meteorological observation stations in Italian.			
Navigational Warnings				
On receipt 0403 0803 1203 1603 2003	Near gale warnings for Sea Areas 1, 2, 6 & 7 in Italian and English. Navigational Warnings in Italian and English.			

ITALY

ROMA RADIO (IAR)					
Control Centre: 41°48'00N 12°31'00E					
Adriatic Coast					
A	Ch 65	VHF	Silvi	42°33'·87N 14°05'·53E	
B	Ch 83		Conconello	45°40'·42N 13°47'·93E	
	Ch 25		Forte Garibaldi	43°36'·33N 13°31'·83E	
	Ch 26		Monte Cero	45°15'·30N 11°40'·13E	
	Ch 02		Monte Conero	43°32'·93N 13°36'·33E	
	Ch 20		Monte Secco	42°58'·00N 13°51'·00E	
	Ch 01		Piancavallo	46°05'·47N 12°32'·43E	
	Ch 27		Ravenna Bassette	44°27'·12N 12°13'·17E	
Sardegna					
C	Ch 19	VHF	Badde Urbara	40°09'·43N 8°37'·75E	
	Ch 62		Margine Rosso	39°13'·75N 9°14'·07E	
	Ch 04		Monte Serpeddi	39°22'·00N 9°17'·82E	
	Ch 82		Punta Campu Spina	39°22'·47N 8°34'·02E	
D	Ch 85		Monte Limbara	40°51'·20N 9°09'·84E	
	Ch 28		Monte Moro	41°06'·43N 9°30'·72E	
	Ch 83		Monte Tului	40°16'·00N 9°35'·00E	
	Ch 26		Osilo	40°44'·17N 8°40'·38E	
			Porto Cervo	41°08'·17N 9°32'·35E	
Mediterranean Coast					
E	Ch 25		VHF	Castellaccio	44°25'·73N 8°56'·03E
	Ch 07			Monte Bignone	43°52'·16N 7°44'·57E
	Ch 27	Zoagli		44°19'·20N 9°18'·70E	
F	Ch 21	Formia		41°15'·08N 13°35'·97E	
	Ch 01	Monte Argentario		42°23'·60N 11°09'·86E	
	Ch 25	Monte Cavo		41°45'·25N 12°42'·62E	
	Ch 64	Monte Paradiso		42°05'·00N 11°51'·00E	
G	Ch 26	Gorgona		43°25'·60N 9°53'·62E	
	Ch 61	Monte Nero		43°29'·44N 10°21'·40E	
Diagrams pages 142 and 143					
Weather Bulletins					
A-G: 0135 0735 1335 1935	Weather synopsis, 12 and 18 hour forecast and outlook for a further 12 hours, in Italian and English, on: A for Sea Areas 13 & 14 B for Sea Areas 14 & 15 C for Sea Areas 2, 3, 6-9 D for Sea Areas 1, 2, 6 & 7 E for Sea Areas 1, 4 & 5 F for Sea Areas 5-9 G for Sea Areas 4-7				
Navigational Warnings					
A-G: On receipt then 0135 0735 1335 1935	Near gale warnings, in Italian and English, on: A for Sea Areas 13 & 14 B for Sea Areas 14 & 15 C for Sea Areas 2, 3, 6-9 D for Sea Areas 1, 2, 6 & 7 E for Sea Areas 1, 4 & 5 F for Sea Areas 5-9 G for Sea Areas 4-7				
A, B, E, F, G: On receipt then 0403 0803 1133 1603 2003	Navigational Warnings in Italian and English.				
C, D: On receipt					

ITALY

SAN BENEDETTO DEL TRONTO (IQP)				
Control Centre: 42°57'00N 13°53'00E				
	1855	RT (MF)		
Diagrams pages 142 and 143				
Weather Bulletins				
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 14 & 15 in Italian and English. Reports from meteorological observation stations in Italian.			
Navigational Warnings				
On receipt 0403 0803 1203 1603 2003	Near gale warnings for Sea Areas 14 & 15 in Italian and English. Navigational Warnings in Italian and English.			

TRIESTE (IQX)				
Control Centre: 45°40′.47N 13°46′.02E				
	2624	RT (MF)		
Diagrams pages 142 and 143				
Weather Bulletins				
0135 0735 1335 1935	Near gale warnings, weather synopsis, 12 or 18 hour forecast and outlook for a further 12 hours for Sea Areas 14 & 15 in Italian and English. Reports from meteorological observation stations in Italian.			
Navigational Warnings				
On receipt 0403 0803 1203 1603 2003	Near gale warnings for Sea Areas 14 & 15 in Italian and English. Navigational Warnings in Italian and English.			

IVORY COAST

ABIDJAN (TUA)				
Control Centre: 5°18'94N 4°01'80W				
	2586	RT (MF)		
Navigational Warnings				
0848 1248 1948	Navigational Warnings for coastal waters of Ivory Coast in French.			

JAN MAYEN (Norway)

JAN MAYEN				
Control Centre: 70°56'63N 8°39'77W				
NOTE(S): Remotely controlled by Bodø.				

JORDAN

AQABA (JYO)				
Control Centre: 29°30'82N 34°59'82E				
	Ch 12 77	VHF		
Navigational Warnings				
On receipt	Navigational and weather warnings.			

KUWAIT**INTERNET WEATHER SERVICES**

State of Kuwait Directorate General of Civil Aviation Meteorological Department
<http://www.met.gov.kw/Forecasts/marine.php>

24 hour forecast, outlook for the next four days, weather warnings, tide times and wave heights, in English.

AL KUWAYT (KUWAIT) (9KK)

Control Centre: 29°23'86N 47°38'80E

2750

RT (MF)

Weather Bulletins

0530 1730

12 hour forecast for coastal waters of Kuwait in English.

LATVIA**MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET**

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.navtex.lv

Maritime Administration of Latvia

Current NAVTEX Warnings in English.

RĪGA MRCC & RĪGA RESCUE RADIO

Control Centre: 57°01'93N 24°05'26E

Ch 71

VHF

Diagram page 173

Weather Bulletins

0703 1503 LT (after Navigational Warnings) On request

Weather forecasts in English and Latvian.

Navigational Warnings

On receipt

Urgent Navigational Warnings in English and Latvian.

On receipt at H+03 or H+33 and repeated half an hour later

Gale warnings in English and Latvian.

0703 1503 LT On request

Navigational Warnings and gale warnings in English and Latvian.

NOTE(S): After prior announcement on VHF Ch 16 and VHF Ch 70 (DSC).

LEBANON**BEYROUTH**

Control Centre: 33°51'00N 35°32'00E

2182

RT (MF)

Ch 16

VHF

Navigational Warnings

On request

Navigational Warnings.

LIBYA**TARĀBULUS (TRIPOLI) (5AT)**

Control Centre: 32°54'28N 13°10'90E

A

2182

RT (MF)

B

2197

Weather Bulletins

B: 0833 1733

Weather bulletins for area between 10°E to 25°E and Libyan Coast to 34°N.

Navigational Warnings

A: On receipt 0903 1903

Navigational Warnings for area between 10°E to 25°E and Libyan Coast to 34°N.

LITHUANIA**MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET**

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.msa.lt/en/hydrography/navigational-warnings-and-kq74/notices-to-mariners-scx9.htm	Lithuanian Maritime Safety Administration	Navigation Warnings in English.
www.msa.lt/msa/lt/hidrografine-veikla/navigaciniai-ispejimai-ir-w73j/navigaciniai-ispejimai-ir-1peu.html		Navigation Warnings in Lithuanian.

FIRING PRACTICE AREAS

Gunnery practice is operated under a 'clear range' policy, monitored by Navy land based surveillance stations in combination with vessels participating in firing exercises. Exceptions are where a ship is carrying out exercises with light weapons e.g. pistols, rifles and machine guns, in which case the 'clear range' is determined by the vessel conducting the exercise. Firing is announced 1 hour prior to the exercise by Klaipėda MRCC, which transmits a Navigational Warning on VHF Ch 16. Details of forthcoming firing exercises may also be found on the websites included in the section Maritime Safety Information (MSI) on the Internet, listed above.

Safety Offices

Information during firings is available from Safety Offices for the following areas:

Area Name	Call / VHF Ch	Telephone number	Fax number	Position
EYD 17, EYD 18	CALL: Klaipėda Rescue / Ch 16	+370 46391257 +370 46391258 +370 46218107	+370 46391259	55°36'·98N 20°45'·88E
	Navy Duty Officer	+370 46314833	+370 46391309	

KLAIPĖDA (RADIO 5) (VTS)

Control Centre: 55°43'·16N 21°06'·04E

	Ch 09	VHF		
Diagram page 173				
Weather Bulletins				
On request	Weather forecast for Sea Area B9 and Port of Klaipėda in Lithuanian, English and Russian.			
Navigational Warnings				
On request	Gale warnings for Sea Area B9 and Port of Klaipėda in Lithuanian, English and Russian.			
NOTE(S): Hours of operation: H24				

MADAGASCAR**INTERNET WEATHER SERVICES**

Madagascan Meteorological Service www.meteomadagascar.mg/prevision-marine	Marine forecasts and warnings, in French.
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MADEIRA (Portugal)**INTERNET WEATHER SERVICES**

Instituto de Português do Mar e da Atmosfera www.ipma.pt	Weather forecast for Portugal, Açores and Madeira in Portuguese and English.
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NAVTEX

P	CENCOMARMADEIRA (Porto Santo)	518 kHz	33°05′.65N 16°20′.29W
M		490 kHz	
Diagrams pages 34, 61 and 153			
Weather Bulletins			
P: 0230 0630 1030 1430 1830 2230	Storm and severe weather warnings, synopsis and 24 hour forecast for Sea Areas 8, 21 and 22 and for area within 20 n miles of the coast in English.		
M: 0200 0600 1000 1400 1800 2200	Storm and severe weather warnings, synopsis and 24 hour forecast for Sea Areas 8, 21 and 22 and for area within 20 n miles of the coast in Portuguese.		

Continued overleaf

MADEIRA (Portugal)**NAVTEX (Continued)**

Navigational Warnings	
P: 0230 0630 1030 1430 1830 2230	Navigational Warnings for Sea Areas 8, 21 and 22 and for area within 20 n miles of the coast in English.
P: 0230 0630 1030 1430 1830 2230	Coastal Navigational Warnings in English.
M: 0200 0600 1000 1400 1800 2200	Navigational Warnings for Sea Areas 8, 21 and 22 and for area within 20 n miles of the coast in Portuguese.
M: 0200 0600 1000 1400 1800 2200	Coastal Navigational Warnings in Portuguese.

CENTRO DE COMUNICAÇÕES DA MADEIRA (CENCOMARMADEIRA) (CTQ)

Control Centre: 33°03'72N 16°21'35W

A	2657	RT (MF)		
B	Ch 11	VHF		

Diagrams pages 61 and 153

Weather Bulletins

A: 0735 1935	Storm and severe weather warnings, weather synopsis and 24 hour forecast for Sea Areas 8, 21 and 22 and area within 20 n miles of islands in Portuguese repeated in English where possible.
B: 1030 1630 LT	Storm and severe weather warnings, weather synopsis and 24 hour forecast within 20 n miles of Madeira and Porto Santo in Portuguese repeated in English where possible.

Navigational Warnings

A: 0735 1935	Navigational Warnings within 200 n miles of Madeira in Portuguese repeated in English where possible.
B: 1030 1630 LT	Local Navigational Warnings for Madeira and Porto Santo in Portuguese repeated in English where possible.

MALDIVES**INTERNET WEATHER SERVICES**

Maldives Meteorological Service www.meteorology.gov.mv/marineweather	Coastal marine forecasts and weather warnings, in English and Dhivehi.
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MALTA**INTERNET WEATHER SERVICES**

Malta International Airport www.maltaairport.com/weather	Marine weather synopsis and 72 hour forecast, in English and Maltese.
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NAVTEX

O	Malta	518 kHz	35°51'30N 14°29'30E
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Diagrams pages 20 and 35

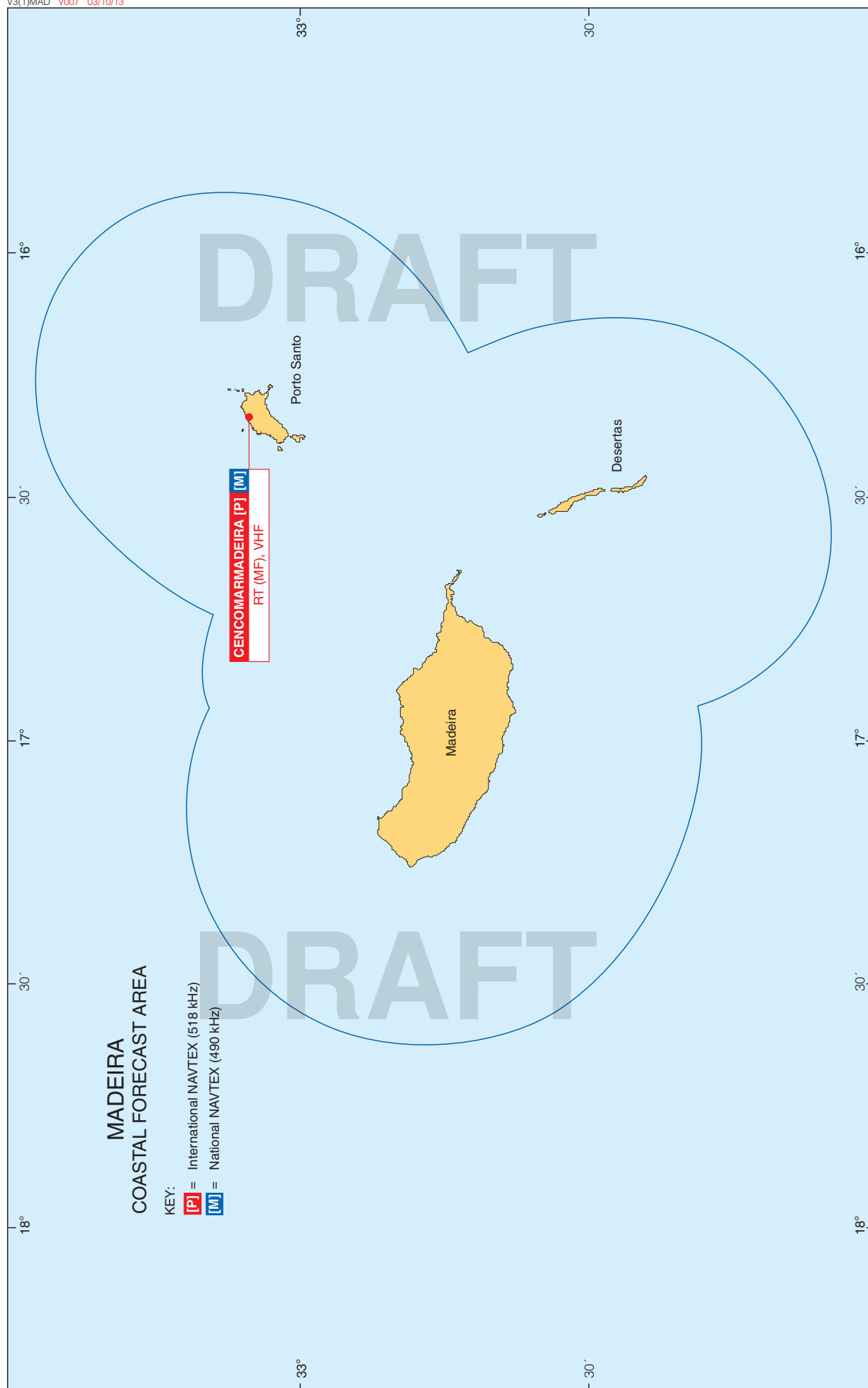
Weather Bulletins

O: 0620 1820	Weather synopsis, 12 hour forecast for coastal waters of Malta up to 50 n miles offshore.
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Navigational Warnings

O: 0620 1820	Gale warnings for coastal waters of Malta up to 50 n miles offshore.
O: 0220 0620 1020 1420 1820 2220	Local and NAVAREA III warnings for central Mediterranean up to 10 days old are broadcast Mon–Sat. All warnings still in force are broadcast on Sun.

NOTE: Tunisian NAVTEX broadcasts from Kelibia are temporarily inoperative. Malta NAVTEX broadcasts MSI for the Sicilian channel and the east coast of Tunisia in the [T] timeslot – see Tunisian NAVTEX entry.



MALTA

MALTA RCC				
Control Centre: 35°51'·30N 14°29'·30E				
	2625	RT (MF)		
	Ch 01 02 03 04	VHF		
Weather Bulletins				
0603 1003 1603 2103	12 hour forecast for coastal waters of Malta up to 50 n miles offshore.			
Navigational Warnings				
On receipt 0603 1003 1603 2103	Gale warnings for coastal waters of Malta up to 50 n miles offshore.			
1003 1603 2103	Local and NAVAREA III warnings for central Mediterranean up to 10 days old are broadcast Mon–Sat. All warnings still in force are broadcast on Sun.			
NOTE(S): Navigational Warnings follow the Weather Bulletins at the stated times.				

VALLETTA VTS				
Control Centre: 35°53'·17N 14°30'·15E				
	Ch 11	VHF		
Weather Bulletins				
0803 1203 1803 2303 LT	Weather forecast for coastal waters of Malta up to 50 n miles offshore.			
NOTE(S): After prior announcement on VHF Chs 12, 14 and 16.				

MAURITIUS

INTERNET WEATHER SERVICES	
Mauritius Meteorological Services http://metService.intnet.mu/	Coastal marine forecasts, weather warnings, tidal and astronomical data, in English and French.

NAVTEX			
C	Mauritius	518 kHz	20°10′.05S 57°28′.69E
Diagrams pages 23 and 37			
Weather Bulletins			
C: 0020 0420 0820 1220 1620 2020	Weather synopsis and 24 hour forecast for Sea Areas 8A1 to 8A7.		
Navigational Warnings			
C: 0020 0420 0820 1220 1620 2020	Navigational Warnings and weather warnings for Sea Areas 8A1 to 8A7.		

MAURITIUS (3BM)				
Control Centre: 20°09'·25S 57°29'·14E				
A ¹	Ch 14	VHF	Cassis	20°09'·00S 57°28'·00E
B ²	4402	RT (HF)		
Diagram page 23				
Weather Bulletins				
A: 0205 1405	Weather bulletins for local fishing vessels in the vicinity of the Nazareth Bank (14°30'S 60°40'E) and the Saya de Malha Bank (10°00'S 61°00'E).			
B: 0115 0730 ³ 1315 1930 ³	Weather synopsis and forecast for Sea Areas 8A1–8A7 in English.			
Navigational Warnings				
A, B: On receipt then repeated every 2 hours	Cyclone warnings for Sea Areas 8A1–8A7 in English.			
B: 0115 0730 ³ 1315 1930 ³	Weather warnings for Sea Areas 8A1–8A7 in English.			
B: 0433 1233 1603	Navigational Warnings in English.			
¹ After prior announcement on VHF Ch 16.				
² After prior announcement on RT (MF) 2182 kHz.				
³ Only when cyclone warning is in force.				

MAYOTTE (France)**MAYOTTE - ELEBN**

Control Centre: 12°46'99S 45°15'46E

	Ch 10	VHF		
Diagram page 180				
Navigational Warnings				
0900 1700 On Receipt	Local Navigational and Weather Warnings in French (English on request).			
NOTE(S): After prior announcement on VHF Ch 16.				

MONACO**MONACO (3AC)**

Control Centre: 43°43'88N 7°25'25E

A	4363 (Ch 403) 8728 (Ch 804) 13146 (Ch 1224) 17260 (Ch 1607)	RT (HF)		
B	Ch 20	VHF	Navimet	
C	Ch 23			
D	Ch 24			
E	Ch 25			

Diagrams pages 19 and 20

Weather Bulletins

A: 0930	Bulletin for METAREA II, eastern Atlantic in French and English.
A: 0800 1030	Bulletin for METAREA III, western Mediterranean in French and English.
A, B: 0930 1403 1930 LT	Bulletin for western Mediterranean in French and English.
C: Continuous Broadcast	Bulletin for coastal waters from St Raphaël to Menton. Bulletins updated twice a day in French and English.
D: Continuous Broadcast	Bulletin for coastal waters of Corse. Bulletins updated twice a day in French and English.
E: Continuous Broadcast	Bulletin for coastal waters from St Raphaël to Port Camargue. Bulletins updated twice a day in French and English.

RIVIERA RADIO

Control Centre: 43°44'00N 7°24'00E

	106.5 MHz	FM	
Weather Bulletins			
Mon–Fri H+06 (0500–2000 LT)	Weather forecast for the coastal waters between St Tropez and the Italian border and Corse in English.		

MONTENEGRO**MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET**

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

http://pomorstvo.me/eng/	Maritime Safety Department of Montenegro	Navigation Warnings and other related information in English and Montenegrin.
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BAR (40B)

Control Centre: 42°03'28N 19°08'46E

	Ch 24	VHF	
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Weather Bulletins

0850 1420 2050	Weather synopsis, 24 hour forecast for the Adriatic Sea and Straits of Otranto in Montenegrin and English.
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Navigational Warnings

0850 1420 2050	Storm warnings and Navigational Warnings for the coastal waters of Montenegro in Montenegrin and English.
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NOTE(S):

1. After preliminary announcement on VHF Ch 70 (DSC).
2. Urgent warnings are broadcast on receipt on VHF Ch 16 and are repeated after the next quiet period on RT.
3. Navigational Warnings follow the Weather Bulletins at the stated times.

MOROCCO**AGADIR (CND)**

Control Centre: 30°22'00N 9°33'00W

	1911	RT (MF)		
Diagram page 19				
Weather Bulletins				
0945 1645 On request	Weather bulletins for Moroccan coastal and ocean forecast areas.			
Navigational Warnings				
On receipt	Special weather bulletins (gale, storm or hurricane warnings) and Navigational Warnings.			
Every H+33	Special weather bulletins (gale, storm or hurricane warnings).			
1048 1628	Navigational Warnings for Moroccan coastal waters and eastern Atlantic Ocean between 22°N and 42°N in French.			
NOTE(S): Broadcasts are made after prior announcement on 2182 kHz.				

CASABLANCA (CNP)

Control Centre: 33°35'74N 7°38'50W

Diagrams pages 19 and 20				
Weather Bulletins				
0945 1645 On request	Weather bulletins for Moroccan coastal and ocean forecast areas.			
Navigational Warnings				
On receipt	Special weather bulletins (gale, storm or hurricane warnings) and Navigational Warnings.			
Every H+33	Special weather bulletins (gale, storm or hurricane warnings).			
0918 2028	Navigational Warnings for Moroccan coastal waters and eastern Atlantic Ocean between 22°N and 42°N in French.			
NOTE(S): Broadcasts are made after prior announcement on 2182 kHz.				

MOZAMBIQUE**MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET**

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.inahina.gov.mz	National Institute of Hydrography and Navigation	Navigation Warnings in English.
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NAMIBIA**INTERNET WEATHER SERVICES**

Namibia Meteorological Service www.meteona.com	Under 'Specialized Services/Marine Weather' menu, choose either the Marine and Coastal or High Seas weather bulletins. High Seas bulletin contains detailed synopsis, 24 hr forecast, sea state and gale warnings, in English. Includes a repeat of Météo-France/La Reunion bulletins, covering sea areas east of the Cape.
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NAVTEX

B	Walvis Bay	518 kHz	23°03'25S 14°37'50E
Diagrams pages 37 and 187			
Weather Bulletins			
B: 1210 1610	Weather forecast for Sea Areas 1, 2 and 9.		
Navigational Warnings			
B: 1210 1610	Gale warnings for Sea Areas 1, 2 and 9.		
B: 0010 0410 0810 1210 1610 2010	Local NAVAREA VII and coastal warnings for the coastal waters and economic zone of Namibia.		
NOTE: Temporarily inoperative.			

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.sanho.co.za/Default.htm

South African Navy
Hydrographic Office

Coastal Navigation and NavArea VII Warnings, including Namibia, in English.

WALVIS BAY (V5W)

Control Centre: 23°03'25S 14°37'50E

A	4357 8719	RT (HF)	Walvis Bay	23°03'25S 14°37'50E
B	Ch 25	VHF	Boegoeberg	27°54'32S 15°56'21E
C	Ch 24		Mile 108	21°26'55S 13°49'18E
D	Ch 22		Möewebai	19°22'21S 12°42'34E
E	Ch 16		Walvis Bay	23°03'25S 14°37'50E
F	Ch 27		Pelican Point	22°53'52S 14°26'12E
	Ch 26		Walvis Bay	23°03'25S 14°37'50E
G	Ch 23		Lüderitz	26°46'16S 15°21'00E

Diagram page 187

Weather Bulletins

A, F: 0935 1635 B-D: 0905 G: 0935 1235 1635	Weather forecast for Sea Areas 1, 2 and 9.
A, F, G: 1235 B-D: 0905	Weather observations at Walvis Bay and Diaz Point.

Navigational Warnings

E: On receipt	Storm warnings for Sea Areas 1, 2 and 9 and urgent NAVAREA VII and coastal warnings for the coastal waters and economic zone of Namibia.
A, F, G: 0905 1605 B-D: 0905 E: On receipt	Local NAVAREA VII and coastal warnings for the coastal waters and economic zone of Namibia.
A, F: 0935 1635 B-D: 0905 E: On receipt G: 0935 1235 1635	Gale warnings for Sea Areas 1, 2 and 9.
A, F: 1235 B-D: 0905 E: On receipt	Gale warnings for Möwe Bay, Walvis Bay and Diaz Point.

NOTE(S): 1. Storm, gale and Navigational Warnings are transmitted on receipt on all frequencies and then at the next scheduled broadcast.
2. MF service and other HF frequencies are available on request only.

NETHERLANDS

INTERNET WEATHER SERVICES

Marine Section Department of Public Works www.vaarweginformatie.nl	Maritime weather forecasts and links to other associated information in Dutch, English, German and French.
Royal Netherlands Meteorological Institute www.knmi.nl/waarschuwingen_en_verwachtingen/waarschuwingen_kust_en_noordzee.html	Weather warnings for Dutch coastal waters & North Sea in Dutch with English translation link.

NAVTEX

P	Netherlands Coastguard	518 kHz	52°55'00N 4°44'00E
Diagrams pages 33, 217 and 304			
Weather Bulletins			
P: 0230 1430	Forecasts for Sea Areas Dogger, German Bight, Humber, Thames and Dover.		

Continued overleaf

NETHERLANDS

NAVTEX (Continued)

Navigational Warnings	
P: 0230 0630 1030 1430 1830 2230	Gale warnings and Navigational Warnings (including firing practice warnings) for Sea Areas Thames, Humber, German Bight and Dogger.
Ice Warnings and Reports	
P: 1030	Ice messages when necessary to report the ice conditions in the river delta.

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.defensie.nl/english/topics/notices-to-mariners

Netherlands Ministry of Defence

Notices to Mariners, in English.

FIRING PRACTICE AREAS

Safety Offices

Information during firings is available from Safety Offices for the following areas (further information may also be found in the Netherlands Coast Pilot publications HP1 and HP1D or the relevant ADMIRALTY Sailing Directions):

Area Name	Call / VHF Ch	Remarks	Position
IJsselmeer, Schietterrein Breezanddijk	CALL: Schietterrein Breezanddijk / Ch 71 or CALL: IJsselmeergebied / Ch 01	Regular firing practice takes place, during which the Netherlands flag is raised on a mast near the battery. Warnings are announced via Notice to Mariners and by broadcast on the following channels: West-Terschelling: VHF Ch 25 Wieringerwerf: VHF Ch 27 Lelystad: VHF Ch 83	53°01'·10N 5°12'·50E
Vlieland, Vliehors	CALL: Vliehors Range Control / Ch 74	Daily firing practice takes place from aircraft on ground targets, usually during daylight when visibility exceeds 2 n miles. A red flag is raised on the observation post during firing, at which time shipping should avoid the sea area along the coast up to 2000m outside the low-water mark. Vessels wishing to transit the area should make contact with the safety office in good time to ensure safe passage and in any case should not remain within the danger area longer than necessary.	53°14'·40N 4°55'·30E

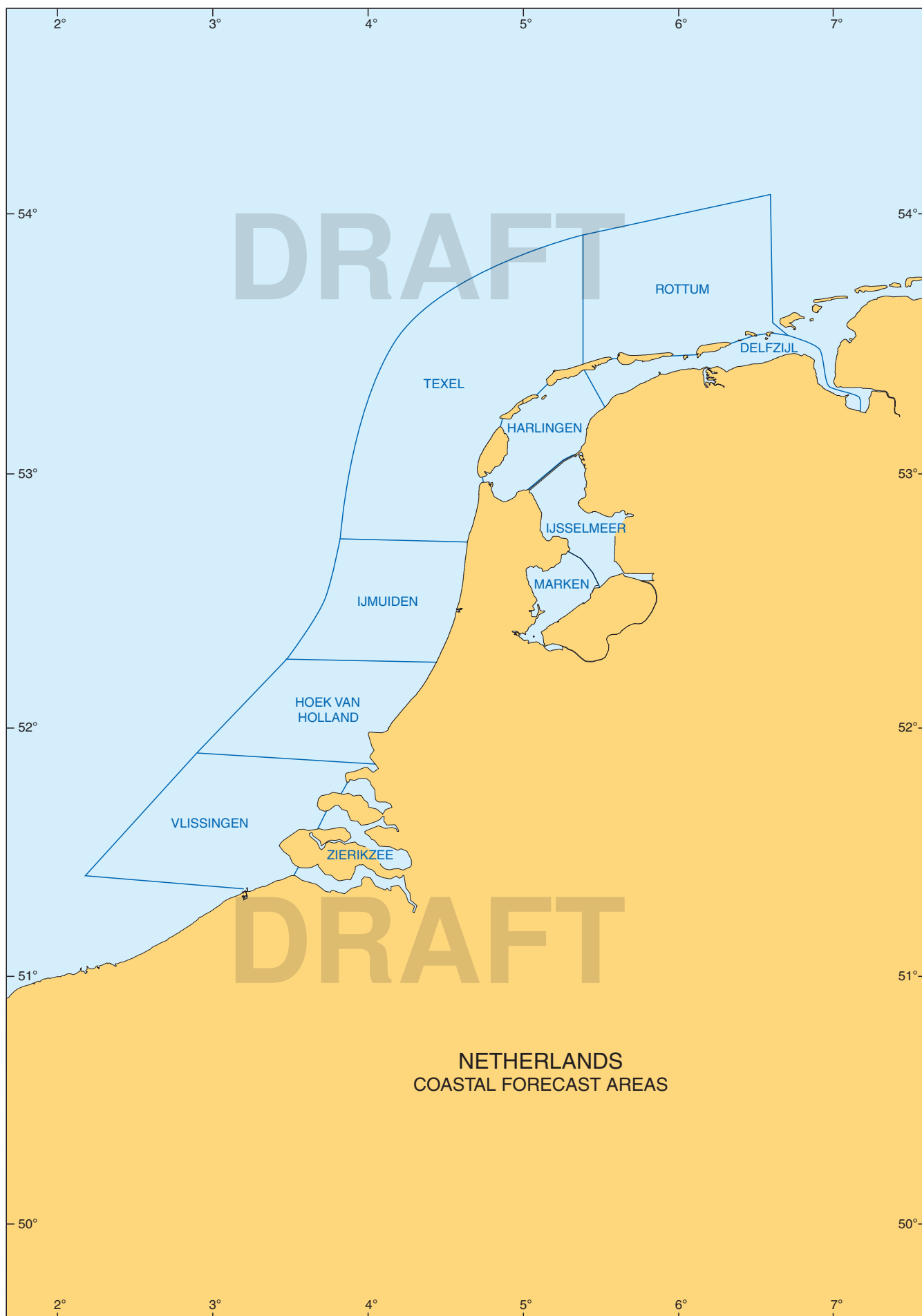
NETHERLANDS COASTGUARD (DEN HELDER) (PBK)

Control Centre: 52°57'·25N 4°47'·66E

A	1890	RT (MF)	Appingedam	53°20'·13N 6°51'·55E
	3673		Scheveningen	52°05'·68N 4°15'·45E
B	Ch 83	VHF	Appingedam	53°20'·13N 6°51'·55E
	Ch 23		Hoorn	52°38'·65N 5°05'·90E
			Huisduinen	52°57'·15N 4°43'·30E
			IJmuiden	52°27'·63N 4°35'·00E
			Kornwerderzand	53°04'·15N 5°20'·32E
			Renesse	51°44'·10N 3°49'·30E
	Ch 83		Scheveningen	52°05'·68N 4°15'·45E
	Ch 23		Schiermonnikoog	53°28'·54N 6°09'·32E
	Ch 83		Schoorl	52°43'·00N 4°38'·70E
			West Terschelling	53°21'·43N 5°12'·83E
			Westkapelle	51°31'·75N 3°26'·83E
	Ch 23		Wezep	52°26'·83N 5°59'·85E
			Woensdrecht	51°26'·23N 4°20'·22E

Diagrams pages 159, 217 and 304

Continued on page 160



NETHERLANDS

NETHERLANDS COASTGUARD (DEN HELDER) (PBK) (Continued)

Weather Bulletins	
A: 0940 2140	Weather forecast for Sea Areas Dover, Thames, Humber, German Bight, Dogger, Fisher, in English.
B: 0805 1305 1905 2305 LT	Forecast for Netherlands coastal waters up to 30 n miles offshore (including larger inland water districts) in English and Dutch.
Navigational Warnings	
A: On receipt then at 0333 0733 1133 1533 1933 2333	Storm warnings for winds of Beaufort Force 7 for Sea Areas Dover, Thames, Humber, German Bight, Dogger, Fisher, Forties and Viking in English.
B: On receipt then at 0333 0733 1133 1533 1933 2333	Storm warnings for winds of Beaufort Force 6 for Netherlands coastal waters up to 30 n miles offshore (including larger inland water districts) in English and Dutch.
A, B: On receipt then at 0333 0733 1133 1533 1933 2333	Navigational Warnings in English on A and in English and Dutch on B.
NOTE(S): 1. Urgent safety messages on receipt after announcement via 2187.5 kHz DSC and 3673 kHz. 2. Most warnings will be announced through DSC MF and/or VHF DSC/Ch 16.	

OUDDORP

Control Centre: 51°48'79N 3°51'84E				
	Ch 25	VHF	Ouddorp	51°48'79N 3°51'84E
Diagram page 159				
Weather Bulletins				
H+30	Coastal forecasts, tide, swell and wave height information.			
Navigational Warnings				
H+30	Local Navigational Warnings.			
NOTE(S): Broadcasts are only made during operational hours: Daily 0800–1600 LT, Thursday and Sunday also from 2200–0800 LT.				

TERNEUZEN TRAFFIC CENTRE

Control Centre: 51°20'56N 3°49'00E				
	Ch 11	VHF	Terneuzen	51°20'56N 3°49'00E
Navigational Warnings				
H+00 LT	Navigational and traffic information for the Terneuzen canal and locks complex, in Dutch.			

VLISSINGEN TRAFFIC CENTRE

Control Centre: 51°26'49N 3°35'05E				
A	Ch 14	VHF	Vlissingen	51°26'49N 3°35'05E
B	Ch 21			
Weather Bulletins				
A: H+50 LT	Weather Bulletins for the areas: Steenbank, Zeebrugge, Flushing, Terneuzen and Hansweert, in Dutch.			
B: H+55 LT	Weather Bulletins for the areas: Steenbank, Zeebrugge, Flushing, Terneuzen and Hansweert, in English.			
Navigational Warnings				
A: H+50 LT	Navigational and traffic information for the areas: Steenbank, Zeebrugge, Flushing, Terneuzen and Hansweert, in Dutch.			
B: H+55 LT	Navigational and traffic information for the areas: Steenbank, Zeebrugge, Flushing, Terneuzen and Hansweert, in English.			

NIGERIA

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.nnho.ng	Nigerian Navy Hydrographic Office	Notices to Mariners, Navigational Warnings, Meteorological Warnings/Forecasts, tidal data and associated information, in English.
www.nigerianports.org	Nigerian Ports Authority	Navigation Warnings and other related information in English. One can also register to receive Notice to Mariners updates by e-mail by contacting portscommunication@nigerianports.org

NORWAY

GENERAL NOTES

Maritime Safety Information (MSI) broadcasts

All scheduled MSI broadcasts are announced from Norwegian maritime radio stations on the distress frequencies 2182 kHz or VHF Ch 16 before being broadcast on the scheduled frequency or channel. The first broadcast of fresh Gale force 9 (Storm) Warnings and Navigational Warnings will be announced through DSC on 2187.5 kHz / VHF Ch 70 and will include the scheduled RT broadcast frequency/channel.

Dangerous Waves

Station	Telephone	Fax
Vervarslinga på Vestlandet	+47 55236600	+47 55236703
Måløy Harbour Office	+47 57852620	N/A

There are a series of designated dangerous wave areas along the Norwegian Coastline, for details of these areas see the ADMIRALTY Sailing Directions. Warnings for these areas may be obtained from local Harbour Offices, Vessel Traffic Centres and other locations. Information is also available on the following website, in Norwegian and English: <https://www.barentswatch.no/bolgevarsel>. The warnings on this site are updated four times a day (see Internet Weather Services entry for further information).

Vessels intending to pass in the vicinity of Statt (Statlandet) 62°12'N 5°00'E, may receive a 2 day wind/wave warning forecast free of charge. These warnings may be obtained through the Internet, telephone and fax numbers above.

Vessels should supply the following information when making requests:

- Vessel's name;
- Vessel's type;
- Area and time of passing;
- Intended course — passing north or south etc;
- Return address (complete with fax number).

INTERNET WEATHER SERVICES

Norwegian Meteorological Institute www.yr.no/hav_og_kyst/	Marine weather forecast for North Atlantic in Norwegian and English.
Wave Forecast for Fairways www.barentswatch.no/bolgevarsel	Wave height/direction forecasts for particularly vulnerable areas, produced from information provided by the Norwegian Meteorological Institute and the US National Weather Service. Updated at least four times a day, in Norwegian and English.

NAVTEX

B	Bodø	518 kHz	67°16'15N 14°25'37E
M	Jeløya		59°26'21N 10°35'66E
N	Ørlandet		63°39'70N 9°32'80E
L	Rogaland		58°39'48N 5°36'23E
A	Svalbard		78°03'70N 13°37'26E
C	Vardø		70°22'25N 31°05'85E

Diagrams pages 32, 33, 40, 163 and 164

Weather Bulletins

B: 0010 1210	Weather bulletin.
N: 0210 1410	
L: 0150 1350	
A: 0000 1200	
C: 0020 1220	
M: 0200 1400	Weather bulletins for the Oslofjord and Skagerak.

Navigational Warnings

B: 0010 0410 0810 1210 1610 2010	Navigational Warnings for Norwegian coastal areas and adjacent seas.
N: 0210 0610 1010 1410 1810 2210	
L: 0150 0550 0950 1350 1750 2150	
A: 0000 0400 0800 1200 1600 2000	
C: 0020 0420 0820 1220 1620 2020	
M: 0200 0600 1000 1400 1800 2200	Navigational Warnings for the Oslofjord and Skagerak.

Continued overleaf

NORWAY

NAVTEX (Continued)

Ice Warnings and Reports		
A: 0800 (Daily) 1600 (Tues only)	Ice reports.	
C: 1620 (Tues only)		

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.kartverket.no/en/EFS/#/	Norwegian Hydrographic Service	Notice to Mariners, Navigation Warnings, and other related information in English and Norwegian.
www.kartverket.no/en/EFS/Miscellaneous-Notices-to-Mariners/8-Coastal-Radio-Maritime-Safety-Information-MSI/		MSI broadcast details in English and Norwegian.
www.kystverket.no/en/EN_Maritime-Services/Reporting-and-Information-Services/Navigation-warning-system-NAVCO/	Norwegian Coastal Administration	Links to coastal, NAVAREA XIX and Malfunctioning Navigational Aids, in English and Norwegian.

FIRING PRACTICE AREAS

Full details of military firing practice and exercise areas can be found by consulting the Norwegian Pilot Guides, available as a free of charge downloads from the Norwegian Hydrographic Service at the webpage below:

www.kartverket.no/en/Maps--Nautical-Charts/Nautical-Publications/The-Norwegian-Pilot-Guide.

Details of firing practices will be announced via coast radio stations, the Norwegian Broadcasting Corporation (NRK) national radio network, in Notices to Mariners and to a lesser extent, in the local press.

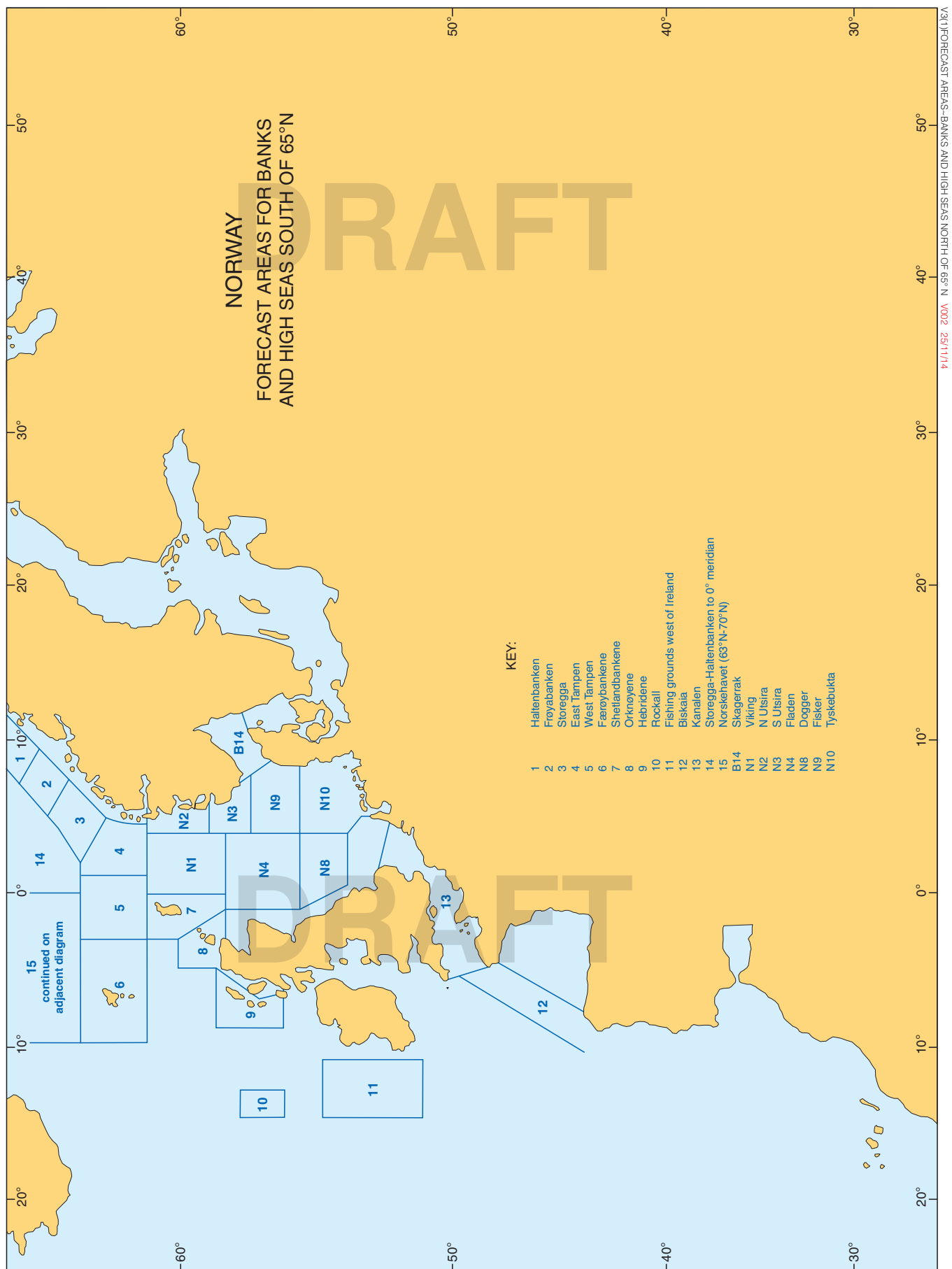
Situated on the island of Andøya in northern Norway, the Andøya Test Centre conducts both aerial and maritime weapons testing. Details of current firing practice times and danger areas are published in both Norwegian and English on their website: www.testcenter.no. The centre can also be contacted by telephone on +47 90 565430.

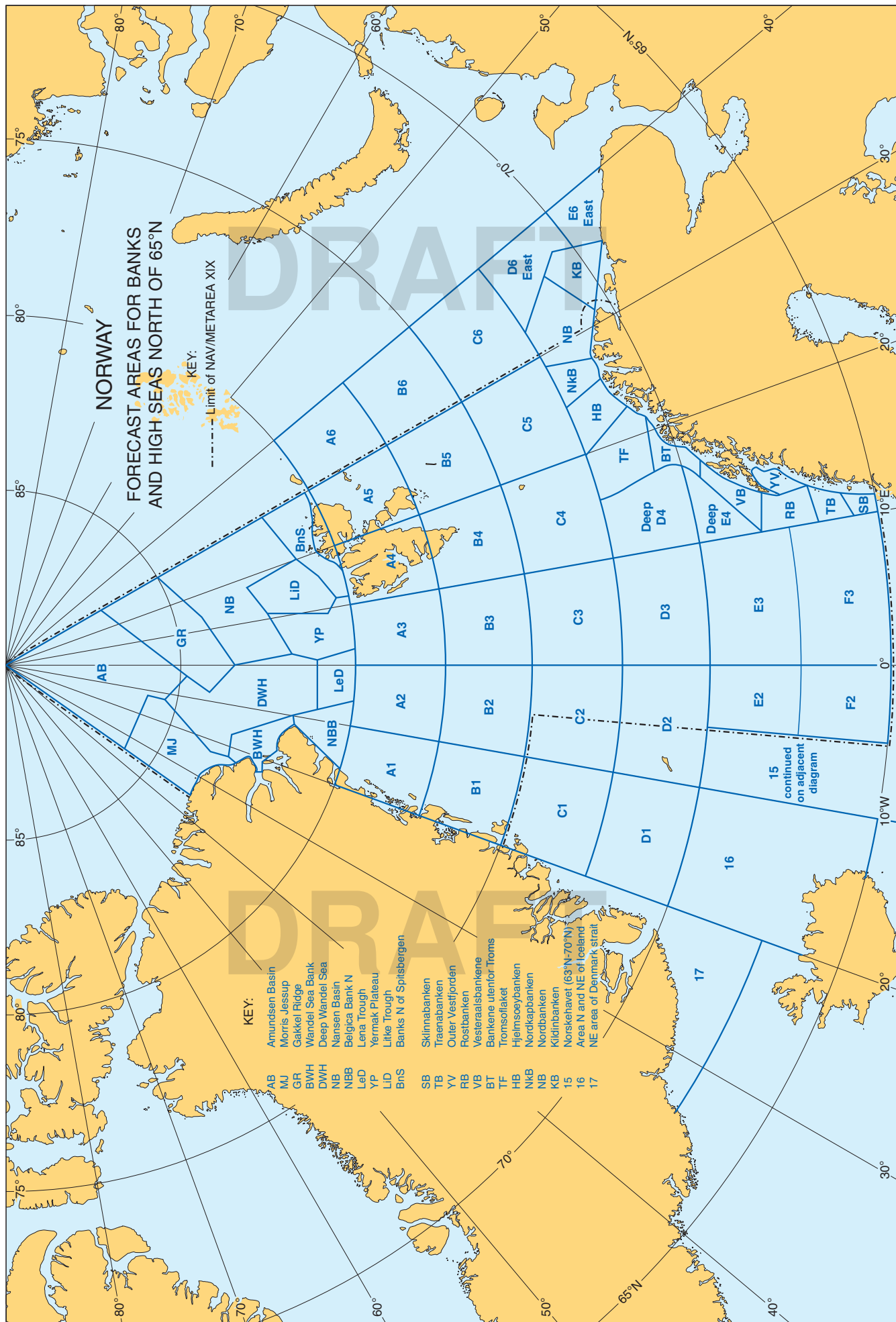
BODØ (LGP)

Control Centre: 67°16'·15N 14°25'·37E

A			Bodø	67°16'·15N 14°25'·37E
B	1770	RT (MF)	Andenes	69°18'·38N 16°04'·66E
	1659		Jan Mayen	70°56'·63N 8°39'·77W
	1743		Sandnessjøen	66°01'·00N 12°37'·00E
	1710		Svalbard (Isfjord) Site 2	78°03'·70N 13°37'·26E
C	1731	VHF	Andenes, Ramnan	69°16'·42N 16°00'·48E
	Ch 27		Bjørndalen (Longyearbyen)	78°14'·30N 15°21'·10E
	Ch 20		Bjørnøya	74°30'·23N 18°59'·90E
	Ch 66		Fornesfjell (Sorfold)	67°25'·85N 15°27'·38E
	Ch 21		Gulsvåg fjell (Vega)	65°39'·00N 11°49'·72E
	Ch 60		Harstad, Harstadåsen	68°47'·90N 16°30'·98E
	Ch 66		Harstad, Sørrollnes	68°43'·70N 16°50'·42E
	Ch 78		Hestmannen (Lurøy)	66°31'·87N 12°49'·05E
	Ch 05		Hillesøy (Malangen)	69°38'·52N 17°58'·04E
	Ch 81		Horva (Leirfjord)	66°00'·90N 12°49'·20E
	Ch 01		Jan Mayen	70°56'·63N 8°39'·77W
	Ch 60		Kistefjell (Lenvik)	69°17'·52N 18°08'·43E
	Ch 28		Kongsveggpasset (Svalbard)	78°44'·62N 13°31'·32E
	Ch 21		Kråkenes (Myre Vesterålen)	68°56'·55N 15°01'·43E
	Ch 22		Kvalnes (Vestvagoy)	68°20'·55N 13°57'·65E
	Ch 20		Lødingen (Fenes)	68°24'·08N 15°58'·32E
	Ch 07		Meløy	66°51'·27N 13°38'·87E
	Ch 27		Mo i Rana	66°12'·53N 13°44'·35E
	Ch 28			

Continued on page 165





NORWAY

BODØ (LGP) (Continued)

C	Ch 07	VHF	Nesna	66°11'·90N 13°00'·63E
	Ch 66		Rønkvikfjell (Bodø)	67°18'·08N 14°26'·46E
	Ch 01		Røstbakken (Tromsø)	69°38'·82N 18°55'·32E
	Ch 60		Sandøy (Tromsø)	70°02'·65N 18°32'·80E
	Ch 21		Småtindane (Steigen)	67°49'·95N 15°00'·35E
	Ch 28		Stamnes (Vesterålen)	68°48'·70N 15°28'·80E
	Ch 27		Storheia (Hadsel)	68°32'·69N 14°52'·06E
	Ch 01		Svalbard (Isfjord) Site 2	78°03'·70N 13°37'·26E
	Ch 79		Svolvaer (Raften)	68°24'·17N 15°06'·85E
	Ch 07		Tjelsundet	68°33'·63N 16°16'·63E
	Ch 81		Tønsnes	69°43'·10N 19°07'·72E
	Ch 78		Tysfjord	68°01'·77N 16°06'·83E
	Ch 22		Vaerøy	67°39'·83N 12°37'·35E
			Veggen (Narvik)	68°27'·77N 17°09'·97E
			Vevelstad Vistenfjord	65°38'·98N 12°37'·47E

Diagrams pages 163 and 164

Weather Bulletins

B: 1203 2303	Weather forecast in English and Norwegian for coastal waters off northern Norway (65°N to 70°N and from 0° to 10°W). Area north and north-east of Iceland and north-eastern part of Denmark Strait. Norwegian, Arctic and Barents Seas (north of 70°N).
C: 0900 1200 1500 1800 2100 LT	Local weather forecasts.

Navigational Warnings

A-C: On receipt 0233 0633 1033 1433 1833 2233	Storm and gale warnings for coastal waters and adjoining Sea Areas in English and Norwegian. Navigational Warnings in English and Norwegian. Vital and important navigational warnings are broadcast on receipt and at the next two scheduled times. All warnings are repeated daily at 1033 for 7 days.
A-C: On request	Storm and gale warnings, Navigational Warnings and ice reports.

NOTE(S): 1. Initial MF broadcast of vital storm and very important navigational warnings are made after prior announcement on 2187.5 kHz. Only the initial broadcast of other MF warnings are announced on 2182 kHz.

2. Initial VHF broadcast of vital storm and very important navigational warnings made after prior announcement on Ch 70. All VHF broadcasts are made after prior announcement on Ch 16.

FLORØ (LGL)

Control Centre: 61°35'·86N 4°59'·88E

A	1680	RT (MF)	Florø Radio	61°35'·86N 4°59'·88E
	1782		Ørlandet Radio	63°40'·98N 9°35'·42E
B	Ch 79	VHF	Ålesund (Aksla)	62°28'·57N 6°10'·74E
	Ch 27		Åsgård B (Rig)	65°06'·61N 6°47'·36E
	Ch 81		Bremanger	61°50'·40N 4°59'·22E
	Ch 01		Buholmsråsa (Yttervågen)	64°17'·83N 10°17'·90E
	Ch 20		Draugen (Rig)	64°21'·17N 7°46'·85E
	Ch 22		Falkhetta (Rørvik)	64°52'·64N 11°13'·94E
	Ch 28		Fjærland	61°25'·37N 6°45'·52E
	Ch 22		Forbordsfjell (Stjørdal)	63°31'·66N 10°53'·70E
	Ch 27		Gamlemstveten (Brattvåg)	62°34'·49N 6°19'·08E
	Ch 79		Geiranger-2	62°07'·22N 7°11'·29E
	Ch 66		Gulen	61°02'·01N 5°09'·08E
	Ch 78		Gullfaks A (Rig)	61°10'·54N 2°11'·24E
	Ch 20		Heidrun (Rig)	65°19'·53N 7°18'·94E
			Hellesylt	62°08'·05N 6°55'·52E

Continued overleaf

NORWAY

FLORØ (LGL) (Continued)

B	Ch 81	VHF	Hjørungnes (Hareid)	62° 21'·22N 6° 06'·73E
	Ch 20		Kinn	61° 33'·42N 4° 45'·50E
	Ch 27		Kopparen (Ørland)	63° 48'·40N 9° 44'·30E
	Ch 66		Kristiansund (Varden)	63° 06'·95N 7° 42'·75E
	Ch 01		Ligtvor (Balestrand)	61° 06'·08N 6° 32'·13E
	Ch 78		Litlefonni (Tjeldbergodden)	63° 22'·80N 8° 42'·92E
	Ch 01		Måløy (Raudeberg)	61° 59'·24N 5° 09'·09E
	Ch 07		Molde	62° 45'·10N 7° 07'·58E
	Ch 21		Mosvik, Skavlen	63° 46'·32N 10° 57'·05E
	Ch 66		Nerlandshorn (Fosnavåg)	62° 21'·16N 5° 35'·16E
	Ch 78		Norne FPSO	66° 01'·62N 8° 05'·19E
	Ch 21		Ørskogfjellet	62° 30'·97N 6° 52'·33E
	Ch 20		Oseberg A (Rig)	60° 29'·48N 2° 49'·54E
	Ch 07		Reinsfjell (Tingvoll)	62° 55'·86N 7° 55'·64E
	Ch 28		Sagtennene (Nordfjordeid)	61° 53'·40N 6° 06'·50E
	Ch 21		Sogndal, Storehogen	61° 10'·38N 7° 07'·15E
	Ch 28		Spillumsaksla (Namsos)	64° 26'·53N 11° 32'·27E
				Storåsen (Florø)
Diagrams pages 163 and 164				
Weather Bulletins				
A: 1215 2315	Weather forecast in English and Norwegian for North Sea, coastal waters off southern and western Norway including Haltenbank, area from Storegga-Haltenbank to Greenwich meridian, Norwegian Sea between 63°N and 65°N and from 0° to 10°W.			
B: 0900 1200 1500 1800 2100 LT	Local weather forecasts.			
Navigational Warnings				
A, B: On receipt 0233 0633 1033 1433 1833 2233	Storm and gale warnings for coastal waters and adjoining Sea Areas in English and Norwegian. Navigational Warnings in English and Norwegian. Vital and important navigational warnings are broadcast on receipt and at the next two scheduled times. All warnings are repeated daily at 1033 for 7 days.			
A, B: On request	Storm and gale warnings, Navigational Warnings and ice reports.			
NOTE(S): 1. Initial MF broadcast of vital storm and very important navigational warnings are made after prior announcement on 2187.5 kHz. Only the initial broadcast of other MF warnings are announced on 2182 kHz. 2. Initial VHF broadcast of vital storm and very important navigational warnings made after prior announcement on Ch 70. All VHF broadcasts are made after prior announcement on Ch 16.				

NRK P1				
A	153 kHz	AM	Ingøy	71°04'·28N 24°05'·23E
B		DAB	P1 ¹	
Diagrams pages 163 and 164				
Weather Bulletins				
A: Mon–Sun: 0545 LT	18 hour forecast in Norwegian for coastal waters of Norway and Sea Areas: B14, N1–N4, N8–N10, 1–4, 14, SB, TB, RB, YV, VB, BT, TF, HB, NKB, NB, KB			
A: Mon–Sat: 1205 LT	36 hour forecast in Norwegian for coastal waters of Norway and Sea Areas: B14, N1–N4, N8–N10, 1–17, SB, TB, RB, YV, VB, BT, TF, HB, NKB, NB, KB, BnS, A5, A6, B4–B6, C4–C6, D2, D3, Deep D4, E3, Deep E4 and F3. Summary for Sea Areas where gale/storm warnings are effective.			
A: Mon–Sun: 1450 LT	33 hour forecast in Norwegian for coastal waters of Norway and Sea Areas: B14, N1–N4, N8–N10, 1–11, 14, SB, TB, RB, YV, VB, BT, TF, HB, NKB, NB, KB, BnS, A5, A6, B4–B6, C4–C6, D2, D3, Deep D4, E3, Deep E4 and F3. Summary for Sea Areas where gale/storm warnings are effective.			

Continued on next page

NORWAY

NRK P1 (Continued)

A: Mon–Sun: 2205 LT	26 hour forecast in Norwegian for coastal waters of Norway and Sea Areas: B14, N1–N4, N8–N10, 1–17, SB, TB, RB, YV, VB, BT, TF, HB, NKB, NB, KB, BnS, A5, A6, B4–B6, C4–C6, D2, D3, Deep D4, E3, Deep E4 and F3. Followed by an additional 24 hour forecast (up to 50 hours ahead of the broadcast time) for coastal and Sea Areas: B14, N1–N4, N8–N10, SB, TB, RB, YV, VB, BT, TF, HB, NKB, NB and KB. Summary for Sea Areas where gale/storm warnings are effective.
B: Mon–Fri: 0545 LT Sun & public holidays: 1450 LT	Weather broadcasts for coastal waters.
¹ NRK P1 can be received as a terrestrial DAB broadcast when within range of most of the Norwegian coast (approximately 20 kms). However, it is also available as a DAB satellite broadcast over a larger area, if suitable equipment is available.	
NOTE(S): 1. A dedicated satellite DAB weather at sea channel is also available - see entry for NRK Været Til Sjø 2. Broadcasts given 1 hour earlier when DST is in force (see ALRS Volume 2 (NP282) for dates).	

NRK TIL VÆRET SJØS

Weather Broadcasts				
A		DAB	Thor 5 and Astra 4A Satellites	
Diagrams pages 163 and 164				
Weather Bulletins				
A: Mon–Fri: 0545 1205 1450 2205 Sun & public holidays: 0700 1450 2205	Weather broadcasts for coastal waters in the sequence: Baltic/southern, western Sea Areas south of 65°N, western and northern Sea Areas north of 65°N			
NOTE(S): 1. NRK Været Til Sjø is a DAB satellite channel broadcast from the satellites listed in the table above. 2. Broadcasts for all Sea Areas covered, are repeated in a continuous loop and updated 4 times a day or as required. 3. Broadcasts given 1 hour earlier when DST is in force (see ALRS Volume 2 (NP282) for dates).				

ROGALAND (LGQ)

Control Centre: 58°53'·35N 5°38'·02E				
A	1728	RT (MF)	Bergen (MF aerial)	60°42'·72N 4°52'·20E
	1785		Farsund	58°04'·32N 6°44'·67E
B	1692		Vigre	58°39'·50N 5°36'·30E
C	Ch 22	VHF	Bergen, Lindås	60°34'·63N 5°19'·73E
	Ch 60		Bergen, Rundemanen	60°24'·77N 5°21'·93E
	Ch 78		Bjerkreim (Urdalsnipa)	58°37'·99N 5°57'·64E
	Ch 28		Bokn	59°13'·19N 5°25'·67E
	Ch 66		Draupner (Rig)	58°11'·29N 2°28'·26E
	Ch 20		Ekofisk (Rig)	56°32'·56N 3°13'·03E
	Ch 01		Farsund	58°04'·32N 6°44'·67E
	Ch 22		Haugesund	59°25'·30N 5°19'·67E
	Ch 60		Heimdal (Rig)	59°34'·42N 2°13'·63E
	Ch 20		Husheia (Mandal)	58°01'·45N 7°34'·71E
	Ch 21		I. Hardanger, Grimo	60°24'·37N 6°38'·17E
	Ch 20		Kalåskniben (Lyngdal)	58°11'·55N 6°55'·95E
	Ch 79		Lifjell (Sandnes)	58°55'·19N 5°47'·38E
	Ch 81		Lindesnes	58°01'·26N 7°03'·42E
	Ch 27		Preståsen (Sand)	59°29'·37N 6°15'·12E
	Ch 07		Sleipner A (Rig)	58°22'·00N 1°54'·42E
	Ch 81		Sotra Pyttane	60°19'·09N 5°06'·54E
	Ch 22		Stavanger (Ullandhaug)	58°56'·42N 5°42'·40E
	Ch 66		Stord, Kattnakken	59°52'·43N 5°29'·63E
			Storefjell (Lista)	58°09'·22N 6°42'·67E
			Ula (Rig)	57°06'·67N 2°50'·82E
			Valhall (Rig)	56°16'·65N 3°23'·63E
			Y. Hardanger, Ljoneshøgda	60°15'·83N 6°10'·15E
Diagrams pages 163 and 164				

Continued overleaf

NORWAY

ROGALAND (LGQ) (Continued)

Weather Bulletins	
A, B: 1215 2315	Weather forecast in English and Norwegian for North Sea, coastal waters off southern and western Norway including Haltenbank, area from Storegga-Haltenbank to Greenwich meridian, Norwegian Sea between 63°N and 65°N and from 0° to 10°W.
C: 0900 1200 1500 1800 2100 LT	Local weather forecasts.
Navigational Warnings	
A, C: On receipt 0233 0633 1033 1433 1833 2233	Storm and gale warnings for coastal waters and adjoining Sea Areas in English and Norwegian. Navigational Warnings in English and Norwegian. Vital and important navigational warnings are broadcast on receipt and at the next two scheduled times. All warnings are repeated daily at 1033 for 7 days.
A, C: On request	Storm and gale warnings, Navigational Warnings and ice reports.
NOTE(S): 1. Initial MF broadcast of vital storm and very important navigational warnings are made after prior announcement on 2187.5 kHz. Only the initial broadcast of other MF warnings are announced on 2182 kHz. 2. Initial VHF broadcast of vital storm and very important navigational warnings made after prior announcement on Ch 70. All VHF broadcasts are made after prior announcement on Ch 16.	

TJØME (LGT)

Control Centre: 59°24'·92N 10°29'·80E				
A	1665	RT (MF)	Jeløy	59°26'·21N 10°35'·66E
B	Ch 27	VHF	Dolsveden (Kristiansand)	58°08'·15N 8°08'·02E
	Ch 07		Drammen	59°40'·38N 10°26'·02E
	Ch 22		Halden (Hoyås)	59°10'·52N 11°25'·72E
	Ch 79		Hisøy (Arendal)	58°26'·85N 8°45'·32E
	Ch 81		Horten	59°24'·92N 10°29'·80E
	Ch 20		Justøy (Lillesand)	58°12'·47N 8°20'·83E
	Ch 21		Risør (Ranvikheia)	58°42'·83N 9°12'·47E
	Ch 81		Svendsheia (Søgne)	58°05'·08N 7°54'·43E
	Ch 66		Tjøme	59°04'·68N 10°24'·33E
	Ch 01		Tønsberg	59°16'·13N 10°24'·66E
			Tryvann (Oslo)	59°59'·08N 10°40'·20E
			Vealøs (Porsgrunn)	59°14'·17N 9°41'·93E
	Diagrams pages 163 and 164			
Weather Bulletins				
B: 0900 1200 1500 1800 2100 LT	Local weather forecasts.			
Navigational Warnings				
A, B: On receipt 0233 0633 1033 1433 1833 2233	Storm and gale warnings for coastal waters and adjoining Sea Areas in English and Norwegian. Navigational Warnings in English and Norwegian. Vital and important navigational warnings are broadcast on receipt and at the next two scheduled times. All warnings are repeated daily at 1033 for 7 days.			
A, B: On request	Storm and gale warnings, Navigational Warnings and ice reports.			
NOTE(S): 1. Initial MF broadcast of vital storm and very important navigational warnings are made after prior announcement on 2187.5 kHz. Only the initial broadcast of other MF warnings are announced on 2182 kHz. 2. Initial VHF broadcast of vital storm and very important navigational warnings made after prior announcement on Ch 70. All VHF broadcasts are made after prior announcement on Ch 16.				

VARDØ (LGV)

Control Centre: 70°22'·25N 31°05'·85E				
A	4210	RADIO-TELEX	Hammerfjell (Hammerfest) HF Aerial	70°43'·01N 23°47'·54E
B	8416·5		Berlevåg	70°51'·78N 29°04'·57E
C	1695	RT (MF)	Hammerfjell (Hammerfest)	70°40'·63N 23°40'·54E
	1713		Vardø (Domen) MF Aerial	70°22'·25N 31°05'·85E

Continued on next page

NORWAY

VARDØ (LGV) (Continued)

D	Ch 27	VHF	Båtsfjord (Hamnefjell)	70°40'·17N 29°42'·65E
	Ch 07		Berlevåg	70°51'·78N 29°04'·57E
	Ch 78		Fuglen (Hasvik)	70°39'·33N 21°57'·82E
	Ch 27		Hammerfjell (Hammerfest)	70°40'·63N 23°40'·54E
	Ch 21		Havøysund (Havoygavlen)	71°00'·27N 24°35'·75E
	Ch 28		Helligfjell (Alta)	70°06'·78N 22°56'·03E
	Ch 79		Honningsvåg (Nordkapp)	70°59'·08N 25°53'·98E
	Ch 28		Kirkenes	69°45'·03N 30°07'·90E
	Ch 78		Mehamn (Trollhetta)	71°02'·75N 28°05'·95E
	Ch 20		Oksen (Lebesby)	70°57'·90N 27°20'·98E
	Ch 79		Stussnesfjell (Skjervøy)	70°01'·45N 20°58'·95E
	Ch 66		Tana (Algasvarre)	70°28'·12N 28°14'·05E
	Ch 20		Torsvåg (Karlsøy)	70°14'·84N 19°29'·96E
	Ch 60		Torsvarde (Varangerfjord)	70°05'·83N 29°49'·10E
	Ch 66		Trolltind (Skjervøy)	70°04'·47N 20°26'·00E
	Ch 22		Tyven (Hammerfest)	70°38'·37N 23°41'·78E
	Ch 01		Vardø (Domen)	70°20'·13N 31°01'·98E

Diagrams pages 25, 163 and 164

Weather Bulletins

A: 1115 2315 B: 1100 2300	METAREA XIX bulletins for arctic waters that are not covered by the INMARSAT SafetyNet service.
C: 1203 2303	Weather forecast in English and Norwegian for coastal waters off northern Norway (65°N to 70°N and from 0° to 10°W). Area north and north-east of Iceland and north-eastern part of Denmark Strait. Norwegian, Arctic and Barents Seas (north of 70°N).
D: 0900 1200 1500 1800 2100 LT	Local weather forecasts.

Navigational Warnings

C, D: On receipt 0233 0633 1033 1433 1833 2233	Storm and gale warnings for coastal waters and adjoining Sea Areas in English and Norwegian. Navigational Warnings in English and Norwegian. Vital and important navigational warnings are broadcast on receipt and at the next two scheduled times. All warnings are repeated daily at 1033 for 7 days.
A: 0645 1845 B: 0630 1830	NAVAREA XIX warnings are broadcast twice a day for arctic waters that are not covered by the INMARSAT SafetyNet service.
A: (Tues) 2315 B: (Tues) 2300	Ice reports.
A-D: On request	Storm and gale warnings, Navigational Warnings and ice reports.

NOTE(S): 1. Initial MF broadcast of vital storm and very important navigational warnings are made after prior announcement on 2187.5 kHz. Only the initial broadcast of other MF warnings are announced on 2182 kHz.
2. Initial VHF broadcast of vital storm and very important navigational warnings made after prior announcement on Ch 70. All VHF broadcasts are made after prior announcement on Ch 16.

OMAN

GENERAL NOTES

A 24 hour telephone Weather Information Service is available which provides forecasts of weather, sea conditions and tides. Telephone +968 24519110, 24519111 or 24519112 (Arabic) or + 968 24519113 (English).

INTERNET WEATHER SERVICES

Directorate General of Meteorology and Air Navigation. www.met.gov.om/opencms/export/sites/default/dgman/en/home/index.html	Marine weather forecast in Arabic and English.
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NAVTEX

M	Masqat (Muscat) (Wattaya)	518 kHz	23°36'·67N 58°30'·20E
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Diagrams pages 37 and 172

Continued overleaf

OMAN

NAVTEX (Continued)

Weather Bulletins	
M: 0200 0600 1000 1400 1800 2200	Forecast, synopsis, wind and sea conditions for all Sea Areas.
Navigational Warnings	
M: 0200 0600 1000 1400 1800 2200	Navigational Warnings for Persian Gulf and Gulf of Oman Sea Areas.
NOTE: Temporarily inoperative.	

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.mod.gov.om/en-US/RNO/HydrographicOceanicServices/Pages/notice.aspx	Oman National Hydrographic Office	Navigation Warnings in English and Arabic.
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FIRING PRACTICE AREAS

Live Firing Warnings

Firing practices and maritime defence exercises take place in a number of sea areas around the Oman coast. These areas are used by the Ministry of Defence and other authorities using practice or live ammunition. The areas are operated using a clear range procedure, which means that exercises and firing etc. only take place when the ranges are clear of all shipping. In most cases warnings are promulgated by radio navigational warning. Details of the limits of the firing areas are held by the Royal Navy of Oman Headquarters (Tel: +968 24338805).

MASQAT (MUSCAT) (WATTAYAH) (A4M)

Control Centre: 23°36'·70N 58°30'·23E

	442.5	WT(MF)		
Navigational Warnings				
0518 1618	Navigational Warnings for the Gulf of Oman.			

PAKISTAN

INTERNET WEATHER SERVICES

Pakistan Meteorological Department www.pmd.gov.pk	Coastal forecast, tidal data and associated information, in English.
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NAVTEX

P	Karachi	518 kHz	24°52'·78N 67°09'·94E
Diagram page 37			
Weather Bulletins			
P: 0630 1830	Synopsis and forecast for Arabian Sea north of 20°N, Gulf of Oman, Persian Gulf, Gulf of Aden and Central Arabian Sea.		
Navigational Warnings			
P: 0230 0630 1030 1430 1830 2230	NAVAREA IX and coastal warnings.		
NOTE: Temporarily inoperative.			

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

https://www.paknavy.gov.pk/hydro/n_navwarn.asp	Pakistan Navy Hydrographic Department	Coastal Navigation Warnings in English.
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POLAND

INTERNET WEATHER SERVICES

Maritime Branch of the Institute of Meteorology and Water Management www.baltyk.pogodynka.pl/index.php	Baltic Sea and coastal waters forecasts/meteorological warnings, in Polish and English.
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MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.hopn.mw.mil.pl/index.php?akcja=on	Hydrographic Office of the Polish Navy	Navigation Warnings in English.
www.bhnmw.mw.mil.pl/index.php?akcja=on		Navigation Warnings in Polish.

FIRING PRACTICE AREAS

Closure of one or more of the Firing Practice Areas are promulgated as Navigational Warnings by Zatoka Gdańsk – Vessel Traffic Services, NAVTEX and in the Fishery Service Programme on Polish Radio, Channel 1.

MARINE WEATHER TELEPHONE INFORMATION SERVICE

The forecast offices in Gdynia and Szczecin provide information about current and forecast meteorological conditions H24. The Hydrological Forecast Office provides information about current and forecast hydrological conditions 0730–1500 LT.

Meteorological information:**Gdynia:**

Tel: 703800000: Information line (H24) (chargeable) – contact with a weather forecaster (H24)
Tel: 703300400: Information line, forecast read in emergency situations:
Tel: +48(0)58 6203422 (H24)
Tel/Fax: +48(0)58 6288155 (H24)

Szczecin:

Tel/Fax: +48(0)91 4342012 (H24)

Hydrological information:

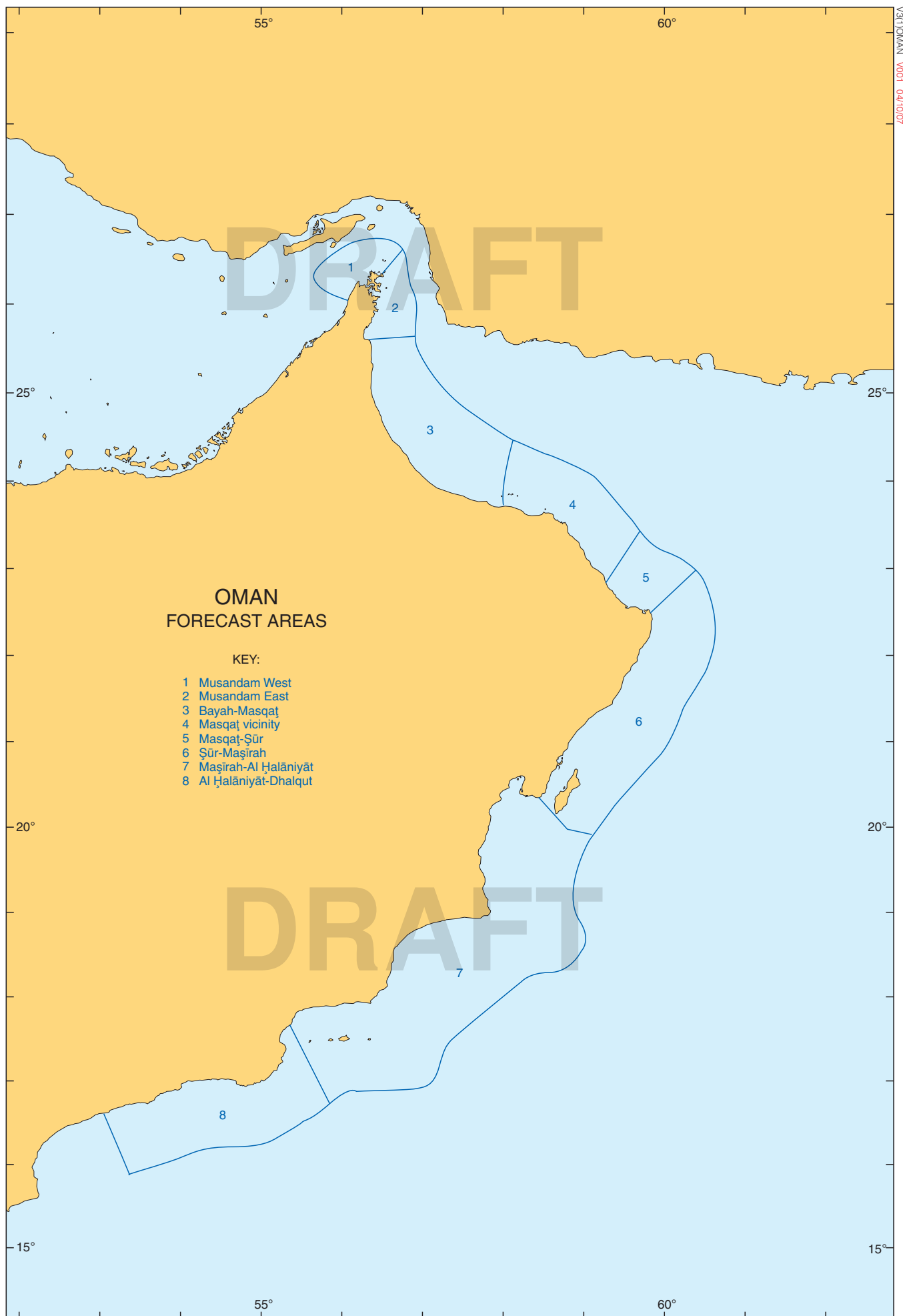
Tel: +48(0)58 6288146 (0730-1500 LT)
Tel/Fax: +48(0)58 6201641

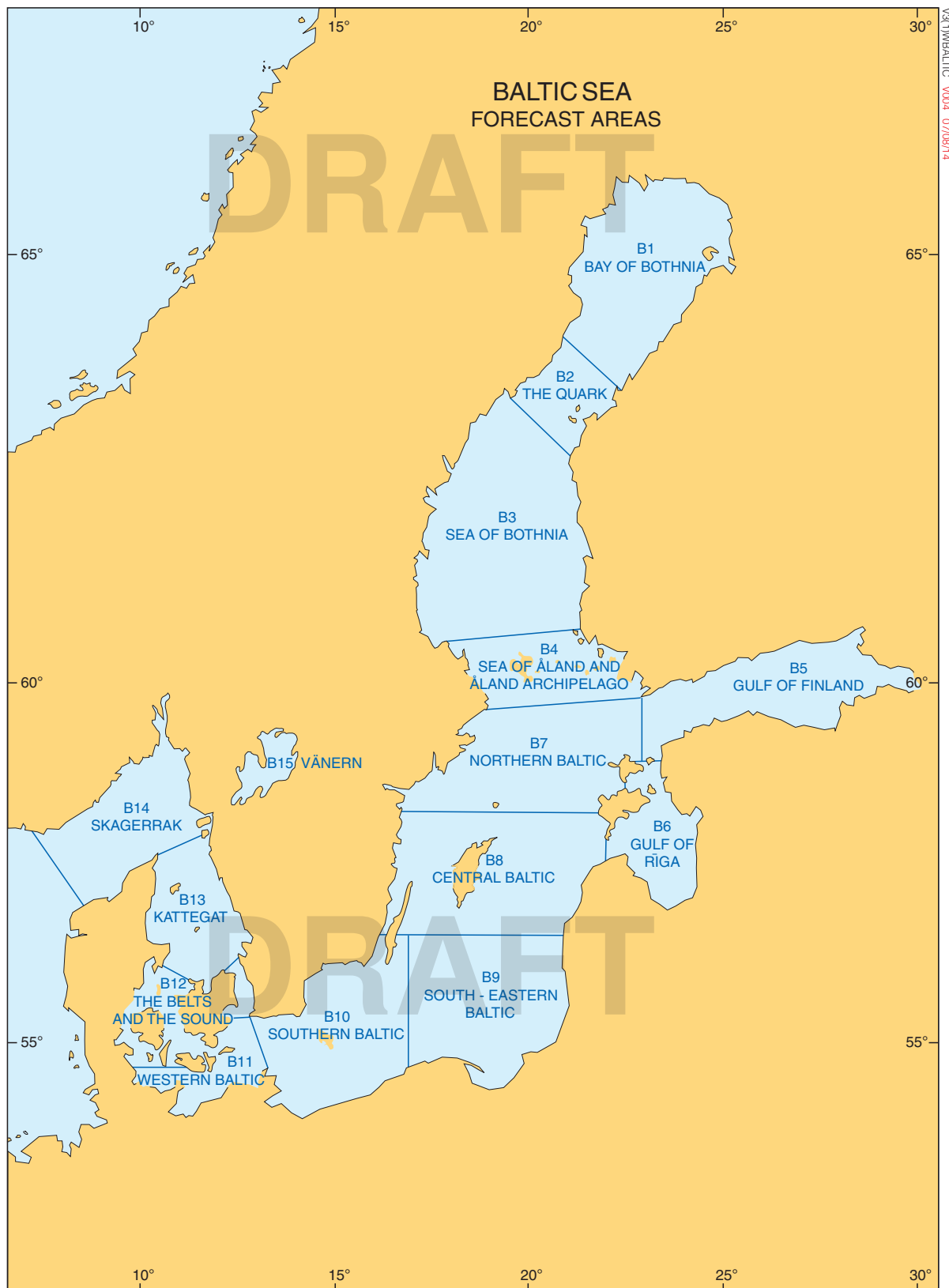
POLSKIE RADIO

Control Centre: 53°01'22N 18°15'73E				
Program 1, Warszawa				
	225 kHz	AM		
Diagram page 173				
Weather Bulletins				
0105 2008 LT	Weather information and conditions for inshore and offshore areas in Polish.			
Navigational Warnings				
0105 2008 LT	Navigational Warnings and information on areas that are periodically closed or dangerous for navigation and fishing in Polish.			

SŁUPSK TRAFFIC CONTROL

Control Centre: 54°27'95N 17°01'75E				
A	Ch 12	VHF		
B	Ch 10			
Diagrams pages 173 and 308				
Weather Bulletins				
A:	0705 1235 1835 2335 LT	Weather forecast for fishermen for the southern Baltic Sea and Polish coastal waters in Polish.		
Navigational Warnings				
B:	0715 1245 1845 2345 LT	Coastal Navigational Warnings in English and Polish.		
A:	On request	Ice reports in Polish or Baltic Ice Code.		
NOTE(S):				
1. Hours of Operation: H24				
2. Navigational Warnings and weather bulletins will be announced prior to broadcast on VHF Chs 16 and 71.				





VA11WBALTIC_V004_07/06/14

POLAND

VTS ŚWINOUJŚCIE				
Control Centre: 53°55'·03N 14°15'·56E				
	Ch 71	VHF		
Navigational Warnings				
0003 0603 1203 1803 LT	Navigational Warnings in Polish and English.			
NOTE(S): Navigational Warnings will be announced prior to broadcast on VHF Ch 12.				
VTS SZCZECIN				
Control Centre: 53°25'·00N 14°35'·00E				
	Ch 71	VHF		
Navigational Warnings				
0533 1133 1733 2333 LT On request	Navigational Warnings in Polish.			
NOTE(S): Navigational Warnings will be announced prior to broadcast on VHF Ch 69.				
VTS ZATOKA GDAŃSK - VTS CENTRE				
Control Centre: 54°24'·33N 18°30'·70E				
	Ch 66	VHF		
Diagram page 173				
Weather Bulletins				
0005 0705 1305 1905 LT On request	Forecast for fishermen and three hour wind forecast in Polish for Sea Areas B9 and B10 in Polish.			
0105 0805 1405 2005 On request	Forecast for fishermen and three hour wind forecast in English for Sea Areas B9 and B10 in Polish.			
Navigational Warnings				
On receipt 0005 0705 1305 1905 LT On request	Navigational Warnings in Polish.			
On receipt 0105 0805 1405 2005 On request	Navigational Warnings in English.			
NOTE(S): Weather bulletins and Navigational Warnings will be announced prior to broadcast on VHF Ch 16 and Ch 71.				
WITOWO (SPS) [2932]				
Control Centre: 54°32'·38N 16°32'·54E				
	2720	RT (MF)		
	Ch 25		Barzowice	54°28'·42N 16°30'·32E
	Ch 26		Grzywacz	53°57'·22N 14°30'·16E
	Ch 24		Kołobrzeg	54°10'·46N 15°33'·31E
			Kołowo	53°20'·05N 14°40'·62E
	Ch 25		Krynica Morska	54°24'·27N 19°30'·51E
	Ch 26		Oksywie	54°32'·70N 18°32'·15E
			Rowokół	54°39'·37N 17°12'·70E
	Ch 24		Rozewie	54°49'·82N 18°20'·18E
Ch 25	Świnoujście	53°55'·03N 14°15'·56E		
Diagrams pages 173 and 308				
Weather Bulletins				
0135 0735 1335 1935 On request	Weather forecast for Sea Areas B7–B11 and Polish coastal waters in English and Polish.			
Navigational Warnings				
On receipt 0133 0533 0933 1333 1733 2133 On request	Navigational Warnings for Polish coastal waters in English and Polish.			
1035 1335 On request	Ice reports in English and Polish.			
NOTE(S): Weather bulletins and Navigational Warnings will be announced prior to broadcast on VHF Ch 16 and 2182 kHz.				

PORTUGAL

INTERNET WEATHER SERVICES

Instituto de Português do Mar e da Atmosfera
<http://www.ipma.pt/pt/maritima/boletins>

Weather forecast for Portugal, Açores and Madeira in Portuguese and English. A recorded telephone weather information service is also available on +351 760 786774 and provides maritime forecasts up to 9 days ahead.

NAVTEX

R	CENCOMAR (Penalva)	518 kHz	38°36'·20N 9°01'·80W
G		490 kHz	
Diagrams pages 34, 61 and 176			
Weather Bulletins			
R:	0250 0650 1050 1450 1850 2250	Storm and severe weather warnings, synopsis and 24 hour forecast for Sea Areas 4, 6 and 16–19 in English.	
G:	0100 0500 0900 1300 1700 2100	Storm and severe weather warnings, synopsis and 24 hour forecast for Sea Areas 4, 6 and 16–19 in Portuguese.	
Navigational Warnings			
R:	0250 0650 1050 1450 1850 2250	Navigational Warnings for area within 200 n miles of the Portuguese coast in English.	
R:	0250 0650 1050 1450 1850 2250	Coastal Navigational Warnings in English.	
G:	0100 0500 0900 1300 1700 2100	Navigational Warnings for area within 200 n miles of the Portuguese coast in Portuguese.	
G:	0100 0500 0900 1300 1700 2100	Coastal Navigational Warnings in Portuguese.	

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

<http://anavnet.hidrografico.pt>

Portuguese Hydrographic Office

Navigation Warnings in Portuguese.

FIRING PRACTICE AREAS

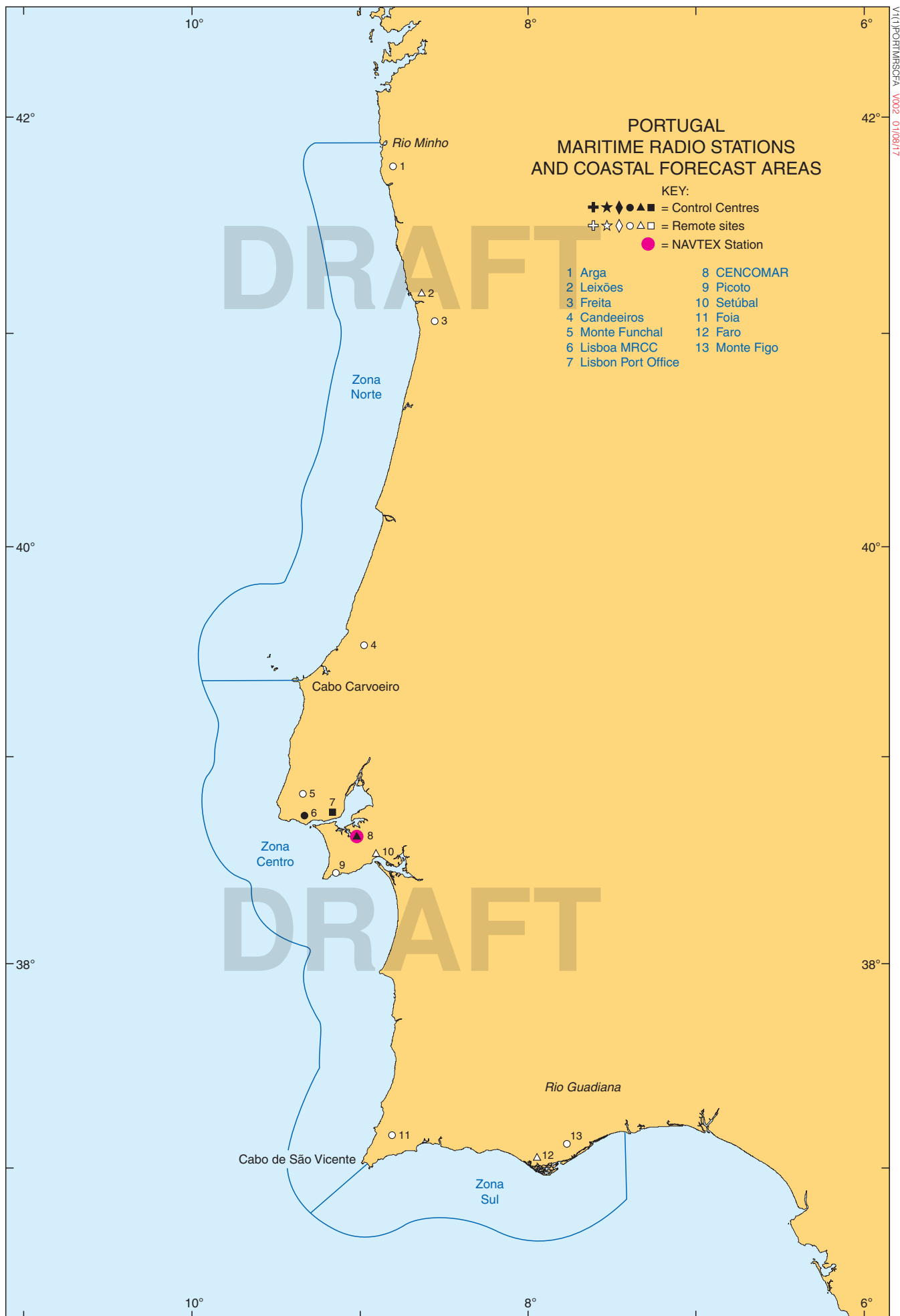
Approximate Position: 38°11'00N 8°55'00W

Mariners are notified of firing practice exercises by Navigational Warnings and Notices to Airmen (NOTAM). Additionally, the unit involved in, or in charge of the exercise, will broadcast a warning on VHF Ch 16, Ch 70 and the designated working channel, prior to commencement of firing. This will give details of the danger area, together with the VHF working channel to be used for clarification if required. Firing practice is conducted using a 'clear range' procedure, it being the responsibility of the commanding officer to ensure that the range is clear of vessels before firing.

CENTRO DE COMUNICAÇÕES DE DADOS E DE CIFRA DA MARINHA (CENCOMAR) (CTA)

Control Centre: 38°36'20N 9°02'80W

A	2657	RT (MF)	CENCOMAR (CTA)	38°36'00N 9°02'00W
B	Ch 11	VHF		
Diagrams pages 61 and 176				
Weather Bulletins				
A, B: 0905 2105	Storm and severe weather warnings, synopsis and 24 hour forecast for Sea Areas 4, 6 and 16–19 and Portuguese coastal forecast areas in Portuguese, repeated in English where possible.			
B: 0705 1905	Storm and severe weather warnings, synopsis and 24 hour forecast for coastal waters within 20 n miles offshore for Sea Areas Zona Norte and Zona Centro (Rio Minho to Cabo de São Vicente) in Portuguese, repeated in English where possible.			
B: 0805 2005	Storm and severe weather warnings, synopsis and 24 hour forecast for coastal waters within 20 n miles offshore for Sea Areas Zona Centro and Zona Sul (Cabo Carvoeiro to Rio Guadiana) in Portuguese, repeated in English where possible.			
Navigational Warnings				
A, B: 0705 0805 0905 1905 2005 2105	Coastal and Local Navigational Warnings within 200 n miles offshore in Portuguese and English.			
NOTE(S): 1. Vital warnings transmitted when received and after the first silence period. 2. Important warnings transmitted after the first silence period.				



PORTUGAL

LISBON (PORT OFFICE)				
Control Centre: 38°41'98N 9°11'14W				
	Ch 11	VHF		
Diagram page 176				
Navigational Warnings				
1100 1630 LT	Local warnings in Portuguese.			

QATAR

INTERNET WEATHER SERVICES	
Qatar Civil Aviation Authority http://qweather.gov.qa/index.aspx	3-day marine weather forecast, together with tidal data for the next 7 days, in English and Arabic.

DOHA (A7D)				
Control Centre: 25°42′.00N 51°35′.00E				
	2768	RT (MF)		
	Ch 24	VHF		
Diagram page 178				
Weather Bulletins				
0500 1000 1600	Weather forecast.			
Navigational Warnings				
On receipt	Gale and Navigational Warnings.			

RÉUNION (France)

GENERAL NOTES

Weather Information Service

A recorded weather information service is available, but is only accessible from Réunion. To contact the service telephone: 08 926 80808. The information includes: 24 hour forecast for coastal and offshore areas, swell predictions, tide times, hours of sunrise/sunset, together with storm and hurricane warnings for the Grand Large Tropical Zone sea area.

INTERNET WEATHER SERVICES	
Météo France La Réunion www.meteofrance.re	Select the 'Marine' from the main menu for synoptic weather charts, coastal and high seas weather forecasts, BMS bulletins and tidal data, in French.

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET		
<i>The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:</i>		
www.czm-reunion.fr/index.php/informations-nautique	Le Préfet de La Réunion	Coastal Navigation Warnings for La Reunion (AVURNAV Côtier) in English and French, all other warnings are in French only.



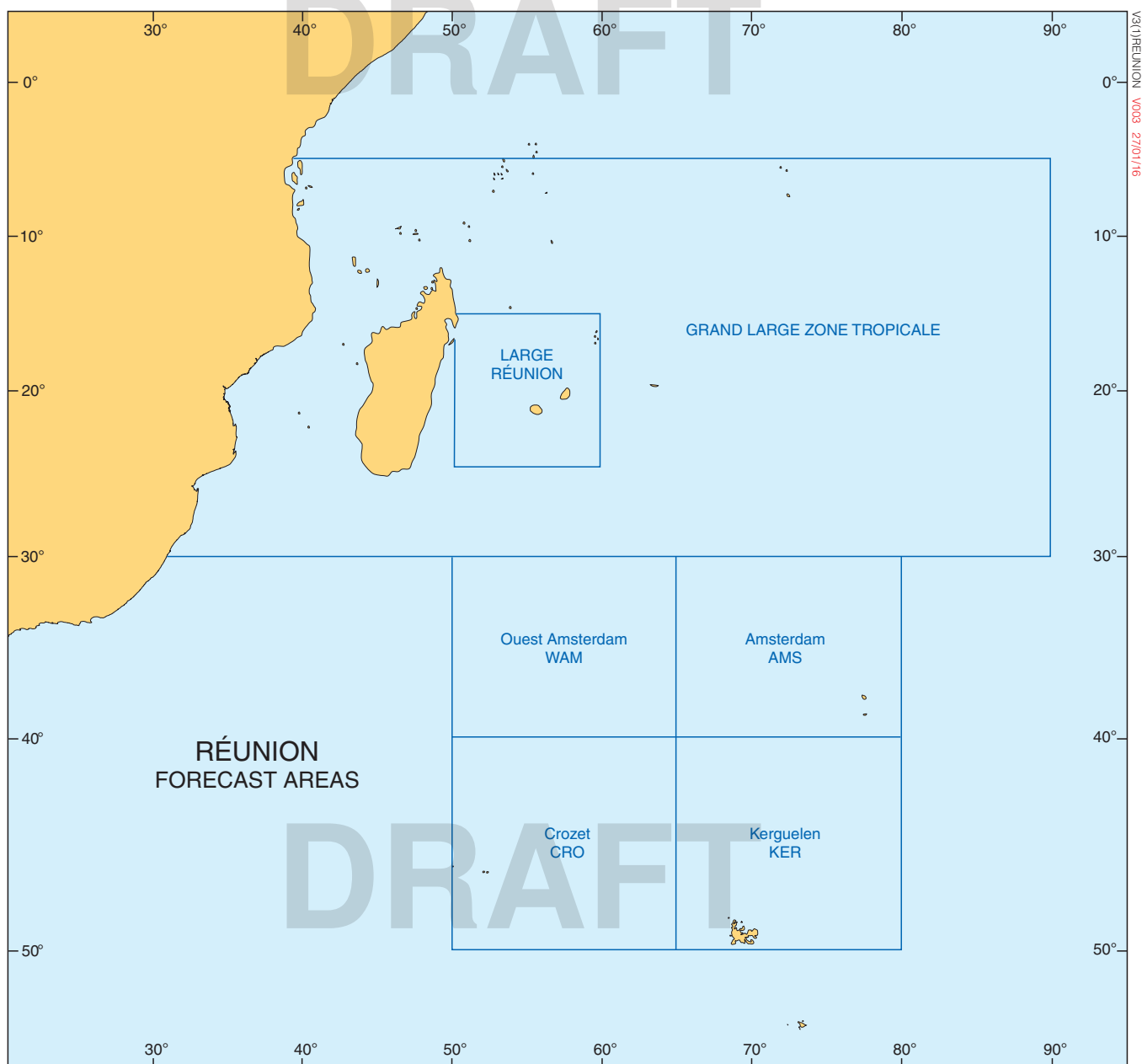
RÉUNION (France)

LA RÉUNION (CROSS) MRCC				
Control Centre: 20°54'51S 55°35'31E				
A	2600	RT (MF)	CROSSRU	20°54'51S 55°35'31E
B	Ch 79	VHF	Colorado	20°53'19S 55°25'81E
C	Ch 80		Le Plate	21°12'39S 55°19'89E
D	Ch 79		Manapany	21°19'92S 55°34'86E
E	Ch 80		Réservoirs	21°09'54S 55°45'85E
Diagrams pages 23 and 180				
Weather Bulletins				
A: 0830 1430 2030 LT		Weather forecasts and storm warnings for Grand Large and the South West Indian Ocean in French.		
B: 0705 1205 1805 LT		Weather forecasts and storm warnings for coastal waters and Large Réunion in French.		
C: 0735 1235 1835 LT				
D: 0805 1305 1905 LT				
E: 0835 1335 1935 LT				
A: On request		Weather bulletins for the southern and Antarctic waters in French and English.		
Navigational Warnings				
A: On receipt Every H+30		Tropical storm warnings (in particular cyclones) for area between parallels 0° and 40°S and the meridians 30°E and 90°E, in French on B–E and English on A.		
B: On receipt Every H+05				
C: On receipt Every H+20				
D: On receipt Every H+35				
E: On receipt Every H+50				
A: On receipt 0830 1430 2030 LT		Inshore and local Navigational Warnings.		
B: On receipt 0705 1205 1805 LT				
C: On receipt 0735 1235 1835 LT				
D: On receipt 0805 1305 1905 LT				
E: On receipt 0835 1335 1935 LT				
NOTE(S): After prior announcement on 2182 kHz and VHF Ch 16.				

RADIO LA RÉUNION (RFO)				
Control Centre: 20°53'53S 55°30'81E				
	666 kHz 729 kHz	AM		
Diagram page 180				
Weather Bulletins				
0639 1710 LT (Mon–Fri) 0639 1708 LT (Sat) 0635 0958 LT (Sun and holidays)	Inshore and offshore weather forecasts for Large Réunion in French.			
0509 0537 0627 0652 0715 0817 1225 1810 LT (Mon–Fri) 0627 0655 0715 0750 0909 1003 1225 1812 LT (Sat) 0610 0710 0810 0909 1225 1808 LT (Sun and holidays)	24 hour coastal forecast for Réunion in French.			

ROMANIA

NAVTEX			
L	Constanța	490 kHz	44°06′.18N 28°37′.49E
Diagram page 36			
Weather Bulletins			
L: 0150 0550 0950 1350 1750 2150	Weather forecasts for Western Black Sea in Romanian.		
Navigational Warnings			
L: 0150 0550 0950 1350 1750 2150	Navigational Warnings in Romanian.		



CONSTANȚA (YQI)				
Control Centre: 44°06′.18N 28°37′.49E				
A	2748	RT (MF)	Constanța Radio	44°06′.18N 28°37′.49E
B	Ch 12 24 25 26	VHF	Sfintu Gheorghe	44°53′.95N 29°36′.18E
			Sulina	45°08′.93N 29°45′.62E
			Tuzla	43°59′.45N 28°39′.89E
Weather Bulletins				
A: 0733 1333 1933	24 hour weather forecast for Western Black Sea in Romanian and English.			
B: 0703 1303 1903				
Navigational Warnings				
A: 0733 1033 1333 1633 1933	Navigational Warnings in English.			
B: 0703 1003 1303 1603 1903 2203				
NOTE(S): After prior announcement on 2187.5 kHz DSC and VHF Ch 70 DSC.				

RUSSIA (Arctic Coast)			
NAVTEX			
L	Arkhangel'sk	518 kHz	64°51'·14N 40°16'·50E
K	Murmansk		68°46'·00N 32°58'·00E
Q	Tiksi		71°38'·00N 128°50'·00E
Diagrams pages 26, 27, 32 and 40			
Weather Bulletins			
L: 0150 0550 0950 1350 1750 2150	Synopsis and forecast for Belye More (White Sea) and SE Barents Sea, when details are available.		
Q: 0240 0640 1040 1440 1840 2240	Weather forecast.		
Navigational Warnings			
L: 0150 0550 0950 1350 1750 2150	Coastal warnings for Belye More (White Sea).		
K: 0140 0540 0940 1340 1740 2140	Coastal warnings for Russian waters in the Barents Sea.		
Q: 0240 0640 1040 1440 1840 2240	Navigational Warnings.		
Ice Warnings and Reports			
K: 0140 0540 0940 1340 1740 2140 (When details are available)	Ice forecast for Barents Sea (except SE part), Norwegian Coast, Kol'skiy Poluostrov and Kol'skiy Zaliv.		
NOTE: Tiksi is operational 1 Jul–30 Oct.			

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET		
<i>The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:</i>		
http://structure.mil.ru/structure/forces/hydrographic/info/notices.htm	Russian Federation Ministry of Defence	Notices to Mariners for NAVAREAS XIII, XX and XXI, in English.

AMDERMA (UPM)				
Control Centre: 69°45'·80N 61°40'·10E				
	574	WT (MF)		
Diagram page 26				
Weather Bulletins				
1630	Weather forecast for 24 hours; for 72 hours on Mondays, Wednesdays and Fridays, for the Novaya Zemlya Straits, the SW part of the Kara Sea southwards of 73.5°N to 69°E including the areas of the Obskaya Guba and Tazovskaya Guba.			

RUSSIA (Arctic Coast)

DIKSON MRCC (UCI)				
Control Centre: 73°30'23N 80°31'35E				
A	428-6	WT (MF)		
B		RADIO-TELEX		
Diagram page 26				
Weather Bulletins				
A: 0530	12 hour weather forecast for the Zemlya Frantsa-Iosifa and Severnaya Zemlya Islands, the Northern part of the Novaya Zemlya Islands, the central and eastern parts of the Kara Sea, the sections of the Northern Sea Route between the meridians of 69°E and 115°E, Yeniseyskiy Zaliv, Gydanskiy Zaliv, the east coast of Poluostrov Taymyr, Khatangskiy Zaliv and Reka Khatanga to Khatanga village.			
A: 1630	Weather forecast for 24 hours; for 72 hours on Mondays, Wednesdays and Fridays for the Zemlya Frantsa-Iosifa and Severnaya Zemlya Islands, the Northern part of the Novaya Zemlya Islands, the central and eastern parts of the Kara Sea, the sections of the Northern Sea Route between the meridians of 69°E and 115°E, Yeniseyskiy Zaliv, Gydanskiy Zaliv, the east coast of Poluostrov Taymyr, Khatangskiy Zaliv and Reka Khatanga to Khatanga village.			
Navigational Warnings				
B: 0818 2018	Coastal warnings for the Kara Sea including the Zemlya Frantsa-Iosifa Islands and the Laptev Sea to 125°E – repeats the Coastal Warnings West (PRIP ZAPAD).			

MOSCOW (UAT) [3701]				
Control Centre: 55°51′.47N 38°13′.77E				
A	12579	RADIO-TELEX		
B	8416.5			
Diagrams pages 26 and 27				
Weather Bulletins				
A: 0715 B: 1915		Weather synopsis, forecast, sea state and ice warnings for METAREA XX and XXI in English.		
Navigational Warnings				
A: 0715 B: 1915		Navigational warnings for NAVAREA XX and XXI in English.		

MURMANSK (UDK, UDK2) [3744]				
Control Centre: 68°52′.50N 33°05′.88E				
	512.5	RADIO-TELEX	UDK	
	6393.5 13050		UDK2	
Diagram page 26				
Weather Bulletins				
0420 1740	Weather synopsis, forecast and sea state for Barents Sea (except SE part), Norwegian Coast, Kol'skiy Poluostrov and Kol'skiy Zaliv in Russian.			
Navigational Warnings				
0400 1730	Coastal warnings for Greenland Sea N of 71°N, Karskoye More and Barents Sea (excluding Ostrov Zemlya Frantsa-Iosifa) in Russian.			

TIKSI MRSC				
Control Centre: 71°41′.36N 128°52′.21E				
	4351	RT (HF)		
Diagrams pages 26 and 27				
Weather Bulletins				
0900 2300	24 hour and 48 hour weather and sea state forecasts for the Northern Sea Route of the Laptev Sea and East Siberian Sea between the meridians of 115°E and 160°E. Revised forecasts for the day (0000–1200).			
NOTE(S): Operated by the River Lena Consolidated River Shipping Company (LORP).				

RUSSIA (Arctic Coast)

YAKUTSK				
Control Centre: 62°02′.00N 129°44′.00E				
	6370 8719 13191	RT (HF)	Zshatay-1	
Diagrams pages 26 and 27				
Weather Bulletins				
1000	24 hour and 48 hour weather and sea state forecasts for the Northern Sea Route of the Laptev Sea and East Siberian Sea between the meridians of 115°E and 160°E.			
2330	Revised forecasts for the day (0000–1200).			
NOTE(S): Operated by the River Lena Consolidated River Shipping Company (LORP).				

RUSSIA (Baltic Coast)

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET		
<i>The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:</i>		
http://structure.mil.ru/structure/forces/hydrographic/info/notices.htm	Russian Federation Ministry of Defence	Notices to Mariners for NavAreas XIII, XX and XXI, in English.

KALININGRAD (UIW)				
Control Centre: 54°42′.00N 20°30′.00E				
A	4228	RADIO-TELEX		
B	8454			
C	12877.5 16927			
Diagram page 173				
Navigational Warnings				
A:	On receipt	Coastal warnings for the Baltic Sea broadcast after a preliminary announcement on 2187.5 kHz (DSC).		
A-C:	1000 (on day of receipt and repeat for previous day) 1620 (on day of receipt)	NAVAREA and NAVIP for Areas I, II, IV, V and VI.		
C:	1030 1650	Navigational Warnings.		
NOTE(S): Navigational Warnings can be obtained by email: kmrp@uiradio.koenig.ru				

RUSSIA (Black Sea Coast)

NAVTEX			
A	Novorossiysk	518 kHz	44°35′.81N 37°57′.69E
Diagram page 36			
Weather Bulletins			
A: 0000 0400 0800 1200 1600 2000	Weather forecast for Anapa-Tuapse region.		
Navigational Warnings			
A: 0000 0400 0800 1200 1600 2000	Storm warnings for Anapa-Tuapse region.		
A: 0000 0400 0800 1200 1600 2000	Coastal warnings for Russian waters in Black Sea, Sea of Azov and Kerchenskiy Proliv.		

RUSSIA (Caspian Sea)

NAVTEX			
W	Astrakhan	518 kHz	45°47'00N 47°33'00E
Diagram page 36			

Continued overleaf

RUSSIA (Caspian Sea)**NAVTEX (Continued)**

Weather Bulletins	
W: 0340 0740 1140 1540 1940 2340	Weather information for north and central Caspian Sea to 42°N.
Navigational Warnings	
W: 0340 0740 1140 1540 1940 2340	Coastal warnings for north and central Caspian Sea to 42°N.

SAUDI ARABIA**INTERNET WEATHER SERVICES**

General Authority of Meteorology and Environmental Protection
www.pme.gov.sa/En/Weather/LocalWeatherInfo/Pages/PortsWeather.aspx

Maritime synopsis for individual ports in the Red Sea and Arabian Gulf, in English and Arabic.

JEDDAH (HZH)

Control Centre: 21°23'·70N 39°14'·02E

A	1726	RT (MF)		
B	Ch 25	VHF		

Diagram page 185

Weather Bulletins

A: 0503 1703	Weather synopsis, 24 hour forecast for Sea Areas RSN, RSS, GAA and Approaches.
B: On request	FM 61-IV MAFOR.

Navigational Warnings

A: 0503 0533 1133 1703 1733 2333	Gale warnings for Sea Areas RSN, RSS, GAA and Approaches.
B: On request	
A: 0333 0733 1133 1533 1933 2333	Navigational Warnings for the Red Sea coastal waters of Saudi Arabia.
B: On request	

SENEGAL**NAVTEX**

C	Dakar	518 kHz	14°46'·25N 17°20'·40W
M		490 kHz	

Diagrams pages 34 and 38

Weather Bulletins

C: 0020 0420 0820 1220 1620 2020	Weather bulletins in English.
M: 0200 0600 1000 1400 1800 2200	Weather bulletins in French.

Navigational Warnings

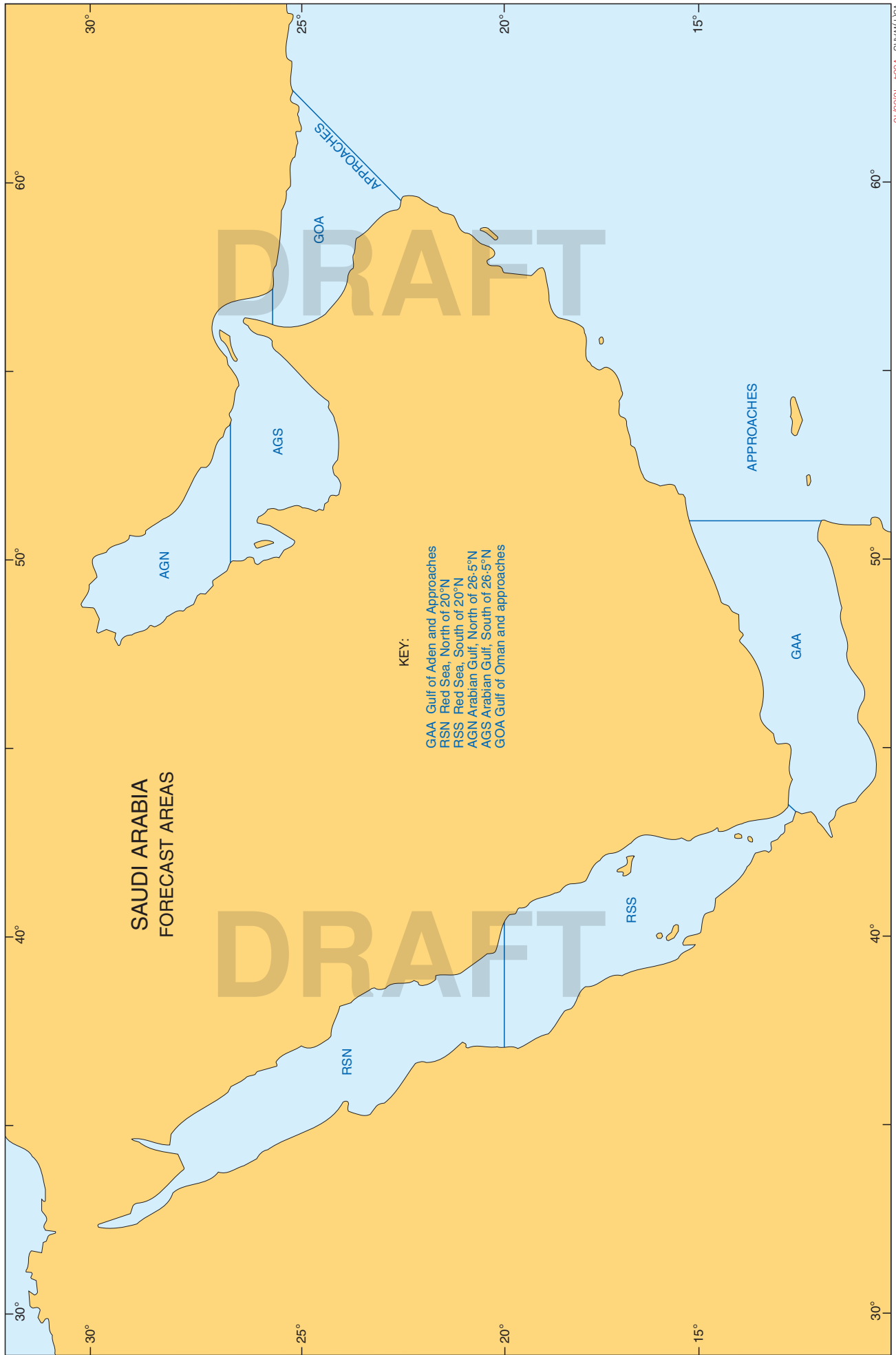
C: 0020 0420 0820 1220 1620 2020	Weather warnings and coastal Navigational Warnings in English.
M: 0200 0600 1000 1400 1800 2200	Weather warnings and coastal Navigational Warnings in French.

NOTE: Temporarily inoperative

SEYCHELLES**INTERNET WEATHER SERVICES**

Seychelles National Meteorological Service
www.meteo.gov.sc

Coastal weather synopsis, outlook, cyclone tracking and tidal data.



SEYCHELLES

NAVTEX			
T	Mahé	518 kHz	4°39′.32S 55°28′.38E
M		490 kHz	
Diagram page 37			
Weather Bulletins			
T:	0310 0710 1110 1510 1910 2310	Weather bulletins in English.	
M:	0200 0600 1000 1400 1800 2200	Weather bulletins in Creole.	
Navigational Warnings			
T:	0310 0710 1110 1510 1910 2310	Navigational Warnings in English.	
M:	0200 0600 1000 1400 1800 2200	Navigational Warnings in Creole.	

SEYCHELLES (S7Q)

Control Centre: 4°37'10S 55°26'63E

	8770 (Ch 818)	RT (HF)	
Weather Bulletins			
0518 1548	Weather bulletins for area within 200 n miles of Seychelles in English.		

SLOVENIA

INTERNET WEATHER SERVICES

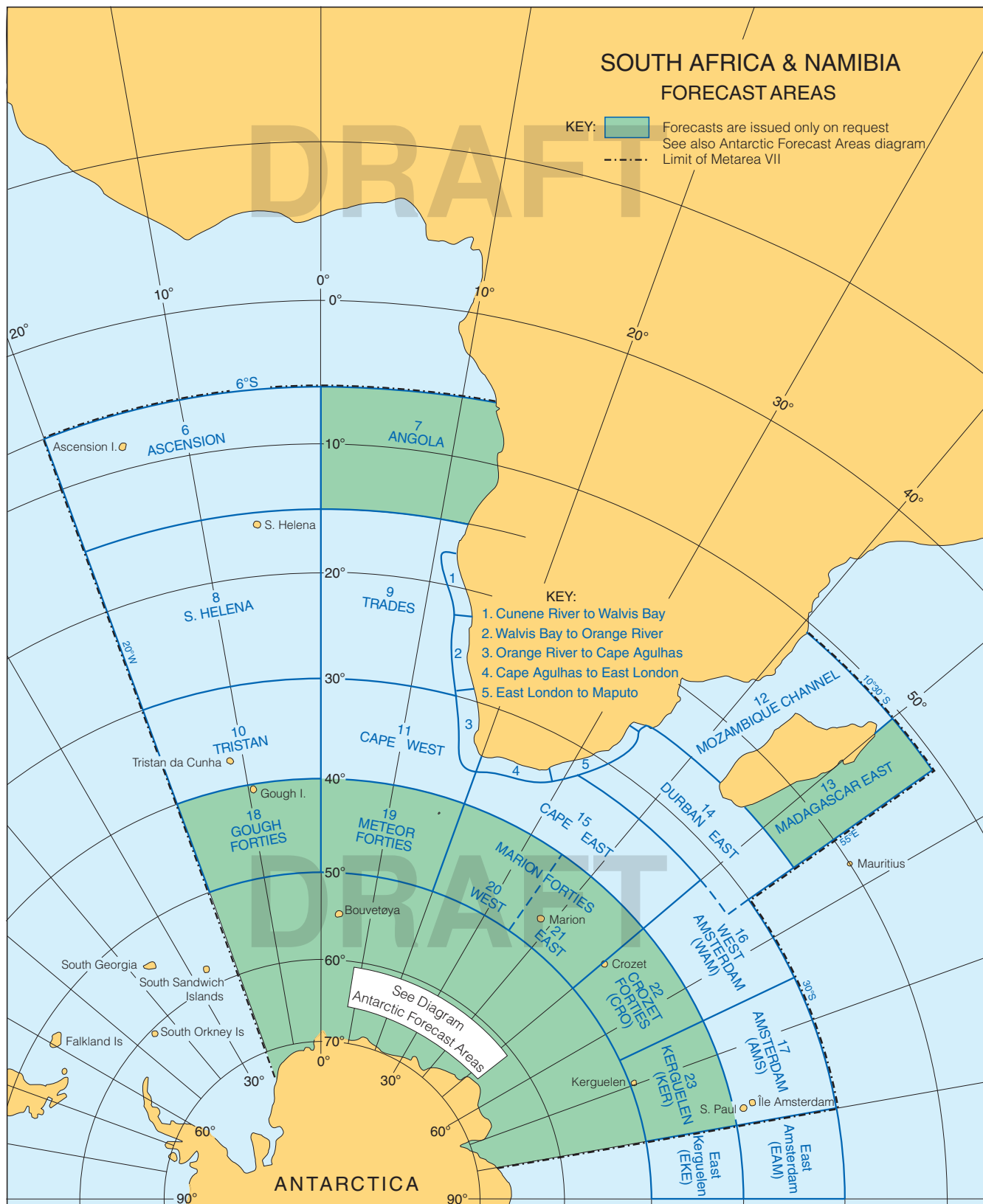
Slovenian Environment Agency http://meteo.arso.gov.si/met/en/weather/bulletin/coast/	General forecast, wind and wave information, in English and Slovenian.
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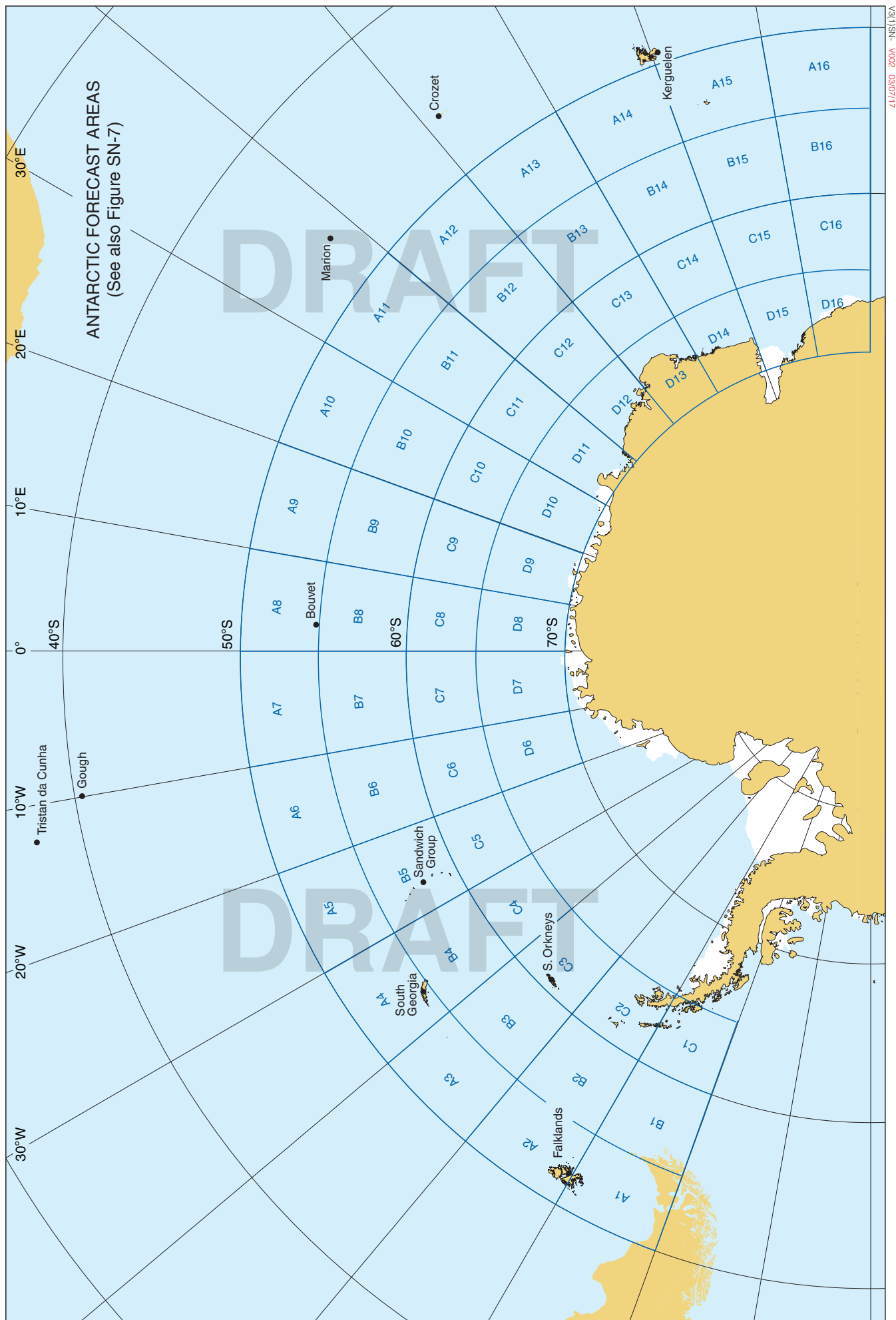
SOUTH AFRICA

INTERNET WEATHER SERVICES

South African Weather Service www.weathersa.co.za/home/marine	Coastal weather bulletin up to 50 n miles offshore, Metarea VII weather bulletin and synoptic chart, in English.
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NAVTEX			
C	Cape Town	518 kHz	33°40′.97S 18°43′.09E
O	Durban		29°48′.35S 30°48′.95E
I	Port Elizabeth		34°02′.20S 25°33′.37E
Diagrams pages 37, 187, 188 and 189			
Weather Bulletins			
C: 1220 1620	Weather forecasts.	DRAFT	
O: 1020 1820			
I: 0920 1720			
Navigational Warnings			
C: 1220 1620	Gale warnings.	DRAFT	
O: 1020 1820			
I: 0920 1720			
C: 0020 0420 0820 1220 1620 2020	NAVAREA VII, local and coastal warnings for the area from the Orange River to Mosselbay.		
O: 0220 0620 1020 1420 1820 2220	NAVAREA VII, local and coastal warnings for the area from the East London to Maputo.		
I: 0120 0520 0920 1320 1720 2120	NAVAREA VII, local and coastal warnings for the area from the Cape Agulhas to Port Edward.		
NOTE: Areas of responsibility for Navigational Warnings covered by adjacent Navtex stations have been defined with overlaps in each case. The overlap is expanded in cases of emergency.			







SOUTH AFRICA

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.sanho.co.za/_nav_warnings_latest/warnings.htm

South African Navy Hydrographic Office

Coastal Navigation Warnings in English.

FIRING PRACTICE AREAS

Cape Agulhas Firing Practice Area: Approximate Position 34°35'S 20°21'E

The precise area and schedule is advised by Navigational Warning or by contacting Tel +27 (0)28 445 3155.

Information regarding all practice areas within South African waters can be obtained using the following contact details:

Urgent Navigational Information (H24):

Tel: +27 (0)21 7874126 (Situation Room)

Fax: +27 (0)21 7872228

E-mail: navcomcen.cape@sanavy.co.za

Other Navigational Information (0730–1600 Mon–Fri):

Tel: +27 (0)21 7872445 or 2444

Fax: +27 (0)21 7872233

E-mail: hydrosan@iatrica.com

CAPE NAVAL (ZSJ)

Control Centre: 33°41'00S 18°43'00E

	4014 7508 13538 18238	RADIO-TELEX		
Diagrams pages 21, 187, 188 and 189				
Weather Bulletins				
0930 1700	Forecast for coastal waters and adjacent high seas, synopsis for high seas.			
NOTE(S): 1. The AFMET ZSJ Radio Weather Facsimile Service is interrupted twice daily for the above Radio-Telex broadcast. 2. For Radio-facsimile see Cape Naval (NAVCOMCEN Cape).				

CAPE TOWN (Including DURBAN and PORT ELIZABETH)

Control Centre: 33°52'76S 18°30'32E

	4375 (Ch 407) 8740 (Ch 808) 13146 (Ch 1224)	RT (HF)		
Ch 03 86			Albertinia	34°12'44S 21°41'93E
Ch 04			Alexander Bay	28°36'75S 16°29'69E
Ch 26			Bluff (Durban)	29°53'77S 31°02'44E
Ch 25 27			Botha's Hill	33°59'98S 25°29'46E
Ch 25			Cape St Lucia	28°22'15S 32°25'21E
Ch 26			Constantiaberg	34°03'26S 18°23'21E
Ch 03			Doringbaai	31°46'74S 18°13'98E
Ch 26			East London	33°00'72S 27°53'99E
Ch 23			Elandsbaai	32°19'22S 18°19'29E
Ch 83			Governorskop	33°17'20S 26°42'41E
Ch 04			Hermanus	34°24'85S 19°13'33E
Ch 25			Hondeklipbaai	30°19'36S 17°16'42E
Ch 84			Kareedouw	34°01'50S 24°25'79E
Ch 23			Knysna	34°04'29S 23°02'57E
Ch 01			Kosi Bay	26°57'47S 32°49'47E
Ch 28			Mazeppa Bay	32°25'73S 28°28'47E

Continued on next page

SOUTH AFRICA

CAPE TOWN (Including DURBAN and PORT ELIZABETH) (Continued)

	Ch 25	VHF	Milnerton	33°52′.76S 18°30′.32E
	Ch 85		Pearly Beach	34°39′.79S 19°29′.80E
	Ch 27		Port Edward	31°03′.70S 30°13′.30E
	Ch 01		Port Nolloth	29°17′.53S 16°52′.79E
	Ch 26		Port Shepstone	30°35′.26S 30°33′.58E
	Ch 24		Port St Johns	31°38′.37S 29°32′.50E
	Ch 28		Richards Bay	28°46′.86S 32°06′.09E
	Ch 27		Saldanha Bay	33°02′.16S 17°55′.70E
	Ch 03		Sodwana	27°28′.87S 32°35′.00E
	Ch 84		Struisbaai	34°48′.42S 20°02′.89E
Diagrams pages 21, 187, 188 and 189				
Weather Bulletins				
1015 1815	Storm, gale and cyclone warnings, weather synopsis and forecast for Sea Areas 3–5, 11, 12, 14 and 15.			
1333	Coastal weather reports comprising 1200 UTC observations from various stations combined and presented as one broadcast.			
On request	High seas weather forecasts.			
Navigational Warnings				
On receipt on Ch 16 & 2182 kHz	Storm warnings.			
On receipt 1015 1815 (after weather bulletin)	Coastal warnings.			
NOTE(S): VHF broadcasts are announced simultaneously through VHF Ch 16 before being broadcast through the allocated remote transmitter site(s).				

SPAIN

GENERAL NOTES

Maritime Safety Information Broadcasts

Storm Warnings, Weather Bulletins and Navigational Warnings are announced by Coast radio stations and MRCCs/MRSCs on 2182 kHz and VHF Ch 16, before being broadcast on the scheduled frequency or channel number.

INTERNET WEATHER SERVICES

Agencia Estatal de Meteorología www.aemet.es/en/eltiempo/prediccion/maritima	Marine weather forecast for coastal areas and high seas around Spain, Islas Canarias, western Mediterranean and Atlantic in English and Spanish.
Agencia Estatal de Meteorología http://meteonav.aemet.es/MeteoNav/MeteoNav_en.html	Interactive weather service which lets the user plot a track, time of departure/arrival and then receive wind and sea state predictions, instructions in English and Spanish.

NAVTEX

X	Cabo de la Nao (Valencia)	518 kHz	38°43'·01N 0°10'·61E
D	Coruña		43°22'·03N 8°27'·13W
G	Tarifa		36°02'·30N 5°33'·34W
M	Cabo de la Nao (Valencia)	490 kHz	38°43'·01N 0°10'·61E
W	Coruña		43°22'·03N 8°27'·13W
T	Tarifa		36°02'·30N 5°33'·34W

Diagrams pages 19, 20, 34, 35, 193, 194, 195 and 196

Weather Bulletins

Continued overleaf

SPAIN

NAVTEX (Continued)

X: 0750 1950	Weather bulletins for Sea Areas Alborán, Palos, Argelia, Baleares, Menorca, Cabrera, León and Cerdeña in English.
D: 0830 2030	Weather bulletins for Sea Areas Pazenn, Yeu, Iroise, Rochebonne, Cantábrico, Finisterre, Charcot, Porto and Gran Sol in English.
G: 0900 2100	Weather bulletins for Sea Areas San Vicente, Cádiz, Casablanca, Agadir, Estrecho, Alborán, Palos and Argelia in English.
M: 1000 2200	Weather bulletins for Sea Areas Alborán, Palos, Argelia, Baleares, Menorca, Cabrera, León and Cerdeña in Spanish.
W: 1140 2340	Weather bulletins for Sea Areas Pazenn, Yeu, Iroise, Rochebonne, Cantábrico, Finisterre, Charcot, Porto and Gran Sol in Spanish.
T: 1110 2310	Weather bulletins for Sea Areas San Vicente, Cádiz, Casablanca, Agadir, Estrecho, Alborán, Palos and Argelia in Spanish.
Navigational Warnings	
X: 0350 1150 1550 2350	NAVAREA III warnings and coastal warnings in English – see Weather Bulletins for areas covered.
D: 0030 0430 1230 1630	NAVAREA II warnings and coastal warnings in English – see Weather Bulletins for areas covered.
G: 0100 0500 1300 1700	
M: 0200 0600 1400 1800	NAVAREA III warnings and coastal warnings in Spanish – see Weather Bulletins for areas covered.
W: 0340 0740 1540 1940	NAVAREA II warnings and coastal warnings in Spanish – see Weather Bulletins for areas covered.
T: 0310 0710 1510 1910	

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.armada.mde.es/ihm/Aplicaciones/Navareas/Index_radioavisos.htm	Spanish Hydrographic Institute	NAVAREA III Warnings in English and Spanish.
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SPAIN (Mediterranean Coast)

ALGECIRAS MRSC

Control Centre: 36°07'39N 5°26'55W

	Ch 15	VHF		
Diagrams pages 193, 194, 195 and 196				
Weather Bulletins				
0315 0515 0715 1115 1515 1915	Weather bulletins in Spanish and English.			

ALMERÍA MRCC

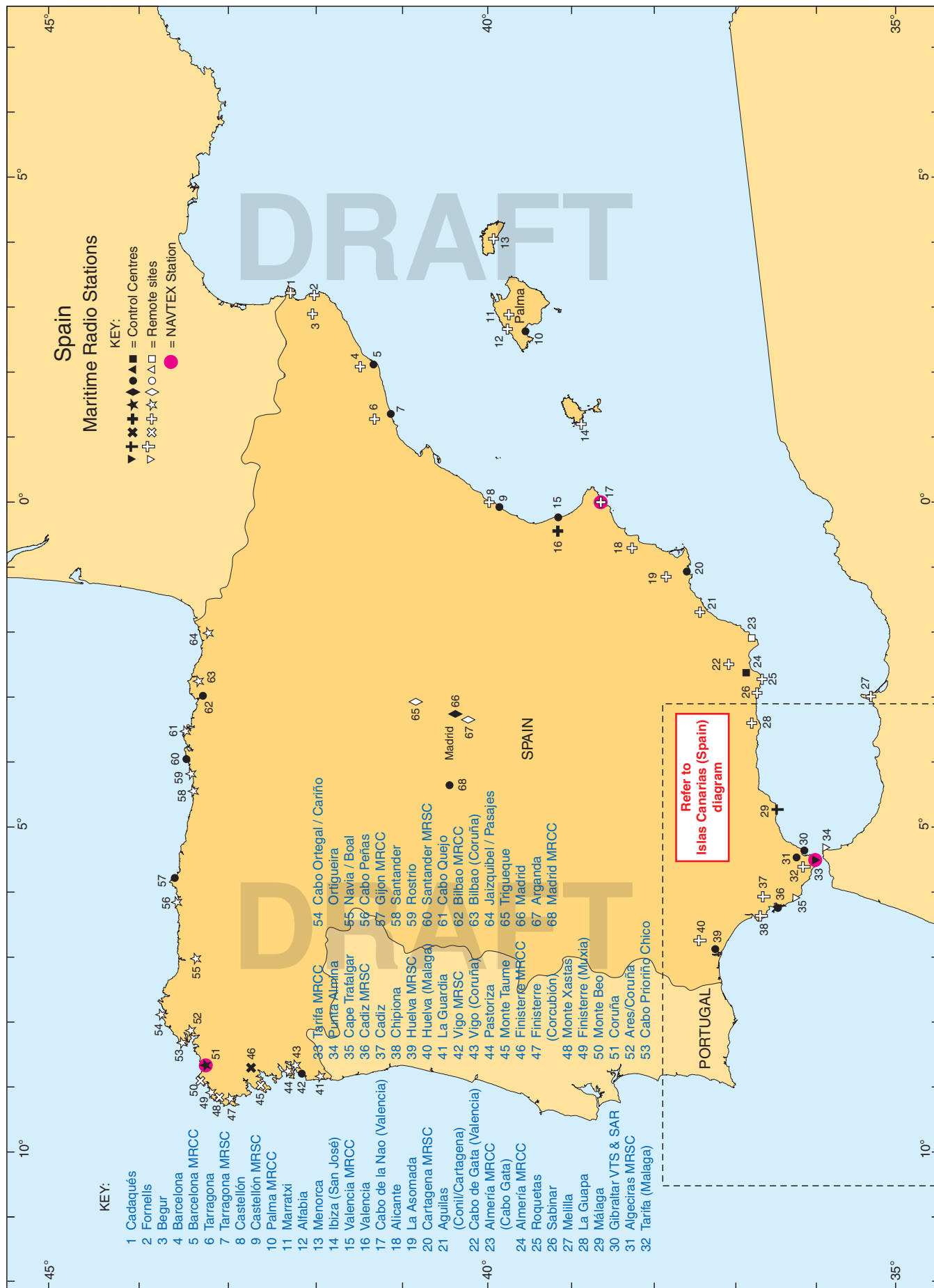
Control Centre: 36°49'84N 2°28'01W

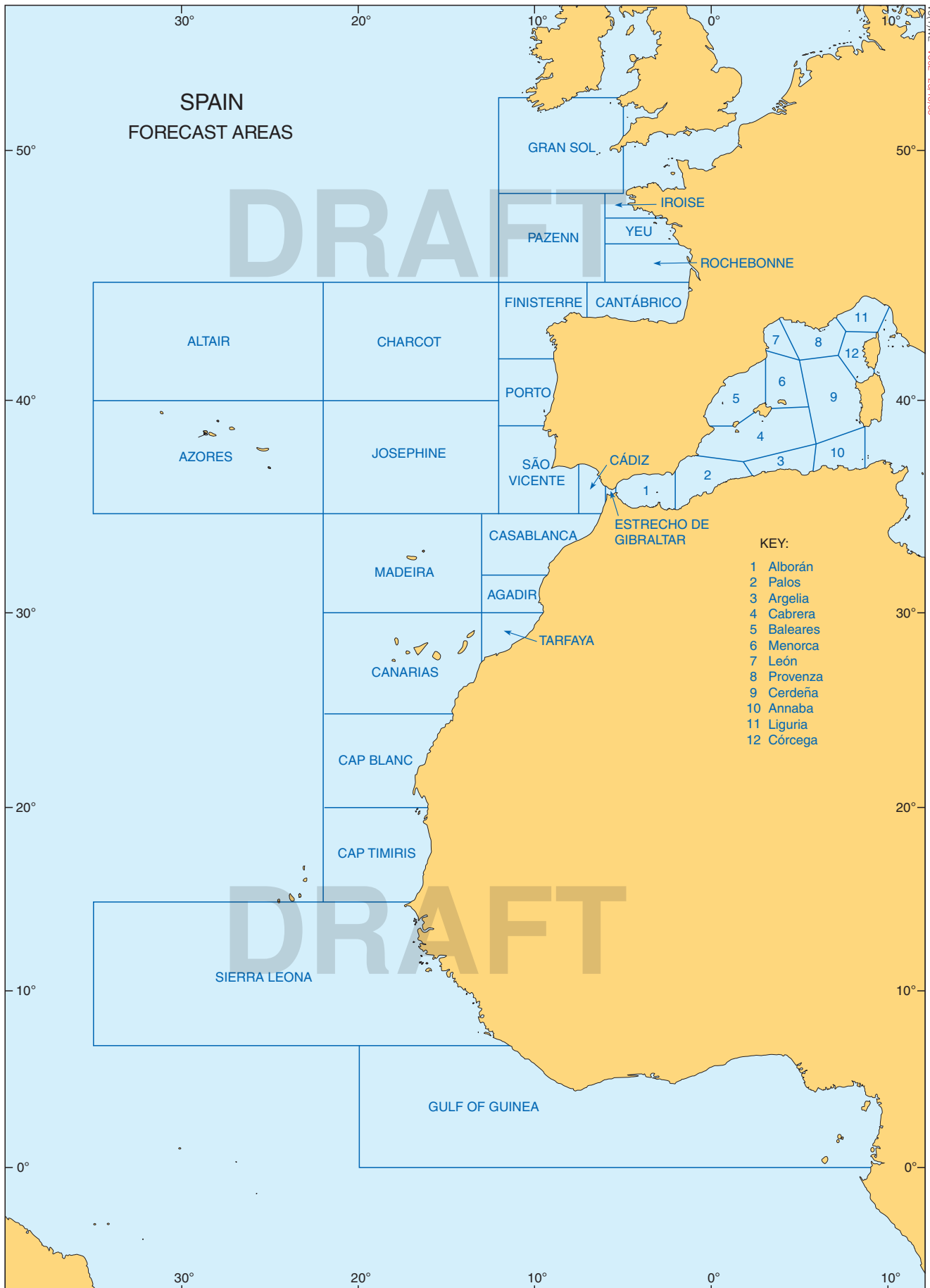
A	Ch 11	VHF	Almería	36°49'84N 2°28'01W
B			Cabo Gata	36°43'30N 2°11'57W
Diagrams pages 193, 194, 195 and 196				
Weather Bulletins				
A:	Every odd H+15	Gale warnings, weather synopsis and forecast for Sea Areas Alborán and Palos in Spanish and English.		
A, B:	Every odd H+15	Gale warnings, weather synopsis and forecast for coastal waters of Murcia, Almería, Granada, Melilla and Isla de Alborán in Spanish and English.		

BARCELONA MRCC

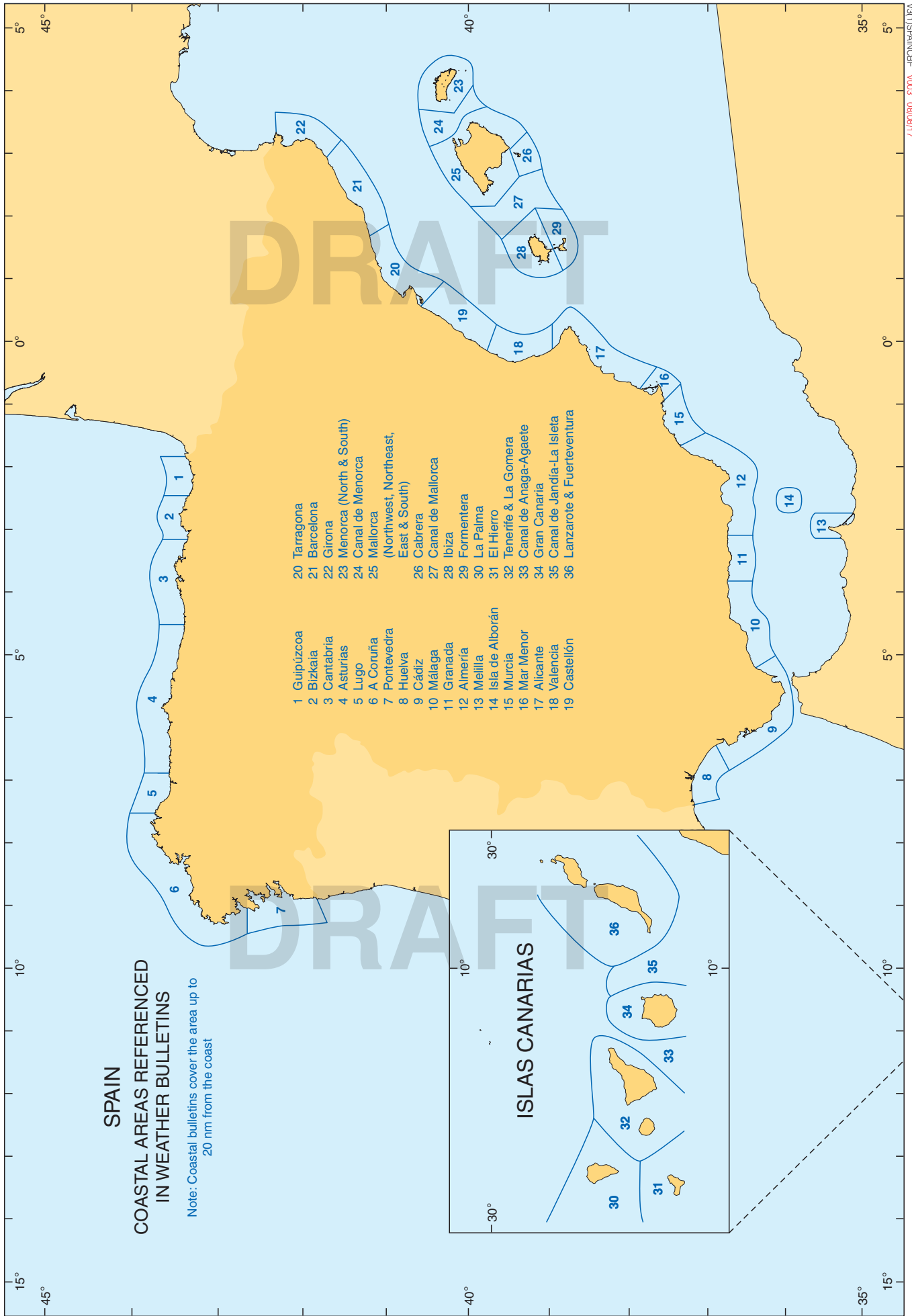
Control Centre: 41°20'09N 2°08'54E

	Ch 10	VHF		
Diagrams pages 193, 194, 195 and 196				
Weather Bulletins				
0700 1600 2300 LT	Weather bulletins in Spanish and English.			
NOTE(S): Broadcast given 1 hour earlier when DST is in force (see ALRS Vol 2 (NP282) for dates).				









SPAIN (Mediterranean Coast)

CARTAGENA MRSC				
Control Centre: 37°34'·89N 0°57'·97W				
	Ch 15	VHF		
Diagrams pages 193, 194, 195 and 196				
Weather Bulletins				
0115 0515 0915 1315 1715 2115	Weather bulletins in Spanish and English.			
CASTELLÓN MRSC				
Control Centre: 39°58'·19N 0°01'·26E				
	Ch 11	VHF		
Diagrams pages 193, 194, 195 and 196				
Weather Bulletins				
0933 2233 LT	Weather bulletins in Spanish and English.			
NOTE(S): Broadcast given 1 hour earlier when DST is in force (see ALRS Vol 2 (NP282) for dates).				
PALMA MRCC				
Control Centre: 39°34'·02N 2°38'·72E				
	Ch 10	VHF		
Diagrams pages 193, 194, 195 and 196				
Weather Bulletins				
0735 1035 1535 2035	Weather bulletins in Spanish and English.			
NOTE(S): Broadcast given 1 hour earlier when DST is in force (see ALRS Vol 2 (NP282) for dates).				
TARRAGONA MRSC				
Control Centre: 41°05'·41N 1°13'·50E				
	Ch 15	VHF		
Diagrams pages 193, 194, 195 and 196				
Weather Bulletins				
1333 2333 LT	Weather bulletins in Spanish and English.			
NOTE(S): Broadcast given 1 hour earlier when DST is in force (see ALRS Vol 2 (NP282) for dates).				
VALENCIA				
Control Centre: 39°25'·80N 0°28'·59W				
Cabo de la Nao				
A	1767	RT (MF)	La Asomada	37°37'·80N 0°57'·81W
Palma				
A	1755	RT (MF)	Marratxi	39°38'·09N 2°40'·20E
Cabo de Gata				
B	1704	RT (MF)	Sabinar	36°41'·21N 2°42'·08W
C	Ch 27	VHF	Aguilas (Conil) (Cartagena)	37°29'·42N 1°33'·80W
	Ch 85		Cabo de La Nao	38°39'·13N 0°16'·33W
	Ch 28		Castellón	40°05'·21N 0°01'·95E
	Ch 03		Ibiza (San José)	38°55'·02N 1°16'·72E
	Ch 85		Menorca	39°59'·13N 4°06'·85E
	Ch 07		Palma	39°44'·07N 2°42'·79E
D	Ch 60		Barcelona	41°25'·10N 2°06'·92E
	Ch 23		Begur	41°56'·93N 3°12'·55E
	Ch 27		Cadaqués	42°18'·13N 3°15'·01E
	Ch 24		Tarragona	41°14'·99N 1°03'·44E

Continued overleaf

SPAIN (Mediterranean Coast)**VALENCIA (Continued)**

E	Ch 24	VHF	Cabo de Gata	36° 59'·34N 2° 22'·99W
	Ch 25		Melilla	35° 17'·70N 2° 56'·06W
Diagrams pages 193, 194, 195 and 196				
Weather Bulletins				
A, B:	1003 1533 2333	Storm warnings, general synopsis and forecasts for sea areas of the Mediterranean, including Cadiz and Estrecho.		
C-E:	0410 1303 1810	Weather bulletins for coastal areas.		
Navigational Warnings				
A:	0803 1933	Navigational Warnings for sea areas from 4°W to Cabo de Palos.		
B:	0840 2003			
C-E:	0410 1810	Navigational Warnings for coastal areas.		

VALENCIA MRCC

Control Centre: 39°26'·63N 0°19'·73W

	Ch 10	VHF		
Diagrams pages 193, 194, 195 and 196				
Weather Bulletins				
0415 1215 2015	Weather bulletins for coastal waters of Alicante, Valencia, Castellón and Mar de Palos, Argelia and Islas Baleares in Spanish and English.			

SPAIN (North Coast)**BILBAO MRCC**

Control Centre: 43°20'·78N 3°01'·91W

	Ch 10 74	VHF		
Diagrams pages 193, 194, 195 and 196				
Weather Bulletins				
0233 0433 0833 1033 1833 2033	Weather bulletins for Cantabria, Vizcaya and Guipuzcoa coastal waters and the Sea Area Cantábrico, in Spanish and English.			

CORUÑA

Control Centre: 43°22'·14N 8°23'·11W

Coruña

A	1707	RT (MF)	Ares	43°27'·10N 8°17'·09W
Finisterre				
B	1698	RT (MF)	Pastoriza	42°20'·30N 8°44'·27W
Machichaco				
C	1677	RT (MF)	Rostrío	43°28'·71N 3°51'·02W
D	Ch 62	VHF	Boal	43°27'·39N 6°49'·23W
	Ch 02		Cabo Ortegal	43°43'·03N 7°53'·88W
	Ch 26		Coruña	43°27'·10N 8°17'·10W
	Ch 22		Finisterre (Muxia)	43°04'·63N 9°13'·51W
	Ch 82		La Guardia	41°53'·42N 8°52'·25W
	Ch 20		Vigo	42°18'·95N 8°42'·27W
E	Ch 26		Bilbao	43°22'·35N 2°45'·75W
	Ch 27		Cabo Peñas	43°29'·53N 5°56'·49W
	Ch 24		Jaizquibel	43°20'·61N 1°51'·43W
			Santander	43°17'·47N 4°08'·63W

Diagrams pages 193, 194, 195 and 196

Weather Bulletins

A-C: 0903 1503 2303	Storm warnings, general synopsis and forecasts for Atlantic sea areas north of 30°N, as well as Mediterranean sea areas Alboran and Palos.
D, E: 0300 1215 1733	Weather bulletins for coastal areas.

Continued on next page

SPAIN (North Coast)

CORUÑA (Continued)

Navigational Warnings		
A ¹ :	0703 2033	Navigational Warnings westwards from 6°W to Cabo San Adrián (approx 43°21'N 8°50'W).
B ¹ :	0703 2033	Navigational Warnings southwards from Cabo San Adrián (approx 43°21'N 8°50'W) to the mouth of the River Miño (approx 41°52'N 8°52'W).
C ¹ :	0703 2033	Navigational Warnings for coastal areas.
D ² , E ² :	0300 1733	
¹ After prior announcement on 2182 kHz.		
² After prior announcement on Ch 16.		

CORUÑA MRSC

Control Centre: 43°22'14N 8°23'11W			
	Ch 10	VHF	
Diagrams pages 193, 194, 195 and 196			
Weather Bulletins			
0005 0405 0805 1605 2005	Weather bulletins in Spanish and English.		

FINISTERRE MRCC

Control Centre: 42°42'20N 8°59'03W			
	Ch 11	VHF	
Diagrams pages 193, 194, 195 and 196			
Weather Bulletins			
0233 0633 1033 1433 1833 2233	Weather bulletins in Spanish and English.		

GIJÓN MRCC

Control Centre: 43°33'56N 5°42'01W			
	Ch 10	VHF	
Diagrams pages 193, 194, 195 and 196			
Weather Bulletins			
0900 2100	Weather bulletins for Asturias coastal waters and Sea Area Cantábrico, in Spanish and English.		

SANTANDER MRSC

Control Centre: 43°28'38N 3°43'27W			
	Ch 11 72	VHF	
Diagrams pages 193, 194, 195 and 196			
Weather Bulletins			
0500 1100 1500 2100	Weather bulletins for Cantabria coastal waters and Sea Area Cantábrico in Spanish and English.		

VIGO MRSC

Control Centre: 42°14'48N 8°43'71W			
	Ch 10	VHF	
Diagrams pages 193, 194, 195 and 196			
Weather Bulletins			
0015 0415 0815 1215 1615 2015	Weather bulletins in Spanish and English.		

SPAIN (South Coast)**CÁDIZ MRSC**

Control Centre: 36°32'·09N 6°17'·45W

	Ch 15	VHF	
Diagrams pages 193, 194, 195 and 196			
Weather Bulletins			
0315 0715 1115 1515 1915 2315	Weather bulletins in Spanish and English.		

HUELVA MRSC

Control Centre: 37°15'·20N 6°57'·00W

	Ch 10	VHF	
Diagrams pages 193, 194, 195 and 196			
Weather Bulletins			
0415 0815 1215 2015	Weather bulletins in Spanish and English.		

SPAIN (South West Coast)**TARIFA**

Control Centre: 36°07'·52N 5°45'·80W

NOTE(S): Remotely controlled by Las Palmas, see relevant entry.

TARIFA MRCC

Control Centre: 36°01'·05N 5°34'·90W

	Ch 10	VHF	
Diagrams pages 193, 194, 195 and 196			
Weather Bulletins			
0015 0415 0815 1215 1615 2015	Actual wind and visibility at Tarifa, followed by forecast for Sea Areas Strait of Gibraltar, Cádiz Bay and Alborán in English and Spanish.		
Navigational Warnings			
0015 0415 0815 1215 1615 2015	Fog (visibility) warnings: Broadcasts are made when visibility falls below 2 n miles in English and Spanish.		

SUDAN**PORT SUDAN (STP)**

Control Centre: 19°37'·51N 37°13'·61E

	Ch 20	VHF		
Weather Bulletins				
0810 2010	Weather forecast in English.			
Navigational Warnings				
On receipt and then every hour	Navigational Warnings.			

SVALBARD (Norway)**GENERAL NOTE**

RT (MF) and VHF remotely controlled from Bodø, RADIO-TELEX remotely controlled from Vardø, Norway - see relevant entries for details.

SWEDEN**INTERNET WEATHER SERVICES**

Swedish Meteorological and Hydrological Institute
www.smhi.se

Marine weather information in Swedish and English.

NAVTEX

H	Bjuröklubb	518 kHz	64°27'·70N 21°35'·42E
J	Gislövshammar		55°29'·38N 14°18'·87E
I	Grimeton		57°06'·33N 12°23'·42E

Diagrams pages 33, 173, 314, 315 and 316

Weather Bulletins

H: 0510 1710	Weather forecast for Baltic Sea. Low water level warnings for the western and southern Baltic, are issued when it is anticipated that levels will be 60cm or more, below the average depth.
J: 0530 1730	
I: 0520 1720	

Navigational Warnings

H: 0110 0510 0910 1310 1710 2110	Gale and Navigational Warnings for Sea Areas B1–3.
J: 0130 0530 0930 1330 1730 2130	Gale and Navigational Warnings for Sea Areas B9–B11.
I: 0120 0520 0920 1320 1720 2120	Gale and Navigational Warnings for Sea Areas B12–14.

NOTE: Broadcasts relayed by MSI Sweden/Stockholm Radio. Ice reports are no longer broadcast on VHF, MF or NAVTEX – see Ice Reports section in ALRS Vol.3 for alternative ways of obtaining this information.

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

www.sjofartsverket.se/en/Maritime-services/Maritime-Traffic-Information/
Navigational-Warnings

Swedish Maritime
Administration

Navigation Warnings, Notice to Mariners and other
related information in English and Swedish.

FIRING PRACTICE AREAS**Kattegat**

For firing information Tel: +46 (0) 352663953.

Northern Baltic Sea

Diagram page 202

Warnings are not announced daily to merchant vessels, extraordinary gunnery exercises will however be announced in Notice to Mariners and/or on Swedish National Radio, with requests to avoid the area of interest.

For firing information call "Naval Control Musko" on: VHF Ch 16, Tel: +46(0) 108231823 or e-mail: Marinb-SjoCMusko@mil.se. An answer machine service, which provides information about current and upcoming firing practices in Swedish only, is available on Tel: +46(0) 850157550.

Southern Baltic Sea

Diagram page 203

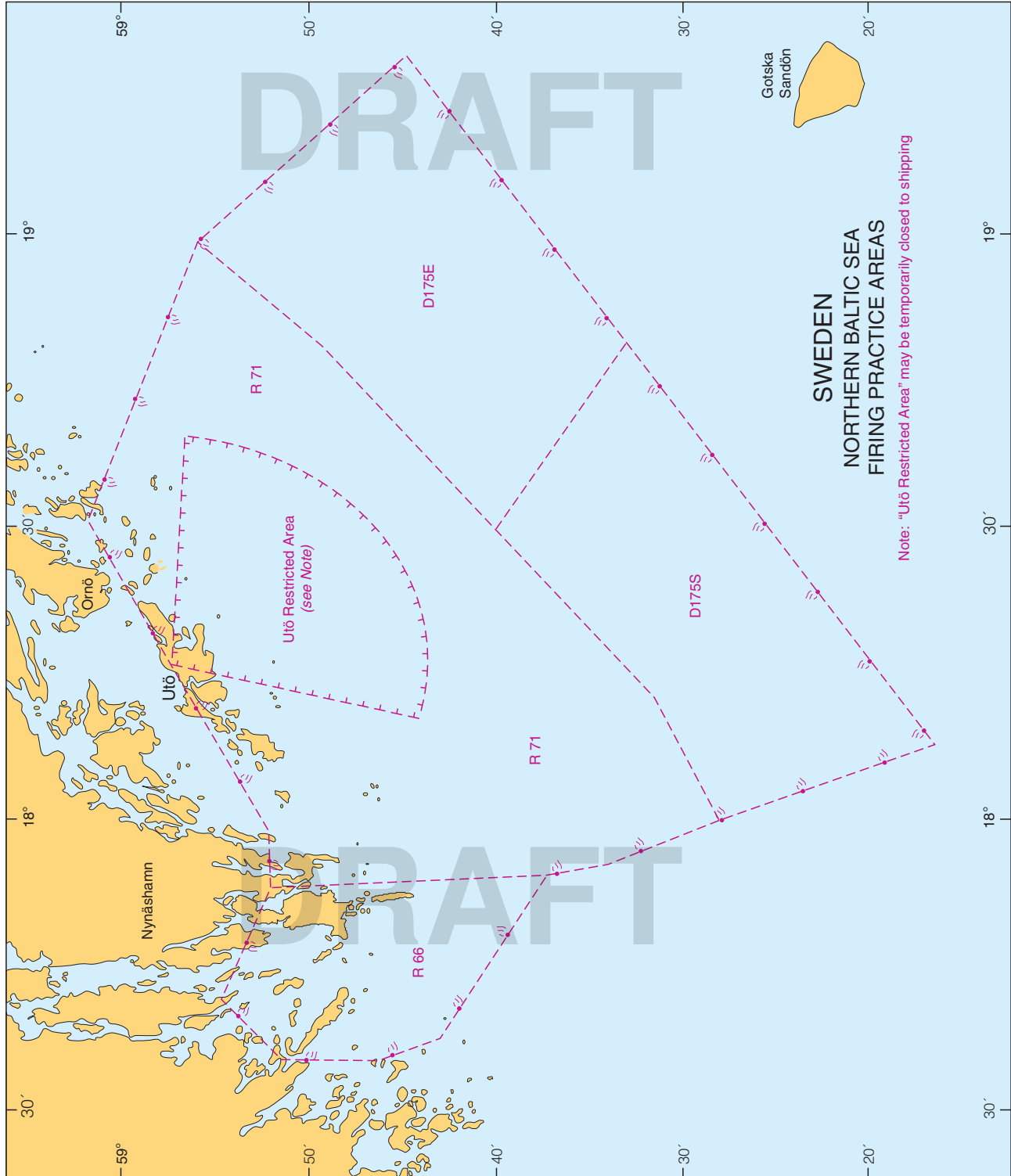
Warnings are not announced daily to merchant vessels. Gunnery exercises are announced daily on a telephone answering machine in Swedish: Tel: +46(0) 45510000.

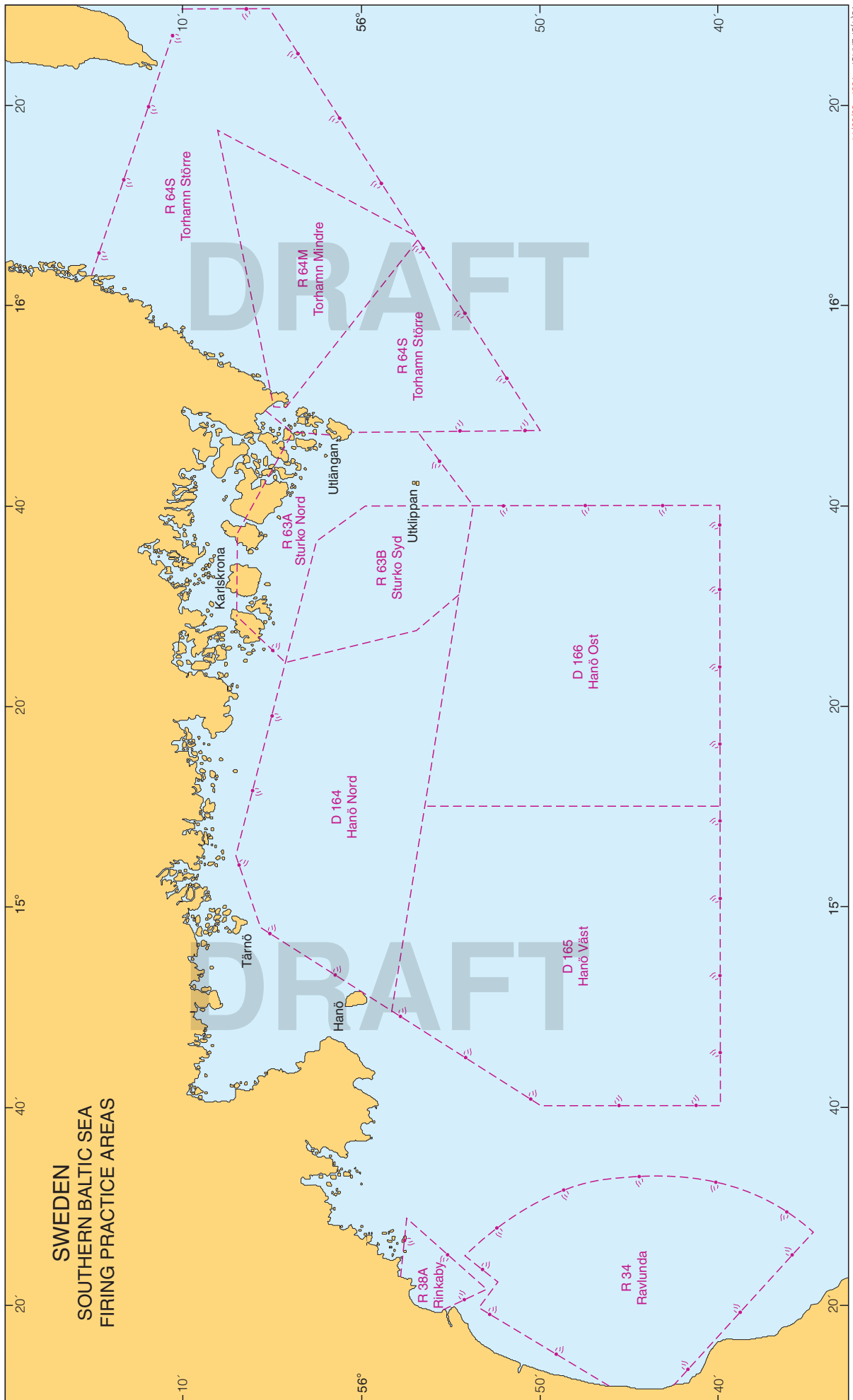
For firing information call "Naval Control Göteborg" on: VHF Ch 16, Tel: +46(0) 46368056 (Control Room), +46(0) 108292838 (Switchboard), or e-mail: Marinb-SjoCGoteborg@mil.se

Safety Offices

Information during firings is available from Safety Offices for the following areas:

Continued on page 204





SWEDEN

Firing Practice Areas (Continued)

Area Name	Call / VHF Ch	Telephone number	Position
Degerfjärden (Firing may take place as follows: 15th Aug–31st May, Weekdays 0800–1600 June, Wed–Thurs 0800–1600)		+46(0) 66330045	63°25'·00N 19°20'·00E
Junkön (R46)		+46(0) 705473515 +46(0) 706395322	65°25'·00N 22°20'·00E
Kabusa (R55A)	CALL: Kabusa skjutfält / Ch 16	+46(0) 411550652 +46(0) 108292805	55°25'·00N 14°00'·00E
Ravlanda (R34) (see diagram for Southern Baltic Sea)		+46(0) 41474180 +46(0) 44351032	55°45'·98N 14°11'·30E
Ringnäs (R41A)		+46(0) 352663955 +46(0) 3553677	56°41'·00N 12°41'·00E
Rinkaby (R38A) (see diagram for Southern Baltic Sea)		+46(0) 44242502	55°56'·78N 14°19'·59E
Tåme (R58)	CALL: Tåme skjutfält / Ch 16	+46(0) 921348405* +46(0) 921349100	64°59'·20N 21°20'·50E
Tofta (R28A, R28B and R28C)	CALL: Tofta skjutfält / Ch 16 or Ch 69	+46(0) 498264405	57° 33'·50N 18° 08'·00 E
Utö (see diagram for Northern Baltic Sea)	CALL: Utö skjutfält / Ch 16	+46(0) 850157045	58°56'·97N 18°15'·75E
Väddö (R15A)	CALL: Väddö skjutfält / Ch 16	+46(0) 108236580*	59°58'·00N 18°54'·00E
Veckholm Firing Danger Area (Stockholm)		+46(0) 171157680	59°30'·00N 17°26'·50E
* When firing is NOT in progress, this number connects to a recorded answering service giving information about current and forthcoming practices, H24 in Swedish only.			

STOCKHOLM (SDJ) [2954]

Control Centre: 59°20'·30N 18°05'·60E

A	1779	RT (MF)	Bjuröklubb	64°27'.70N 21°35'.42E
	1797		Gislövshammar	55°29'.38N 14°18'.87E
	1710		Grimeton	57°06'.33N 12°23'.42E
	2733		Härnösand (MF Aerial)	62°42'.43N 18°07'.65E
	1674		Tingstade	57°43'.85N 18°35'.81E
East Coast				
B	Ch 28	VHF	Fårö (Gotland)	57°51'.73N 19°01'.97E
	Ch 23		Gävle	60°37'.85N 17°07'.75E
	Ch 65		Gotska Sandön	58°22'.54N 19°13'.94E
	Ch 23		Härnösand	62°36'.53N 17°57'.70E
	Ch 24		Hoburgen (Gotland)	56°56'.20N 18°13'.48E
	Ch 25		Hudiksvall	61°42'.44N 16°51'.24E
	Ch 26		Kalix	65°56'.26N 23°30'.97E
	Ch 25		Kalmar	56°39'.58N 16°21'.66E
	Ch 81		Karlshamn	56°13'.62N 14°46'.52E
	Ch 21		Karlskrona	56°10'.45N 15°36'.09E
	Ch 84		Kivik	55°40'.08N 14°09'.48E
	Ch 24		Kramfors	62°56'.49N 17°56'.95E
	Ch 64		Luleå	65°36'.39N 22°08'.69E
	Ch 26		Mjällom	62°59'.14N 18°23'.57E
	Ch 64		Nacka (Stockholm)	59°17'.85N 18°10'.38E
	Ch 78		Norrköping	58°40'.59N 16°28'.06E
			Ölands Södra Udde	56°14'.02N 16°27'.30E

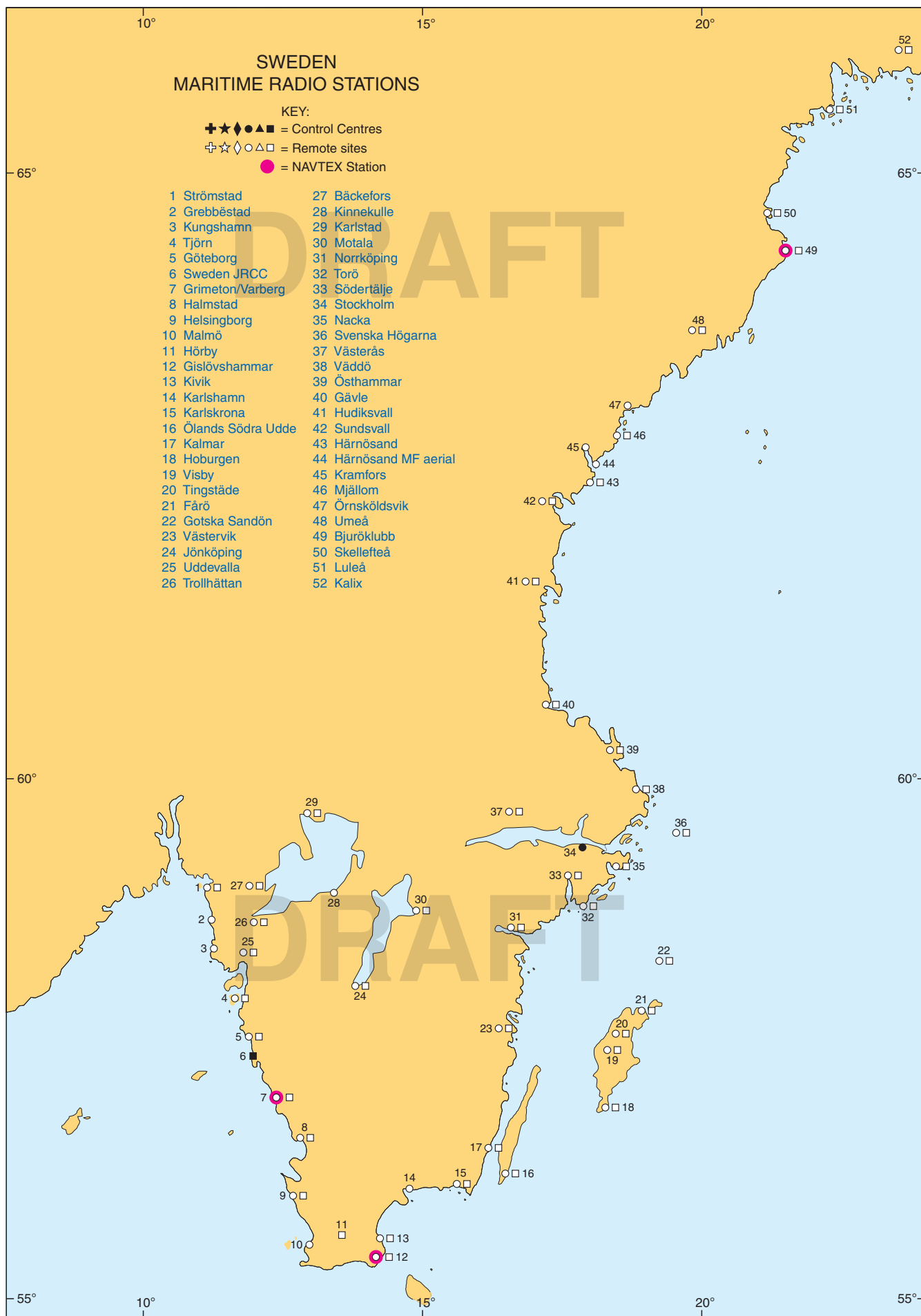
Continued on page 206

SWEDEN MARITIME RADIO STATIONS

KEY:

- ✚ ✦ ✧ ✪ ✫ = Control Centres
- ✚ ✦ ✧ ✪ ✫ = Remote sites
- = NAVTEX Station

- | | |
|----------------------|------------------------|
| 1 Strömstad | 27 Bäckeфорs |
| 2 Grebbestad | 28 Kinnekulle |
| 3 Kungshamn | 29 Karlstad |
| 4 Tjörn | 30 Motala |
| 5 Göteborg | 31 Norrköping |
| 6 Sweden JRCC | 32 Torö |
| 7 Grimeton/Varberg | 33 Södertälje |
| 8 Halmstad | 34 Stockholm |
| 9 Helsingborg | 35 Nacka |
| 10 Malmö | 36 Svenska Högarna |
| 11 Hörby | 37 Västerås |
| 12 Gislövshammar | 38 Vaddö |
| 13 Kivik | 39 Östhammar |
| 14 Karlshamn | 40 Gävle |
| 15 Karlskrona | 41 Hudiksvall |
| 16 Ölands Södra Udde | 42 Sundsvall |
| 17 Kalmar | 43 Härnösand |
| 18 Hoburgen | 44 Härnösand MF aerial |
| 19 Visby | 45 Kramfors |
| 20 Tingstäde | 46 Mjällom |
| 21 Färö | 47 Örnsköldsvik |
| 22 Gotska Sandön | 48 Umeå |
| 23 Västervik | 49 Bjuröklubb |
| 24 Jönköping | 50 Skellefteå |
| 25 Uddevalla | 51 Luleå |
| 26 Trollhättan | 52 Kalix |



SWEDEN

STOCKHOLM (SDJ) [2954] (Continued)

B	Ch 28	VHF	Örnsköldsvik	63°18'15N 18°39'65E
	Ch 24		Östhammar	60°15'81N 18°04'24E
	Ch 23		Skellefteå	64°46'69N 20°57'07E
	Ch 66		Södertälje	59°13'41N 17°37'24E
	Ch 24		Sundsvall	62°24'03N 17°28'40E
	Ch 84		Svenska Högarna	59°26'63N 19°30'09E
	Ch 24		Torö	58°49'24N 17°50'65E
	Ch 26		Umeå	63°50'42N 19°49'36E
	Ch 78		Väddö	59°58'10N 18°50'38E
	Ch 25		Västerås	59°38'60N 16°24'20E
	Ch 23		Västervik	57°43'26N 16°25'56E
	Ch 25		Visby (Gotland)	57°35'58N 18°22'24E
West Coast				
B	Ch 24	VHF	Göteborg	57°41'57N 12°03'40E
	Ch 26		Grebbestad	58°41'30N 11°15'48E
	Ch 22		Grimeton	57°06'33N 12°23'42E
	Ch 62		Halmstad	56°47'40N 12°56'28E
	Ch 24		Helsingborg	56°03'17N 12°42'53E
	Ch 23		Kungshamn	58°21'39N 11°15'22E
	Ch 27		Malmö	55°34'39N 13°03'36E
	Ch 22		Strömstad	58°56'11N 11°11'16E
	Ch 81		Tjörn	57°59'50N 11°39'40E
	Ch 84		Uddevalla	58°22'46N 11°49'22E
Vänern / Vättern				
B	Ch 78	VHF	Bäckefors	58°49'37N 12°12'18E
	Ch 23		Jönköping	57°46'19N 14°15'02E
	Ch 65		Karlstad	59°23'72N 13°22'96E
	Ch 01		Kinneulle	58°36'04N 13°24'47E
	Ch 26		Motala	58°35'31N 15°05'79E
	Ch 25		Trollhättan	58°17'40N 12°16'81E
Diagrams pages 163, 173, 205, 314, 315 and 316				
Weather Bulletins				
A, B:	0600 1800	24 hour weather forecast and synopsis for Sea Areas B1–B15 in English and Swedish.		
B ¹ :	0830 1630 2130 LT	Coastal weather forecast with latest meteorological observations and details of tidal heights and outlook for three days for Haparanda - Örskär for pleasure craft and small commercial vessels, in Swedish.		
B ¹ :	0845 1645 2145 LT	Coastal weather forecast with latest meteorological observations and details of tidal heights and outlook for three days for Örskär - Landsort, Mälaren/Hjälmaren for pleasure craft and small commercial vessels, in Swedish.		
B ¹ :	0900 1700 2200 LT	Coastal weather forecast with latest meteorological observations and details of tidal heights and outlook for three days for Landsort - Utklippan, Gotland for pleasure craft and small commercial vessels, in Swedish.		
B ¹ :	0915 1715 2215 LT	Coastal weather forecast with latest meteorological observations and details of tidal heights and outlook for three days for Utklippan - Hallands Väderö for pleasure craft and small commercial vessels, in Swedish.		
B ¹ :	0930 1730 2230 LT	Coastal weather forecast with latest meteorological observations and details of tidal heights and outlook for three days for Hallands Väderö - Nordkoster, Vänern/Vättern for pleasure craft and small commercial vessels, in Swedish.		
Navigational Warnings				
A, B:	On receipt 0200 0600 1000 1400 1800 2200	Gale warnings and Navigational Warnings in English and Swedish.		
1 Broadcast by Stockholm Radio 1 May to 31 Sept after prior announcement on VHF Ch 16.				
NOTE(S): Ice reports are no longer broadcast on VHF, MF or NAVTEX as of winter 2017/18. Please see Swedish Ice Reports section for alternative methods of obtaining this information.				

SWEDEN

SVERIGES RADIO P1				
Control Centre: 59°20′.08N 18°06′.07E				
	87.6-103.8 MHz	FM		
Weather Bulletins				
0555 1555	24 hour weather forecast for coastal and offshore sea areas, including coastal wind observations, in Swedish.			
0755 1250 ¹ 1255 ²	24 hour weather forecast for the Baltic sea areas, in Swedish.			
1555 ³	Tidal observations, in Swedish.			
2150	48 hour weather forecast for coastal and offshore sea areas, including selected wind observations, in Swedish.			
Navigational Warnings				
0555 0755 1250 ¹ 1255 ² 1555 2150	Storm, gale and ice warnings are included in the Weather Bulletins as necessary, in Swedish.			
1555 ⁴	Ice reports in Swedish.			
¹ Sat–Sun. ² Mon–Fri. ³ During the summer. ⁴ During the season.				
NOTE(S): 1. All times quoted refer to LT. 2. Maritime forecasts follow the terrestrial weather broadcasts.				

SYRIA

AL LĀDHIQĪYAH (LATAKIA) (YKM7)				
Control Centre: 35°30'05N 35°46'50E				
	3624	RT (MF)		
	Ch 13	VHF		
Navigational Warnings				
0000 0400 0800 1200 1600 2000	Navigational Warnings.			

TARTŪS (TARTOUS) (YKO)				
Control Centre: 34°54'00N 35°53'00E				
	2662	RT (MF)		
	Ch 20	VHF		
Navigational Warnings				
0400 0800 1200 1600	Navigational Warnings.			

TUNISIA

NAVTEX			
T	Kelibia	518 kHz	36°48'08N 11°02'29E
Diagrams pages 35 and 210			
Weather Bulletins			
T: 0710 1910	Weather forecasts.		
Navigational Warnings			
T: 0310 0710 1110 1510 1910 2310	Navigational Warnings and storm warnings.		
NOTE: Tunisian NAVTEX broadcasts from Kelibia are temporarily inoperative. Malta NAVTEX broadcasts MSI for the Sicilian channel and the east coast of Tunisia in the [T] timeslot – see Malta NAVTEX entry.			

LA GOULETTE PORT				
Control Centre: 36°49'00N 10°18'00E				
A	1743	RT (MF)		
B	2182			
Diagram page 210				

Continued overleaf

TUNISIA

LA GOULETTE PORT (Continued)

Weather Bulletins	
A: 0405 1905	Weather summary, 12 hour forecast and outlook for further 12 hours for the coastal waters of Tunisia in French.
Navigational Warnings	
B: On receipt and then every H+03	Storm warnings for the coastal waters of Tunisia in French.
B: On receipt 0003 0403 0603 1003 1303 1803 1903 2103	Navigational Warnings for Tunisian Coast, Western Mediterranean south of 40°N, east of a line from Tunisian-Algerian frontier to C. Spartivento (38°52'N 8°52'E) in French.

TUNIS (3VT)

Control Centre: 36°55'55N 10°11'22E

	2670	RT (MF)	
Diagram page 210			
Weather Bulletins			
0805 1705	Weather summary, 12 hour forecast and outlook for further 12 hours for the coastal waters of Tunisia in French.		
Navigational Warnings			
On receipt 0003 0403 0603 1003 1303 1803 1903 2103	Navigational Warnings for Tunisian Coast, Western Mediterranean south of 40°N, east of a line from Tunisian-Algerian frontier to C. Spartivento (38°52'N 8°52'E) in French.		

TURKEY

GENERAL NOTES

Meteorological and Hydrological Information transmitted through the Automatic Identification System (AIS)

Meteorological and hydrological information is transmitted from some AIS stations around the coast of Turkey.

For full details of the Automatic Identification System (AIS) see ALRS Volume 2 (NP282).

Navigational warnings

Current navigational warnings may also be found, in both Turkish and English, on the Turkish Hydrographic website: www.shodb.gov.tr

INTERNET WEATHER SERVICES

Turkish State Meteorological Service https://www.mgm.gov.tr/	Marine weather forecast in Turkish, English and German.
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NAVTEX

F	Antalya (Mediterranean Coast)	518 kHz	36°09'17N 32°26'72E
D	İstanbul (Marmara Denizi)		41°04'00N 28°57'00E
I	İzmir (Aegean Coast)		38°16'88N 26°16'05E
E	Samsun (Black Sea Coast)		41°23'18N 36°11'37E
D	Antalya (Mediterranean Coast)	490 kHz	36°09'17N 32°26'72E
B	İstanbul (Marmara Denizi)		41°04'00N 28°57'00E
C	İzmir (Aegean Coast)		38°16'88N 26°16'05E
A	Samsun (Black Sea Coast)		41°23'18N 36°11'37E
M	İstanbul (Marmara Denizi)	4209.5 kHz	41°04'00N 28°57'00E
Diagrams pages 36 and 210			
Weather Bulletins			

Continued on next page

F: 0050 0450 0850 1250 1650 2050	Weather forecast for Sea Area Taurus in English.
D: 0030 0430 0830 1230 1630 2030	Weather forecast for Sea Areas Marmara and Danube in English.
I: 0120 0520 0920 1320 1720 2120	Weather forecast for Sea Areas Aegean and Jason in English.
E: 0040 0440 0840 1240 1640 2040	Weather forecast for Sea Areas Georgia and Danube in English.
D: 0030 0430 0830 1230 1630 2030	Weather forecast for Sea Area Taurus in Turkish.
B: 0010 0410 0810 1210 1610 2010	Weather forecast for Sea Areas Marmara and Danube in Turkish.
C: 0020 0420 0820 1220 1620 2020	Weather forecast for Sea Areas Aegean and Jason in Turkish.
A: 0000 0400 0800 1200 1600 2000	Weather forecast for Sea Areas Georgia and Danube in Turkish.
M: 0200 0600 1000 1400 1800 2200	Weather forecast for Sea Areas 12–27 in Turkish.
Navigational Warnings	
F: 0050 0450 0850 1250 1650 2050	Navigational Warnings for E Mediterranean in English.
D: 0030 0430 0830 1230 1630 2030	Navigational Warnings for SW part of Black Sea in English.
I: 0120 0520 0920 1320 1720 2120	Navigational Warnings for Aegean in English.
E: 0040 0440 0840 1240 1640 2040	Navigational Warnings for SE part of Black Sea in English.
D: 0030 0430 0830 1230 1630 2030	Navigational Warnings for E Mediterranean in Turkish.
B: 0010 0410 0810 1210 1610 2010	Navigational Warnings for SW part of Black Sea in Turkish.
C: 0020 0420 0820 1220 1620 2020	Navigational Warnings for Aegean in Turkish.
A: 0000 0400 0800 1200 1600 2000	Navigational Warnings for SE part of Black Sea in Turkish.
M: 0200 0600 1000 1400 1800 2200	Navigational Warnings for Black Sea, Marmara Denizi, Aegean and Mediterranean in Turkish.

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

http://www.shodb.gov.tr/shodb_esas/index.php/en/

Turkish Office of Navigation, Hydrography and Oceanography

Navigation Warnings in Turkish and English.

ANTALYA (TAL)

Control Centre: 36°50'·93N 30°45'·75E

Ch 67	VHF	Anamur	36°07'·90N 32°49'·78E
		Bodrum	37°04'·06N 27°26'·37E
		Çobandede	36°31'·13N 36°15'·32E
		Dilektepe	37°31'·72N 27°15'·52E
		Kazakin	36°50'·25N 29°05'·75E
		Markiz	36°43'·00N 30°29'·00E
		Ören	37°02'·21N 27°57'·19E
		Palamut	36°45'·43N 28°13'·00E
		Yumrutepe	36°15'·22N 29°27'·47E

Diagram page 210

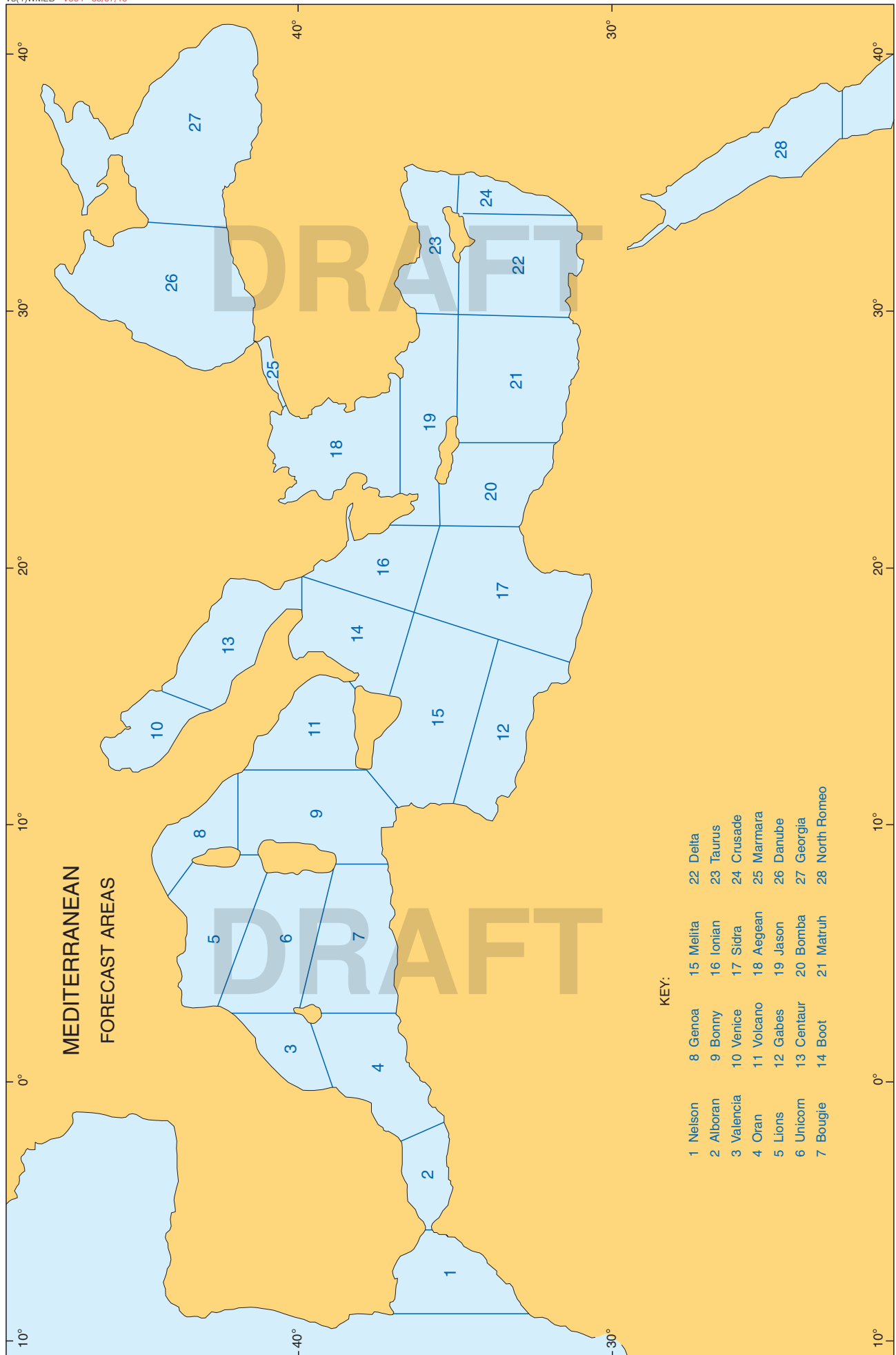
Weather Bulletins

0700 1900	24 hour forecast for Black Sea, Marmara Denizi, Aegean Sea and Mediterranean Sea in Turkish and English.
0730 0930 1130 1330 1530 1730 1930	Sea observations for Mediterranean Sea and Aegean Sea in Turkish.
0900 1930	3 day forecast for Black Sea, Marmara Denizi, Aegean Sea and Mediterranean Sea in Turkish.

Navigational Warnings

On receipt 0700 1900	Weather warnings for Black Sea, Marmara Denizi, Aegean Sea and Mediterranean Sea in Turkish and English.
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NOTE(S): VHF transmissions are remotely controlled from Istanbul.



ISTANBUL (TAH) [4360]

Control Centre: 40°59′.00N 28°49′.00E

A	4405 (417) 8812 (832) 13128 (1218)	RT (HF)		
B	4560 8431 (830) 12654 (12151)	RADIO-TELEX		
C	Ch 67	VHF	Akçakoca	40°58′.45N 31°12′.23E
			Akdağ	38°33′.00N 26°30′.00E
			Ayvalık	39°18′.48N 26°41′.43E
			Bandırma	40°21′.18N 27°53′.68E
			Çamlıca	41°01′.85N 29°04′.25E
			Kayalıdağ	39°57′.97N 26°38′.15E
			Keltepe	40°38′.60N 30°06′.05E
			Mahyadağı	41°47′.65N 27°37′.48E
			Şarköy	40°41′.32N 27°10′.68E
Yuşa	41°10′.18N 29°06′.28E			

Diagram page 210

Weather Bulletins

A: 1000 1800	Weather forecast for Black Sea, Marmara Denizi, Aegean Sea and Mediterranean Sea in Turkish and English.
B: 0800 2000	
C: 0700 1900	24 hour forecast for Black Sea, Marmara Denizi, Aegean Sea and Mediterranean Sea in Turkish and English.
C: 0730 0930 1130 1330 1530 1730 1930	Sea observations for Western Black Sea, Marmara Denizi and Aegean Sea in Turkish.
C: 0900 1930	3 day forecast for Black Sea, Marmara Denizi, Aegean Sea and Mediterranean Sea in Turkish.

Navigational Warnings

C: On receipt 0700 1900	Weather warnings for Black Sea, Marmara Denizi, Aegean Sea and Mediterranean Sea in Turkish and English.
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SAMSUN (TAF)

Control Centre: 41°18′.33N 36°20′.00E

	Ch 67	VHF	Akçabat	41°04′.22N 39°27′.17E
			Dikmen	40°55′.50N 38°16′.15E
			Dütmen	41°26′.88N 35°28′.88E
			İnebolu	41°53′.45N 33°43′.10E
			Pazar	41°08′.93N 40°49′.12E
			Yıldıztepe	41°05′.72N 37°01′.67E
			Zonguldak	41°23′.65N 31°49′.93E

Diagram page 210

Weather Bulletins

0700 1900	24 hour forecast for Black Sea, Marmara Denizi, Aegean Sea and Mediterranean Sea in Turkish and English.
0730 0930 1130 1330 1530 1730 1930	Sea observations for Black Sea in Turkish.
0900 1930	3 day forecast for Black Sea, Marmara Denizi, Aegean Sea and Mediterranean Sea in Turkish.

Navigational Warnings

On receipt 0700 1900	Weather warnings for Black Sea, Marmara Denizi, Aegean Sea and Mediterranean Sea in Turkish and English.
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NOTE(S): VHF transmissions are remotely controlled from Istanbul.

UKRAINE**NAVTEX**

G	Berdiansk	518 kHz	46°38'·10N 36°45'·42E
C	Odesa		46°22'·38N 30°44'·50E
U	Berdiansk	490 kHz	46°38'·10N 36°45'·42E
X	Odesa		46°22'·38N 30°44'·50E
Diagram page 36			
Weather Bulletins			
G: 0900 1700	24 hour weather and sea state forecast for Sea of Azov and Kerch Strait in English.		
C: 0820 1620	Weather bulletin for NW part of Black Sea in English.		
U: 1120 1920	Weather bulletin in English.		
X: 1150 1950			
Navigational Warnings			
G: 0100 0500 0900 1300 1700 2100	Navigational Warnings for Sea of Azov and Kerch Strait in English.		
C: 0020 0420 0820 1220 1620 2020	Navigational Warnings for NW part of Black Sea in English.		
U: 0320 0720 1120 1520 1920 2320	Navigational Warnings in English.		
X: 0350 0750 1150 1550 1950 2350			
Ice Warnings and Reports			
G: 1300	Ice reports for Sea of Azov in English.		
C: 1220	Ice reports in English.		
U: 1520	Ice reports in English.		
X: 1550			

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET

The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:

http://charts.gov.ua/pm_archive_en.htm	Ukrainian State Hydrographic Service	Notices to Mariners in Ukrainian and English.
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KERCH (UKW)

Control Centre: 45°22'·00N 36°27'·00E

	4143	RT (MF)	
Weather Bulletins			
0633	12 hour weather and sea state forecast for the Sea of Azov west of the line from Novoazovsk to Mys Khrony and Kerch Strait from Mys Khrony to Mys Takyl' and NE Black Sea in Russian.		
1833	24 hour weather and sea state forecast in English.		
Navigational Warnings			
0233 1033 1833	Navigational Warnings for the Sea of Azov west of the line from Novoazovsk to Mys Khrony and Kerch Strait from Mys Khrony to Mys Takyl' and NE Black Sea in English.		
0633 1433 2233	Navigational Warnings for the Sea of Azov west of the line from Novoazovsk to Mys Khrony and Kerch Strait from Mys Khrony to Mys Takyl' and NE Black Sea in Russian.		
1033	Ice conditions for the Sea of Azov west of the line from Novoazovsk to Mys Khrony and Kerch Strait from Mys Khrony to Mys Takyl' and NE Black Sea in English.		
1433	Ice conditions for the Sea of Azov west of the line from Novoazovsk to Mys Khrony and Kerch Strait from Mys Khrony to Mys Takyl' and NE Black Sea in Russian.		

ODESA (MORTELECOM LTD) (UTT, UII)

Control Centre: 46°22'·54N 30°45'·01E

	3310	RT (MF)	
Weather Bulletins			
0023	12 hour weather and sea state forecast for N central and NW Black Sea in Russian.		
2023	24 hour weather and sea state forecast in English.		

Continued on next page

UKRAINE

ODESA (MORTELECOM LTD) (UTT, UUI) (Continued)

Navigational Warnings	
0023 0823 1623	Navigational Warnings for N central and NW Black Sea in Russian.
0423 1223 2023	Navigational Warnings for N central and NW Black Sea in English.
1223	Ice conditions for N central and NW Black Sea in English.
1623	Ice conditions for N central and NW Black Sea in Russian.

UNITED ARAB EMIRATES

INTERNET WEATHER SERVICES

National Centre of Meteorology and Seismology www.ncms.ae	Select 'List of Services' from the main menu to access marine forecasts for the Arabian Gulf and Sea of Oman, together with monthly tide tables for Abu Dhabi, in English and Arabic.
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UNITED KINGDOM

GENERAL NOTES

Maritime and Coastguard Agency Operational Structure

The Maritime and Coastguard Agency has undergone major organisational restructuring, in order to improve the efficiency and level of service offered to the maritime community. However, it must be stressed that in practice, the mariner will notice little, if any, change.

The coastguard operation now comprises 10 'Coast Guard Operation Centres' (CGOCs): Stornoway, Shetland, Aberdeen, Humber, Dover, Solent, Falmouth, Milford Haven, Holyhead and Belfast, with a separate station, London Coastguard, dedicated to London and the River Thames. These CGOCs carry out all the normal functions of an MRCC (Maritime Rescue Coordination Centre), as well as a number of additional operations – hence the renaming.

Although each of these CGOCs has a 'nominal' region for which they are responsible, in reality the operation network and infrastructure is completely dynamic and flexible, with a high level of resilience and redundancy built in. During busy periods, or because of a major SAR incident for example, any CGOC can take over some, or all of the duties, functions and areas, which are normally covered by a different centre.

As a result of these changes, the MCA's *preferred* Call Sign is 'UK Coastguard', rather than 'Falmouth Coastguard' or 'Dover Coastguard' etc. The voice call sign of the CGOC required, followed by the geographical name, can still be used, but the mariner should be aware that their call may actually be answered by an operation centre elsewhere. Regardless of this, the answering CGOC will be fully conversant and equipped to deal with the current situation in that area, so that the mariner should not notice any difference.

Maritime Safety Information (MSI) Broadcasts

NAVTEX is the prime means of promulgating MSI using the 518 kHz service with additional information made available on the 490 kHz service. Full MSI broadcasts are made twice a day on VHF and MF consisting of: Inshore Forecast, Gale Warnings, Shipping Forecast, 3 day Fisherman's Forecast where appropriate, Navigational Warnings, GUNFACTS/SUBFACTS (from selected stations only) and any other authorised information. Note, vessels should select the B1 NAVTEX transmitter identity for the area they are working in and transiting to.

The first broadcast of fresh Gale Warnings, Strong Wind Warnings, abnormal tide warnings and some WZ Navigational Warnings will be made on receipt after an announcement on VHF Ch 16 and 2182 kHz MF and may be announced through DSC.

Weather Information Broadcasts

Inshore forecasts are updated and broadcast every 6 hours either as part of the full MSI broadcast or as a Weather Information Broadcast.

Repetition Broadcasts

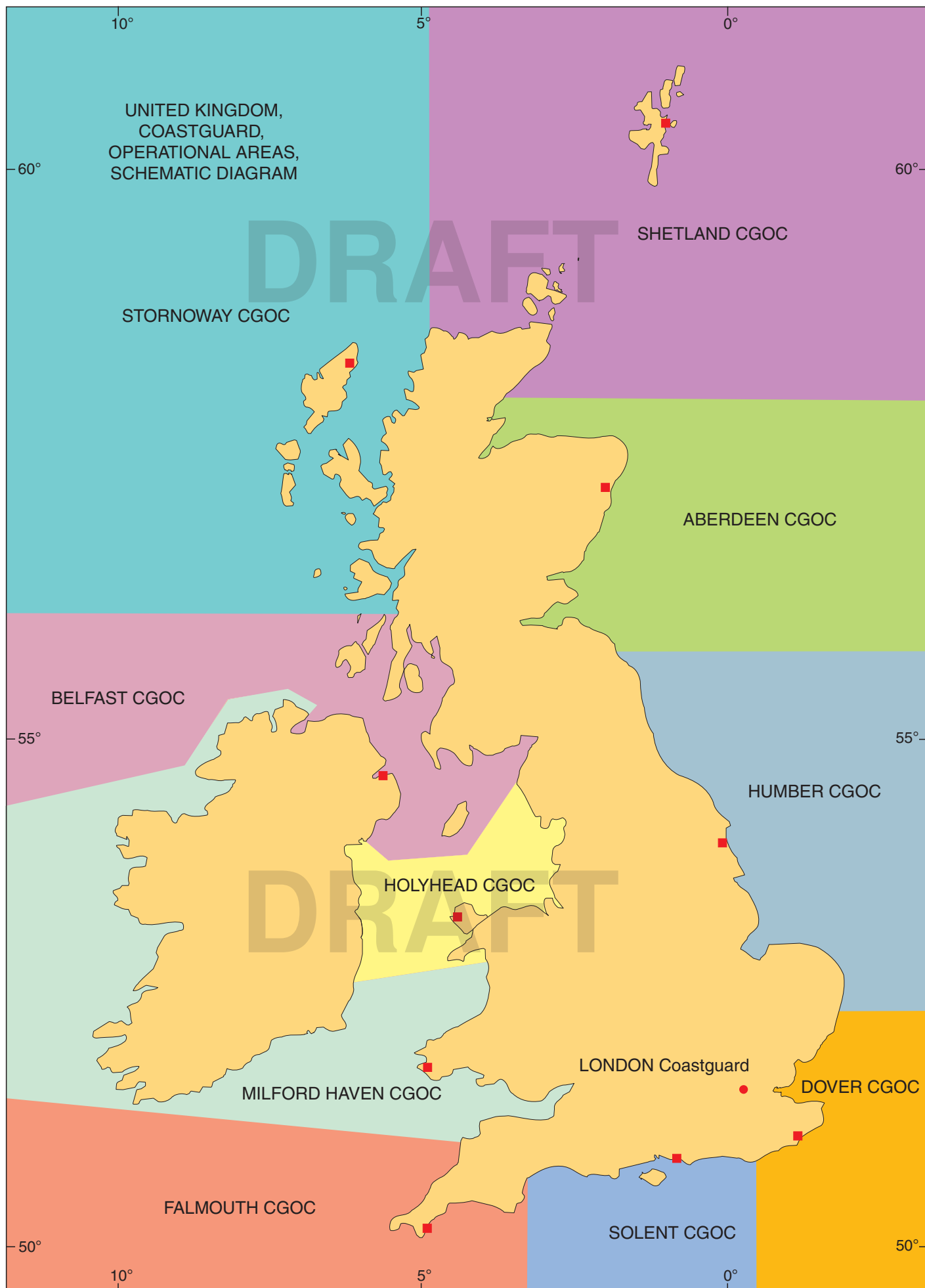
Inshore Waters Forecasts, gale warnings and Strong Wind Warnings are repeated 3 hours after the full MSI and Weather Information Broadcasts.

INTERNET WEATHER SERVICES

BBC www.bbc.co.uk/weather/coast_and_sea	Gale warnings, shipping forecast, buoy observations, inshore waters forecast, coastal forecast, extended outlook and Atlantic pressure charts in English.
United Kingdom Met Office www.metoffice.gov.uk/public/weather/marine	Gale warnings, shipping forecast, inshore waters forecast in English.
UK Hydrographic Office www.ukho.gov.uk/easytide/EasyTide	The ADMIRALTY EasyTide website provides free global tide predictions for the current day and the next 6-days hence.
ABP Southampton www.sotonmet.co.uk	Real-time and historical weather data for Southampton Water, derived from instrumentation situated at Southampton Dockhead. Information includes: wind speed and direction, tidal height and atmospheric conditions.
ABP Southampton www.bramblemet.co.uk	Real-time and historical weather data for the central Solent, derived from instrumentation situated on the Bramble Pile – roughly equidistant from Cowes, Calshot and Hill Head. Information includes: wind speed and direction, tidal height and atmospheric conditions.

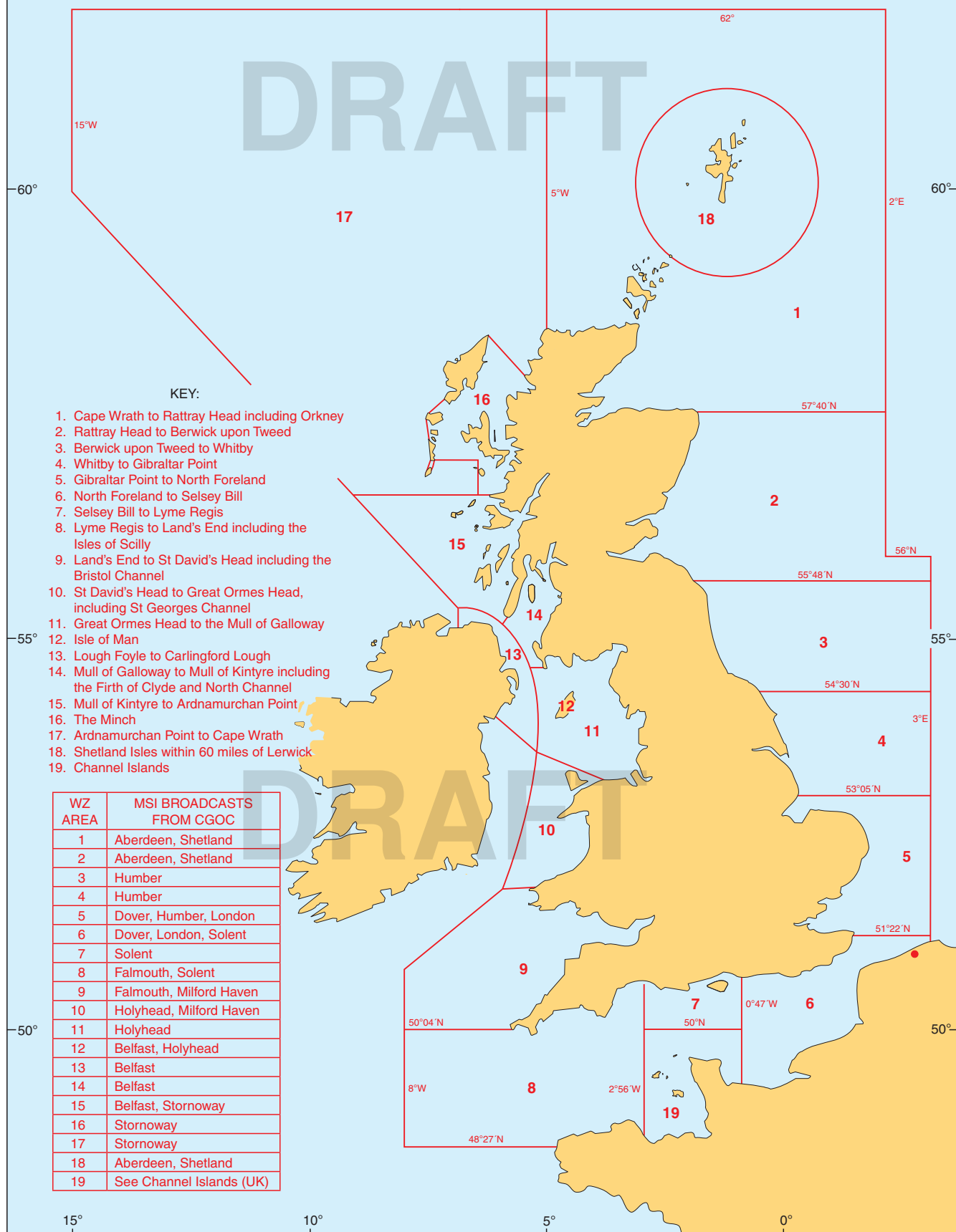
UNITED KINGDOM

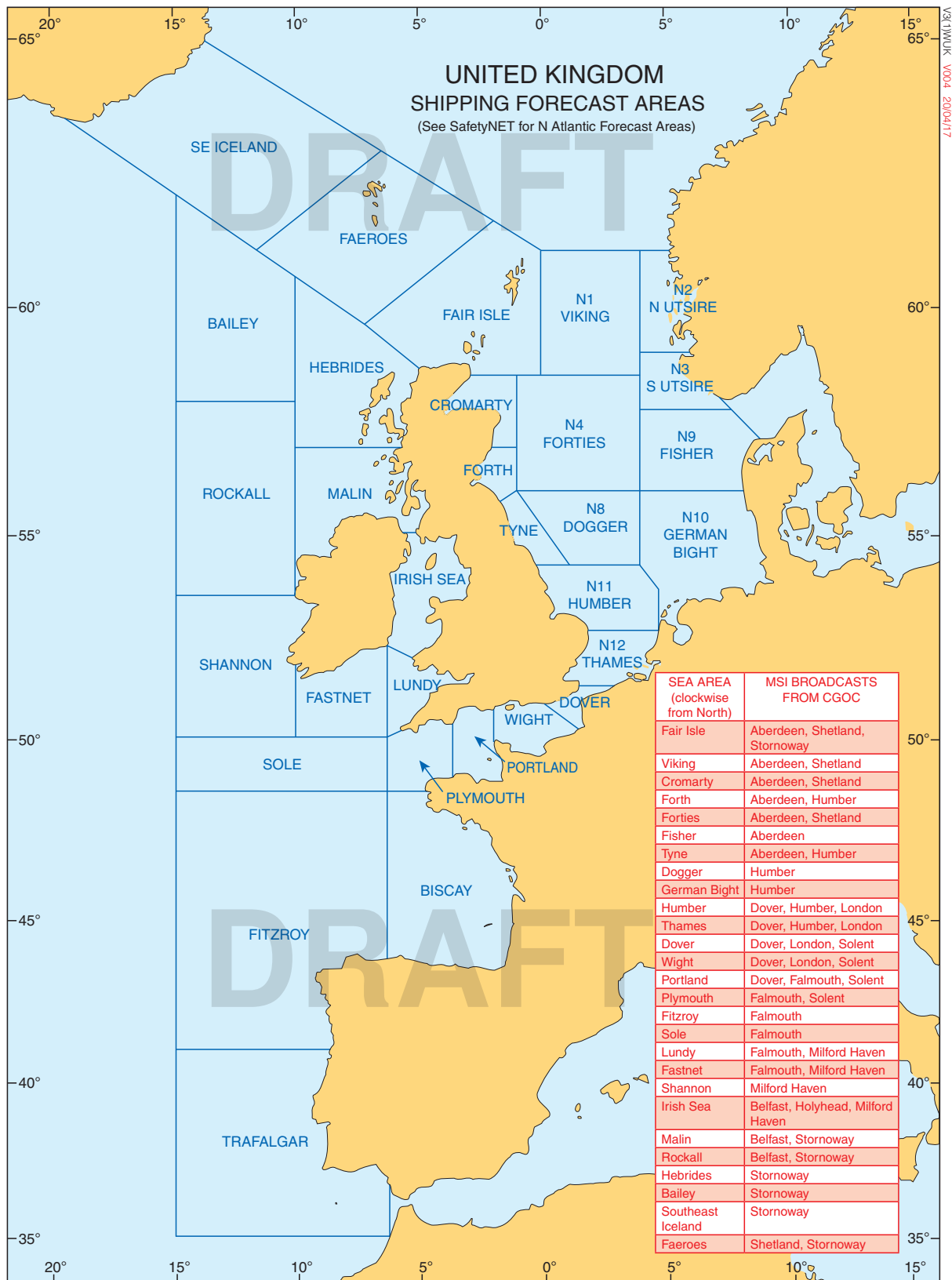
NAVTEX			
G	Cullercoats	518 kHz	55°04'·48N 1°27'·78W
E	Niton		50°35'·18N 1°15'·28W
K			
O	Portpatrick	490 kHz	54°50'·65N 5°07'·47W
U	Cullercoats		55°04'·48N 1°27'·78W
I	Niton		50°35'·18N 1°15'·28W
T			
C	Portpatrick	54°50'·65N 5°07'·47W	
Diagrams pages 33, 97, 215, 216, 217, 218, 219, 220 and 221			
Weather Bulletins			
G: 0900 2100	24 hour forecast and outlook for Sea Areas Viking, Forties, Cromarty, Forth, Tyne, Dogger, Humber, Thames and Fair Isle.		
G: 0100	Extended outlook (3–5 days) for the North Sea and Eastern English Channel.		
E: 0040	Extended outlook (3–5 days) for Sea Areas Thames, Dover, Wight, Portland, Plymouth, Biscay, FitzRoy, Sole, Lundy, Fastnet, Irish Sea and Shannon.		
E: 0840 2040	24 hour forecast and outlook for Sea Areas Thames, Dover, Wight, Portland, Plymouth, Biscay, FitzRoy, Sole, Lundy and Fastnet.		
O: 0220	Extended outlook (3–5 days) for Sea Areas Lundy, Fastnet, Irish Sea, Shannon, Rockall, Malin, Hebrides, Fair Isle, Faeroes and Southeast Iceland.		
O: 0620 1820	24 hour forecast and outlook for Sea Areas Lundy, Fastnet, Irish Sea, Rockall, Malin, Hebrides, Bailey, Fair Isle, Faeroes and Southeast Iceland.		
U: 0720 1920	Inshore waters 24 hour forecast, 24 hour outlook, wind, weather, visibility and sea state for Sea Areas 1–5 and 18.		
U: 1120 2320	Updates to inshore waters forecast for Sea Areas 1–5 and 18.		
U: 0720 1120 1920 2320	Current weather observations for eastern coastal areas of the UK, from Orkney to the south coast.		
I: 0520 1720	Inshore waters 24 hour forecast, 24 hour outlook, wind, weather, visibility and sea state for Sea Areas 5–9 and 19.		
I: 0120 1320	Updates to inshore waters forecast for Sea Areas 5–9 and 19.		
I: 0120 0520 1320 1720	Current weather observations for southern coastal areas and English Channel.		
T: 0710 1910	Weather synopsis and development, 24 hour forecast for Sea Areas Humber, Tamise, Pas de Calais, Antifer, Casquets and Ouessant, in French.		
C: 0820 2020	Inshore waters 24 hour forecast, 24 hour outlook, wind, weather, visibility and sea state for Sea Areas 9–17.		
C: 0020 1220	Updates to inshore waters forecast for Sea Areas 9–17.		
C: 0020 0420 1220 1620	Current weather observations for western coastal areas of the UK, from Wales to Orkney, including the coasts of Ireland.		
Navigational Warnings			
G, E, O: On receipt	Gale Warnings.		
G, E, O: On receipt	Tidal Surge Warnings.		
G: 0100 0500 0900 1300 1700 2100	Coastal (WZ) Navigational Warnings for Sea Areas 1–5, together with Gale and Tidal Surge Warnings until cancelled.		
G: 0500 1700	NAVAREA I Warnings.		
O: 0220 1420			
E: 0040 0440 0840 1240 1640 2040	Coastal (WZ) Navigational Warnings for Sea Areas 6–9, together with Gale and Tidal Surge Warnings until cancelled.		
E: 0440 1640	NAVAREA I Warnings, including submarine and gunnery exercise warnings (SUBFACTS/GUNFACTS) as required.		
K: 0140 0540 0940 1340 1740 2140	Coastal (WZ) Navigational Warnings for Sea Areas 6–7 south of the Channel median in English.		
O: 0220 0620 1020 1420 1820 2220	Coastal (WZ) Navigational Warnings for Sea Areas 10–17, together with Gale and Tidal Surge Warnings until cancelled.		
O: 0620 1820	Submarine and gunnery exercise warnings (SUBFACTS/GUNFACTS) as required.		
U, C: On receipt	Strong Wind Warnings.		
I: On receipt	Strong wind warnings.		
T: 0710 1910	Gale or storm warnings for Sea Areas Humber, Tamise, Pas de Calais, Antifer, Casquets and Ouessant in French		
NOTE: Broadcasts are remotely controlled by Falmouth and Humber Coastguards. There may be a delay in broadcast action if there is Search and Rescue in progress.			



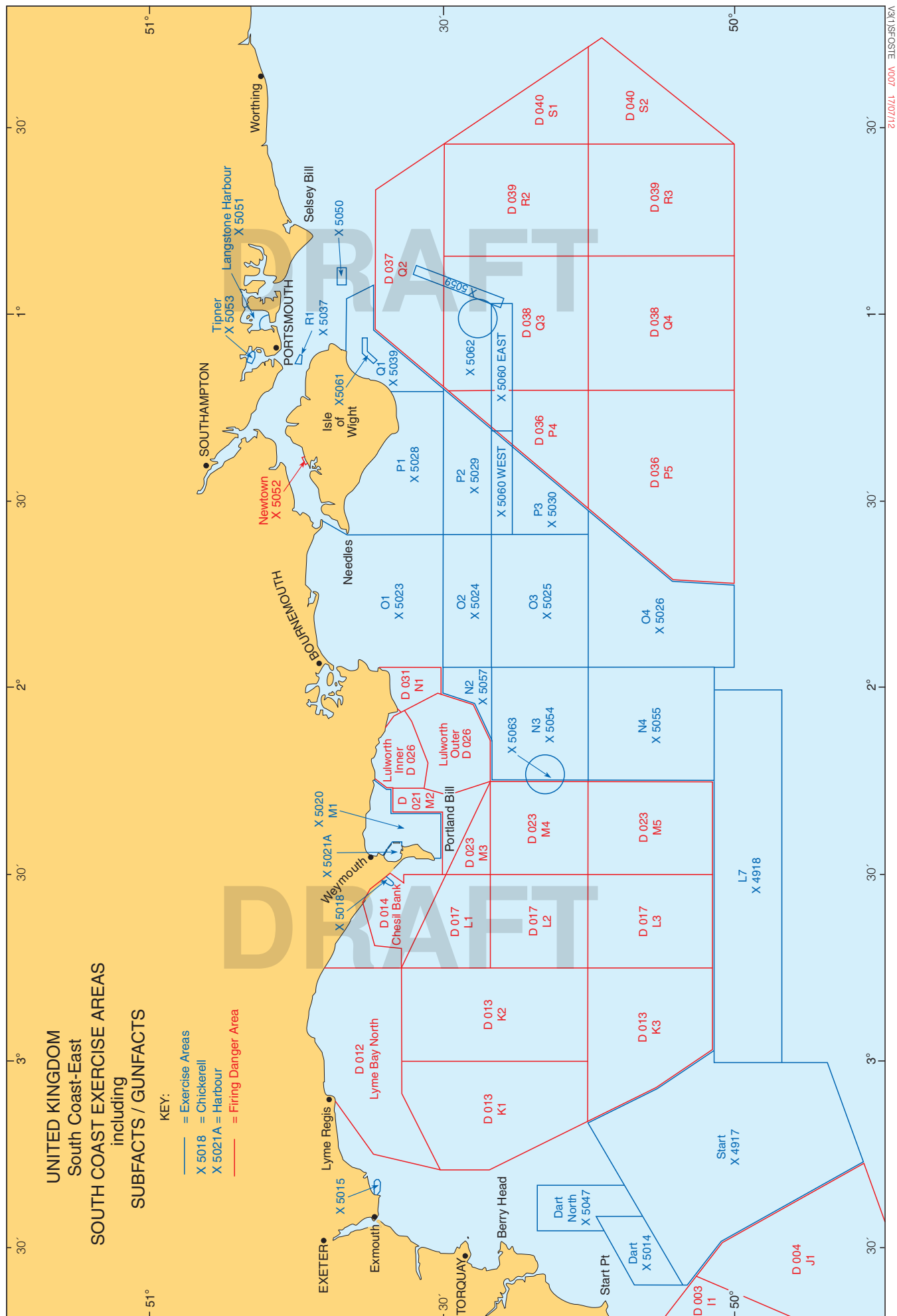
UNITED KINGDOM COASTAL (WZ) NAVIGATIONAL WARNING AREAS AND INSHORE WEATHER FORECAST AREAS

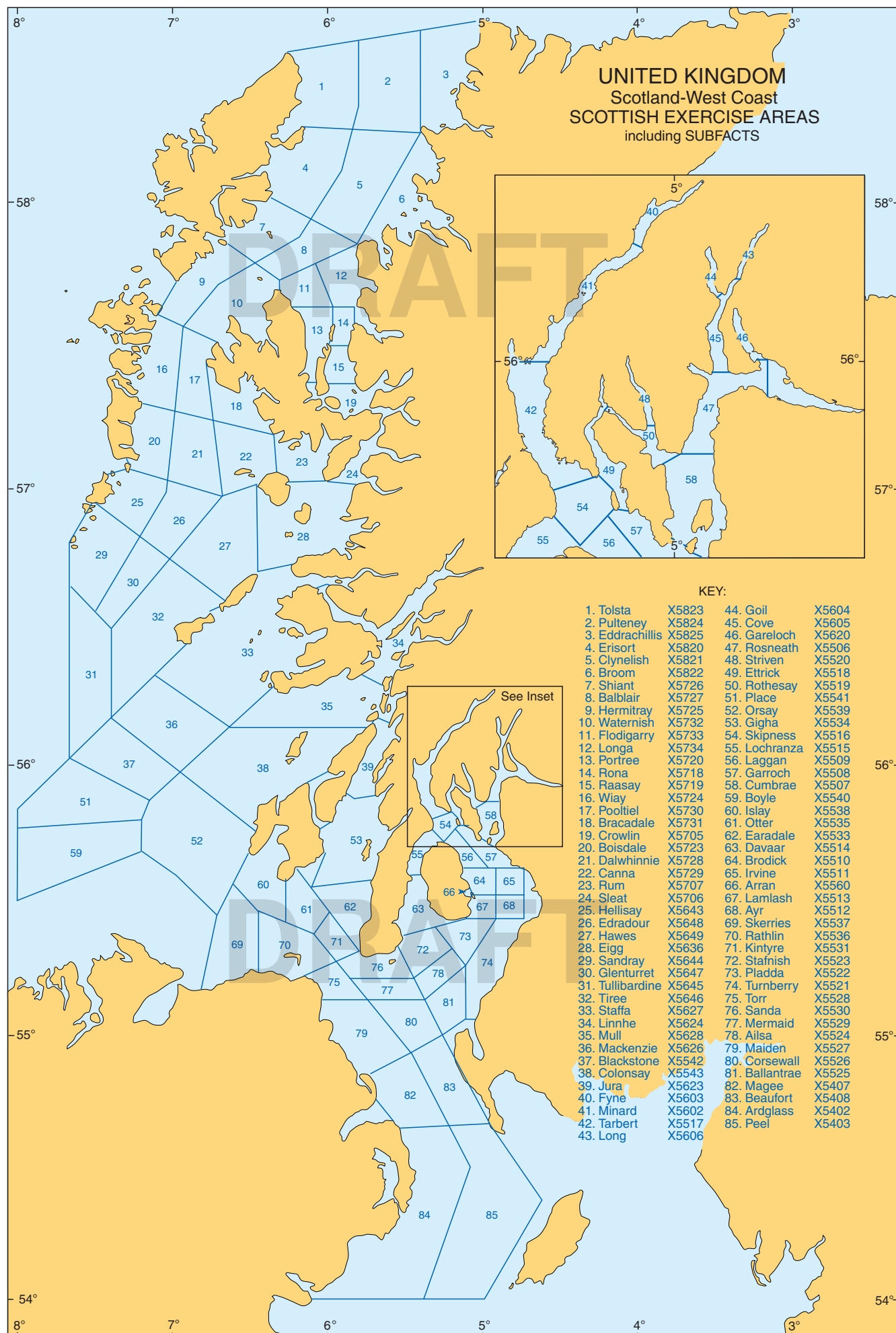
The inshore weather forecast covers the
coastal waters of the UK out to 12 n miles

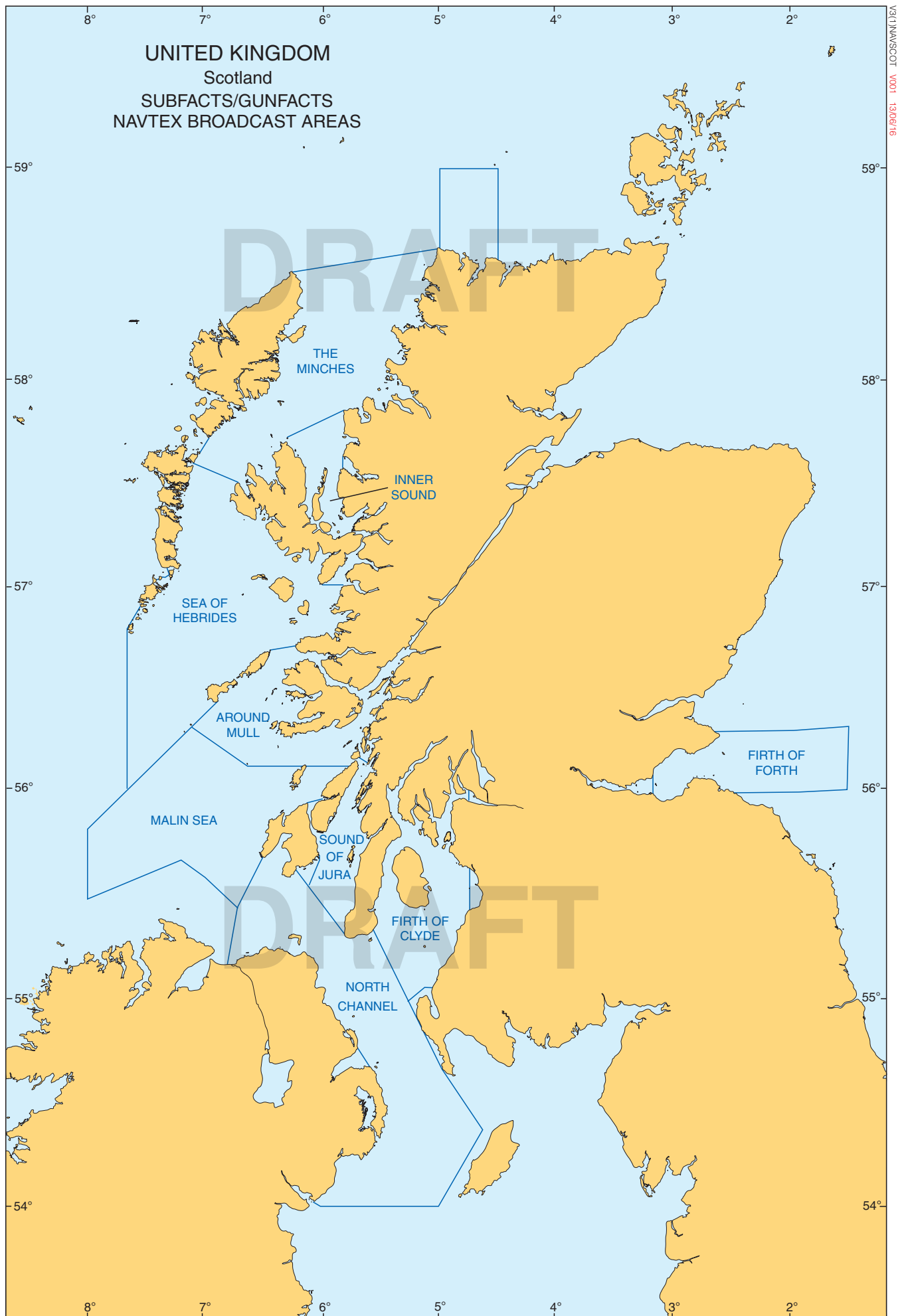




V311WUK V004 2004/17







UNITED KINGDOM

MARITIME SAFETY INFORMATION (MSI) ON THE INTERNET		
<p><i>The internet is not part of the Maritime Safety Information system and should never be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information. However, the following website(s) may prove useful to the mariner:</i></p>		
NAVIGATIONAL WARNINGS		
www.admiralty.co.uk/maritime-safety-information/radio-navigational-warnings	United Kingdom Hydrographic Office	Navigation Warnings for UK coastal waters, as well as NAVAREA I warnings, in English.
www.trinityhouse.co.uk/notices-to-mariners	Trinity House	Notices to Mariners regarding Aids to Navigation in UK waters.
LOCAL NOTICES TO MARINERS		
www.aberdeen-harbour.co.uk/operations/information-for-port-users/navigation-notices/	Aberdeen Harbour Board	Local Notices to Mariners.
www.cowesharbourcommission.co.uk/local_notices_to_mariners	Cowes Harbour Commission	Local Notices to Mariners for Cowes Harbour, Isle of Wight.
www.doverport.co.uk/operations/notices-to-mariners/	Dover Harbour Board	Local Notices to Mariners. Other associated information is available under the 'Operations' menu, such as pilotage and VTS details.
www.falmouthharbour.co.uk/doc-category/notices-to-mariners/	Falmouth Harbour Commissioners	Local Notices to Mariner for Falmouth Harbour, together with associated information.
https://forthports.co.uk/marine/notices-to-mariners/	Forth Ports Ltd.	Local Notices to Mariners for ports in the Firth of Forth, together with weather and tidal information.
www.humber.com/Estuary_Information/Navigating_the_Estuary/Notice_to_Mariners_in_Force/	Humber: Associated British Ports (ABP)	Local Notices to Mariners for the Humber Estuary. Other useful information is also shown regarding: weather, tidal data, pilotage and ports.
www.pla.co.uk/Safety/Regulations-and-Guidance/Notices-to-Mariners/Notices-to-Mariners	Port of London Authority	Local Notices to Mariners within the PLA jurisdiction, together with associated information such as pilotage and VTS.
www.orkneyharbours.com/notices_to_mariners.asp	Orkney Islands Council Marine Services	Local Notices to Mariners for the Orkney Islands, together with associated information such as weather, tidal data, pilotage and VTS information.
www.peelports.com/marine-information/	Peel Ports Group	Local Notices to Mariners and related information for the ports of Clydeport, Great Yarmouth, Heysham, Liverpool, London Medway and the Manchester Ship Canal.
www.royalnavy.mod.uk/qhm/portsmouth/local-notices www.royalnavy.mod.uk/qhm/plymouth/local-notices	Royal Navy Queen's Harbour Master: Portsmouth and Plymouth	Navigation Warnings and Local Notices to Mariners for the Portsmouth and Plymouth Harbour area. Other information is also available from links on the homepage, such as local regulations, weather, tidal, pilotage and port information.
www.shetland.gov.uk/ports/notices.asp	Shetland Islands Council	Local Notices to Mariners and associated information.
www.southwalesports.co.uk/Notices/Notice_to_Mariners/	South Wales: Associated British Ports (ABP)	Local Notices to Mariners for the approaches to the ports of South Wales. Other useful information is also shown regarding weather, tidal data, pilotage and ports.
www.pdports.co.uk/en/marine-operations/navigation-information/	Tees and Hartlepool: PD Ports	Local Notices to Mariners and weekly Navigational Bulletin for the River Tees, Hartlepool and Tees Bay.
www.tor-bay-harbour.co.uk/harbours/hmn.htm	Tor Bay Harbour Authority	Local Harbour Notices for ports within the Tor Bay area.

FIRING PRACTICE AND EXERCISE AREAS

Diagrams pages 218, 219, 220 and 224

Firing, bombing practices and defence exercises take place in a number of sea areas around the coasts of the United Kingdom. These areas are in use, or are available for use, by the Ministry of Defence for practice and exercises, with or without the use of live ammunition. The areas are generally operated using a clear range procedure, which means that exercises and firing etc. only take place when the ranges are thought to be clear of all shipping. However, mariners should ensure that they refer to any relevant chart notes, as these may contain additional information regarding local byelaws which prohibit access to particular areas of some ranges. In most cases, warnings are not broadcast during operations.

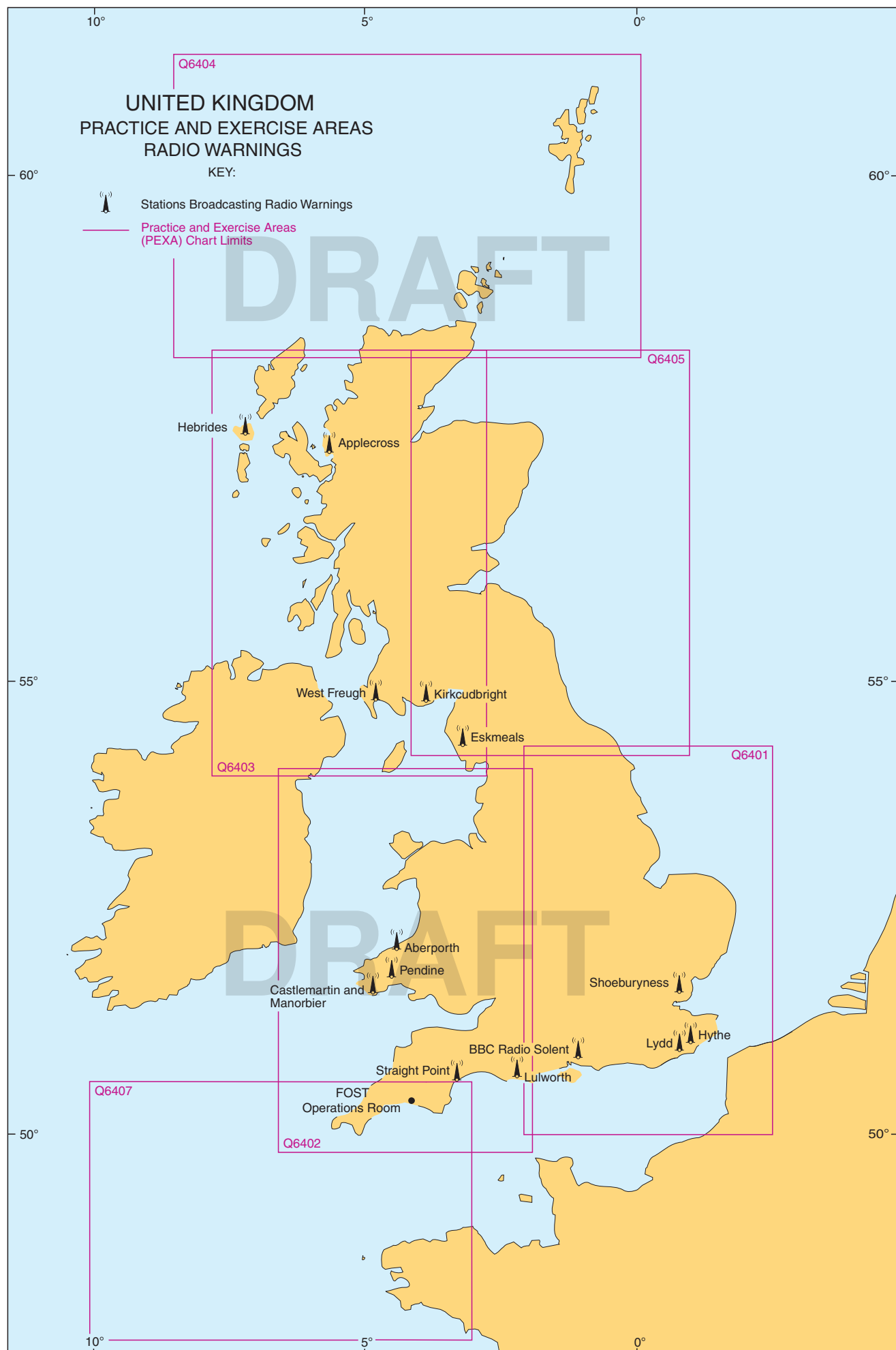
The designated Range Authorities are responsible for ensuring that there should be no risk of damage from falling shell splinters, bullets etc., to any vessel which may be in a practice area.

The limits of all practice and exercise areas are shown on nautical charts and Practice and Exercise Areas (PEXA) charts Q.6401, Q.6402, Q.6403, Q.6404, Q.6405, and Q.6407. These charts are available through appointed ADMIRALTY Distributors.

It should be noted that practice and exercise area warning broadcasts are only in force for limited periods. For information regarding activities and broadcasts, the authorities listed in the table should be contacted – see also SUBFACTS and GUNFACTS section. It should be further noted, that this table is NOT comprehensive and that full and authoritative details of all firing exercise and danger areas may be found on the National Air Traffic Service (NATS) website www.nats-uk.ead-it.com. Once on this page, go to the IAIP tab, then the Enroute Information-ENR Index and select ENR 5.1. Some of the times of 'activation' (times of operation), refer to NOTAMs (Notices to Airmen) and no longer conform to a regular Mon–Fri time schedule. This allows greater flexibility to all users and means that the areas are only activated when required. To view NOTAMs, one may either register on the official NATs website using the NOTAM tab, or go to a third-party site such as *NOTAM Info* (<http://notaminfo.com>), noting that the latter is NOT the official source, but rather takes NOTAMs from the NATs site and displays them in some more easily readable/searchable forms.

Firing Range	Frequencies	Times of Operation (LT)	Area
ENGLAND – EAST COAST (Range Safety vessels are on station except in adverse weather)			
Shoeburyness Artillery Range Range Control: Tel: 01702 383211 Marine Control: Tel: 01702 383311 e-mail: qqshbenquiries@qinetiq.com website: www.shoeburyness.qinetiq.com	Chs 16 72 Call: Shoe Radar	Refer to NOTAMs (see introduction)	D136, D138 and D138A-C — Thames Estuary ADMIRALTY Chart 1183, 1185, 1607 & 1975
ENGLAND – SOUTH COAST (Range Safety vessels are on station except in adverse weather)			
South Coast Exercise Areas — are the responsibility of the Flag Officer Sea Training (FOST) Operations Room, Plymouth. West and East Areas — FOST Ops, Duty Operations Officer Tel: 01752 557550 (H24) Fax: 01752 557774 (H24) RT: Call: 'FOST Ops' on VHF Ch 74 (Transmit/Receive range approximately 40 n miles from Plymouth). Details of activities within South Coast Exercise Areas (East) are also available on request from Solent CGOC: Tel: 02392 552100 or Call: 'Solent Coastguard' on VHF Ch 16 or 67. BBC Radio Solent – 999 kHz; 1359 kHz; 96.1 MHz; 103.8 MHz – 0535 06350745 (Mon–Fri) / 0535 06330745 (Sat, Sun) covering area Portsmouth to Lulworth Cove.			
HQ Defence Training Estate SE (CPTA) Tel: 01303 225834 or 225859 Fax: 01303 225885			
Hythe Firing Ranges Range Control Operator (During Firing): Tel: 01303 225879	Chs 16 73	0830–2300 (as required to clear the Danger Areas). For latest firing times see: www.hythetc.kentparishes.gov.uk/ under 'Local Information'	D141 — Dover Strait ADMIRALTY Charts 1610, 1892, 2449 & 2451 Danger Areas are closed under Local Byelaws. NOTE: Radar tracking and recording of all vessels within or approaching the area.
Lulworth Range Range Officer: Tel: 01929 404712 Fax: 01929 404912 24h pre-recorded message on firing times: 01929 404819	Chs 08 16 Range Control and Safety Boats Call: Lulworth Range Safety Boat	0930–1700 (Mon–Thurs) 0930–1230 (Fri) 0930–1700 (Fri if weekend firing taking place). Night firing usually takes place on Tues and Thurs. Weekend firing takes place up to 6 times a year.	D026 — Portland — S. Alban's Head ADMIRALTY Chart 2610 NOTE: Radar and CCTV tracking and recording of all vessels within or approaching the area.
Lydd Ranges Range Control Operator (During Firing): Tel: 01303 225518 or 225519 Training Safety Officer: Tel: 01303 225503	Chs 16 73	0830–2300 (as required to clear the Danger Areas). For latest firing times see: www.hythetc.kentparishes.gov.uk/ under 'Local Information'	D044 — Dover Strait ADMIRALTY Charts 536, 1892, 1991 & 2451 Danger Areas are closed under Local Byelaws. NOTE: Radar tracking and recording of all vessels within or approaching the area.

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UNITED KINGDOM

Firing Practice and Exercise Areas (Continued)

Firing Range	Frequencies	Times of Operation (LT)	Area
Straight Point Training Safety Officer: Tel: 01395 272972 or Mobile: 07810 773175	Ch 16	0900–1615 (Day) 1700–2345 (Night)	X5015 — Straight Point, Exmouth ADMIRALTY Charts 2454 & 3315
Tregantle Ranges Chief Range Warden: Tel: 01752 822516			X5009 Admiralty Chart 1900
Trevose Head Ops Room: Tel: 01326 552415		0800–2359 (Mon–Thurs) 0800–1800 (Fri) Note: Summer 1h earlier	D001 Admiralty Charts 1149, 1156 & 1178
WALES (Range Safety vessels are on station except in adverse weather)			
Aberporth Range Range Control: Tel: 01239 813480 or 813423 Marine Control: Tel: 01239 813760 e-mail: abeenquiries@qinetiq.com Website: www.aberporth.qinetiq.com	Chs 11 16 Call: Aberporth Marine Control	Refer to NOTAMS (see introduction)	D201, D201A–D, D201F and D201G — Cardigan Bay ADMIRALTY Chart 1410, 1411, 1971 & 1973 NOTE: Radar tracking and recording of all vessels within or approaching the area. CCTV recording on coastline near MOD Aberporth. See website for details.
Castlemartin Range (Army) Range Control Office: Tel: 01646 662367 or 662496 (24h pre-recorded message on firing times and areas, updated at 0800)	Ch 16 Call: Castlemartin Range Control	0900–1700 (Mon, Wed and Fri) 0900–2330 (Tues and Thurs) Note: Changes maybe made without notice.	D113A, D113B — St. Govan's Hd to Skokholm I, about 12 n miles offshore. ADMIRALTY Charts 1076, 1178 & 1478 NOTE: Radar tracking and recording of all vessels within or approaching the area.
Manorbier Range Range Control Tower (During firing): Tel: 01834 870105 For information at all other times: Tel: 01834 870104 (Commandant) or 871282 For 24h pre-recorded message on firing times and areas: Tel 01834 870098	Chs 16 73 (on request) Call: Manorbier Range Control on Ch 16	0830–1730 (Mon–Fri) Occasionally Sat and Sun.	D115A, D115B — Caldey I. to St. Govan's Hd, about 12 n miles offshore. ADMIRALTY Charts 1076, 1482 & 1478 NOTE: Radar tracking and recording of all vessels within or approaching the area.
Penally Range Tel: 01834 845776 or 870104 Fax: 01834 843522 or 871283 For 24h pre-recorded message on firing times and areas: Tel 01834 845950		Normal firing times (may change at short notice): 0830–1630 (Mon–Sat) 1100–1530 (Sun) No Firing on Bank/Public Holidays	X5104 ADMIRALTY Charts 1076 & 1482
Pendine Range Range Control: Tel: 01994 452240 or 01994 452310 (after hours) e-mail: pendineinfo@qinetiq.com Website: www.pendine.qinetiq.com	Chs 16 67 73 Chs 16 17 Safety Boat Call: Triton	Refer to NOTAMS (see introduction)	D117 — Carmarthen Bay ADMIRALTY Chart 1179
SCOTLAND, NORTHERN ENGLAND AND NORTHERN IRELAND (Range Safety vessels are on station except in adverse weather)			
Scotland, Northern England and Northern Ireland Exercise Areas are the responsibility of Fleet Operations, Northwood Headquarters, Sandy Lane, Northwood HA3 6HP. Scotland — West Coast, Exercise Areas — Fleet Operations, Waterspace Manager. Tel: 01923 956371			
Altcar Rifle Range Range Control: Tel: 0151 9292539 General Enquiries: Tel: 0151 9292601 E-mail: nw-altcarchiefclk@rfca.mod.uk Website: www.nwrfca.org.uk/rfca/altcar-training-camp/		Live Firing Times: Day: 0830–1600 (Sun–Thurs) 0830–1630 (Sat) Night Firing: Dusk–2359 (April–Sept) Dusk–2200 (Oct–March)	X5306 — River Mersey ADMIRALTY Charts 1951, 1978 and 1981

Continued overleaf

UNITED KINGDOM

Firing Practice and Exercise Areas (Continued)

Firing Range	Frequencies	Times of Operation (LT)	Area
Applecross (BUTEC) Operations Room: Tel: 01397 436713 or 01397 436720 Range Control Tel: 01397 436740 or 01397 436741	Chs 08 13 16	Refer to NOTAMs (see introduction)	Inner Sound ADMIRALTY Chart 2210, 2479 & 2480
Barry Buddon Ranges Range Control (Working Hours): Tel: 0131 3108690 Ops Room: Tel: 0131 3103426		0900–1600 (periodically extended for night firing).	D604 — River Tay ADMIRALTY Chart 1481 NOTE: Radar and CCTV tracking and recording of all vessels within or approaching the area.
Binn Hill Range Range Safety Officer: Tel: 01463 224545		0900–1600 (Mon–Sat) 1600–2300 (Tues & Thurs) 0900–1230 (Sun)	X5702 — Moray Firth ADMIRALTY Charts 115, 222 & 223
Cape Wrath, Faraid Head Range Control (Working hours): Tel: 01971 511242 Ops Room: Tel: 0131 3103426			D801, D802 & D803 ADMIRALTY Charts 1954 and 2720
Eskmeals Range Range Control: Tel: 01229 712245 Fax: 01229 712380 e-mail: eskmealsenquiries@qinetiq.com	Chs 11 16 Call: Eskmeals Gun Range	Refer to NOTAMs (see introduction)	D406, D406B & D406C — Irish Sea ADMIRALTY Chart 1826 & 1320 NOTE: Radar and CCTV tracking and recording of all vessels within or approaching the area.
Fort George Range Range Control (Working hours): Tel: 0131 3108690 Ops Room: Tel: 0131 3103426		0900–1600 (Mon–Sat) 1600–2300 (Tues & Thurs) 0900–1230 (Sun)	D702 — Moray Firth ADMIRALTY Charts 1077 & 1078 NOTE: Radar and CCTV tracking and recording of all vessels within or approaching the area.
Hebrides Range Control: Tel: 01870 604449 or 01870 604554	Ch 16 Call: Hebs Range Control (only monitored when active)	Refer to NOTAMs (see introduction)	D701A through D701Z West Coast of Outer Hebrides and St. Kilda ADMIRALTY Charts 1127, 1128 & 2635 NOTE: Radar tracking and recording of all vessels within or approaching the area.
Kirkcudbright Firing Range (Army) Range Control (Working hours): Tel: 0141 2248520 or 2248521 Ops Room: Tel: 0131 3103426	Chs 16 73 Range Control and Safety Boat Call: Gallovidian	0800–2359 (Mon–Fri) Alternative times as issued by Navigational Warnings. Note: Summer 1h earlier	D405, D405A — Solway Firth ADMIRALTY Charts 1346, 1826 & 2094 NOTE: Radar tracking and recording of all vessels within or approaching the area.
Moray Firth Military Airspace Booking Co-ordination Cell: Tel: 01489 612495			D809C, D809N & D809S — Moray Firth ADMIRALTY Charts 1409, 1942, 1954, 1971 & 2250
Tain Range Control (Working hours): Tel: 01862 892185 Ops Room: Tel: 0131 3103426		0900–2200 (Mon–Thurs) 0900–1400 (Fri) Alternative times as issued by Navigational Warnings. Note: Summer 1h earlier	D703 — Moray Firth ADMIRALTY charts 115 and 223
West Freugh Operations Manager: Tel: 01776 888932 Range Control: Tel: 01776 888930	Chs 12 16 Call: Luce Bay Control (only monitored when active)	Refer to NOTAMs (see introduction)	D402A, D403, D403A — Luce Bay ADMIRALTY Charts 1404, 1826, 2093 & 2094

SUBFACTS AND GUNFACTS

Diagrams pages 218, 219, 220, 221 and 224

SUBFACTS is a warning service providing information to the mariner of planned or known submarine activity. Submarines may operate for the entire period, or part thereof, in each area notified.

Submarines on the surface will act strictly in accordance with the International Regulations for Preventing Collisions at Sea. Submarines at periscope depth will not close to within 1500 yards of a fishing vessel unless the fishing vessel's express permission has been obtained. Vessels operating in these areas should monitor VHF Ch 16 for specific deconfliction and safety related information, changing to a working frequency as required.

SUBFACTS are issued by Flag Officer Sea Training (FOST), Plymouth, (**SUBFACTS — South Coast**) and Fleet Operations, Northwood (**SUBFACTS — Clyde**).

- SUBFACTS — South Coast** will cover planned or known activity off the South Coast of England. This service only applies to submarines that have been allocated dived water.
Any queries regarding SUBFACTS — South Coast Broadcasts should be addressed to FOST at Plymouth, Tel: (0)1752 557550 or call 'FOST Ops' on VHF Ch 74 (range approximately 40 n miles from Plymouth).
Falmouth Coastguard broadcast SUBFACTS — South Coast as part of the MSI broadcast. For full broadcast details see relevant Radio Station entries.
General information on SUBFACTS is also broadcast by NAVTEX. For full broadcast details see NAVTEX station entry.
- SUBFACTS — Clyde** will cover planned or known activity off the West Coast of Scotland. This service will apply to both surfaced submarines (with dived areas allocated) and dived submarines. The exercise areas referred to in SUBFACTS — Clyde are shown on the relevant diagram. It should be noted that due to the complexity of the Scottish Exercise Areas and the limitations of the length of textual entries in the system, NAVTEX transmissions of SUBFACTS/GUNFACTS for this section of UK waters will refer to the following general sea areas: The Minches, Inner Sound, Sea of the Hebrides, Around Mull, Malin Sea, Sound of Jura, Firth of Clyde and North Channel (see relevant diagram). SUBFACTS are available H24 through Fleet Operations, Northwood Tel: (0)1923 956371 or 956366.
Fishermen may contact the DSMC (Tel: (0)1923 956366) for immediate issues involving submarines resulting from SUBFACTS.
Belfast and Stornoway Coastguard broadcast SUBFACTS — Clyde as part of the MSI broadcast. For full broadcast details see relevant station entries.
General Information on SUBFACTS is also broadcast by NAVTEX. For full broadcast details see NAVTEX station entry.

SUBFACTS covering all areas are also available on request from:

Stornoway Coastguard: Tel: (0)1851 702013/4 alternatively on VHF Ch 16 (Call: Stornoway Coastguard)

Belfast Coastguard: Tel: (0)2891 463933 alternatively on VHF Ch 16 (Call: Belfast Coastguard).

GUNFACTS is a warning broadcast service providing information to the mariner of Practice Firing Intentions by Naval Authorities. It is emphasised that GUNFACTS is a warning service to provide information to mariners and poses no restriction on the passage of any vessel. The onus for safety within the firing area lies with the naval unit.

GUNFACTS are issued by Flag Officer Sea Training (FOST), Plymouth (**GUNFACTS — South Coast**) for the South Coast Exercise Areas; Fleet Operations, Northwood (**GUNFACTS — Clyde**) for the Scottish Exercise Areas and for all other areas by a nominated 'Duty Broadcast Ship' (**GUNFACTS — Ship**).

- GUNFACTS — South Coast** will cover planned or known activity for the South Coast Exercise Areas.
Any queries regarding GUNFACTS — South Coast Broadcasts should be addressed to FOST at Plymouth, Tel: (0)1752 557550 or call 'FOST Ops' on VHF Ch 74 (range approximately 40 n miles from Plymouth).
Falmouth Coastguard broadcast GUNFACTS — South Coast as part of the MSI broadcast. For full broadcast details see relevant station entries.
General information on GUNFACTS is also broadcast by NAVTEX. For full broadcast details see NAVTEX station entry.
- GUNFACTS — Clyde** will cover planned or known activity for the Scottish Exercise Areas. GUNFACTS are available H24 through Fleet Operations, Northwood: Tel: (0)1923 956371.
Belfast and Stornoway Coastguard broadcast GUNFACTS — Clyde as part of the MSI broadcast. For full broadcast details see relevant station entries.
General information on GUNFACTS is also broadcast by NAVTEX. For full broadcast details see NAVTEX station entry.
- GUNFACTS — Ship** will cover planned or known activity in all other areas including the Channel (outside South Coast Exercise Areas) and Scotland and Northern Ireland (outside Scottish Exercise Areas).
Broadcasts will be made twice daily at 0800 and 1400 LT by a nominated 'Duty Broadcast Ship'. If for any reason this is not possible broadcasts will be made as a minimum at least 1 hour prior to firing. The 'Duty Broadcast Ship' will make a short preliminary call on VHF Ch 16 before transferring to the VHF broadcast channel appropriate to the area, normally on VHF Ch 06 or 67. More than one 'Duty Broadcast Ship' may be used in widely dispersed areas.

METEOROLOGICAL SERVICES FOR SHIPPING

Diagrams pages 216 and 217

Broadcasts from HM Coastguard and the British Broadcasting Corporation (BBC)**Gale warnings**

Gale warnings are issued when mean winds of at least force 8 (34 to 40 knots) or gusts reaching 43 to 51 knots are expected. Gale warnings remain in force until amended or cancelled. However, if the gale persists for more than 24 hours after the time of origin, the warning will be re-issued. The term 'severe gale' implies a mean wind of at least force 9 (41 to 47 knots) or gusts reaching 52 to 60 knots. The term 'storm' implies a mean wind of at least force 10 (48 to 55 knots) or gusts reaching 61 to 68 knots. The term 'imminent' implies within 6 hours of the time of issue, 'soon' implies between 6 and 12 hours, 'later' implies more than 12 hours.

Weather Bulletins from HM Coastguard

Weather bulletins are broadcast from HM Coastguard stations on VHF, MF and NAVTEX. They contain gale warnings, if in force, and area forecasts valid for 24 hours from the time of issue and the inshore waters forecast which may include strong wind warnings. These are given in the order: wind speed and direction, sea state, weather and visibility. The words 'wind', 'force', 'nautical', 'millibars/hectopascals', 'sea state', 'weather' and 'visibility' are omitted.

Continued overleaf

UNITED KINGDOM

Meteorological Services for Shipping (Continued)

Weather Messages from the BBC

BBC Radio 4 shipping forecasts contain:

- Gale warnings in force at the time of the forecast. If no gale warnings are issued this section is omitted.
- A general synopsis giving the situation for all Sea Areas, within the next 24 hours.
- A forecast for the next 24 hours for all Sea Areas giving wind direction and force, sea state, weather, visibility and superstructure icing.
- Latest reports from selected observation stations. The elements given are wind direction (compass points) and force (Beaufort scale), present weather (including that of the past hour), visibility (nautical miles or metres) and, if available, sea level pressure and tendency in qualitative terms. The words 'wind', 'force', 'nautical', 'millibars/hectopascals' and 'visibility' are omitted. The number of stations included depends on the time available.

A forecast for the inshore waters of the UK (i.e. up to 12 n miles offshore) is also broadcast twice a day. The 0048 broadcast also includes a selection of coastal reports from stations around the UK Coast.

NOTE: See Radio Station **BBC Radio 4** for full Broadcast details.

SPECIAL FORECASTS FOR COMMERCIAL SHIPPING

Forecasts issued at time of request

PROCEDURE FOR VESSELS AT SEA

Weather forecasts for areas within the regions contained between the parallels of 65°00'N and 35°00'N and the meridian of 40°00'W and the coast of the continent of Europe, including the Mediterranean, can be obtained H24 from the Met Office's Operations Centre.

Requests for information should be made by telephone to the Met Office Customer Centre on Tel: 0370 9000100 (from within the UK) or +44 1392 885680 (from outside the UK). The forecast areas should be quoted to indicate the areas for which forecasts are required. Please note that services are chargeable, for further information please see the Met Office webpage www.metoffice.gov.uk/services/talkfc.

WEATHER REPORTS AND FORECASTS

Local weather reports from Port Radio Stations

ALRS Volume 6 (1) (NP286(1)) contains details of Port Radio Stations which give local weather and visibility reports on request.

Special forecasts for port areas from the Met Office

Masters of vessels and others interested in the movements of shipping in the vicinity of a port and in the loading and discharging of cargo can obtain local weather forecasts by contacting the Met Office Customer Centre. Tel: 0370 9000100. Please note that services are chargeable, for further information please see the Met Office webpage www.metoffice.gov.uk/services/talkfc.

SPECIALISED WEATHER SERVICES

Reports of Present Weather

Mariners requiring reports of actual weather conditions prevailing at specified places around the coasts of the British Isles may obtain such reports by contacting the Met Office Customer Centre. Tel: 0370 9000100 (from within the UK), +44 1392 885680 (from outside the UK) or e-mail: enquiries@metoffice.gov.uk

Reports from selected sites are also available on the internet at: www.metoffice.gov.uk/public/weather/marine-observations

From UK Coastguard Stations

The following UK Coastguard Operations Centres (CGOCs), all of which are continuously manned, may be prepared to respond to enquiries concerning actual weather conditions. Such information only applies to present weather in the immediate vicinity of each station or a remote site and does not include forecasts or information concerning other areas.

List of Coastguard Operations Centres (CGOCs)

	Tel (+44)	Fax (+44)	e-mail
Dover Coastguard	(0)1304 210008	(0)1329 841905	zone14@hmcg.gov.uk
Humber Coastguard	(0)1262 672317		zone8@hmcg.gov.uk
Solent Coastguard (NMOC)	(0)2392 552100		zone17@hmcg.gov.uk
Milford Haven Coastguard	(0)1646 690909		zone28@hmcg.gov.uk
Falmouth Coastguard	(0)1326 317575		zone23@hmcg.gov.uk
Holyhead Coastguard	(0)1407 762051		zone31@hmcg.gov.uk
Stornoway Coastguard	(0)1851 702013		zone36@hmcg.gov.uk
Belfast Coastguard	(0)2891 463933		zone34@hmcg.gov.uk
Aberdeen Coastguard	(0)1224 592334		zone3@hmcg.gov.uk
Shetland Coastguard	(0)1595 692976		zone1@hmcg.gov.uk

CGOC Voice Call Signs: The voice call sign of a particular CGOC is the geographical name followed by "Coastguard", e.g. "HUMBER COASTGUARD". However, the MCAs preference is for the mariner to just call "UK COASTGUARD", for the reasons explained in the 'General Notes' section.

Winter Fishing Fleet Forecasts — HM Coastguard

A 3 day forecast for fishing fleets in the North Sea, Western Isles, North West Approaches and South West Approaches is transmitted between October and March. A forecast of wind direction and force is provided, covering the 3 days ahead from the time of issue.

The National Severe Weather Warning Service (NSWWS)

The NSWWS is provided by the Met Office. Warnings of severe weather; the overriding criterion for the issue of these warnings is the strong likelihood of severe weather which may cause considerable inconvenience to a large number of people and/or present a danger to life. Flash messages are issued up to 6 hours ahead of the expected event and are sent to emergency organisations and to radio and TV companies for broadcast to the public. Early warnings with longer lead times are sent only to emergency organisations, with the public kept informed through scheduled forecasts on radio and TV.

Inshore Waters Forecast (IWF)

The IWF is a forecast provided by the MCA for the benefit of coastal shipping, fishing vessels and leisure craft covering the coastal waters of the UK out to 12 n miles. Forecasts give a brief general situation (synopsis), a 24 hour forecast and outlook for 19 inshore areas and an indication if Strong Wind Warnings (SWW) are in operation within a given area. The forecast consists of four elements, wind, sea state, weather and visibility.

The IWF is transmitted on the 490 kHz Navtex. Each new forecast is transmitted on RT and a repetition is made 3 hours later.

The 19 inshore waters forecast areas can either be referred to in full, in abbreviated form or simply by the listed sequential number. Note that the Coastal (WZ) Navigational Warning sea regions are also aligned to these boundaries although they extend beyond the 12 mile limit from the coast. These are referred to by the sequential number only.

NOTE: The Shetland Isles Inshore Waters Forecast is based on a 60 n miles radius of Lerwick and consists of four 12 hour forecasts and four 12 hour outlooks.

Strong Wind Warnings (SWW)

SWW complement the IWF and cover the same areas out to 12 miles from the coast. A SWW will be issued when winds of force 6 or more are forecast within an inshore forecast area and are valid only until the next IWF.

If the strong winds persist, or are forecast as part of the IWF then the legend SWW is given after the area title of the IWF to indicate that a SWW is in operation.

SWWs are broadcast on receipt, included as part of the repetition broadcast and are identified within the text of the IWF.

Extended 3 to 5 day Outlook

An extended 3 to 5 day outlook covering the offshore shipping forecast Areas is available on the 518 kHz NAVTEX Service. The sea areas are grouped into three regions, broadly, North and East Coast, South Coast and West Coast, corresponding to the areas covered by the 3 NAVTEX transmitters.

Latest Marine Observations

A selection of Marine Observations is provided on the 490 kHz NAVTEX service. The areas covered are grouped into three regions, broadly, North and East Coast, South Coast and West Coast, corresponding to the areas covered by the 3 NAVTEX transmitters.

MISCELLANEOUS SERVICES**Correction of Ships' Barometers****International Convention for the Safety of Life at Sea**

The International Convention for the Safety of Life at Sea (SOLAS) states that whenever the Master of a vessel has good reason to believe that a tropical storm is developing, or exists in the neighbourhood, he is obliged to communicate the information by all means at his disposal to vessels in the vicinity, and also to the competent authorities at the first point on the coast with which he can communicate. The form in which the message is sent is not obligatory but should, where practicable include the barometric pressure.

The greatest possible accuracy in barometer readings is therefore desirable in order that they may be compared with those of other vessels for the purpose of assessing the form and progress of the storm. Accurate barometer readings are also essential for a proper appreciation of weather bulletins used in temperate latitudes. Aneroid barometers in particular are subject to periodical errors.

The attention of Masters of vessels in ports in the United Kingdom is drawn to the lists of stations giving local weather forecasts and reports of present weather. These stations are equipped with tested barometers.

A barograph (updated every 5 minutes) and details of the UK's National Standard Barometer are accessible through the National Physical Laboratory (NPL) Website:

www.npl.co.uk/pressure/pressure.html

NOTE: The values of barometric pressure shown on the NPL Website give the pressure in Teddington, corrected to Mean Sea Level. When using the pressure values, particularly for checking another barometer, it is important to appreciate that the differences in altitude, distance from Teddington and weather conditions will seriously limit the validity of the comparison. Proper calibration of barometers can only be accomplished by direct pneumatic connection to an appropriate pressure standard and adherence to well defined procedures.

In addition, tested barometers are available for comparison in the following Harbour Masters offices: Teesport (Middlesbrough), Leith, Cardiff, Avonmouth, Milford Haven, Swansea. Meteorological advice, corrections to ships' barometers, etc., will also be readily supplied by the Port Meteorological Officers listed in the Ships' Weather Reports section.

UNITED KINGDOM

NATIONAL COASTWATCH INSTITUTION (NCI)

The National Coastwatch Institution (NCI) is a voluntary organisation set up in 1994 to restore a visual watch along UK shores after many small Coastguard stations closed. The scheme is strongly supported and overseen by the Maritime and Coastguard Agency (MCA) and currently comprises 49 stations around the English and Welsh coastline, from Rossall Point in the North-West, through Wales, to Sunderland in the North-East.

Watchkeepers are responsible for maintaining a visual watch, monitoring radio channels and radar, as well as providing a listening watch in poor visibility. They are able to respond to request from passing traffic, as well as local sailing and fishing vessels, for radio checks and actual weather/sea state conditions in the vicinity. The NCI has been allocated a national licence by OFCOM for the use of VHF Ch 65, by which communications with the mariner can take place.

Although volunteers, watchkeepers are fully trained by the NCI to act in an emergency and report to the MCA. They can then, if required by the Coastguard, co-ordinate with the search and rescue services. It must be noted that the NCI is not permitted to provide any weather forecasts or initiate any SAR activities itself, as these are the sole prerogative of the MCA. For further information regarding the location of NCI stations, the facilities available and operating times, please see the NCI website www.nci.org.uk or for general enquiries contact: Tel: 0300 111 1202 or Postal Address: 1 Barras Street, Liskeard, Cornwall, PL14 6AD.

ABERDEEN CGOC

Control Centre: 57°08'·67N 2°05'·27W

A	2226	RT (MF) VHF	Greg Ness	57°07'·65N 2°03'·22W
B	Ch 62		Forth (Fife Ness)	56°16'·70N 2°35'·29W
			Noss Head	58°28'·75N 3°03'·08W
C	Ch 63		Craigkelly	56°04'·32N 3°14'·00W
			Durness	58°33'·86N 4°44'·13W
			Inverbervie	56°51'·10N 2°15'·68W
			Windyheads Hill	57°38'·91N 2°14'·67W
D	Ch 64		Greg Ness	57°07'·65N 2°03'·22W
			Rosemarkie	57°37'·99N 4°04'·41W
			S. Abbs (Crosslaw)	55°54'·46N 2°12'·31W

Diagrams pages 215, 216, 217 and 232

Weather Bulletins

A-D: 0730 1930 LT	Shipping Forecast and outlook for Areas: Cromarty, Forties, Forth, Tyne and Fair Isle. 3-day Fisherman's Forecast for Sea Areas: Fair Isle, Viking, Forties, Cromarty, Forth, Fisher and Tyne, when and where appropriate (October–March).
A-D: 0130 0430 0730 1030 1330 1630 1930 2230 LT	Inshore Forecast, Gale and Strong Wind Warnings for WZ Areas 1, 2 and 18.

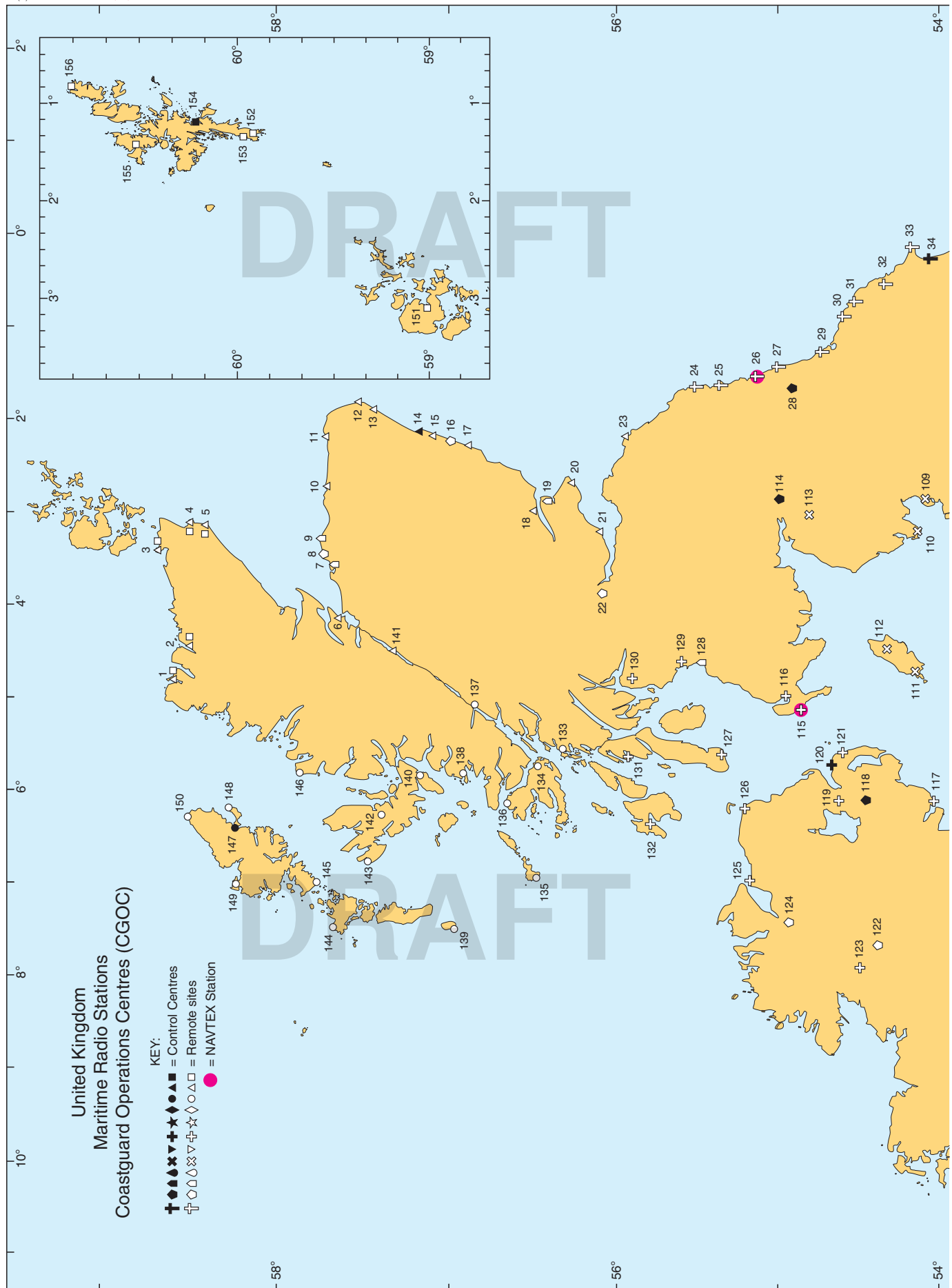
Navigational Warnings

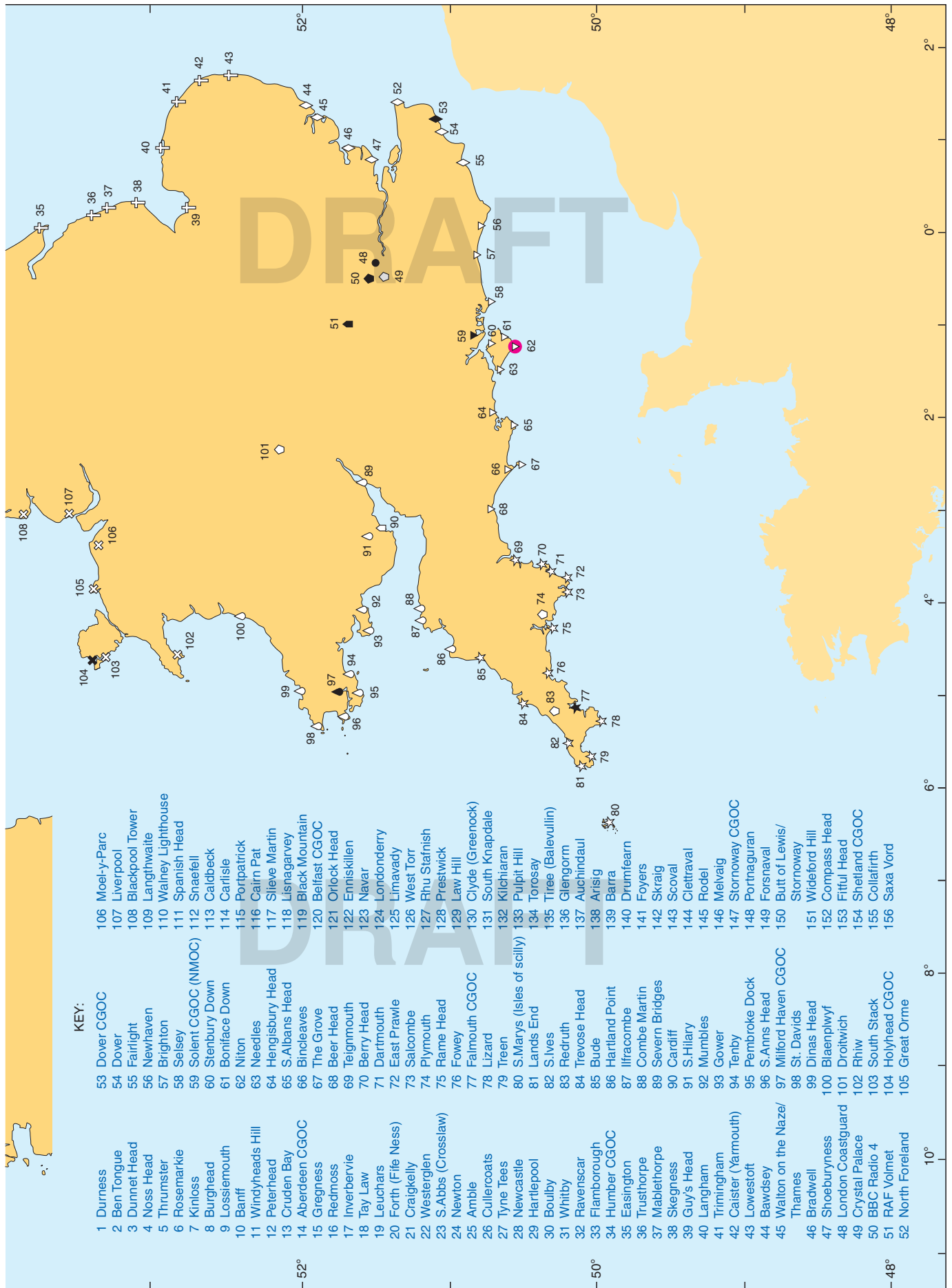
A-D: On receipt	Gale Warnings for Sea Areas: Cromarty, Forties, Forth, Tyne and Fair Isle.
A-D: 0730 1930 LT	Local Navigational Warnings. Coastal (WZ) Navigational Warnings for WZ Areas 1–2. SUBFACTS/GUNFACTS Warnings: Submarine and Gunnery exercise warnings for Cape Wrath, Moray Firth, Firth of Forth and east coast of Scotland exercise areas.

NOTE(S): 1. New Gale Warnings, Storm Warnings and Navigational Warnings will be broadcast (VHF & MF) on receipt and repeated at every scheduled broadcast whilst valid. Such warnings may be announced on DSC.
2. Negative Tidal Surge Warnings will be broadcast (VHF only) on receipt, and at hourly intervals until the next scheduled routine broadcast. Such warnings may also be announced on DSC.

BBC RADIO 4				
Control Centre: 51°31'·00N 0°08'·00W				
A	198 kHz	AM	Burghead	57°41'·89N 3°28'·18W
			Droitwich	52°17'·69N 2°06'·33W
Westerglen	55°58'·52N 3°48'·93W			
B	1485 kHz		Carlisle	54°52'·00N 2°55'·00W
	720 kHz		Crystal Palace	51°25'·00N 0°05'·00W
	774 kHz		Enniskillen	54°22'·00N 7°39'·00W
	720 kHz		Lisnagarvey	54°29'·00N 6°03'·00W
			Londonderry	55°00'·00N 7°22'·00W
	603 kHz		Newcastle	54°56'·00N 1°34'·00W
	774 kHz		Plymouth	50°24'·31N 4°06'·63W
	1449 kHz		Redmoss	57°06'·85N 2°05'·70W
	756 kHz		Redruth MF	50°12'·60N 5°14'·34W
C	92·4-104·9 MHz	FM		
Diagrams pages 216 and 217				
Weather Bulletins				
A-C: 0048 0520 LT		Gale warnings, shipping forecast, weather reports from coast stations and the inshore forecast.		
A: 1201 1754 LT		Gale warnings and shipping forecast.		
C: 1754 LT (Sat & Sun)				

BELFAST CGOC					
Control Centre: 54°39'·85N 5°40'·14W					
A	1883	RT (MF)	Tiree (Scarinish)	56°29'·97N 6°48'·43W	
B	Ch 10	VHF	Limavady	55°06'·56N 6°53'·18W	
			Ru Stafnish	55°22'·27N 5°31'·93W	
C	Clyde (Greenock)		55°55'·45N 4°48'·14W		
	Kilchiaran		55°45'·90N 6°27'·29W		
	Orlock Head		54°40'·42N 5°35'·06W		
D	Black Mountain		54°35'·00N 6°01'·30W		
	South Knapdale		55°55'·06N 5°27'·79W		
	Law Hill		55°41'·75N 4°50'·52W		
E	Ch 64		Navar	54°28'·00N 7°54'·00W	
			Slieve Martin	54°05'·61N 6°09'·61W	
			West Torr	55°11'·91N 6°05'·68W	
Diagrams pages 215, 216, 217, 220 and 232					
Weather Bulletins					
A-E: 0810 2010 LT			Shipping Forecast and outlook for Sea Areas: Irish Sea, Rockall and Malin.		
A-E: 0210 0510 0810 1110 1410 1710 2010 2310 LT			Inshore Forecast, Gale and Strong Wind Warnings for WZ Areas 12–15.		
Navigational Warnings					
A-E: On receipt			Gale Warnings for Sea Areas: Irish Sea, Rockall and Malin.		
A-E: 0810 2010 LT			Local Navigational Warnings.		
A-E: 0810 2010 LT			Coastal (WZ) Navigational Warnings for WZ Areas 12–15. SUBFACTS/GUNFACTS Warnings: Submarine and Gunnery exercise warnings for Inner Clyde and Scottish Exercise Areas.		
NOTE(S): 1. New Gale Warnings, Storm Warnings and Navigational Warnings will be broadcast (VHF & MF) on receipt and repeated at every scheduled broadcast whilst valid. Such warnings may be announced on DSC. 2. Negative Tidal Surge Warnings will be broadcast (VHF only) on receipt, and at hourly intervals until the next scheduled routine broadcast. Such warnings may also be announced on DSC.					





UNITED KINGDOM

DOVER CGOC				
Control Centre: 51°07'98N 1°20'60E				
A	Ch 62	VHF	Bawdsey	51°59'61N 1°24'49E
B	Ch 63		Fairlight	50°52'27N 0°38'74E
			Shoeburyness	51°31'38N 0°46'57E
C	Ch 64		Walton on the Naze	51°51'30N 1°16'79E
			Bradwell	51°43'98N 0°53'36E
			Langdon Battery	51°07'98N 1°20'60E
Diagrams pages 215, 216, 217 and 232				
Weather Bulletins				
A-C: 0710 1910 LT	Shipping Forecast and outlook for Sea Areas: Humber, Thames, Dover, Wight and Portland.			
A-C: 0110 0410 0710 1010 1310 1610 1910 2210 LT	Inshore Forecast, Gale and Strong Wind Warnings for WZ Areas 5 and 6.			
Navigational Warnings				
A-C: On receipt	Gale Warnings for Sea Areas: Humber, Thames, Dover, Wight and Portland.			
A-C: 0110 0410 0710 1010 1310 1610 1910 2210 LT	Local Navigational Warnings.			
A-C: 0710 1910 LT	Coastal (WZ) Navigational Warnings for WZ Areas 5 and 6.			
NOTE(S): 1. New Gale Warnings, Storm Warnings and Navigational Warnings will be broadcast on receipt and repeated at every scheduled broadcast whilst valid. Such warnings may be announced on DSC. 2. Negative Tidal Surge Warnings will be broadcast on receipt, and at hourly intervals until the next scheduled routine broadcast. Such warnings may also be announced on DSC.				

FALMOUTH CGOC				
Control Centre: 50°08′.71N 5°02′.73W				
A	1880	RT (MF)	S. Mary's (Isles of Scilly)	49°55′.73N 6°18′.23W
B	Ch 10	VHF	Dartmouth	50°21′.30N 3°35′.20W
			Fowey	50°19′.62N 4°38′.19W
C	Ch 62		East Prawle	50°13′.14N 3°42′.55W
			Falmouth	50°08′.71N 5°02′.73W
D	Ch 63		Trevoze Head	50°32′.91N 5°01′.99W
			Berry Head	50°23′.97N 3°29′.04W
E	Ch 64		Lizard	49°57′.86N 5°12′.46W
			Rame Head	50°19′.03N 4°13′.18W
			S. Mary's (Isles of Scilly)	49°55′.73N 6°18′.23W
Diagrams pages 215, 216, 217, 218, 219 and 232				
Weather Bulletins				
A-E: 0710 1910 LT	Shipping Forecast and outlook for Sea Areas: Portland, Plymouth, Sole, Lundy and Fastnet. 3-day Fisherman's Forecast for Sea Areas: Plymouth, Fitzroy, Sole, Lundy and Fastnet, when and where appropriate (October–March).			
A-E: 0110 0410 0710 1010 1310 1610 1910 2210 LT	Inshore Forecast, Gale and Strong Wind Warnings for WZ Areas 8 and 9.			
Navigational Warnings				
A-E: On receipt	Gale Warnings for Sea Areas: Portland, Plymouth, Sole, Lundy and Fastnet.			
A-E: 0710 1910 LT	Local Navigational Warnings. Coastal (WZ) Navigational Warnings for WZ Areas 8 and 9. SUBFACTS/GUNFACTS Warnings: Submarine and Gunnery exercise warnings for Southwestern Approaches (Isles of Scilly to Lizard Point), Plymouth Approaches (Lizard Point to Start Point), Portland Approaches (Start Point to St. Albans Head) and Portsmouth Approaches (St. Albans Head to Selsey Bill).			
NOTE(S): 1. New Gale Warnings, Storm Warnings and Navigational Warnings will be broadcast (VHF & MF) on receipt and repeated at every scheduled broadcast whilst valid. Such warnings may be announced on DSC. 2. Negative Tidal Surge Warnings will be broadcast (VHF only) on receipt, and at hourly intervals until the next scheduled routine broadcast. Such warnings may also be announced on DSC.				

HOLYHEAD CGOC				
Control Centre: 53°18'98N 4°37'95W				
A	Ch 62	VHF	Langthwaite	54°01'95N 2°45'74W
B	Ch 63		Caldbeck	54°46'40N 3°05'43W
			Moel-y-parc	53°13'23N 3°18'81W
			South Stack	53°18'54N 4°41'17W
C	Ch 64		Great Orme	53°19'97N 3°51'21W
			Snafell	54°15'84N 4°27'66W
Diagrams pages 215, 216, 217 and 232				
Weather Bulletins				
A-C: 0750 1950 LT		Shipping Forecast and outlook for the Irish Sea.		
A-C: 0150 0450 0750 1050 1350 1650 1950 2250 LT		Inshore Forecast, Gale and Strong Wind Warnings for WZ Areas 10–12.		
Navigational Warnings				
A-C: On receipt		Gale Warnings for the Irish Sea.		
A-C: 0750 1950 LT		Local Navigational Warnings. Coastal (WZ) Navigational Warnings for WZ Areas 10–12.		
NOTE(S): 1. New Gale Warnings, Storm Warnings and Navigational Warnings will be broadcast on receipt and repeated at every scheduled broadcast whilst valid. Such warnings may be announced on DSC. 2. Negative Tidal Surge Warnings will be broadcast on receipt, and at hourly intervals until the next scheduled routine broadcast. Such warnings may also be announced on DSC.				

HUMBER CGOC				
Control Centre: 54°05'64N 0°10'55W				
A	1925	RT (MF)	Cullercoats	55°04'40N 1°27'80W
B	Ch 62	VHF	Mablethorpe	53°18'64N 0°15'82E
C	Ch 63		Boulby	54°33'76N 0°50'59W
			Flamborough	54°07'08N 0°05'21W
			Guy's Head	52°48'00N 0°13'00E
			Lowestoft	52°28'60N 1°45'65E
			Newton	55°31'01N 1°37'21W
D	Ch 64		Trimingham	52°54'59N 1°20'60E
			Caister (Yarmouth)	52°39'55N 1°42'96E
			Cullercoats	55°04'40N 1°27'80W
			Easington	53°39'15N 0°05'85E
		Langham	52°56'53N 0°57'24E	
			Ravenscar	54°23'83N 0°30'35W
Diagrams pages 215, 216, 217 and 232				
Weather Bulletins				
A-D: 0750 1950 LT		Shipping Forecast and outlook for Sea Areas: Forth, Tyne, Dogger, German Bight, Humber and Thames. 3-day Fisherman's Forecast for Sea Areas: Forth, Tyne, Dogger, German Bight, Humber and Thames, when and where appropriate (October–March).		
A-D: 0150 0450 0750 1050 1350 1650 1950 2250 LT		Inshore Forecast, Gale and Strong Wind Warnings for WZ Areas 3–5.		
Navigational Warnings				
A-D: On receipt		Gale Warnings for Sea Areas: Forth, Tyne, Dogger, German Bight, Humber and Thames.		
A-D: 0750 1950 LT		Local Navigational Warnings. Coastal (WZ) Navigational Warnings for WZ Areas 3–5.		
NOTE(S): 1. New Gale Warnings, Storm Warnings and Navigational Warnings will be broadcast (VHF & MF) on receipt and repeated at every scheduled broadcast whilst valid. Such warnings may be announced on DSC. 2. Negative Tidal Surge Warnings will be broadcast (VHF only) on receipt, and at hourly intervals until the next scheduled routine broadcast. Such warnings may also be announced on DSC.				

UNITED KINGDOM

MILFORD HAVEN CGOC

Control Centre: 51°42'47N 5°03'15W

Centre Centre of the 17th to 18th				
A	Ch 62	VHF	Blaenplwyf	52°21'·59N 4°06'·14W
			S. Ann's Head	51°41'·00N 5°10'·58W
			Tenby	51°41'·67N 4°41'·28W
B	Ch 63		Combe Martin	51°10'·05N 4°02'·83W
			S. Hilary	51°27'·43N 3°24'·18W
C	Ch 64		Dinas Head	52°00'·25N 4°53'·68W
			Hartland Point	51°01'·22N 4°31'·38W
			Mumbles	51°34'·15N 3°59'·05W
			Severn Bridges	51°37'·00N 2°39'·00W

Diagrams pages 215, 216, 217 and 232

Weather Bulletins

A-C: 0750 1950 LT Shipping Forecast and outlook for Sea Areas: Lundy, Fastnet, Irish Sea and Shannon.

A-C: 0150 0450 0750 1050
1350 1650 1950 2250
LT Inshore Forecast, Gale and Strong Wind Warnings for WZ Areas 9 and 10.

Navigational Warnings

A-C: On receipt Gale Warnings for Sea Areas: Lundy, Fastnet, Irish Sea and Shannon.

A-C: 0750 1950 LT Local Navigational Warnings.
Coastal (WZ) Navigational Warnings for WZ Areas 9 and 10.

NOTE(S): 1. New Gale Warnings, Storm Warnings and Navigational Warnings will be broadcast on receipt and repeated at every scheduled broadcast whilst valid. Such warnings may be announced on DSC.

2. Negative Tidal Surge Warnings will be broadcast on receipt, and at hourly intervals until the next scheduled routine broadcast. Such warnings may also be announced on DSC.

RAF VOLMET

Control Centre: 51°40'90N 0°48'00W

A	5450 11253	RT (HF)	Cardiff	51°24'17N 3°20'85W
			Kinloss	57°38'96N 3°33'64W
			Leuchars	56°22'65N 2°49'71W
			Lossiemouth	57°42'31N 3°20'35W
B			Prestwick	55°30'47N 4°35'20W

Weather Bulletins

A: Every H+00 H+30 VOLMET is a meteorological service provided for aviation which continuously broadcasts reports of actual weather conditions and / or weather forecasts for selected airfields on HF SSB. The information given consists of: airport name, wind direction and speed, visibility, cloud amount and height, air temperature and dew point temperature, sea level pressure and any significant weather. If no updated weather report arrives within one hour of the last report then a 'NO REPORT' is transmitted.

B: Every H+06 H+36

SHETLAND CGOC

Control Centre: 60°08'92N 1°08'42W

A	1770	RT (MF)	Collafirth Hill	60°32'00N 1°23'50W
B	Ch 62		VHF	Lerwick (Shetland)
C	Ch 63	Fitful Head		59°54'34N 1°23'02W
		Saxa Vord		60°49'74N 0°50'46W
D	Ch 64	Collafirth Hill		60°32'00N 1°23'50W
		Wideford Hill (Orkney)		58°59'30N 3°01'31W

Diagrams pages 215, 216, 217 and 232

Weather Bulletins

A-D: 0710 1910 LT Shipping forecast for Sea Areas: Viking, Cromarty, Fair Isle and Faroes.
3-day Fisherman's Forecast for Sea Areas: Fair Isle, Viking, Forties and Cromarty, when and where appropriate (October–March).A-D: 0110 0410 0710 1010
1310 1610 1910 2210
LT Inshore Forecast, Gale and Strong Wind Warnings for WZ Areas 1 and 18.

Continued on next page

Navigational Warnings	
A-D: On receipt	Gale warnings for Sea Areas: Viking, Cromarty, Fair Isle and Faroes.
A-D: 0710 1910 LT	Local Navigational Warnings. Coastal (WZ) Navigational Warnings for WZ Areas 1, 2 and 18.
NOTE(S): 1. New Gale Warnings, Storm Warnings and Navigational Warnings will be broadcast (VHF & MF) on receipt and repeated at every scheduled broadcast whilst valid. Such warnings may be announced on DSC. 2. Negative Tidal Surge Warnings will be broadcast (VHF only) on receipt, and at hourly intervals until the next scheduled routine broadcast. Such warnings may also be announced on DSC.	

SOLENT CGOC (NMOC)

Control Centre: 50°48'51N 1°12'66W

A	Ch 63	VHF	Boniface Down (LOW)	50°36'22N 1°12'03W
			The Grove (Portland)	50°32'92N 2°25'18W
B	Ch 62		Beer Head	50°41'46N 3°06'41W
			Needles	50°39'67N 1°34'57W
			Newhaven	50°46'94N 0°02'99E

Diagrams pages 215, 216, 217 and 232

Weather Bulletins

A, B: 0730 1930 LT	Shipping Forecast and outlook for Sea Areas: Dover, Wight, Portland and Plymouth.
A, B: 0130 0430 0730 1030 1330 1630 1930 2230 LT	Inshore Forecast, Gale and Strong Wind Warnings for WZ Areas 6-8.

Navigational Warnings

A, B: On receipt	Gale Warnings for Sea Areas: Dover, Wight, Portland and Plymouth.
A, B: 0130 0430 0730 1030 1330 1630 1930 2230 LT	Local Navigational Warnings. SUBFACTS/GUNFACTS Warnings: Submarine and Gunnery exercise warnings.
A, B: 0730 1930 LT	Coastal (WZ) Navigational Warnings for WZ Areas 6-8.

NOTE(S): 1. New Gale Warnings, Storm Warnings and Navigational Warnings will be broadcast on receipt and repeated at every scheduled broadcast whilst valid. Such warnings may be announced on DSC.
2. Negative Tidal Surge Warnings will be broadcast on receipt, and at hourly intervals until the next scheduled routine broadcast. Such warnings may also be announced on DSC.

STORNOWAY CGOC

Control Centre: 58°12'20N 6°22'54W

Control Centre: 65°12'23"N 6°22'34"W				
A	1743	RT (MF)	Butt of Lewis	58°27'·69N 6°13'·86W
B	Ch 10	VHF	Barra	57°00'·66N 7°30'·42W
			Butt of Lewis	58°27'·69N 6°13'·86W
			Skriag	57°23'·18N 6°14'·53W
Torosay	56°27'·49N 5°43'·76W			
Forsnaval	58°12'·77N 7°00'·35W			
Glengorm	56°37'·92N 6°07'·95W			
Rodel	57°44'·81N 6°57'·30W			
Cletraval	57°37'·08N 7°26'·81W			
Drumfearn	57°12'·00N 5°48'·00W			
Portnaguran	58°14'·80N 6°09'·81W			
Tiree (Balevullin)	56°30'·23N 6°57'·84W			
D	Ch 63		Arisaig	56°55'·14N 5°49'·81W
		Melvaig	57°50'·58N 5°46'·92W	
E	Ch 64			

Diagrams pages 215, 216, 217, 220 and 232

Continued overleaf

UNITED KINGDOM

STORNOWAY CGOC (Continued)

Weather Bulletins	
A-E: 0710 1910 LT	Shipping Forecast and outlook for Sea Areas: Rockall, Malin, Hebrides, Bailey, Fair Isle, Faeroes and Southeast Iceland. 3-day Fisherman's Forecast for Sea Areas: Rockall, Malin, Hebrides and Faeroes, when and where appropriate (October–March).
A-E: 0110 0410 0710 1010 1310 1610 1910 2210 LT	Inshore Forecast, Gale and Strong Wind Warnings for WZ Areas 15–17.
Navigational Warnings	
A-E: On receipt	Gale Warnings for Sea Areas: Rockall, Malin, Hebrides, Bailey, Fair Isle, Faeroes and Southeast Iceland.
A-E: 0710 1910 LT	Local Navigational Warnings. Coastal (WZ) Navigational Warnings for WZ Areas 15–17. SUBFACTS/GUNFACTS Warnings: Submarine and Gunnery exercise warnings for Scottish Exercise Areas.
NOTE(S):	
<ol style="list-style-type: none"> 1. New Gale Warnings, Storm Warnings and Navigational Warnings will be broadcast (VHF & MF) on receipt and repeated at every scheduled broadcast whilst valid. Such warnings may be announced on DSC. 2. Negative Tidal Surge Warnings will be broadcast (VHF only) on receipt, and at hourly intervals until the next scheduled routine broadcast. Such warnings may also be announced on DSC. 	

MULTILINGUAL LIST OF TERMS USED IN WEATHER AND SEA BULLETINS

The following is taken from the WMO publication Manual on Marine Meteorological Services — WMO—No. 558

ENGLISH

Standards of time

Universal Coordinated Time (UTC)
Zone time
Summer time
Local time

Periods of time

Six hours
Twelve hours
Eighteen hours
Twenty-four hours
Thirty-six hours
Forty-eight hours
Today
Tomorrow
Next few days
Morning
Evening
Midday
Afternoon
Day
Night
Sunrise
Sunset

Preliminary terms

Forecast
Further outlook
General inference
General statement
Long-range forecast
Medium-range forecast
Short-range forecast
Synoptic situation
Warning

Terms of position

Degrees
Latitude
Longitude
Quadrant
Hemisphere
North
South
East
West
District
Parallel
Meridian
Square
Bearing
Direction
Track
Area
Line

Storm warnings

Gale warning

FRANÇAIS

Unités de temps

Temps universel coordonné (UTC)
Heure du fuseau
Heure d'été
Heure locale

Périodes de temps

Six heures
Douze heures
Dix-huit heures
Vingt-quatre heures
Trente-six heures
Quarante-huit heures
Aujourd'hui
Demain
Les prochains jours
Matin
Soir
Midi
Après-midi
Jour
Nuit
Lever du soleil
Coucher du soleil

Termes préliminaires

Prévision
Evolution ultérieure probable
Situation générale et évolution
Situation générale
Prévision à longue échéance
Prévision à moyenne échéance
Prévision à courte échéance
Situation synoptique
Avis

Termes de position

Degrés
Latitude
Longitude
Quadrant
Hémisphère
Nord
Sud
Est
Ouest
District
Parallèle
Méridien
Carré
Relèvement
Direction
Trajectoire, route
Zone
Ligne

Avis de tempête

Avis de coup de vent

ESPAÑOL

Unidades de tiempo

Tiempo universal coordinado (UTC)
Hora zona
Hora de verano
Hora local

Períodos de tiempo

Seis horas
Doce horas
Dieciocho horas
Veinticuatro horas
Treinta y seis horas
Cuarenta y ocho horas
Hoy
Mañana
Los próximos días
Mañana
Tarde, noche
Mediodía
Tarde, noche
Día
Noche
Orto
Ocaso

Términos preliminares

Previsión, pronóstico
Evolución probable
Perspectivas futuras
Situación general
Previsión a largo plazo
Previsión a medio plazo
Previsión a corto plazo
Situación sinóptica
Aviso

Términos de posición

Grados
Latitud
Longitud
Cuadrante
Hemisferio
Norte
Sur
Este
Oeste
Distrito
Paralelo
Meridiano
Cuadrado
Rumbo
Dirección
Trayectoria
Área, zona
Línea

Avisos de temporales

Aviso de viento duro

Storm warnings

Storm warning
Hurricane warning
Blizzard

Tropical storms

Tropical cyclone
Hurricane
Tornado
Typhoon
Baguio
Willy-willy

Pressure systems

Area of low pressure
Low
Trough
Area of high pressure
High
Ridge of high pressure
Belt of high pressure
Belt of low pressure
Col
Hyperbolic point
Cyclolysis
Cyclogenesis
Anticyclolysis
Anticyclogenesis

Air mass nomenclature

Air mass
Stable air mass
Unstable air mass
Cold air
Arctic air
Antarctic air
Polar air
Warm air
Tropical air
Subtropical air
Equatorial air
Maritime air
Continental air
Winter monsoon
Summer monsoon

Front nomenclature

Front
Polar front
Cold front
Secondary cold front
Warm front
Occlusion
Cold occlusion
Warm occlusion
Upper front
Intertropical front
Frontal wave
Frontogenesis
Frontolysis

Weather

Precipitation
Rain

Avis de tempête

Avis de tempête
Avis d'ouragan
Blizzard

Cyclones tropicaux

Cyclone tropical
Ouragan
Tornado
Typhon
Baguio
Willy-willy

Systèmes de pression

Zone de basses pressions
Dépression
Creux barométrique
Zone de hautes pressions
Anticyclone
Dorsale, crête barométrique
Ceinture de hautes pressions
Ceinture de basses pressions
Col barométrique
Point hyperbolique
Cyclolyse
Cyclogénèse
Anticyclolyse
Anticyclogénèse

Nomenclature des masses d'air

Masse d'air
Masse d'air stable
Masse d'air instable
Air froid
Air arctique
Air antarctique
Air polaire
Air chaud
Air tropical
Air subtropical
Air équatorial
Air maritime
Air continental
Mousson d'hiver
Mousson d'été

Nomenclature des fronts

Front
Front polaire
Front froid
Front froid secondaire
Front chaud
Occlusion
Occlusion à caractère de front froid
Occlusion à caractère de front chaud
Front en altitude
Front intertropical
Onde frontale
Frontogénèse
Frontolyse

Temps

Précipitation
Pluie

Avisos de temporales

Aviso de temporal
Aviso de huracán
Blizzard, ventisca

Ciclones tropicales

Ciclón tropical
Huracán
Tornado
Tifón
Baguio
Willy-willy

Sistemas de presión

Área de bajas presiones
Depresión barométrica
Vaguada
Área de altas presiones
Anticiclón
Cresta de alta presión
Cinturón de altas presiones
Cinturón de bajas presiones
Collado
Punto hiperbólico
Ciclolisis
Ciclogénesis
Anticicloisis
Anticiclogénesis

Nomenclatura de las masas de aire

Masa de aire
Masa de aire estable
Masa de aire inestable
Aire frío
Aire ártico
Aire antártico
Aire polar
Aire caliente, aire cálido
Aire tropical
Aire subtropical
Aire ecuatorial
Aire marítimo
Aire continental
Monzón de invierno
Monzón de verano

Nomenclatura de los frentes

Frente
Frente polar
Frente frío
Frente frío secundario
Frente caliente
Occlusión
Occlusión fría
Occlusión caliente
Frente en altura
Frente intertropical
Onda frontal
Frontogénesis
Frontolisis

Tiempo

Precipitación
Lluvia

Weather

Freezing rain
Rain and snow
Supercooled rain
Snow
Snow pellets
Snow grains
Drizzle
Hail
Diamond dust
Ice pellets
Small hail
Shower
Visibility
Fog
Mist
Haze
Duststorm
Sandstorm
Spray
Drifting snow
Blowing snow
Miscellaneous
Cloud
Clearing up
Line squall
Whirlwind
Water-spout
Frost, freezing
Rime
Glaze
Smoke
Thunderstorm
Thunder
Lightning

Wind

General Terms
Beaufort scale
Calm
Light air
Light breeze
Gentle breeze
Moderate breeze
Fresh breeze
Strong breeze
Near gale
Gale
Strong gale
Storm
Violent storm
Hurricane
Gust
Squall
Sea breeze
Land breeze
Prevailing wind
Shift of wind
Veering (clockwise change in direction)

Backing (anti-clockwise change in direction)

Local Names

Trade winds (trades)

Temps

Pluie se congelant
Pluie et neige mêlées
Pluie surfondue
Neige
Neige roulée
Neige en grains
Bruine
Grêle
Poudrin de glace
Granules de glace
Grésil
Averse
Visibilité
Brouillard
Brume
Brume sèche
Tempête de poussière
Tempête de sable
Embruns
Chasse-neige basse
Chasse-neige élevée
Divers
Nuage
Se dissipant
Grain en ligne
Tourbillon de vent
Trombe marine
Gelée, gel
Givre blanc
Givre transparent
Fumée
Orage
Tonnerre
Eclair

Vent

Termes généraux
Échelle de Beaufort
Calme
Très légère brise
Légère brise
Petite brise
Jolie brise
Bonne brise
Vent frais
Grand frais
Coup de vent
Fort coup de vent
Tempête
Violente tempête
Ouragan
Rafale
Grain
Brise de mer
Brise de terre
Vent dominant
Saute de vent
Rotation du vent (dans le sens des aiguilles d'une montre)
Rotation du vent (dans le sens contraire des aiguilles d'une montre)
Noms locaux
Alizés

Tiempo

Lluvia engelante
Lluvia y nieve mezcladas
Lluvia subfundida
Nieve
Nieve granulada
Cinarra, gragea
Llovizna
Granizo
Polvillo de hielo
Gránulos de hielo
Granizo menudo
Chubasco
Visibilidad
Niebla
Neblina
Calima
Tempestad de polvo
Tempestad de arena
Rociones
Ventisca baja
Ventisca alta
Misceláneos
Nube
Despejando(se)
Turbonada en línea
Remolino de viento
Tromba marina
Helada
Cencellada blanca
Cencellada transparente
Humo
Tormento
Trueno
Relámpago

Viento

Términos generales
Escala Beaufort
Calma
Ventolina
Flojito (viento), brisa muy débil
Flojo (viento), brisa débil
Bonancible (viento), brisa moderada
Fresquito (viento), brisa fresca
Fresco (viento), brisa fuerte
Frescachón, viento fuerte
Viento duro
Viento muy duro
Tormenta, tempestad, temporal
Temporal duro, borrasca
Huracán
Ráfaga, racha
Turbonada
Brisa de mar
Brisa de tierra
Viento dominante
Salto de viento
Cambio de dirección (en el sentido de las agujas del reloj)
Cambio de dirección (en el sentido contrario de las agujas del reloj)
Nombres locales
Vientos alisios (alisios)

Wind

Bora
Mistral
Sirocco
Gregale
Levanter
Norther

Vent

Bora
Mistral
Sirocco
Grégal
Levante
Norther

Viento

Bora
Mistral
Siroco
Gregal
Levante
Nortada

Ice

Bergy bit
Brash ice concentration
Fast ice
First year ice
Flaw
Floe
Frazil
Grease ice
Grey ice
Grey-white ice
Growler
Hummocked ice
Iceberg
Ice boundary
Ice edge
Ice field
Ice limit
Ice patch
Ice rind
Ice shelf
Level ice
New ice
Nilas
Pack ice
Pancake ice
Polynya
Rafted ice
Shore lead
Shuga
Slush
Young Ice

Glace

Fragment d'iceberg
Concentration en brash (sarrasins)
Banquise côtière
Glacé de première année
Brèche de séparation
Floe
Frazil
Sorbet
Glacé grise
Glacé blanchâtre
Bourguignon
Glacé hummockée
Iceberg
Ligne de démarcation de glaces
Lisière de glace
Champ de glace
Limit des glaces
Banc de glace
Glacé vitrée
Plateau de glace
Glacé plane
Nouvelle glace
Nilas
Banquise
Glacé en crêpes
Polynie
Glacé entassée ou empilée
Chenal côtier
Shuga
Gadoué
Jeune glace

Hielo

Tempanito
Concentración de escombros de hielo
Hielo fijo
Hielo del primer año
Grieta
Bandejón
Cristales de hielo
Hielo grasoso
Hielo gris
Hielo gris blanco
Gruñón
Hielo amonticulado
Témpano
Frontera del hielo
Borde del hielo
Campo hielo
Limite del hielo
Manchón de hielo
Costra de hielo
Meseta de hielo
Hielo plano
Hielo nuevo
Nilas
Hielo a la deriva
Hielo panqueque
Polinia
Hielo sobreescurrecido
Canal costero
Shuga
Pasta o grumo
Hielo joven

Miscellaneous nautical terms

Sea
Sea level
Horizon
Tsunami
Swell
Tide
Surge
Surf
Breakers
Wave
Wavelet

Termes nautiques divers

Mer
Niveau de la mer
Horizon
Tsunami
Houle
Marée
Lame de fond
Déferlement
Brisants
Vague
Vaguelette

Términos náuticos diversos

Mar
Nivel del mar
Horizonte
Tsunami
Mar de fondo
Marea
Oleada
Resaca
Rompientes
Ola
Ola pequeña

General descriptive terms

Slight
Moderate
Violent
Heavy
Strong
Dry
Damp
In patches
Extensive

Termes descriptifs généraux

Faible (léger)
Modéré
Violent
Fort (gros)
Fort
Sec
Humide
Par plaques, en bancs
Etendu

Términos descriptivos generales

Leve
Moderado
Violento
Fuerte
Fuerte
Seco
Húmedo
En bancos
Extenso

MULTILINGUAL LIST OF TERMS USED IN WEATHER AND SEA BULLETINS

General descriptive terms

Low
High
Rough
Recurve
Quickly
Slowly
Filling up
Increasing
Decreasing
Breaking up
Poor
Good
Spreading
Occasional
Continuous
Intermittent
At times
Immediately
Early
Late
Later

Termes descriptifs généraux

Bas
Haut, élevé
Forte
Se recourber
Rapidement
Lentement
Se comblant
Croissant, augmentant
Décroissant, diminuant
Se dissolvant
Mauvais
Bon
S'étendant
Occasionnel
Continu
Intermittent
De temps à autre
Immédiatement
Tôt
Tard
Plus tard, par la suite

Términos descriptivos generales

Baja
Alta
Duro
Recurvarse
Rápidamente
Lentamente
Llenándose
Aumentando
Disminuyendo
Disipándose
Malo
Bueno
Extendiéndose
Ocasional
Continuo
Intermitente
A veces
Inmediatamente
Temprano
Tarde
Luego, más tarde

DRAFT

SHIPS' WEATHER REPORTS

Diagrams pages 249 and 250

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Port Meteorological Officers have a significant role to play in support of the VOS scheme and spend a large amount of time visiting vessels whilst in port. These officers should be consulted when any servicing of meteorological instruments or a comparison of barometers is required. The following section contains contact details for PMOs in countries covered by this Volume.

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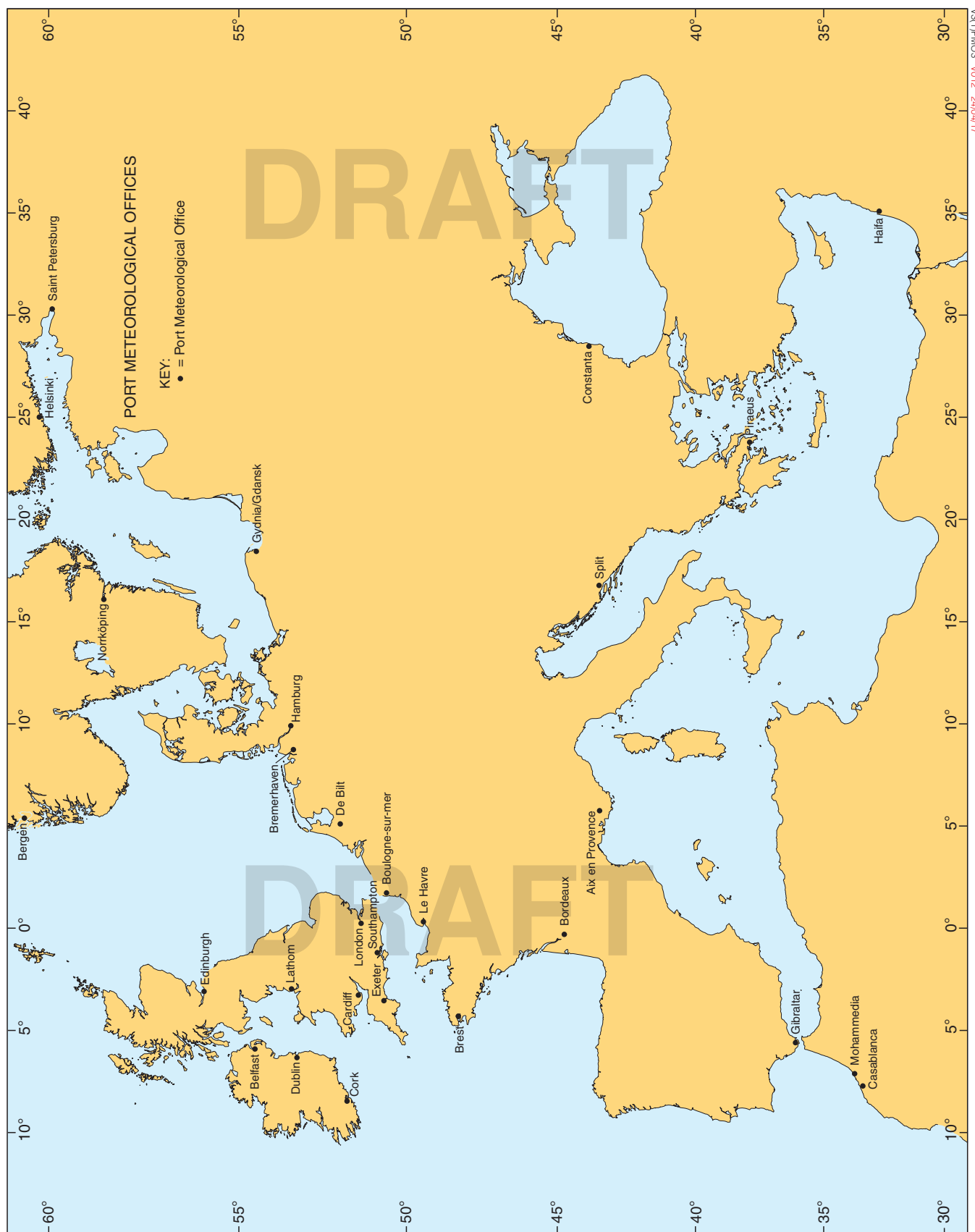
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DRAFT

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THE WMO VOLUNTARY OBSERVING SHIP PROGRAMME (VOS)

INTRODUCTION

Lieutenant Matthew Fontaine Maury of the U.S. Navy was the first man to realise the scientific and commercial value of weather information collected from ships. Owing to his initiative, the first International Meteorological Conference was held in Brussels in 1853 to consider international cooperation and a uniform system of observation.

With the advent of radio communications early in the twentieth century, it became possible for observations from ships to be transmitted to meteorological offices ashore and warnings of dangerous conditions to be transmitted to ships.

At the 1929 meeting of the International Convention for the Safety of Life at Sea (SOLAS), provision was made for the international encouragement of meteorological work at sea.

Meteorological services of most maritime countries made arrangements with ships regularly visiting their coast, to take marine meteorological observations and transmit them to shore at no cost to the ship. The observations themselves are usually provided free of charge by shipping companies, in return for the instrumentation and the forecasting and warning service, hence the name of the scheme - Voluntary Observing Ship (**VOS**). In addition, Port Meteorological Officers (**PMOs**) provide free training in observing the weather, whilst essential meteorological supplies are provided by participating National Meteorological Services (**NMSs**). A list of PMOs is maintained by WMO at:

http://www.jcomm.info/index.php?option=com_oe&task=viewGroupRecord&groupID=151 and is also listed in ALRS Volume 3 in the Ships' Weather Reports section.

Ships are recruited by Members of the WMO, usually through Port Meteorological Officers (**PMOs**), who recruit into their **VOS** fleets ships of all flags, not just those on their national register. Ships are recruited on the basis of the willingness of the ships' officers to perform the observations and the regular route followed by the ship. A Member will generally recruit ships which regularly visit ports in the country concerned and which are on the national register of that nation, however foreign registered ships may also be recruited, in which case the meteorological service of the country of registry is informed.

Maritime meteorological data is required for a number of purposes:

- Preparation of marine forecasts and warnings
- Preparation of forecasts and warnings for offshore industries;
- Marine consultancy
- Global computer models of the future state of the atmosphere
- To monitor the state of the oceans using delayed-mode data in weekly and monthly analyses
- Climatological data banks used for many purposes, e.g. design of ships and structures at sea and determination of economic shipping routes etc.
- Compilation of long-term records to monitor changes in the climate of the earth.

The VOS Scheme makes a highly important contribution to the Global Observing System (GOS) of the World Weather Watch (WWW) and increasingly to global climate studies. The oceans cover about two-thirds of the surface of the earth and for decades ships were the only means of obtaining meteorological data from them. Although there are now several other means - satellites, drifting buoys, floats and radar - ships still play a very important part. They provide ground truth for the calibration of satellite observations and make measurements not yet obtainable by other means, such as air temperature and dew point.

Since 1999, the marine activities of WMO, as well as those of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, have been coordinated by the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM).

OBSERVATIONS

Ships' observations are generally made at the standard synoptic hours of 0000, 0600, 1200 and 1800 UTC and are sent to a meteorological service by INMARSAT-C or email communication. In the case of INMARSAT C, the cost of transmission is paid by the meteorological service of the receiving country. Observations at the intermediate reporting times of 0300, 0900, 1500 and 2100 UTC are also welcomed and observers are urged to report at any UTC hour if they missed the standard or intermediate reporting times, or if weather conditions varied markedly from that forecast.

A list of all **VOS** and their instrumentation is maintained in WMO publication No. 47

<http://www.wmo.int/pages/prog/www/ois/pub47/pub47-home.htm> on the basis of information supplied by Members. Metadata about the type of instrumentation, location and exposure are absolutely essential to a correct interpretation and use of the observations.

Relevant standard and recommended practices and procedures are contained in Part III, Section 2.2.3 of the Manual on the Global Observing System (WMO-No.544) as well as in Chapter 6 of the (provisional) Guide to MMS (WMO-471).

CLASSIFICATIONS OF VOS SHIP

There are eight classes of ships in the international **VOS** Scheme, which are listed below. It should be noted that it is increasingly the case that many nations are providing Automatic Weather Stations (**AWSS**) to their fleets:

A **Selected** ship is equipped with sufficient certified meteorological instruments for making observations, transmits regular weather reports and enters the observations in meteorological logbooks. It should have at least a barometer, a thermometer for sea-surface temperature, a psychrometer and a barograph. Most of the **VOS** are selected ships.

A **Selected AWS** ship is a mobile ship station equipped with an Automatic Weather Station (AWS) system comprising certified meteorological instruments to measure at least: air pressure, pressure change, temperature and humidity. Optional sensors would

include wind speed and direction and sea temperature measurement. The AWS may or may not have the facility for manual input of the visual elements, and transmit reports at least three hourly or more frequently. The AWS should have the facility to log the data.

A **VOSclim** ship is a mobile ship station equipped with sufficient certified meteorological instruments for making observations. It transmits regular and timely weather reports, enters the observations in an International Maritime Meteorological Tape (IMMT) compliant electronic logbook (including the extra **VOSclim** delayed-mode groups) and has a proven record of providing high quality observations. A **VOSclim** ship should have at least: a barometer, a thermometer to measure SST, a psychrometer (for air temperature and humidity), a barograph and possibly an anemometer. The full range of metadata must be maintained in WMO No. 47, the full suite of digital images, sketches and drawings must be available, and the delayed-mode IMMT data must be submitted to the Global Collecting Centres (**GCCs**) according to recommended WMO procedures. It is highly desirable for a **VOSclim** ship to be inspected at less than six monthly intervals.

A **VOSclim AWS** ship is a mobile ship station equipped with an AWS system comprising certified meteorological instruments to measure at least: air pressure, pressure change, temperature and humidity. Optional sensors would include wind speed and direction and sea temperature measurement. The AWS may have a facility for manual input of the visual elements, and transmit reports at least three hourly or more frequently. The AWS must have the facility to log the data including the additional IMMT delayed-mode **VOSclim** groups. The full range of metadata must be maintained in WMO No. 47, the full suite of digital images, sketches and drawings must be available, and the delayed-mode IMMT data must be submitted to the GCCs according to the recommended WMO procedures. It is highly desirable for a **VOSclim AWS** ship to be inspected at less than six monthly intervals.

A **Supplementary** ship is a mobile ship station equipped with a limited number of certified meteorological instruments for making observations. It transmits regular weather reports and enters the observations in a meteorological logbook.

A **Supplementary AWS** ship is a mobile ship station equipped with an AWS system comprising a limited number of certified meteorological instruments and reporting regularly. The AWS should at least measure air pressure.

An **Auxiliary** ship is a mobile ship station normally without certified meteorological instruments, which transmits in a reduced code form or in plain language, either on a routine basis or on request, in certain data sparse areas and under certain conditions.

An **Auxiliary AWS** ship is a mobile ship station equipped with an AWS system comprising non-certified meteorological instruments and reporting regularly. The AWS should at least measure air pressure.

Figure 1: Required observations for each class of ship in the VOS.

element	Selected	VOSclim	Supplementary	Auxiliary
present and past weather	N	N	N	N
wind direction and speed	N	N	N	N
cloud amount	N	N	N	N
cloud type and height of base	N	N	N	X
visibility	N	N	N	N
temperature	O	O	N	N
humidity (dew point)	O	O	X	X
atmospheric pressure	O	O	O	N
pressure tendency	O	O	X	X
ship's course and speed	O	O	X	X
sea surface temperature	N	N	X	X
direction, period and height of waves	N	N	X	X
sea ice and/or icing	N	N	N	N
special phenomena	N	N	X	X
max height of deck cargo from SLL	X	O	X	X
height difference from the SLL to the water line	X	O	X	X
course of ship over ground	X	O	X	X
ship's ground speed	X	O	X	X
ship's heading	X	O	X	X

O reported by non-AWS and AWS ships.

N reported by non-AWS ships only.

X non-reported.

MAKING OBSERVATIONS EASIER AND MORE ACCURATE

Software, such as TurboWin (freeware) <http://www.knmi.nl/turbowin/>, is available to assist the mariner in the recording, preparation and transmission of meteorological records. TurboWin was developed at KNMI (Royal Netherlands Meteorological Institute) with contributions from several National Meteorological Services and endorsed by the WMO (World Meteorological Organization) and E-SURFMAR (European Surface Marine Programme).

It is recognised that observations are subject to keying, coding and calculating errors, etc., so to help achieve an optimal control of the quality of the observations, before they are used in real time TurboWin contains checking routines which are applied to the data before they are transmitted. TurboWin is a user-friendly system with over 200 built-in quality checks. It allows the automated compilation of observations on board ships and fixed sea stations, their downloading to disk and their subsequent transmission ashore and thence to a Meteorological Centre, by using Inmarsat, E-mail or other specific communication facilities. The program assists the observer with many menus, pictures, photos, forms, help pages, output options, automated calculations etc.

Observers can also monitor the quality of their observations via the web using tools such as those developed by the UK Met Office and within the Eumetnet E-SURFMAR programme.

<http://research.metoffice.gov.uk/research/nwp/observations/monitoring/marine/index.html> and <http://www.meteo.shom.fr/qctools/>

FURTHER INFORMATION

Further information on the VOS scheme, National VOS websites and the areas covered here can be obtained from the following:

- Oceans Affairs Division, World Meteorological Organization, 7 bis, avenue de la Paix, P.O. Box 2300, CH-1211 Geneva 2, SWITZERLAND, Tel: + 41 22 730 82 37 Fax: +41 22 730 80 21
Internet: <http://www.wmo.ch>
- <http://www.bom.gov.au/jcomm/vos/>
- <http://www.dwd.de/gcc>
- http://www.hko.gov.hk/wservice/tsheet/pms/index_e.htm
- http://www.imdpune.gov.in/weather_forecasting/Marine/index.htm
- <http://www.jcomm.info>
- <http://www.jcommops.org/sot/>
- <http://www.knmi.nl/turbowin/>
- <http://www.knmi.nl/vos/>
- <http://www.meteo.shom.fr/qctools/>
- http://www.metoffice.gov.uk/weather/marine/observations/gathering_data
- <http://research.metoffice.gov.uk/research/nwp/observations/monitoring/marine/index.htm>
- <http://www.wmo.int/pages/prog/amp/mmop/JCOMM/OPA/SOT/vos.html>
- <http://www.vos.noaa.gov/>

Acknowledgement is made to the above sources, particularly to JCOMM, the UK Met Office and the Australian Bureau of Meteorology, for their assistance in compiling this overview of the VOS.

INMARSAT C LAND EARTH STATIONS (LES) ACCEPTING CODE 41 MESSAGES**Atlantic Ocean Region - East (AOR-E)**

LES Operator	LES Name	Access Codes	Country
Vizada	Eik	101	Norway
Stratos Global	Burum	102	Netherlands
KDDI	Yamaguchi at Aussaguel	103	France
Vizada	Eik	104	Norway
Telecom Italia	Fucino	105	Italy
Stratos Global	Burum	112	Netherlands
Morsviazspudnik	Nudol	117	Russian Federation
Vizada	Aussaguel	121	France

Atlantic Ocean Region - West (AOR-W)

LES Operator	LES Name	Access Codes	Country
Vizada	Eik	001	Norway
Stratos Global	Burum	002	Netherlands
KDDI	Yamaguchi at Aussaguel	003	France
Vizada	Eik	004	Norway
Stratos	Burum	012	Netherlands
Vizada	Aussaguel	021	France

SHIPS' WEATHER REPORTS

Indian Ocean Region (IOR)

LES Operator	LES Name	Access Codes	Country
Vizada	Eik	301	Norway
Stratos Global	Perth	302	Australia
KDDI	Yamaguchi	303	Japan
Vizada	Eik	304	Norway
VSNL	Pune ²	306	India
MCN	Beijing	311	China
Stratos Global	Perth	312	Australia
Morsviasputnik	Nudol	317	Russian Federation
Vizada	Aussaguel	321	France
Singapore Telecom	Sentosa	328	Singapore
Vishipel	Haiphong	330	Vietnam
Telecom Italia	Fucino	335	Italy

Pacific Ocean Region (POR)

LES Operator	LES Name	Access Codes	Country
Vizada	Eik at Santa Paula	201	USA
Stratos Global	Perth	202	Australia
KDDI	Yamaguchi	203	Japan
Vizada	Eik at Santa Paula	204	USA
Singapore Telecom	Sentosa	210	Singapore
MCN	Beijing	211	China
Stratos Global	Perth	212	Australia
Morsviasputnik	Nakhodka	217	Russian Federation
Vizada	Aussaguel at Yamaguchi	221	Japan

NOTES:

(1) Code 41 should be used by weather observing vessels to send their weather observations. In most cases where the service is available, the service is free of charge to vessels, the national weather authority paying the relevant charges.

(2) For full details of Inmarsat services see ALRS Volume 1 (NP281) and Volume 5 (NP285).

DRAFT

METEOROLOGICAL CODES

FM SYSTEM OF NUMBERING CODE FORMS

Each code form bears a number, preceded by the letters FM. This number is followed by a Roman numeral to identify the session of CSM or CBS which either approved the code form as a new one or made the latest amendment to its previous version. A code form approved or amended by correspondence after a session of CSM/CBS receives the number of that session.

Furthermore, an indicator term is used to designate the code form colloquially and is therefore called a "code name". In some cases, this code name is included as a symbolic prefix in the code form and during transmission ensures ready identification of the type of report (e.g. SHIP).

The information contained in this section is an extract taken from the WMO publication **Manual on Codes — WMO-No. 306**. The WMO publication No. 306 should be considered the definitive source and consulted for full details.

FM SYSTEM OF CODE FORMS

FM 12–XIV Ext. SYNOP	Report of surface observation from a fixed land station
FM 13–XIV Ext. SHIP	Report of surface observation from a sea station
FM 61–IV MAFOR	Forecast for shipping

LIST OF CODE FORMS WITH NOTES AND REGULATIONS

FM 12–XIV Ext. SYNOP	Report of surface observation from a fixed land station
FM 13–XIV Ext. SHIP	Report of surface observation from a sea station

CODE FORM

SECTION 0	$M_i M_j M_k M_l$	$\left\{ \begin{array}{l} D....D^{**} \\ \text{or} \\ A_1 b_w n_b n_b n_b^{**} \end{array} \right\}$	$YYGGi_w$	$\left\{ \begin{array}{l} Iiii^{*} \\ \text{or} \\ 99L_a L_a L_a Q_c L_o L_o L_o L_o^{**} \end{array} \right\}$	
SECTION 1	$i_R i_x h V V$	$Nddff \quad (OOfff)$	$1s_n TTT$	$\left\{ \begin{array}{l} 2s_n T_d T_d T_d \\ \text{or} \\ 29UUU \end{array} \right\}$	
	$3P_o P_o P_o P_o$	$\left\{ \begin{array}{l} 4PPPP \\ \text{or} \\ 4a_3 hhh \end{array} \right\}$	$5appp \quad 6RRRt_R$	$\left\{ \begin{array}{l} 7wwW_1 W_2 \\ \text{or} \\ 7W_a W_a W_{a1} W_{a2} \end{array} \right\}$	$8N_h C_L C_M C_H \quad 9GGgg$
SECTION 2	$222D_s V_s$	$(Os_s T_w T_w T_w)$	$(1P_{wa} P_{wa} H_{wa} H_{wa})$	$(2P_w P_w H_w H_w)$	$((3d_{w1} d_{w1} d_{w2} d_{w2}) \quad (4P_{w1} P_{w1} H_{w1} H_{w1}) \quad (5P_{w2} P_{w2} H_{w2} H_{w2}))$
	$\left(\left\{ \begin{array}{l} 6I_s E_s E_s R_s \\ \text{or} \\ ICING + \\ \text{plain language} \end{array} \right\} \right)$	$(70H_{wa} H_{wa} H_{wa})$	$(8s_w T_b T_b T_b)$	$(ICE+ \left\{ \begin{array}{l} c_i S_i b_i D_i z_i \\ \text{or} \\ \text{plain language} \end{array} \right\})$	
* Used in FM 12 only.					
** Used in FM 13 only.					
SECTION 3	333	$(0 \dots)$	$(1s_n T_x T_x T_x)$	$(2s_n T_n T_n T_n)$	$(3Ejjj) \quad (4E'sss) \quad (5j_1 j_2 j_3 j_4 \quad (j_5 j_6 j_7 j_8 j_9))$
		$(6RRRt_R)$	$(7R_{24} R_{24} R_{24} R_{24})$	$(8N_s Ch_s h_s)$	$(9S_p S_p S_p S_p)$
		$(80000 \quad (0 \dots))$	$(1 \dots) \dots$		

NOTES

- The code form FM 12 SYNOP is used for reporting synoptic surface observations from a fixed land station, manned or automatic. The code form FM 13 SHIP is used for the same kind of observations from a sea station, manned or automatic.
- A SYNOP report from a fixed land station is identified by the symbolic letters $M_i M_j M_k M_l = AAXX$.
- A SHIP report from a sea station is identified by the symbolic letters $M_i M_j M_k M_l = BBXX$.
- The code form is made up of figure groups arranged by sections in ascending order of their numerical indicators with the exception of the following:
 - All the groups of Section 0 and for the first two groups of Section 1, which are always included in the report of any surface observing station;
 - The first data group of Section 2 - $222D_s V_s$, which is always included in the report of a sea station if data are available;
 As a result, the following features are achieved:

- (c) The loss of information due to the accidental loss of any one of these groups is strictly limited to the information content of that group;
 - (d) The rules of inclusion or omission of sections or of groups between brackets can be laid down for each specific case of station type or of data requirements;
 - (e) The length of the report can be kept to a strict minimum by dropping out some groups whenever their information content is considered insignificant or when that information content is not normally available.
- It is to be noted that the code word ICE of Section 2 plays the role of a numerical indicator for the last data group of the section or for the equivalent plain language information.

5. The code form is divided into a number of sections as follows:

Section	Symbolic figure group	Contents
0	—	Data for reporting identification (type, ship's call sign/buoy identifier, date, time, location) and units of wind speed used
1	—	Data for global exchanges which are common to the SYNOP and SHIP code forms
2	222	Maritime data for global exchange pertaining to a sea, or to a coastal station

REGULATIONS

12.1 General

12.1.1 The code name SYNOP or SHIP shall not be included in the report.

NOTE: See Regulation 12.1.7

12.1.1.1 SYNOP MOBIL is intended for encoding meteorological observations from a non-fixed location. SYNOP MOBIL shall not be used as a replacement to SYNOP from a fixed location.

NOTE: An example of the intended application is to temporarily monitor meteorological parameters in the area of an environmental emergency.

12.1.2 **Use of Groups** $M_i M_j M_k M_l$ $D...D^*$ $YYGGi_w$
or
 $A_1 b_w n_b n_b n_b^*$

NOTE: See Regulation 18.2.3, Notes (1), (2) and (3).

12.1.2.1 In a bulletin of SYNOP reports from fixed land stations, the groups $M_i M_j M_k M_l$ and $YYGGi_w$ shall be included only as the first line of the text, provided all the reports of the bulletin were taken at the same time and they use the same unit for reporting wind speed.

12.1.2.2 In a bulletin of SHIP reports from sea stations, the group $M_i M_j M_k M_l$ shall be included only as the first line of the text, and the groups ($D...D^*$ or $A_1 b_w n_b n_b n_b^*$) and $YYGGi_w$ shall be included in every individual report.

NOTE: See Regulation 12.1.7

* Used in FM 13 only.

12.1.3 Use of Sections

12.1.3.1 Reports from a fixed land station shall always contain at least Sections 0 and 1. When a report from a coastal station contains maritime data, that report shall also include Section 2. The identification and position of a fixed land station shall be indicated by means of the group Iliii.

12.1.3.4 Reports from a sea station shall always include Sections 0 and 1 and, whenever the corresponding data are available, Section 2. Section 2 shall always include the maximum number of data groups consistent with observed conditions. The identification of a sea station shall be indicated by either by the group $D...D$ or the group $A_1 b_w n_b n_b n_b$. The position of a sea station shall be indicated by the groups $99L_a L_a L_a Q_c L_o L_o L_o$.

12.1.3.5 Ocean weather station reports shall include (besides Sections 0, 1 and 2), whenever the corresponding data are available, Section 3 containing at least the groups with indicator figures 5, 8 and 9.

12.1.3.6 In reports from supplementary ships, Section 1 shall contain at least:

$i_{R_i} h V V N d d f f 1 s_n T T T 4 P P P P 7 w w W_1 W_2 8 N_h C_L C_m C_H$ where:

(a) i_R shall be set to code figure 4;

(b) i_x shall be coded as 1 or 3 as the case may be.

12.1.3.7 In reports from auxiliary ships, Section 1 shall contain at least:

$i_{R_i} h V V N d d f f 1 s_n T T T 4 P P P P 7 w w W_1 W_2$ where:

(a) i_R shall be set to code figure 4;

(b) i_x shall be coded as 1 or 3 as the case may be.

NOTES:

(1) The above-mentioned version of Section 1 is considered suitable for any ship which is not supplied with tested-instruments and may be requested to report in areas where shipping is relatively sparse, or on request, and especially when storm conditions threaten or prevail. These ships may report in plain language if the use of code is impracticable.

(2) If the ship does not report cloud data, h should be coded with a solidus (/).

(3) If the ship is not equipped with tested instruments permitting the determination of tenths of degrees of air temperature and/or tenths of hectopascals of pressure, a solidus should be coded for the tenths of degrees and/or tenths of hectopascals, as appropriate.

12.1.4 In reports from automatic stations, mandatory group elements specified by symbolic letters shall be coded with solidi (/) if the station is not equipped to report the relevant data, taking into account that i_R , i_x , and $N = 0$, $N = 9$, $N = /$ provide for omission of groups $6RRRt_R$, $7w_a w_a W_{a1} W_{a2}$ and $8N_h C_L C_m C_H$ as the case may be.

12.1.5 A fixed sea station (other than an ocean weather station or a moored buoy), which is considered by the Member operating it to be in the same category as a fixed land station, shall report its identification and position by means of the group Iliii.

12.1.6 The actual time of observation shall be the time at which the barometer is read.

- 12.1.7 (a) The identification of stations located at sea on a drilling rig, or on an oil- or gas-production platform shall be indicated by the group $A_1b_w n_b n_b n_b$.
(b) In reports of sea stations other than buoys, drilling rigs and oil- or gas-production platforms, and in the absence of a ship's call sign, the word SHIP shall be used for D....D.
- 12.2 **Section 1**
- 12.2.1 **Group $i_R i_x h VV$**
- 12.2.1.1 This group shall always be included in the report
- 12.2.1.2 *Base of lowest cloud: h*
When the station is in fog, a sandstorm or a dust storm, or in blowing snow, but the sky is discernible, h shall refer to the base of the lowest cloud observed, if any. When, under the above conditions, the sky is not discernible, h shall be reported as /.
- 12.2.1.3 *Visibility: VV*
- 12.2.1.3.1 When the horizontal visibility is not the same in different directions, the shortest distance shall be given for VV.
- 12.2.1.3.2 In reporting visibility at sea, the decile 90–99 shall be used for VV
- 12.2.2 **Group Nddff**
- 12.2.2.1 This group shall always be included in the report.
- 12.2.2.2 *Total cloud cover: N*
N shall be reported as actually seen by the observer during the observation.
- 12.2.2.2.1 Altocumulus perlucidus or Stratocumulus perlucidus (mackerel sky) shall be reported using N = 7 or less (unless overlying clouds appear to cover the whole sky) since breaks are always present in this cloud form even if it extends over the whole celestial dome.
- 12.2.2.2.3 N shall be coded as 0 when blue sky or stars are seen through existing fog or other analogous phenomena without any trace of cloud being seen.
- 12.2.2.2.4 When clouds are observed through fog or analogous phenomena, their amount shall be evaluated and reported as if these phenomena were non-existent.
- 12.2.2.2.5 The total cloud cover shall not include the amount resulting from rapidly dissipating condensation trails.
- 12.2.2.2.6 Persistent condensation trails and cloud masses which have obviously developed from condensation trails shall be reported as cloud, using appropriate C_H or C_M code figure.
- 12.2.2.3 *Wind direction and speed: ddf*
- 12.2.2.3.1 The mean direction and speed of the wind over the 10-minute period immediately preceding the observation shall be reported as ddf. However, when the 10-minute period includes a discontinuity in the wind characteristics, only data obtained after the discontinuity shall be used for reporting the mean values and hence the period in these circumstances shall be correspondingly reduced.
- 12.2.2.3.2 In the absence of wind instruments, the wind speed shall be estimated on the basis of the Beaufort wind scale. The Beaufort number obtained by estimation is converted into metres per second or knots by the use of the wind speed equivalent columns of the Beaufort scale, and this speed is reported for ff.
- 12.2.2.3.3 When the wind speed, in units indicated by i_w , is 99 units or more:
(a) ff in the group Nddff shall be encoded 99;
(b) The group 00ff shall be included immediately following the group Nddff.
NOTE: The apparent wind speed measured on board a moving ship is to be corrected for the course and the speed of the ship, in order to obtain the true speed of the wind, which is to be reported. The correction can be made on the basis of the parallelogram of velocities or by means of special tables.
- 12.2.3 **Groups $1s_n TTT$, $2s_n T_d T_d T_d$, 4PPPP, 5appp**
- 12.2.3.1 Groups $1s_n TTT$, $2s_n T_d T_d T_d$ and 4PPPP shall be included whenever the corresponding data are available, unless stated otherwise in specific regulations.
NOTE: See Regulation 12.2.3.5 relative to group 5appp.
- 12.2.3.2 *Group $1s_n TTT$*
When the data are not available as a result of a temporary instrument failure, automatic weather stations programmed to transmit this group shall either omit the group altogether or include it in their reports in the form 1////.
- 12.2.3.3 *Group $2s_n T_d T_d T_d$*
- 12.2.3.3.1 Under unusual conditions when the dew-point temperature is temporarily unavailable (e.g. because of instrument failure) but relative humidity is available, the group 29UUU shall replace the group $2s_n T_d T_d T_d$. Every attempt shall first be made, however, to convert relative humidity to dew-point temperature, and the relative humidity included only as a last resort.
- 12.2.3.3.2 Regulation 12.2.3.2 shall apply to this group, which shall in that case either be omitted or encoded as 2////.
- 12.2.3.4 *Group 4PPPP*
- 12.2.3.4.1 Whenever air pressure at mean sea level can be computed with reasonable accuracy, this pressure shall be reported in the 4PPPP group
NOTES:
(1) For a station situated in a region of normal synoptic network density, the pressure at mean sea level is considered not to be computed with reasonable accuracy when it introduces a deformation into the analysis of the horizontal pressure field which is purely local and recurring;
(2) For a station lying in a data-sparse area of the synoptic network, reasonable accuracy will be obtained when using a reduction method which has proved to be satisfactory in a region of normal network density and under similar geographical conditions.

- 12.2.3.4.2 By regional decision, a high-level station which cannot give pressure at mean sea level to a satisfactory degree of accuracy shall report both the station level pressure group $3P_0P_0P_0P_0$ and the geopotential height of an agreed standard isobaric surface. In that case the group 4PPPP shall be replaced by the group $4a_3hhh$.
NOTE: The level chosen for each station is indicated in *Weather Reporting* (WMO - No. 9), Volume A.
- 12.2.3.5 **Group 5appp**
- 12.2.3.5.1 Unless specified otherwise by regional decision this group shall be included whenever the three-hourly pressure tendency is available.
- 12.2.3.5.2 The pressure tendency over the past three hours, a , shall, wherever possible, be determined on the basis of pressure samplers at equi-spaced intervals not exceeding one hour.
NOTE: Algorithms for selecting the appropriate code figure are included in the *Guide to Meteorological Instruments and Methods of Observation* (WMO - No. 8).
- 12.2.3.5.3 Where it is not possible to apply the algorithms specified in Regulation 12.2.3.5.2 in reports from automatic weather stations, a , shall be coded as 2 when the tendency is positive; as 7 when the tendency is negative; and as 4 when the atmospheric pressure is the same as three hours before.
- 12.2.4 **Group $3P_0P_0P_0P_0$**
This group shall be included in reports for global exchange from land stations, together with either the group 4PPPP or, in accordance with Regulation 12.2.3.4.2, the group $4a_3hhh$.
NOTE: Inclusion of this group at other times is left to the decision of individual members.
- 12.2.5 **Group 6RRRt_R**
- 12.2.5.1 When precipitation data are to be exchanged in time periods of six hours at main standard times (i.e. to report the amount of precipitation over the preceding 6, 12, 18 and 24 hours), this group shall be included in Section 1.
- 12.2.5.3 For lightships reporting in the SHIP code form and for ocean weather stations, the use of this group shall be fixed regionally or nationally. In the case of mobile ship stations which make precipitation observations, the group shall be included in each SHIP report.
- 12.2.5.4 This group shall be:
(a) Coded with RRR = 000 (3 zeros) when precipitation is measured but no precipitation occurred during the reference period;
(b) Coded with RRR = /// (3 solidi) when precipitation is normally measured but is not available for the current report;
(c) Omitted when precipitation is not normally measured. In this case, i_R should be coded as 4.
(d) Existing automated weather stations (AWS) may continue to report no precipitation with i_R coded as 3 and the 6RRRt_R group omitted. New systems and human observer should report the 6RRRt_R group with RRR = 000 (3 zeros) to indicate no precipitation occurred during the reference period.
- 12.2.6 **Group $7wwW_1W_2$ or $7w_a w_a W_{a1} W_{a2}$**
- 12.2.6.1 This group shall be included in an observation by a manually operated station after a period of closure or at start up, when past weather conditions for the period applicable to the report are unknown, and shall take the form $7ww//$ (with $i_x = 1$), even if $ww = 00-03$. Otherwise it shall only be included if present or past weather phenomena of significance, or both, were observed. $W_1W_2 = //$ shall indicate that previous conditions are unknown. This regulation shall also apply to automatic reporting stations with the facility to report present and past weather. Where a single past weather form is recognized it shall take the form of $7wwW_1/$ or $7w_a w_a W_{a1}/$.
- 12.2.6.2 Code figures 00, 01, 02, 03 of the ww code table and code figures 0, 1 and 2 of the W_1, W_2 code table shall be considered to represent phenomena without significance.
NOTE: All present weather and past weather including phenomena without significance observed at sea shall be reported in the SHIP message.
- 12.2.6.3 This group shall be omitted if both present and past weather were:
(a) Not available (no observation made); or
(b) Observation made but observed phenomena were not of significance.
The indicator i_x shall indicate which one of these conditions applies.
- 12.2.6.4 *Present weather reported from a manned weather station: ww*
- 12.2.6.4.1 If more than one form of weather is observed, the highest applicable code figure shall be selected for the group $7wwW_1W_2$. Other weather may be reported in Section 3, using the group 960ww or 961w1w1, repeated as necessary. In any case, in the group $7wwW_1W_2$, code figure 17 shall have precedence over figures 20–49.
- 12.2.6.4.2 In coding 01, 02 and 03, there is no limitation on the magnitude of the change of the cloud amount. $ww = 00, 01$ and 02 can each be used when the sky is clear at the time of observation. In this case, the following interpretation of the specifications shall apply:
00 is used when the preceding conditions are not known;
01 is used when the clouds have dissolved during the past hour;
02 is used when the sky has been continuously clear during the past hour.
- 12.2.6.4.3 When the phenomenon is not predominantly water droplets, the appropriate code figure shall be selected without regard to VV.
- 12.2.6.4.4 The code figure 05 shall be used when the obstruction to vision consists predominantly of lithometeors.
- 12.2.6.4.5 National instructions shall be used to indicate the specifications for $ww = 07$ and 09.
- 12.2.6.4.6 The visibility restriction on $ww = 10$ shall be 1000 metres or more. The specification refers only to water droplets and ice crystals.
- 12.2.6.4.7 For $ww = 11$ or 12 to be reported, the apparent visibility shall be less than 1000 metres.
- 12.2.6.4.8 For $ww = 18$, the following criteria for reporting squalls shall be used:

- (a) When wind speed is measured:
A sudden increase of wind speed of at least eight metres per second (16 knots), the speed rising to 11 metres per second (22 knots) or more and lasting for at least one minute;
- (b) When the Beaufort scale is used for estimating wind speed:
A sudden increase of wind speed by at least three stages of the Beaufort scale, the speed rising to force 6 or more and lasting for at least one minute.
- 12.2.6.4.9 Figures 20–29 shall never be used when precipitation is observed at the time of observation.
- 12.2.6.4.10 For $w_w = 28$, visibility shall have been less than 1000 metres.
NOTE: The specification refers only to visibility restrictions which occurred as a result of water droplets or ice crystals.
- 12.2.6.4.11 For synoptic coding purposes, a thunderstorm shall be regarded as being at the station from the time thunder is first heard, whether or not lightning is seen or precipitation is occurring at the station. A thunderstorm shall be reported in present weather if thunder is heard within the normal observational period preceding the time of the report. A thunderstorm shall be regarded as having ceased at the time thunder is last heard and the cessation is confirmed if thunder is not heard for 10–15 minutes after this time.
- 12.2.6.4.12 The necessary uniformity in reporting $w_w = 36, 37, 38$ and 39 which may be desirable within certain regions shall be obtained by means of national instructions.
- 12.2.6.4.13 A visibility restriction “less than 1000 metres” shall be applied to $w_w = 42–49$. In the case of $w_w = 40$ or 41 , the apparent visibility in the fog or ice fog patch or bank shall be less than 1000 metres. $40–47$ shall be used when the obstructions to vision consist predominantly of water droplets or ice crystals, and 48 or 49 when the obstructions consist predominantly of water droplets.
- 12.2.6.4.14 When referring to precipitation, the phrase “at the station” in the w_w table shall mean “at the point where the observation is normally taken”.
- 12.2.6.4.15 The precipitation shall be encoded as intermittent if it has been discontinuous during the preceding hour, without presenting the character of a shower.
- 12.2.6.4.16 The intensity of precipitation shall be determined by the intensity at the time of observation.
- 12.2.6.4.17 Code figures 80–90 shall be used only when the precipitation is of the shower type and takes place at the time of observation.
NOTE: Showers are produced by convective clouds. They are characterised by their abrupt beginning and end and by the generally rapid and sometimes great variations in the intensity of the precipitation. Drops and solid particles falling in a shower are generally larger than those falling in non-showery precipitation. Between showers openings may be observed unless stratiform clouds fill the intervals between the cumuliform clouds.
- 12.2.6.4.18 In reporting code figure 98, the observer shall be allowed considerable latitude in determining whether precipitation is or is not occurring, if it is not actually visible.
- 12.2.6.5 *Present weather reported from an automatic weather station: $w_a w_a$*
- 12.2.6.5.1 The highest applicable figure shall be selected.
- 12.2.6.5.2 In coding 01, 02 and 03 there is no limitation on the magnitude of the change of the cloud amount. $w_a w_a = 00, 01$ and 02 can each be used when the sky is clear at the time of observation. In this case, the following interpretation of the specifications shall apply:
00 is used when the preceding conditions are not known;
01 is used when the clouds have dissolved during the past hour;
02 is used when the sky has been continuously clear during the past hour.
- 12.2.6.5.3 When the phenomenon is not predominantly water droplets, the appropriate code figure shall be selected without regard to VV.
- 12.2.6.5.4 The code figures 04 and 05 shall be used when the obstruction to vision consists predominantly of lithometeors.
- 12.2.6.5.5 The visibility restriction on $w_a w_a = 10$ shall be 1000 metres or more. The specification refers only to water droplets and ice crystals.
- 12.2.6.5.6 For $w_a w_a = 18$, the following criteria for reporting squalls shall be used:
A sudden increase of wind speed of at least eight metres per second (16 knots), the speed rising to 11 metres per second (22 knots) or more and lasting for at least one minute.
- 12.2.6.5.7 Code figures 20–26 shall never be used when precipitation is observed at the time of observation.
- 12.2.6.5.8 For $w_a w_a = 20$, visibility shall have been less than 1000 metres.
NOTE: The specification refers only to visibility restrictions which occurred as a result of water droplets or ice crystals.
- 12.2.6.5.9 See Regulation 12.2.6.4.11.
- 12.2.6.5.10 A visibility restriction “less than 1000 metres” shall be applied to $w_a w_a = 30–35$.
- 12.2.6.5.11 The precipitation shall be encoded as intermittent if it has been discontinuous during the preceding hour, without presenting the character of a shower.
- 12.2.6.5.12 The intensity of precipitation shall be determined by the intensity at the time of observation.
- 12.2.6.5.13 Code figures 80–89 shall be used only when the precipitation is intermittent or of the shower type and takes place at the time of observation.
NOTE: See Regulation 12.2.6.4.17 NOTE.
- 12.2.6.6 *Past weather reported by a manned weather station: $W_1 W_2$*

- 12.2.6.6.1 The period covered by W_1 and W_2 shall be:
 (a) Six hours for observations at 0000, 0600, 1200 and 1800 UTC;
 (b) Three hours for observations at 0300, 0900, 1500 and 2100 UTC;
 (c) Two hours for intermediate observations if taken every two hours;
 (d) One hour for intermediate observations if taken every hour.
- 12.2.6.6.2 The code figures for W_1 and W_2 shall be selected in such a way that W_1W_2 and ww together give as complete a description as possible of the weather in the time interval concerned. For example, if the type of weather undergoes a complete change during the time interval concerned, the code figures selected for W_1 and W_2 shall describe the weather prevailing before the type of weather indicated by ww began.
- 12.2.6.6.3 When W_1 and W_2 are used in hourly reports other than those covered by Regulation 12.2.6.6.1 (a) and (b), they cover a short period of time and Regulation 12.2.6.6.2 shall apply.
- 12.2.6.6.4 If, using Regulation 12.2.6.6.2, more than one code figure may be given to W_1 with regard to the past weather, the highest figure shall be reported for W_1 and the second highest code figure shall be reported for W_2 .
- 12.2.6.6.5 If the weather during the period has not changed so that only one code figure may be selected for the past weather, then that code figure shall be reported for both W_1 and W_2 . For example, rain during the entire period shall be reported as $W_1W_2 = 66$.
- 12.2.6.7 *Past weather reported from an automatic weather station: $W_{a1}W_{a2}$*
- 12.2.6.7.1 The period covered by $W_{a1}W_{a2}$ shall be:
 (a) Six hours for observations at 0000, 0600, 1200 and 1800 UTC;
 (b) Three hours for observations at 0300, 0900, 1500 and 2100 UTC;
 (c) Two hours for intermediate observations if taken every two hours;
 (d) One hour for intermediate observations if taken every hour.
- 12.2.6.7.2 The code figures for $W_{a1}W_{a2}$ shall be selected so that the maximum capability of the automatic station to discern past weather is utilized, and so that $W_{a1}W_{a2}$ and $w_a w_a$ together give as complete a description as possible of the weather in the time interval concerned.
- 12.2.6.7.3 In cases where the automatic station is capable only of discerning very basic weather conditions, the lower code figures representing basic and generic phenomena may be used. If the automatic station has higher discrimination capabilities, the higher code figures representing more detailed explanation of the phenomena shall be used. For each basic type of phenomenon, the highest code figure within the discrimination capability of the automatic station shall be reported.
- 12.2.6.7.4 If the type of weather during the time interval concerned undergoes complete and discernable changes, the code figures selected for W_{a1} and W_{a2} shall describe the weather prevailing before the type of weather indicated by $w_a w_a$ began. The highest figure shall be reported for W_{a1} , and the second highest code figure shall be reported for W_{a2} .
- 12.2.6.7.5 If a discernable change in weather has not occurred during the period, such that only one code figure may be selected for the past weather, then that code figure shall be reported for both W_{a1} and W_{a2} . For example, rain during the entire period shall be reported as $W_{a1}W_{a2} = 44$ in the case of an automatic station incapable of differentiating types of precipitation, or $W_{a1}W_{a2} = 66$ in the case of a station with the higher discrimination capability.
- 12.2.7 **Group 8 $N_h C_L C_M C_H$**
- 12.2.7.1 This group shall be omitted in the following cases:
 (a) When there are no clouds ($N = 0$);
 (b) When the sky is obscured by fog and/or other meteorological phenomena ($N = 9$);
 (c) When the cloud cover is indiscernible for reasons other than (b) above, or observation is not made ($N = /$).
 NOTE: All cloud observations at sea, including no cloud observations, shall be reported in the SHIP message.
- 12.2.7.2 Certain regulations concerning the coding of N shall also apply to the coding on N_h .
- 12.2.7.2.1 (a) If there are C_L clouds then the total amount on all C_L clouds, as actually seen by the observer during the observation, shall be reported for N_h ;
 (b) If there are no C_L clouds but there are C_M clouds, then the total amount of the C_M clouds shall be reported for N_h ;
 (c) If there are no C_L clouds and there are no C_M level clouds, but there are C_H clouds, then N_h shall be coded as 0.
- 12.2.7.2.2 If the variety of the cloud reported for N_h is perlocidus (Stratocumulus perlocidus for a C_L cloud or Altopumulus perlocidus for a C_M cloud) then N_h shall be coded as 7 or less.
 NOTE: See Regulation 12.2.2.2.2.
- 12.2.7.2.3 When the clouds reported for N_h are observed through fog or an analogous phenomenon, their amount shall be reported as if these phenomena were not present.
- 12.2.7.2.4 If the clouds reported for N_h include contrails, then N_h shall include the amount of persistent contrails. Rapidly dissipating contrails shall not be included in the value for N_h .
 NOTE: See Regulation 12.5 concerning the use of Section 4.
- 12.2.7.3 The coding of C_L , C_M and C_H clouds shall be as specified in the *International Clouds Atlas*, (WMO - No. 407) Volume. I.
 NOTE: It is recommended that the pictorial guides included at the end of chapter II.8 in the *International Cloud Atlas*, Volume I, be fully utilized in determining the priority of reporting the code figures for C_L , C_M , and C_H .

- 12.2.8 **Group 9GGgg**
This group shall be included:
(a) When the actual time of observation differs by more than 10 minutes from the standard time GG reported in Section 0;
(b) When additionally specified by regional decision.
NOTE: See Regulation 12.1.6.
- 12.3 **Section 2**
General
The inclusion of the groups of Section 2 in reports of merchant ships shall be determined by the Member who recruits the ship. The same rule shall be applied for automatic sea stations.
NOTE: Members are recommended to encourage the inclusion of the maximum possible number of data groups in Section 2 in accordance with Regulation 12.1.3.4.
- 12.3.1 **Group 222D_sv_s**
12.3.1.1 This group shall always be included in reports from stations which have observed maritime conditions and in reports from ships being requested to include D_sv_s as a routine procedure.
12.3.1.2 This group shall be encoded as:
(a) 22200 for a stationary sea station;
(b) 222// for:
(i) A coastal land station which reports maritime conditions;
(ii) A supplementary or auxiliary ship, except when reporting from an area for which the ship report collecting centre, in order to meet a requirement of a search and rescue centre, has requested inclusion of D_sv_s as a routine procedure.
- 12.3.2 **Group (0s_sT_wT_wT_w)**
This group shall always be included in reports from ocean weather stations, when data are available.
- 12.3.3 **Groups (1 P_{wa}P_{wa}H_{wa}H_{wa}), (2P_wP_wH_wH_w), (70H_{wa}H_{wa}H_{wa})**
12.3.3.1 Regulation 12.3.2 shall apply to these groups.
12.3.3.2 The group 1P_{wa}P_{wa}H_{wa}H_{wa} shall be used to report instrumental wave data in units of 0.5 metre.
12.3.3.3 The group 2P_wP_wH_wH_w shall be used to report wind waves, when instrumental wave data are not available.
12.3.3.4 (a) When the sea is calm (no waves and no swell) P_{wa}P_{wa}H_{wa}H_{wa}, or P_wP_wH_wH_w as the case may be, shall be reported as 0000;
(b) When the estimation of the period is impossible owing to confused sea, P_wP_w shall be reported as 99. When for the same reason, the height of the waves cannot be determined, H_wH_w shall be encoded as //;
(c) In a report from a station that includes instrumental wave data, if data are not available for any other reason for either period or height of waves, P_{wa}P_{wa} or H_{wa}H_{wa}, as the case may be, shall be encoded as //. If data are not available for either period or height of waves, Regulation 12.2.3.2 shall apply and the group 1P_{wa}P_{wa}H_{wa}H_{wa} shall either be omitted or encoded as 1////;
(d) In a report from a station that does not include instrumental wave data, if data are not available for any other reason for either period or height of waves, P_wP_w or H_wH_w, as the case may be, shall be encoded as //. If data are not available for either period or height of waves, the group 2P_wP_wH_wH_w shall be omitted.
- 12.3.3.5 The group 70H_{wa}H_{wa}H_{wa} shall be reported in addition to the group 1P_{wa}P_{wa}H_{wa}H_{wa} when the following conditions have been met:
(a) The sea is not calm (e.g. P_{wa}P_{wa}H_{wa}H_{wa} has not been reported as 0000);
(b) H_{wa}H_{wa} has not been reported as //;
(c) The station has the capability of accurately measuring instrumental wave height in units of 0.1 metre.
- 12.3.4 **Groups ((3d_{w1}d_{w1}d_{w2}d_{w2}) (4P_{w1}P_{w1}H_{w1}H_{w1}) (5P_{w2}P_{w2}H_{w2}H_{w2}))**
12.3.4.1 These groups shall be used to report swell data only when swell can be distinguished from wind waves.
12.3.4.2 If only one system of swell is observed:
(a) Its direction, period and height shall be indicated respectively, by d_{w1}d_{w1}, P_{w1}P_{w1}, H_{w1}H_{w1};
(b) d_{w2}d_{w2} shall be encoded as //;
(c) group 5P_{w2}P_{w2}H_{w2}H_{w2} shall be omitted.
- 12.3.4.3 If a second system of swell is observed:
(a) Its direction, period and height shall be indicated, respectively, by d_{w2}d_{w2}, P_{w2}P_{w2}, H_{w2}H_{w2};
(b) The corresponding data for the first system of swell shall be reported as prescribed by Regulation 12.3.4.2 (a).
- 12.3.4.4 Ocean weather stations shall always include swell data when data are available.
- 12.3.5 **Group (6I_sE_sE_sR_s)**
When the ice accretion on ships is reported in plain language, it shall be preceded by the word ICING.
- 12.3.6 **Group (8s_wT_bT_bT_b)**
When the wet bulb is used to derive the dew-point value in a SHIP report, the group 8s_wT_bT_bT_b shall be included to report the wet-bulb temperature measurement.
- 12.3.7 **Groups (ICE + c_sb_iD_iz_i OR plain language)**
12.3.7.1 The reporting of sea ice and ice of land origin in FM 13 shall not supersede the reporting of sea ice and icebergs in accordance with the International Convention for the Safety of Life at Sea
12.3.7.2 The group c_sb_iD_iz_i shall be reported wherever sea ice and/or ice of land origin are observed from the ship's position at the time of observation, unless the ship is required to report ice conditions by means of a special sea-ice code.
12.3.7.3 When an ice edge is crossed or sighted between observation hours, it shall be reported as a plain-language addition in the form "ice-edge lat. long." (with position in degrees and minutes).

- 12.3.7.4 If the ship is in the open sea reporting an ice edge, the concentration c_i and stage of development S_i shall be reported only if the ship is close to the ice (i.e. within 0.5 n mile).
- 12.3.7.5 The situation in which the ship is in an open lead more than 1.0 n mile wide shall be coded as $c_i = 1$ and $D_i = 0$. The situation in which the ship is in fast ice with ice boundary beyond limit of visibility shall be coded as $c_i = 1$ and $D_i = 9$.
- 12.3.7.6 If no sea ice is visible and the code group is used to report ice of land origin only, the group shall be coded as 0/b_i/0; e.g. 0/2/0 would mean 6–10 icebergs in sight, but no sea ice.
- 12.3.7.7 In coding concentration or arrangement of sea ice (code c_i), that condition shall be reported which is of the most navigational significance.
- 12.3.7.8 The bearing of the principal ice edge reported shall be to the closest part of that edge.
NOTE: The requirements for sea-ice reporting are covered in the following way by the associated code tables:
- Symbolic code letter c_i**
(a) The purpose of the first code figure (0) is to establish in relation to code z_i (code figure 0) and code b_i whether the floating ice that is visible is only ice of land origin;
(b) The possible variations in sea-ice concentration and arrangement within an area of observation are almost infinite. However, the field of reasonably accurate observation from a ship's bridge is limited. For this reason, and also because minor variations are of temporary significance, the choice of concentrations and arrangements has been restricted for reporting purposes to those representing significantly different conditions from a navigational point of view. The code figures 2–9 have been divided into two sections depending on:
(i) Whether sea-ice concentration within the area of observation is more or less uniform (code figures 2–5); or
(ii) Whether there are marked contrasts in concentration or arrangement (code figures 6–9).
- Symbolic code letter S_i**
(a) This table represents a series of increasing navigational difficulties for any given concentration; i.e. if the concentration is, for example, $8/_{10}$ ths, then new ice would hardly have any effect on navigation while predominantly old ice would provide difficult conditions requiring reductions in speed and frequent course alterations;
(b) The correlation between the stage of development of sea ice and its thickness is explained in the *Guide to Meteorological Instruments and Methods of Observation* (WMO - No. 8).
- Symbolic code letter b_i**
(a) This code provides a scale of increasing navigational hazard;
(b) Growlers and bergy bits, being much smaller and lower in the water than icebergs, are more difficult to see either by eye or radar. This is especially so if there is a heavy sea running. For this reason, code figures 4 and 5 represent more hazardous conditions than code figures 1 to 3.
- Symbolic code letter D_i**
There is no provision in this code for the reporting of distance from the ice edge. It will be assumed by those receiving the report that the bearing has been given to the closest part of the ice edge. From the reported code figures for concentration and stage of development, it will be clear whether the ship is in ice or within 0.5 n mile of the ice edge. If the ship is in open water and more than 0.5 n mile from the ice edge, the ice edge will be assumed to be aligned at right-angles to the bearing which is reported.
- Symbolic code letter z_i**
(a) The purpose of this element in the code is to establish:
(i) Whether the ship is in pack ice or is viewing floating ice (i.e. sea ice and/or ice of land origin) from the open sea; and
(ii) A qualitative estimate, dependent on the sea-ice navigation capabilities of the reporting ship, of the penetrability of the sea ice and of the recent trend in conditions;
(b) The reporting of the conditions represented by code figures 1–9 in Code table 5239 can be used to help in the interpretation of reports from the two code tables (concentration c_i and stage of development S_i).
- 12.4 **Section 3**
This section shall be used for regional exchange.
- 12.4.1 The inclusion of groups with indicator figures 1 to 6, 8 and 9 shall be decided regionally. However group 7R₂₄R₂₄R₂₄ shall be included by all stations (with the exception of stations situated in the Antarctic) capable of doing so, once a day at one appropriate time of the main standard times (0000, 0600, 1200 or 1800 UTC).
- 12.4.2 The symbolic form of the group with indicator figure 0 shall be developed regionally, as well as the rules for its inclusion in Section 3.
- 12.4.3 Other figure groups shall be developed regionally in order to cover requirements which cannot be satisfied by the existing groups. In order to avoid ambiguities, these other groups shall be:
(a) Provided with indicator figures 0, 1, 2, etc.;
(b) Preceded by an indicator group 80000 located after the last of the existing figure groups that was included in the report.
Notes:
(1) For example, if three supplementary groups are developed, a report including state of the ground, precipitation and cloud data would present Section 3 as 333 3Ejjj 6RRRrR 8NsChshs 80000 0 1 2
(2) See Regulation 12.1.3.5.
- 12.4.4 **Groups (1s_nT_xT_xT_x), (2s_nT_nT_nT_n)**
The period of time covered by the maximum and the minimum temperature and the synoptic hour at which these temperatures are reported shall be determined by regional decision.
- 12.4.5 **Group (3Ejjj)**
The use of the parameter(s) jjj shall be fixed regionally.
- 12.4.6 **Group (4E'sss)**
The measurement shall include snow, ice and all other forms of solid precipitation on the ground at the time of observation.
- 12.4.6.1

- 12.4.6.2 When the depth is not uniform, the average depth over a representative area shall be reported.
- 12.4.7 **Groups (5j₁j₂j₃j₄ (j₅j₆j₇j₈j₉))**
- 12.4.7.1 *Symbolic expression*
- 12.4.7.1.1 When the group 5j₁j₂j₃j₄ is used in the form 55j₂j₃j₄, 553j₃j₄, 554j₃j₄ or 555j₃j₄, the supplementary group j₅j₆j₇j₈j₉ shall be added to report net radiation, global solar radiation, diffused solar radiation, long-wave radiation, short-wave radiation, net shortwave radiation or direct solar radiation if data are available. The group shall be repeated as often as necessary.
Note: If sunshine duration is not available, the group shall be reported as 55///, 553//, 55407, 55408, 55507 or 55508 whenever the group j₅j₆j₇j₈j₉ is required to report radiation data.
- 12.4.7.1.2 When the group 5j₁j₂j₃j₄ is used, one or more of the following symbolic expressions shall be adopted:
- (a) 5EEEi_E to report the daily amount of either evaporation or evapotranspiration;
 - (b) 54g₀s_nd_T to report temperature change data in period covered by W₁W₂;
 - (c) 55SSS to report the daily hours of sunshine;
 - (d) 553SS to report the duration of sunshine in the past hour;
 - (e) 55407 to indicate that the supplementary group 4FFFF, which follows immediately, is used to report net short-wave radiation during the previous hour, in kJ m⁻²;
 - (f) 55408 to indicate that the supplementary group 4FFFF, which follows immediately, is used to report direct solar radiation during the previous hour, in kJ m⁻²;
 - (g) 55507 to indicate that the supplementary group 5F₂₄F₂₄F₂₄F₂₄, which follows immediately, is used to report net short-wave radiation during the preceding 24 hours, in J cm⁻²;
 - (h) 55508 to indicate that the supplementary group 5F₂₄F₂₄F₂₄F₂₄, which follows immediately, is used to report direct solar radiation during the preceding 24 hours, in J cm⁻²;
 - (i) 56D_LD_MD_H to report data on direction of cloud drift;
 - (j) 57CD_ae_C to report data on direction and elevation of cloud;
 - (k) 58p₂₄p₂₄p₂₄ to report positive or zero change of surface pressure over the last 24 hours;
 - (l) 59p₂₄p₂₄p₂₄ to report negative change of surface pressure over the last 24 hours.
- 12.4.7.1.3 When more than one group 5j₁j₂j₃j₄ is used, these groups shall be included in the order as listed in Regulation 12.4.7.1.2 with the supplementary groups j₅j₆j₇j₈j₉ at the appropriate place.
- 12.4.7.2 *Daily evaporation or evapotranspiration*
- 12.4.7.2.1 The symbolic expression 5EEEi_E shall be used to report either daily evaporation or evapotranspiration.
- 12.4.7.2.2 EEE shall indicate the amount of either evaporation or evapotranspiration, in tenths of a millimetre, during the preceding 24 hours at either 0000, 0600 or 1200 UTC.
- 12.4.7.3 *Temperature change*
- For a change of temperature to be reported, the change shall be equal to or more than 5°C and occur in less than 30 minutes during the period covered by W₁W₂.
Note: The reporting of this information is restricted by regional or national decision to islands or other widely separated stations.
- 12.4.7.4 *Duration of sunshine and radiation data*
- 12.4.7.4.1 The symbolic expression SSS shall be used to report the daily sunshine, in hours and tenths of an hour. The symbolic expression SS (in group 553SS) shall be used to report the duration of sunshine in the past hour, in tenths of an hour.
- 12.4.7.4.2 In the form 55SSS, this group shall, by regional decision, be reported by all stations capable of doing so and included at either 0000, 0600, 1200 or 1800 UTC.
- 12.4.7.4.3 When the group 5j₁j₂j₃j₄ has the form 553SS, the supplementary group(s) j₅FFFF may take one or more of the following forms:
- j₅ = 0 FFFF = positive net radiation during the previous hour, in kJ m⁻²;
 - j₅ = 1 FFFF = negative net radiation during the previous hour, in kJ m⁻²;
 - j₅ = 2 FFFF = global solar radiation during the previous hour, in kJ m⁻²;
 - j₅ = 3 FFFF = diffused solar radiation during the previous hour, in kJ m⁻²;
 - j₅ = 4 FFFF = downward long-wave radiation during the previous hour, in kJ m⁻²;
 - j₅ = 5 FFFF = upward long-wave radiation during the previous hour, in kJ m⁻²;
 - j₅ = 6 FFFF = short-wave radiation during the previous hour, in kJ m⁻².
- Note: For reporting net short-wave and direct solar radiation during the previous hour, see Regulation 12.4.7.1.2 (e) and (f), respectively.
- 12.4.7.4.4 When the group 5j₁j₂j₃j₄ has the form 55SSS, the supplementary group(s) j₅F₂₄F₂₄F₂₄F₂₄ may take one or more of the following forms:
- j₅ = 0 F₂₄F₂₄F₂₄F₂₄ = positive net radiation during the preceding 24 hours, in J cm⁻²;
 - j₅ = 1 F₂₄F₂₄F₂₄F₂₄ = negative net radiation during the preceding 24 hours, in J cm⁻²;
 - j₅ = 2 F₂₄F₂₄F₂₄F₂₄ = global solar radiation during the preceding 24 hours, in J cm⁻²;
 - j₅ = 3 F₂₄F₂₄F₂₄F₂₄ = diffused solar radiation during the preceding 24 hours, in J cm⁻²;
 - j₅ = 4 F₂₄F₂₄F₂₄F₂₄ = downward long-wave radiation during the preceding 24 hours, in J cm⁻²;
 - j₅ = 5 F₂₄F₂₄F₂₄F₂₄ = upward long-wave radiation during the preceding 24 hours, in J cm⁻²;
 - j₅ = 6 F₂₄F₂₄F₂₄F₂₄ = short-wave radiation during the preceding 24 hours, in J cm⁻².
- Note: For reporting net short-wave and direct solar radiation during the preceding 24 hours, see Regulation 12.4.7.1.2 (g) and (h), respectively.
- 12.4.7.4.5 FFFF shall indicate the absolute value of the amount of solar or terrestrial radiation as appropriate, in kJ m⁻², during the preceding hour. F₂₄F₂₄F₂₄F₂₄ shall indicate the absolute value of the amount of solar or terrestrial radiation as appropriate, in J cm⁻², during the preceding 24 hours at either 0000, 0600, 1200 or 1800 UTC.

- 12.4.7.5 *Direction, drift and elevation of cloud*
Note: This information is required from land stations and fixed ship stations, mainly in the tropics.
- 12.4.8 **Group (6RRRt_R)**
12.4.8.1 This group shall be included in Section 3 only when Regulation 12.2.5.2 applies.
12.4.8.2 The decision to implement Regulation 12.2.5.2 shall be taken at the regional level.
- 12.4.9 **Group (7R₂₄R₂₄R₂₄R₂₄)**
This group shall be used to report the total amount of precipitation during the 24-hour period ending at the time of observation, in tenths of a millimetre (coded 9998 for 999.8 mm or more, and coded 9999 for trace).
- 12.4.10 **Group (8N_sCh_sh_s)**
12.4.10.1 This group shall be repeated to report a number of different layers or masses of cloud. When reported from a manned station, the number of such groups shall in the absence of Cumulonimbus clouds not exceed three. Cumulonimbus clouds, when observed, shall always be reported, so that the total number of groups can be four. When the station operates in the automatic mode, the total number of groups shall not exceed four. The selection of layers (masses) to be reported shall be made in accordance with the following criteria:
(a) The lowest individual layer (mass) of any amount (N_s equals 1 or more);
(b) The next higher individual layer (mass) the amount of which is greater than two oktas (N_s equals 3 or more);
(c) The next higher individual layer (mass) the amount of which is greater than four oktas (N_s equals 5 or more);
(d) Cumulonimbus clouds, whenever observed and not reported under (a), (b) and (c) above by means of a group referring exclusively to Cb.
- 12.4.10.2 The order of reporting the groups shall always be from lower to higher levels.
- 12.4.10.3 In determining the cloud amounts to be reported for individual layers or masses in the 8-group, the observer shall estimate, by taking into consideration the evolution of the sky, the cloud amounts of each layer or mass at the different levels, as if no other clouds existed.
- 12.4.10.4 When the sky is clear (N = 0), the 8-group shall not be used.
- 12.4.10.5 When the sky is obscured (N_s = 9), the 8-group shall read 89/h_sh_s, where h_sh_s is the vertical visibility. When the observation of clouds is not made (N = /), the 8-group shall not be included.
Note: The vertical visibility is defined as the vertical visual range into an obscuring medium.
- 12.4.10.6 If two or more types of cloud occur with their bases at the same level and this level is one to be reported in accordance with Regulation 12.4.10.1, the selection for C and N_s shall be made in accordance with the following criteria:
(a) If these types do not include cumulonimbus then C shall refer to the cloud type that represents the greatest amount, or if there are two or more types of cloud all having the same amount, the highest applicable code figure for C shall be reported. N_s shall refer to the total amount of cloud whose bases are all at the same level;
(b) If these types do include cumulonimbus then one group shall be used to describe only this type with C reported as 9 and N_s as the amount of cumulonimbus. If the total amount of the remaining type(s) of cloud (excluding cumulonimbus) whose bases are all at the same level is greater than that required by Regulation 12.4.10.1, then another group shall be reported with C being selected in accordance with (a) and N_s referring to the total amount of the remaining cloud (excluding cumulonimbus).
- 12.4.10.7 Regulations 12.2.2.2.3 to 12.2.2.2.6, inclusive, shall apply.
- 12.4.11 **Group (9S_pS_pS_pS_p)**
The use of this group and the specifications for the supplementary information shall be as specified in Code table 3778.

MARITIME FORECAST CODE (MAFOR)

FM 61-IV MAFOR Forecast for Shipping

CODE FORM

MAFOR
YYG₁G₁/ 0AAAa_m 1GDF_mW_m (2VST_xT_n) (3DKP_wH_wH_w)

NOTE

MAFOR is the name of the code for a forecast for shipping.

REGULATIONS

- 61.1 **General**
61.1.1 The code name MAFOR shall appear as a prefix to individual coded forecasts for shipping.
61.1.2 The code name MAFOR shall be included as the first line of the text of a meteorological bulletin of MAFOR forecasts. Individual coded forecasts in the bulletin shall not contain the code name MAFOR.
- 61.2 **Group YYG₁G₁/**
This group, indicating the date (day of month) and time (UTC) of the beginning of the period for which the whole forecast or set of forecasts is valid, shall not be repeated if forecasts for several areas (AAA) are given in the one message.
- 61.3 **Group 0AAAa_m**
61.3.1 This group shall indicate the maritime area to which the whole forecast or set of forecasts refers.

- 61.3.2 If the geographical name for the forecast region is used instead of the indicator AAA_m, it shall be inserted at the place of this group.
- 61.4 **Groups 1GDF_mW_m (2VST_xT_n) (3D_KP_wH_wH_w)**
- 61.4.1 This set of groups shall be repeated as many times as necessary to describe the changes in the meteorological conditions forecast in a given area, due attention being given to the need for strict economy in the number of groups used. The first group 1GDF_mW_m in which G = 1-8, and the following optional group(s), if used, then shall refer to the forecast weather commencing at the time given in the group YYG₁G₁/ and continuing through the period indicated by G. Subsequent groups 1GDF_mW_m (G = 1-8) shall give the period of time that the described weather is forecast to persist, commencing at the end of the period covered by the preceding group 1GDF_mW_m (G = 1-8). If a phenomenon is forecast to occur occasionally in the same period any set 1GDF_mW_m (2VST_xT_n) (3D_KP_wH_wH_w) (G = 1-8) shall be followed by a group 1GDF_mW_m (G = 9).
NOTE: The specific value of any of the elements given in the forecast should be understood to be necessarily approximate and the value of the element in question should accordingly be interpreted as representing the most probable mean of a range of values which the element may assume during the period of forecast concerned and over the area concerned.
- 61.4.2 *Group 1GDF_mW_m*
This group shall indicate the period of time covered by the forecast, the direction and the force of the forecast wind and the forecast weather.
- 61.4.3 *Group (2VST_xT_n)*
This optional group shall indicate the forecasts of visibility, state of sea and extreme air temperatures.
- 61.4.4 *Group (3D_KP_wH_wH_w)*
- 61.4.4.1 This group shall indicate, as an optional feature, the direction, the period and the height of the forecast waves.
- 61.4.4.2 The direction from which the wave of longest period is traveling shall be given when waves from several directions are forecast.

SYMBOLIC LETTERS AND REMARKS AS TO THE METHODS OF CODING

- A Mirage. (Code table 0101) (9-group in Section 3 of FM 12, FM 13 and FM 14).
- A₁ WMO Regional Association area in which buoy, drilling rig or oil- or gas-production platform has been deployed (1 - Region I; 2 - Region II, etc.). (Code table 0161) (FM 13).
- A₃ Day darkness, worst in direction D_a. (Code table 0163) (9-group in Section 3 of FM 12, FM 13 and FM 14)
- AAA Maritime area. (FM 61).
- a Characteristic of pressure tendency during the 3 hours preceding the time of observation. (Code table 0200) (FM 12, FM 13).
- a_m Portion of the maritime area. (Code table 0244) (FM 61).
- a₃ Standard isobaric surface for which the geopotential is reported. (Code table 0264) (FM 12).
- b_i Ice of land origin. (Code table 0439) (FM 12, FM 13).
- b_w Sub-area belonging to the area indicated by A₁. (Code table 0161) (FM 13).
- C Genus of cloud. (Code table 0500) (FM 12, FM 13, FM 14)
(1) The genus of the cloud of the reported layers shall be determined on the basis of the 10 genera of cloud and of their illustrations given in the *International Cloud Atlas*.
- C_H Clouds of the genera Cirrus, Cirrocumulus and Cirrostratus. (Code table 0509) (FM 12, FM 13).
(1) The figure to be reported for C_H shall be determined on the basis of the detailed description of C_H clouds and illustrations of them in the *International Cloud Atlas* in conjunction with specifications in Code table 0509.
(2) The figure C_H = 9 shall be used when the predominant C_H clouds are Cirrocumulus although small amounts of Cirrocumulus may be present in the C_H cloud system reported under C_H = 1 to 8.
- C_L Clouds of the genera Stratocumulus, Stratus, Cumulus and Cumulonimbus. (Code table 0513) (FM 12, FM 13).
(1) The figure to be reported for C_L shall be determined on the basis of the detailed description of the low clouds and illustrations of them in the *International Cloud Atlas* in conjunction with specifications in Code table 0513.
- C_M Clouds of the genera Altopumulus, Altostratus and Nimbostratus. (Code table 0515) (FM 12, FM 13).
(1) The figure to be reported for C_M shall be determined on the basis of the detailed description of C_M clouds and illustrations of them in the *International Cloud Atlas* in conjunction with specifications in Code table 0515.
- C_S Special clouds. (Code table 0521) (9-group in Section 3 of FM 12, FM 13 and FM 14).
- C_a Nature of clouds of vertical development. (Code table 0531) (9-group in Section 3 of FM 12, FM 13 and FM 14).
- C_c Coloration and/or convergence of clouds associated with a tropical disturbance. (Code table 0533) (9-group in Section 3 of FM 12, FM 13 and FM 14).
- C_t Description of the top of cloud whose base is below the level of the station. (Code table 0552) (FM 12, FM 14).
- C₀ Orographic clouds. (Code table 0561) (9-group in Section 3 of FM 12, FM 13 and FM 14).
- C' Genus of cloud whose base is below the level of the station. (Code table 0500) (FM 12, FM 14).
- c_i Concentration or arrangement of sea ice. (Code table 0639) (FM 12, FM 13).
- D True direction from which surface wind is blowing. (Code table 0700) (FM 61).
- D_K True direction from which swell is moving. (Code table 0700) (FM 61).
- D_L True direction from which C_L clouds are moving. (Code table 0700) (FM 12, FM 13, FM 14).
- D_M True direction from which C_M clouds are moving. (Code table 0700) (FM 12, FM 13, FM 14).
- D_a True direction in which orographic clouds or clouds with vertical development are seen. (Code table 0700) (FM 12, FM 13, FM 14).

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D_i	True bearing of principal ice edge. (Code table 0739) (FM 12, FM 13). (1) If more than one ice edge can be stated, the nearest or most important shall be reported.
D_s	True direction of resultant displacement of the ship during the three hours preceding the time of observation. (Code table 0700) (FM 13).
$D....D$	Ship's call sign consisting of three or more alphanumeric characters. (FM 13).
d_T	Amount of temperature change, the sign of the change being given by s_n . (Code table 0822) (FM 12, FM 13, FM 14).
d_c	Duration and character of precipitation given by RRR. (Code table 0833) (9-group in section 3 of FM 12, FM 13 and FM 14) (1) If only one period of precipitation has occurred during the period covered by W_1W_2 , the duration is defined as the time elapsed from the beginning (a) until the end of the period of precipitation, if precipitation is not occurring at the time of observation, or (b) until the time of observation, if precipitation is occurring at the time of observation. (2) If two or more periods of precipitation have occurred during the period covered by W_1W_2 , the duration of precipitation is defined as the time elapsed from the beginning of the first period of precipitation, all or part of which occurred during the period covered by W_1W_2 , (a) until the end of the last period of precipitation, if precipitation is not occurring at the time of observation, or (b) until the time of observation, if precipitation is occurring at the time of observation.
dd	True direction, in tens of degrees, from which wind is blowing (or will blow). (Code table 0877) (FM 12, FM 13).
$d_{w1}d_{w1}$ $d_{w2}d_{w2}$	True direction, in tens of degrees, from which swell waves are coming. (Code table 0877) (FM 12, FM 13).
E'	State of the ground with snow or measurable ice cover. (Code table 0975) (FM 12, FM 14).
E_sE_s	Thickness of ice accretion on ships, in centimetres. (FM 12, FM 13).
F_m	Forecast strength of surface wind. (Code table 1144) (FM 61).
F_x	Maximum wind force, in the period covered by W_1W_2 , on the Beaufort scale (0 = 10 Beaufort; 1 = 11 Beaufort; 2 = 12 Beaufort, etc.). (9-group in Section 3 of FM 12, FM 13 and FM 14).
FFFF	Amount of radiation, in kilojoules per square metre, over a 1-hour period. (FM 12, FM 13, FM 14).
$F_{24}F_{24}F_{24}F_{24}$	Amount of radiation, in joules per square centimetre, over a 24-hour period. (FM 12, FM 13, FM 14).
ff	Wind speed in units indicated by i_w . (FM 12, FM 13). (1) If wind speed is 99 units or more, see Regulation 12.2.2.3.3.
fff	Wind speed, in units indicated by i_w , of 99 units or more. (FM 12, FM 13). (1) See Regulation 12.2.2.3.3.
G	Period covered by forecast. (Code table 1300) (FM 61).
GG	Actual time of observation, to the nearest whole hour UTC. (FM 12, FM 13). (1) In the case of surface observations, the actual time of observation is the time at which the barometer is read. (2) In the case of upper-air observations, the actual time of observation is the time at which the balloon or rocket is actually released, or the time at which the aircraft actually takes off from the surface. (3) In the case of atmospheric observation, the actual time of observation is the time at which the observation of all specified elements is completed.
G_1G_1	Time of commencement of period of forecast in whole hours UTC. (FM 61). (1) When the period of forecast commences at midnight, G_1G_1 shall be encoded as 00.
$GGgg$	Time of observation, in hours and minutes UTC. (FM 12, FM 13). (1) FM 12, FM 13: actual time of observation.
g_0	Period of time, in hours, between the time of the observation and the time of the wind change, the time of occurrence of the maximum mean wind speed, or the time of temperature change. (FM 12, FM 13, FM 14) (1) The period is the number of whole hours, disregarding the minutes. For example, if the time of occurrence is 45 minutes after the time of the observation, g_0 shall be encoded as 0; if the time of occurrence is 1 hour or more, but less than 2 hours after the observation, g_0 shall be encoded as 1; and so on. (2) The value of g_0 can be any whole number from 0 to 5.
H_wH_w	Height of wind waves in units of 0.5 metre. (FM 12, FM 13).
—	Height of forecast waves, in units of 0.5 metre. (FM 61). (1) The average value of the wave height (i.e. vertical distance between trough and crest) shall be reported or forecast, as obtained from the larger well-formed waves of the wave system being observed or forecast. (2) Height of the waves less than 0.25 m shall be coded 00, height of the waves from 0.25 m to less than 0.75 m shall be coded 01, height of the waves from 0.75 m to less than 1.25 m shall be coded 02, etc.
$H_{wa}H_{wa}$	Height of waves, obtained by instrumental methods, in the same units as H_wH_w . (FM 12, FM 13) (1) See Notes (1) and (2) under H_wH_w .
$H_{w1}H_{w1}$ $H_{w2}H_{w2}$	Height of the swell waves in the same units as H_wH_w . (FM 12, FM 13). (1) See Notes (1) and (2) under H_wH_w .
$H_{wa}H_{wa}H_{wa}$	Height of waves, obtained by instrumental methods, in units of 0.1 metre. (FM 12, FM 13). (1) See Regulation 12.3.3.5 for the use of $H_{wa}H_{wa}H_{wa}$. (2) See Note (1) under H_wH_w .
h	Height above surface of the base of the lowest cloud seen. (Code table 1600) (FM 12, FM 13). (1) The term "height above surface" shall be considered as being the height above the official aerodrome elevation or above station level at a non-aerodrome station, or above the surface of the water in reports from ships.

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$h_s h_s$	Height of base of cloud layer or mass whose genus is indicated by C. (Code table 1677) (FM 12, FM 13, FM 14) (1) If, notwithstanding the existence of fog, sandstorm, duststorm, blowing snow or other obscuring phenomena, the sky is discernible, the partially obscuring phenomena shall be disregarded. If, under the above conditions, the sky is not discernible, the 8-group is to be coded 89/hshs with the appropriate vertical visibility value being coded for hshs. The vertical visibility is defined as the vertical visual range into an obscuring medium. Vertical visibility is recorded to the same limits of accuracy as specified for cloud heights (Code table 1677). (2) Heights are above surface (see Note (1) under h).
hhh	Geopotential of an agreed standard isobaric surface given by a3, in standard geopotential metres, omitting the thousand digit. (FM 12).
I_s	Ice accretion on ships. (Code table 1751) (FM 12, FM 13).
II	Block number. (FM 12) (See ALRS 4).
i_R	Indicator for inclusion or omission of precipitation data. (Code table 1819) (FM 12, FM 13).
i_w	Indicator for source and units of wind speed. (Code table 1855) (FM 12, FM 13).
i_x	Indicator for type of station operation (manned or automatic) and for present and past weather data. (Code table 1860) (FM 12, FM 13).
iii	Station number. (FM12) (See ALRS 4).
j_1	Supplementary information indicator. (Code table 2061) (FM 12, FM 13, FM 14).
jjj	Supplementary information to be developed regionally (see Volume II) (FM 12, FM 14).
$j_2 j_3 j_4$	Specifications relating to supplementary information. (Code table 2061) (FM 12, FM 13, FM 14).
$j_5 j_6 j_7 j_8 j_9$	Supplementary group which follows $5j_1 j_2 j_3 j_4$. (Code table 2061) (FM 12, FM 13, FM 14).
$L_a L_a L_a$	Latitude, in tenths of a degree. (FM 13). (1) Tenths shall be obtained by dividing the number of minutes by 6, disregarding the remainder.
$L_o L_o L_o L_o$	Longitude, in tenths of a degree. (FM 13). (1) See Note (1) under $L_a L_a L_a$.
MiMi	Identification letters of the report. (Code table 2582) (FM 12, FM 13).
MjMj	Identification letters of the part of the report or the version of the code form. (Code table 2582) (FM 12, FM 13).
N	Total cloud cover. (Code table 2700) (FM 12, FM 13). (1) This symbolic letter shall embrace the total fraction of the celestial dome covered by clouds irrespective of their genus.
N_h	Amount of all the C_L cloud present or, if no C_L cloud is present, the amount of all the C_M cloud present. (Code table 2700) (FM 12, FM 13).
N_s	Amount of individual cloud layer or mass whose genus is indicated by C. (Code table 2700) (FM 12, FM 13, FM 14).
N_v	Cloud conditions observed from a higher level. (Code table 2754) (9-group in Section 3 of FM 12, FM 13 and FM 14)
n_3	Evolution of clouds. (Code table 2863) (9-group in Section 3 of FM 12, FM 13 and FM 14).
n_4	Evolution of clouds observed from a station at a higher level. (Code table 2864) (9-group in Section 3 of FM 12, FM 13 and FM 14).
nn	Unit is either millimetre or tens and units of hectopascals (coded 99 for 99 or more units). (9-group in Section 3 of FM 12, FM 13 and FM 14).
$n_b n_b n_b$	Type and serial number of buoy. (FM 13).
P_w	Period of waves. (Code table 3155) (FM 61). (1) The period of the waves is the time between the passage of two successive wave crests past a fixed point (it is equal to the wave length divided by the wave speed). (2) The average value of the wave period shall be forecast, as obtained from the larger well-formed waves of the wave system being forecast.
$P_w P_w$	Period of wind waves, in seconds. (FM 12, FM 13). (1) See note (1) under P_w . (2) The average value of the wave period shall be reported, as obtained from the larger well-formed waves of the wave system being observed. (3) A confused sea shall be indicated by coding 99 for $P_w P_w$.
$P_{wa} P_{wa}$	Period of waves, obtained by instrumental methods, in seconds. (FM 12, FM 13).
$P_{w1} P_{w1}$	Period of swell waves, in seconds. (FM 12, FM 13).
$P_{w2} P_{w2}$	(1) See note (1) under P_w . (2) See note (2) under $P_w P_w$.
PPPP	Pressure at mean sea-level, in tenths of a hectopascal, omitting the thousands digit of hectopascal of the pressure value. (FM 12, FM 13).
$P_0 P_0 P_0 P_0$	Pressure at station level, in tenths of a hectopascal, omitting thousands digit of hectopascals of the pressure value. (FM 12).
ppp	Amount of pressure tendency at station level during the three hours preceding the time of observation, expressed in tenths of a hectopascal. (FM 12, FM 13).
$P_{24} P_{24} P_{24}$	Amount of surface pressure change during last 24 hours either positive, zero or negative, in tenths of a hectopascal. (FM 12, FM 13, FM 14).
Q_c	Quadrant of the globe. (Code table 3333) (FM 13).
R_s	Rate of ice accretion on ships. (Code table 3551) (FM 12, FM 13).

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R_t	Time at which precipitation given by RRR began or ended. (Code table 3552) (9-group in section 3 of FM 12, FM 13 and FM 14) (1) When precipitation is occurring at the time of observation or has ended during the hour preceding the observation, the time reported is the "time precipitation began". When precipitation is not occurring at the time of observation and has not occurred in the hour preceding the observation, the time reported is the "time precipitation ended". When two or more periods of precipitation occur during the period covered by W_1W_2 , the time (beginning or ending) of the last period of precipitation is reported.
RR	Amount of precipitation or water equivalent of solid precipitation, or diameter of solid deposit. (Code table 3570) (9-group in section 3 of FM 12, FM 13 and FM 14)
RRR	Amount of precipitation which has fallen during the period preceding the time of observation as indicated by t_R . (Code table 3590) (FM 12, FM 13).
S	State of the sea. (Code table 3700) (9-group in Section 3 of FM 12, FM 13 and FM 14, FM 61) (1) The state of the sea is the state of agitation of the sea resulting from various factors such as wind, swell, currents, angle between swell and wind, etc.
S_i	Stage of development. (Code table 3739) (FM 12, FM 13).
S_0	Hoar frost or coloured precipitation. (Code table 3761) (9-group in Section 3 of FM 12, FM 13 and FM 14).
S_6	Type of frozen deposit. (Code table 3764) (9-group in Section 3 of FM 12, FM 13 and FM 14).
S_7	Character of snow cover. (Code table 3765) (9-group in Section 3 of FM 12, FM 13 and FM 14).
S_8	Snow-storm phenomena (snow raised by wind). (Code table 3766) (9-group in Section 3 of FM 12, FM 13 and FM 14).
S'	State of the water surface in an alighting area. (Code table 3700) (9-group in Section 3 of FM 12, FM 13, FM 14, FM 15 and FM 16).
S'_7	Regularity of snow cover. (Code table 3775) (9-group in Section 3 of FM 12, FM 13 and FM 14).
S'_8	Evolution of drift snow. (Code table 3776) (9-group in Section 3 of FM 12, FM 13 and FM 14).
SS	Duration of sunshine in the past hour, in tenths of an hour. (FM 12, FM 13, FM 14).
SSS	Duration of sunshine, in hours and tenths of an hour. (FM 12, FM 13, FM 14).
$S_pS_pS_pS_p$	Supplementary information. (Code table 3778) (FM 12, FM 13, FM 14).
s_n	Sign of the data, and relative humidity indicator. (Code table 3845) (FM 12, FM 13). (1) See Note (1) under UUU.
s_s	Indicator for the sign and type of measurement of sea-surface temperature. (Code table 3850) (FM 12, FM 13).
s_w	Indicator for the sign and type of wet-bulb temperature reported. (Code table 3855) (FM 12, FM 13).
ss	Depth of newly fallen snow. (Code table 3870) (9-group in Section 3 of FM 12, FM 13 and FM 14).
sss	Total depth of snow. (Code table 3889) (FM 12, FM 14).
T_n	Minimum air temperature. (Code table 3956) (FM 61).
T_w	Variation of temperature during the period covered by W_1W_2 , associated with glaze or rime. (Code table 3955) (9-group in Section 3 of FM 12, FM 13 and FM 14).
T_x	Maximum air temperature. (Code table 3956) (FM 61).
T_vT_v	Variation in air temperature, in whole degrees Celsius. (9-group in Section 3 of FM 12, FM 13 and FM 14).
T_wT_w	Water temperature at resorts during the bathing season. (9-group in Section 3 of FM 12, FM 13 and FM 14).
TTT	Air temperature in tenths of a degree Celsius, its sign being given by s_n . (FM 12, FM 13).
$T_bT_bT_b$	Wet-bulb temperature, in tenths of a degree Celsius, its sign being given by s_w . (FM 12, FM 13).
$T_dT_dT_d$	Dew-point temperature, in tenths of a degree Celsius, its sign being given by s_n . (FM 12, FM 13). (1) See Note (1) under UUU.
$T_nT_nT_n$	Minimum air temperature, in tenths of degrees Celsius, its sign being given by s_n . (FM 12, FM 13, FM 14).
$T_wT_wT_w$	Sea-surface temperature, in tenths of a degree Celsius, its sign being given by s_n . (FM 12, FM 13).
$T_xT_xT_x$	Maximum air temperature, in tenths of degrees Celsius, its sign being given by s_n . (FM 12, FM 13, FM 14).
t_R	Duration of period of reference for amount of precipitation, ending at the time of the report. (Code table 4019) (FM 12, FM 13).
t_w	Time of commencement of a phenomenon before the hour of observation. (Code table 4055) (9-group in Section 3 of FM 12, FM 13 and FM 14).
tt	Time before observation or duration of phenomena. (Code table 4077) (9-group in Section 3 of FM 12, FM 13 and FM 14).
U_vU_v	Variation in relative humidity, in per cent. (9-group in Section 3 of FM 12, FM 13 and FM 14).
UUU	Relative humidity of the air, in per cent, the first figure being zero except for UUU = 100 per cent. (FM 12, FM 13). (1) See Regulation 12.2.3.3.1.
V	Forecast surface visibility. (Code table 4300) (FM 61).
V_b	Variation of visibility during the hour preceding the observation. (Code table 4332) (9-group in Section 3 of FM 12, FM 13 and FM 14).
VV	Horizontal visibility at surface. (Code table 4377) (FM 12, FM 13). (1) If the distance of visibility is between two of the distances given in Code table 4377, the code figure for the smaller distance shall be reported; e.g. if the distance is 350 metres, code figure 03 shall be reported.
V_sV_s	Visibility towards the sea. (Code table 4377) (9-group in Section 3 of FM 12, FM 13 and FM 14).
v_p	Forward speed of phenomenon. (Code table 4448) (9-group in Section 3 of FM 12, FM 13 and FM 14).

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V_s	Ship's average speed made good during the three hours preceding the time of observation (Code table 4451) (FM 13).
W_{a1}	Past weather reported from an automatic weather station. (Code table 4531) (FM 12, FM 13).
W_{a2}	
W_m	Forecast weather. (Code table 4544) (FM 61).
W_1	Past weather. (Code table 4561) (FM 12, FM 13).
W_2	
ww	Present weather reported from a manned weather station. (Code table 4677) (FM 12, FM 13).
	(1) For correct use of the code, it is necessary to study with care Part III of the <i>International Cloud Atlas</i> (WMO - No. 407) which deals with meteors other than clouds.
	(2) The first figure of the scale ww indicates <i>grasso modo</i> a division of the scale into ten deciles, numbered 0-9, which correspond to ten principle categories of weather. Firstly, the decile the most suitable to the general state of the weather is chosen; then, in the complete list, the code figure is chosen which best describes the weather at the time of observation or (where specifically mentioned in the code) during the period of one hour immediately preceding it. In making the choice of the decile or in determining the complete code figure ww, one does not take into account meteorological phenomena which have been experienced more than one hour before the observation.
$W_a W_a$	Present weather reported from an automatic weather station. (Code table 4680) (FM 12, FM 13).
$W_1 W_1$	Present weather phenomenon not specified in Code table 4677, or specification of present weather phenomenon in addition to group 7ww $W_1 W_2$. (Code table 4687) (9-group in Section 3 of FM 12, FM 13 and FM 14).
YY	Day of the month (UTC), with 01 indicating the first day, 02 the second day, etc: (a) On which the actual time of observation falls. (FM 12, FM 13); (b) Indicating the date (day) of the beginning of the period for which the whole forecast or set of forecasts is valid (FM 61);
Z_0	Optical phenomena. (Code table 5161) (9-group in Section 3 of FM 12, FM 13 and FM 14).
z_i	Present ice situation and trend of conditions over preceding three hours. (Code table 5239) (FM 12, FM 13).
zz	Variation, location or intensity of phenomena. (Code table 4077) (9-group in Section 3 of FM 12, FM 13 and FM 14).
/	Missing data. The number of solidi depends on the number of symbolic letters for which no data can be reported.
//	
...	

CODE TABLES

0200

a Characteristic of pressure tendency during the three hours preceding the time of observation

Code figure		
0	Increasing, then decreasing; atmospheric pressure the same or higher than 3 hours ago	
1	Increasing, then steady; or increasing, then increasing more slowly	
2	Increasing (steadily or unsteadily)*	atmospheric pressure now higher than 3 hours ago
3	Decreasing or steady, then increasing; or increasing, then increasing more rapidly	
4	Steady; atmospheric pressure the same as three hours ago*	
5	Decreasing, then increasing; atmospheric pressure the same or lower than 3 hours ago	
6	Decreasing, then steady; or decreasing, then decreasing more slowly atmospheric	
7	Decreasing (steadily or unsteadily)*	atmospheric pressure now lower than 3 hours ago
8	Steady or increasing, then decreasing; or decreasing, then decreasing more rapidly	
	* For reports from automatic stations see Regulation 12.2.3.5.3	

0244

a_m	<i>Portion of the maritime area</i>
Code figure	
0	Whole of the area AAA
1	NE quadrant of the area AAA
2	Eastern half of the area AAA
3	SE quadrant of the area AAA
4	Southern half of the area AAA
5	SW quadrant of the area AAA
6	Western half of the area AAA
7	NW quadrant of the area AAA
8	Northern half of the area AAA
9	Rest of the area AAA

0264

a₃	<i>Standard isobaric surface for which the geopotential is reported</i>
Code figure	
1	1000 hPa
2	925 hPa
5	500 hPa
7	700 hPa
8	850 hPa

0439

b_i	<i>Ice of land origin</i>
Code figure	
0	No ice of land origin.
1	1–5 icebergs, no growlers or bergy bits.
2	6–10 icebergs, no growlers or bergy bits.
3	11–20 icebergs, no growlers or bergy bits.
4	Up to and including 10 growlers and bergy bits — no icebergs.
5	More than 10 growlers and bergy bits — no icebergs.
6	1–5 icebergs, with growlers and bergy bits.
7	6–10 icebergs, with growlers and bergy bits.
8	11–20 icebergs, with growlers and bergy bits.
9	More than 20 icebergs, with growlers and bergy bits — a major hazard to navigation.
/	Unable to report, because of darkness, lack of visibility or because only sea ice is visible.

0509

C_H	<i>Clouds of the genera Cirrus, Cirrocumulus and Cirrostratus</i>
Code figure	Non-technical specifications
0	No Cirrus, Cirrocumulus or Cirrostratus.
1	Cirrus in the form of filaments, strands or hooks, not progressively invading the sky.

Continued on next page

METEOROLOGICAL CODES

2	Dense Cirrus, in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; or Cirrus with sproutings in the form of small turrets or battlements, or Cirrus having the appearance of cumuliform tufts
3	Dense Cirrus, often in the form of an anvil, being the remains of the upper parts of Cumulonimbus.
4	Cirrus in the form of hooks or of filaments, or both, progressively invading the sky; they generally become denser as a whole
5	Cirrus (often in bands converging towards one point or two opposite points of the horizon) and Cirrostratus, or Cirrostratus alone; in either case, they are progressively invading the sky, and generally growing denser as a whole, but the continuous veil does not reach 45 degrees above the horizon.
6	Cirrus (often in bands converging towards one point or two opposite points of the horizon) and Cirrostratus, or Cirrostratus alone; in either case, they are progressively invading the sky, and generally growing denser as a whole; the continuous veil extends more than 45 degrees above the horizon, without the sky being totally covered.
7	Veil of Cirrostratus covering the celestial dome.
8	Cirrostratus not progressively invading the sky and not completely covering the celestial dome.
9	Cirrocumulus alone, or Cirrocumulus accompanied by Cirrus or Cirrostratus, or both, but Cirrocumulus is predominant.
/	Cirrus, Cirrocumulus and Cirrostratus invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds.

0513

C_L	<i>Clouds of the genera Stratocumulus, Stratus, Cumulus and Cumulonimbus</i>
Code figure	Non-technical specifications
0	No Stratocumulus, Stratus, Cumulus or Cumulonimbus.
1	Cumulus with little vertical extent and seemingly flattened, or ragged Cumulus other than of bad weather*, or both.
2	Cumulus of moderate or strong vertical extent, generally with protuberances in the form of domes or towers, either accompanied or not by other Cumulus or by Stratocumulus, all having their bases at the same level.
3	Cumulonimbus the summits of which, at least partially, lack sharp outlines, but are neither clearly fibrous (cirriform) nor in the form of an anvil; Cumulus, Stratocumulus or Stratus may also be present.
4	Stratocumulus formed by the spreading out of Cumulus; Cumulus may also be present.
5	Stratocumulus not resulting from the spreading out of Cumulus.
6	Stratus in a more or less continuous sheet or layer, or in ragged shreds, or both, but no Stratus fractus of bad weather*.
7	Stratus fractus of bad weather* or Cumulus fractus of bad weather,* or both (pannus), usually below Altostratus or Nimbostratus.
8	Cumulus and Stratocumulus other than that formed from the spreading out of Cumulus; the base of the Cumulus is at a different level from that of the Stratocumulus.
9	Cumulonimbus, the upper part of which is clearly fibrous (cirriform), often in the form of an anvil; either accompanied or not by Cumulonimbus without anvil or fibrous upper part, by Cumulus, Stratocumulus, Stratus or pannus.
/	Stratocumulus, Stratus, Cumulus and Cumulonimbus invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena

* "Bad weather" denotes the conditions which generally exist during precipitation and a short time before and after.

0515

C_M	<i>Clouds of the genera Altocumulus, Altostratus and Nimbostratus</i>
Code figure	Non-technical specifications
0	No Altocumulus, Altostratus or Nimbostratus.
1	Altostratus, the greater part of which is semi-transparent; through this part the sun or moon may be weakly visible, as through ground glass.
2	Altostratus, the greater part of which is sufficiently dense to hide the sun or moon, or Nimbostratus.
3	Altocumulus, the greater part of which is semi-transparent; the various elements of the cloud change only slowly and are all at a single level.
4	Patches (often in the form of almonds or fish) of Altocumulus, the greater part of which is semi-transparent; the clouds occur at one or more levels and the elements are continually changing in appearance.

Continued overleaf

METEOROLOGICAL CODES

5	Semi-transparent Altocumulus in bands, or Altocumulus in one or more fairly continuous layer (semi-transparent or opaque), progressively invading the sky; these Altocumulus clouds generally thicken as a whole.
6	Altocumulus resulting from the spreading out of Cumulus (or Cumulonimbus).
7	Altocumulus in two or more layers, usually opaque in places, and not progressively invading the sky; or opaque layer of Altocumulus, not progressively invading the sky; or Altocumulus together with Altostratus or Nimbostratus.
8	Altocumulus with sproutings in the form of small towers or battlements, or Altocumulus having the appearance of cumuliform tufts
9	Altocumulus of a chaotic sky, generally at several levels.
/	Altocumulus, Altostratus and Nimbostratus invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds.

0639

C _i	Concentration or arrangement of sea ice		
Code figure			
0	No sea ice in sight		
1	Ship in open lead more than 1·0n mile wide, or ship in fast ice with boundary beyond limit of visibility		
2	Sea ice present in concentrations less than 3/10 (3/8), open water or very open pack ice	Sea ice concentration is uniform in the observation area	Ship in ice or within 0·5 n miles of ice edge
3	4/10 to 6/10 (3/8 to less than 6/8), open pack ice		
4	7/10 to 8/10 (6/8 to less than 7/8), close pack ice		
5	9/10 or more, but not 10/10 (7/8 to less than 8/8), very close pack ice		
6	Strips and patches of pack ice with open water between	Sea ice concentration is not uniform in the observation area	
7	Strips and patches of close or very close pack ice with areas of lesser concentration between		
8	Fast ice with open water, very open or open pack ice to seaward of the ice boundary		
9	Fast ice with close or very close pack ice to seaward of the ice boundary		
/	Unable to report, because of darkness, lack of visibility, or because ship is more than 0·5 n miles away from ice edge		

0700

Direction or bearing in one figure

D	True direction from which surface wind is blowing
D_k	True direction from which swell is moving
D_s	True direction of resultant displacement of the ship during the 3 hours preceding the time of observation
Code figure	
0	Calm (in D, D _k), or stationary (in D _s)
1	NE
2	E
3	SE
4	S
5	SW
6	W
7	NW
8	N
9	Confused (in D _k), or unknown (in D _s)
/	Report from a coastal land station or displacement of ship not reported (In D _s only - see Regulation 12.3.1.2 (b))

0739

D_i	<i>True bearing of principal ice edge</i>
Code figure	
0	Ship in shore or flaw lead
1	Principal ice edge towards NE
2	Principal ice edge towards E
3	Principal ice edge towards SE
4	Principal ice edge towards S
5	Principal ice edge towards SW
6	Principal ice edge towards W
7	Principal ice edge towards NW
8	Principal ice edge towards N
9	Not determined (ship in ice)
/	Unable to report, because of darkness, lack of visibility or because only ice of land origin is visible

0877**Direction in two figures**

dd	<i>True direction, in tens of degrees, from which wind is blowing (or will blow)</i>		
d_{w1}d_{w1} d_{w2}d_{w2}	<i>True direction, in tens of degrees, from which swell waves are coming</i>		
Code figure			
00	Calm (no waves)	20	195°–204°
01	005°–014°	21	205°–214°
02	015°–024°	22	215°–224°
03	025°–034°	23	225°–234°
04	035°–044°	24	235°–244°
05	045°–054°	25	245°–254°
06	055°–064°	26	255°–264°
07	065°–074°	27	265°–274°
08	075°–084°	28	275°–284°
09	085°–094°	29	285°–294°
10	095°–104°	30	295°–304°
11	105°–114°	31	305°–314°
12	115°–124°	32	315°–324°
13	125°–134°	33	325°–334°
14	135°–144°	34	335°–344°
15	145°–154°	35	345°–354°
16	155°–164°	36	355°–004°
17	165°–174°	99	Variable, or all directions or waves confused, direction indeterminate
18	175°–184°		
19	185°–194°		

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1144

F_m	Forecast strength of surface wind		
Code figure	Beaufort number	Code figure	Beaufort number
0	0-3	5	8
1	4	6	9
2	5	7	10
3	6	8	11
4	7	9	12

1300

G	Period covered by forecast
Code figure	
0	Synopsis of meteorological conditions in the forecast area at the time of the beginning of the forecast period
1	Forecast valid for 3 hours
2	Forecast valid for 6 hours
3	Forecast valid for 9 hours
4	Forecast valid for 12 hours
5	Forecast valid for 18 hours
6	Forecast valid for 24 hours
7	Forecast valid for 48 hours
8	Forecast valid for 72 hours
9	Occasionally

1600

h	Height above surface of the base of the lowest cloud seen
Code figure	
0	0 to 50 m
1	50 to 100 m
2	100 to 200 m
3	200 to 300 m
4	300 to 600 m
5	600 to 1000 m
6	1000 to 1500 m
7	1500 to 2000 m
8	2000 to 2500 m
9	2500 m or more, or no clouds
/	Height of base of cloud not known or base of clouds at a level lower and tops at a level higher than that of the station
Notes:	<p>(1) A height exactly equal to one of the values at the ends of the ranges shall be coded in the higher range; e.g., a height of 600 m shall be reported by code figure 5.</p> <p>(2) Due to the limitation in range of the cloud-sensing equipment used by an automatic station, the code figures reported for h could have one of the three following meanings:</p> <p>(a) The actual height of the base of the cloud is within the range indicated by the code figure; or:</p> <p>(b) The height of the base of the cloud is greater than the range indicated by the code figure but cannot be determined due to instrumental limitations; or:</p> <p>(c) There are no clouds vertically above the station.</p>

Continued on next page

1751

i_s	<i>Ice accretion on ships</i>
Code figure	
1	Icing from ocean spray
2	Icing from fog
3	Icing from spray and fog
4	Icing from rain
5	Icing from spray and rain

1819

i_R	<i>Indicator for inclusion or omission of precipitation data</i>	
Code figure	Precipitation data are reported:	Group 6RRRt _R is:
0	In Sections 1 and 3	Included in both sections
1	In Section 1	Included
2	In Section 3	Included
3	In none of the two Sections 1 and 3	Omitted (precipitation amount = 0)
4	In none of the two Sections 1 and 3	Omitted (precipitation amount not available)

1855

i_w	<i>Indicator for source and units of wind speed</i>	
Code figure		
0	Wind speed estimated	Wind speed in metres per second
1	Wind speed obtained from anemometer	
3	Wind speed estimated	Wind speed in knots
4	Wind speed obtained from anemometer	

1860

i_x	<i>Indicator for type of station operation (manned or automatic) and for present and past weather data</i>	
Code figure	Type of station operation:	Group 7wwW ₁ W ₂ or 7w _a w _a W _{a1} W _{a2}
1	Manned	Included
2	Manned	Omitted (no significant phenomena to report)
3	Manned	Omitted (no observation, data not available)
4	Automatic	Included using Code tables 4677 and 4561
5	Automatic	Omitted (no significant phenomena to report)
6	Automatic	Omitted (no observation, data not available)
7	Automatic	Included using code tables 4680 and 4531
Note:		Manned station operations use only the group 7wwW ₁ W ₂ and indicator i _x = 1, 2 and 3. Automatic station operations normally use the group 7w _a w _a W _{a1} W _{a2} and indicator i _x = 5, 6 and 7. However, only when an automatic station is sufficiently sophisticated and able to cope automatically with Code tables 4677 and 4561 should the group 7wwW ₁ W ₂ and indicator i _x = 4 be used.

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2582

M_iM_i	Identification letters of the report								
M_jM_j	Identification letters of the part of the report or the version of the code form								
Code Format	M _i M _i				M _j M _j				
	Land Station	Sea Station	Aircraft	Satellite	Part A	Part B	Part C	Part D	No distinction
FM 13-XIV Ext. SHIP	-	BB	-	-	-	-	-	-	XX

2700

N	Total cloud cover	
N_h	Amount of all the C_L cloud present or, if no C_L cloud is present, the amount of all the C_M cloud present	
Code figure		Code figure
0	0	0
1	1 okta or less, but not zero	1/10 or less, but not zero
2	2 oktas	2/10 - 3/10
3	3 oktas	4/10
4	4 oktas	5/10
5	5 oktas	6/10
6	6 oktas	7/10 - 8/10
7	7 oktas or more, but not 8 oktas	9/10 or more, but not 10/10
8	8 oktas	10/10
9	Sky obscured by fog and/or other meteorological phenomena	
/	Cloud cover is indiscernible for reasons other than fog or other meteorological phenomena, or observation is not made	
Note:	For the use of (/), see Regulation 12.1.4	

3155

P_w	Period of waves
Code figure	
0	10 seconds
1	11 seconds
2	12 seconds
3	13 seconds
4	14 seconds or more
5	5 seconds or less
6	6 seconds
7	7 seconds
8	8 seconds
9	9 seconds
/	Calm or period not determined

3333

Q_c	Quadrant of the globe	
Code figure	Latitude	Longitude
1	North	East
3	South	East

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5	South	West
7	North	West
Note:	The choice is left to the observer in the following cases:	
—	When the ship is on the Greenwich Meridian or the 180° meridian ($L_o L_o L_o L_o = 0000$ or 1800 respectively): $Q_c = 1$ or 7 (northern hemisphere) or $Q_c = 3$ or 5 (southern hemisphere);	
—	When the ship is on the Equator ($L_a L_a L_a = 000$): $Q_c = 1$ or 3 (eastern longitude) or $Q_c = 5$ or 7 (western longitude).	

3551

R_s	Rate of ice accretion on ships
Code figure	
0	Ice not building up
1	Ice building up slowly
2	Ice building up rapidly
3	Ice melting or breaking up slowly
4	Ice melting or breaking up rapidly

3590

RRR	Amount of precipitation which has fallen during the period preceding the time of observation, as indicated by t_R		
Code figure		Code figure	
000	No precipitation	990	Trace
001	1 mm	991	0.1 mm
002	2 mm	992	0.2 mm
etc.	etc.	993	0.3 mm
998	988 mm	994	0.4 mm
989	989 mm or more	995	0.5 mm
		996	0.6 mm
		997	0.7 mm
		998	0.8 mm
		999	0.9 mm
		///	Precipitation not measured
Note:	See Regulation 12.2.5.4.		

3739

S_i	Stage of development
Code figure	
0	New ice only (frazil ice, grease ice, slush, shuga).
1	Nilas or ice rind, less than 10 cm thick.
2	Young ice (grey ice, grey-white ice), 10–30 cm thick.
3	Predominantly new and/or young ice with some first-year ice.
4	Predominantly thin first-year ice with some new and/or young ice.
5	All thin first-year ice (30–70 cm thick).
6	Predominantly medium first-year ice (70–120 cm thick) and thick first-year ice (>120 cm thick) with some thinner (younger) first-year ice.
7	All medium and thick first-year ice.

Continued overleaf

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8	Predominantly medium and thick first-year ice with some old ice (usually more than 2 metres thick).
9	Predominantly old ice.
/	Unable to report, because of darkness, lack of visibility or because only ice of land origin is visible or because ship is more than 0.5 n miles away from ice edge

3845

s_n	<i>Sign of the data, and relative humidity indicator</i>
Code figure	
0	Positive or zero
1	Negative
9	Relative humidity follows
Notes:	(1) Code figures 2 to 8 are not used (2) See regulation 12.2.3.3.1 for the use of code figure 9

3850

s_s	<i>Indicator for sign and type of measurement of sea-surface temperature</i>	
Code figure	Sign	Type of measurement
0	Positive or 0	Intake
1	Negative	Intake
2	Positive or 0	Bucket
3	Negative	Bucket
4	Positive or 0	Hull contact sensor
5	Negative	Hull contact sensor
6	Positive or 0	Other
7	Negative	Other

3855

s_w	<i>Indicator for the sign and type of wet-bulb temperature reported</i>
Code figure	
0	Positive or zero measured wet-bulb temperature
1	Negative measured wet-bulb temperature
2	Iced bulb measured wet-bulb temperature
5	Positive or zero computed wet-bulb temperature
6	Negative computed wet-bulb temperature
7	Iced bulb computed wet-bulb temperature

3956

T_n	<i>Minimum air temperature</i>
T_x	<i>Maximum air temperature</i>
Code figure	Temperature in degrees Celsius
0	Less than -10
1	-10 to -5
2	-5 to -1
3	About 0 (to nearly ± 1)
4	1 to 5
5	5 to 10

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6	10 to 20
7	20 to 30
8	Greater than 30
9	Temperature not forecast

4019

t_R	<i>Duration of period of reference for amount of precipitation, ending at the time of the report</i>
Code figure	
1	Total precipitation during the 6 hours preceding the observation
2	Total precipitation during the 12 hours preceding the observation
3	Total precipitation during the 18 hours preceding the observation
4	Total precipitation during the 24 hours preceding the observation
5	Total precipitation during the 1 hour preceding the observation
6	Total precipitation during the 2 hours preceding the observation
7	Total precipitation during the 3 hours preceding the observation
8	Total precipitation during the 9 hours preceding the observation
9	Total precipitation during the 15 hours preceding the observation
Notes:	(1) If the duration of the period of reference is not covered by Code table 4019 or the period does not end at the time of the report t _R shall be coded as 0. (2) Members are recommended to avoid any deviations from international practices which require the use of code figure 0. The specification of code figure 0 should be indicated in Volume II of the Manual of Codes under national coding procedures.

4300

V	<i>Forecast surface visibility</i>
Code figure	
0	less than 50 m
1	50-200 m
2	200-500 m
3	500-1000 m
4	1-2 km
5	2-4 km
6	4-10 km
7	10-20 km
8	20-50 km
9	50 km or more

4377

VV <i>Horizontal visibility at surface</i>				
Code figure	km		Code figure	km
00	<0.1		81	35
01	0.1		82	40
02	0.2	
..	...		87	65
49	4.9		88	70
50	5		89	<70

Continued overleaf

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51-55	Not used	90	<0.05
		91	0.05
56	6	92	0.2
57	7	93	0.5
..	..	94	1
79	29	95	2
80	30	96	4
		97	10
		98	20
		99	<50

4451

v_s	Ship's average speed made good during the three hours preceding the time of observation		
Code figure			
0	0 knots	0 km h ⁻¹	
1	1-5 knots	1-10 km h ⁻¹	
2	6-10 knots	11-19 km h ⁻¹	
3	11-15 knots	20-28 km h ⁻¹	
4	16-20 knots	29-37 km h ⁻¹	
5	21-25 knots	38-47 km h ⁻¹	
6	26-30 knots	48-56 km h ⁻¹	
7	31-35 knots	57-65 km h ⁻¹	
8	36-40 knots	66-75 km h ⁻¹	
9	Over 40 knots	Over 75 km h ⁻¹	
/	Not applicable (report from a coastal land station) or not reported (see Regulation 12.3.1.2 (b))		

4531

W_{a1} or W_{a2}	Past weather reported from an automatic weather station
Code figure	
0	No significant weather observed
1	VISIBILITY REDUCED
2	Blowing phenomena, visibility reduced
3	FOG
4	PRECIPITATION
5	Drizzle
6	Rain
7	Snow or ice pellets
8	Showers or intermittent precipitation
9	Thunderstorm
NOTE:	The weather descriptions in this table are progressively complex to accommodate the different levels of weather discrimination capability of various automatic stations. Stations having only basic sensing capability may use the lower code figures and basic generic descriptions (shown in capital letters) Stations with progressively higher discrimination capability shall use the more detailed descriptions (higher codes).

Continued on next page

4544

W_m	Forecast weather
Code figure	
0	Moderate to good visibility (greater than 5 km)
1	Risk of accumulation of ice on superstructures (air temperature between 0 and -5 °C)
2	Strong risk of accumulation of ice on superstructures (air temperature below -5 °C)
3	Mist (visibility 1-5 km)
4	Fog (visibility less than 1 km)
5	Drizzle
6	Rain
7	Snow or rain and snow
8	Squally weather with or without showers
9	Thunderstorms

4561

W₁ W₂	Past weather
Code figure	
0	Cloud covering 1/2 or less of the sky throughout the appropriate period
1	Cloud covering more than 1/2 of the sky during part of the appropriate period and covering 1/2 or less during part of the period
2	Cloud covering more than 1/2 of the sky throughout the appropriate period
3	Sandstorm, duststorm or blowing snow
4	Fog, ice fog or thick haze
5	Drizzle
6	Rain
7	Snow or rain and snow mixed
8	Shower(s)
9	Thunderstorm(s) with or without precipitation

4677

ww	Present weather reported from a manned weather station		
ww=00–49	No precipitation at the station at the time of observation		
ww=00–19	No precipitation, fog, ice fog (except for 11 and 12), duststorm, sandstorm, drifting or blowing snow at the station ¹ at the time of observation or, except for 09 and 17, during the preceding hour		
	Code figure		
No meteors except photo-meteors	00	Cloud development not observed or not observable	Characteristic change of the state of sky during the past hour.
	01	Clouds generally dissolving or becoming less developed	
	02	State of sky on the whole unchanged	
	03	Clouds generally forming or developing	
	04	Visibility reduced by smoke, e.g., veldt or forest fires, industrial smoke or volcanic ashes	
Haze, dust sand or smoke	05	Haze	
	06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation	
	07	Dust or sand raised by wind at or near the station at the time of observation, but no well- developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen; or, in the case of ships, blowing spray at the station	
	08	Well-developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no duststorm or sandstorm	
	09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour	
	10	Mist	

Continued overleaf

METEOROLOGICAL CODES

ww	Present weather reported from a manned weather station		
	11	Patches	shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea
	12	More or less continuous	
	13	Lightning visible, no thunder heard	
	14	Precipitation within sight, not reaching the ground or the surface of the sea	
	15	Precipitation within sight, reaching the ground or the surface of the sea, but distant, i.e. estimated to be more than 5km from the station	
	16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station	
	17	Thunderstorm, but no precipitation at the time of observation	
	18	Squalls	at or within sight of the station during the preceding hour or at the time of observation
	19	Funnel cloud(s) ²	
ww=20–29	Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation		
	20	Drizzle (not freezing) or snow grains	not falling as shower(s)
	21	Rain (not freezing)	
	22	Snow	
	23	Rain and snow or ice pellets	
	24	Freezing drizzle or freezing rain	
	25	Shower(s) of rain	
	26	Shower(s) of snow, or of rain and snow	
	27	Shower(s) of hail ³ , or of rain and hail ³	
	28	Fog or ice fog	
	29	Thunderstorm (with or without precipitation)	
ww=30–39	Duststorm, sandstorm, drifting or blowing snow		
	30	Slight or moderate duststorm or sandstorm	– has decreased during the preceding hour
	31		– no appreciable change during the preceding hour
	32		– has begun or has increased during the preceding hour
	33	Severe duststorm or sandstorm	– has decreased during the preceding hour
	34		– no appreciable change during the preceding hour
	35		– has begun or has increased during the preceding hour
	36	Slight or moderate drifting snow	generally low (below eye level)
	37	Heavy drifting snow	
	38	Slight or moderate blowing snow	generally high (above eye level)
	39	Heavy blowing snow	
ww=40–49	Fog or ice fog at the time of observation		
	40	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer	
	41	Fog or ice fog in patches	
	42	Fog or ice fog, sky visible	has become thinner during the preceding hour
	43	Fog or ice fog, sky invisible	
	44	Fog or ice fog, sky visible	no appreciable change during the preceding hour
	45	Fog or ice fog, sky invisible	
	46	Fog or ice fog, sky visible	has begun or has become thicker during the preceding hour
	47	Fog or ice fog, sky invisible	
	48	Fog, depositing rime, sky visible	
	49	Fog, depositing rime, sky invisible	
ww=50–99	Precipitation at the station at the time of observation		
ww=50–59	Drizzle		
	50	Drizzle, not freezing, intermittent	slight at time of observation
	51	Drizzle, not freezing, continuous	
	52	Drizzle, not freezing, intermittent	moderate at time of observation
	53	Drizzle, not freezing, continuous	
	54	Drizzle, not freezing, intermittent	heavy (dense) at time of observation
	55	Drizzle, not freezing, continuous	
	56	Drizzle, freezing, slight	
	57	Drizzle, freezing, moderate or heavy (dense)	
	58	Drizzle and rain, slight	
	59	Drizzle and rain, moderate or heavy	

Continued on next page

METEOROLOGICAL CODES

ww	<i>Present weather reported from a manned weather station</i>	
ww=60–69	Rain	
	60	Rain, not freezing, intermittent slight at time of observation
	61	Rain, not freezing, continuous
	62	Rain, not freezing, intermittent moderate at time of observation
	63	Rain, not freezing, continuous
	64	Rain, not freezing, intermittent heavy at time of observation
	65	Rain, not freezing, continuous
	66	Rain, freezing, slight
	67	Rain, freezing, moderate or heavy
	68	Rain or drizzle and snow, slight
	69	Rain or drizzle and snow, moderate or heavy
ww=70–79	Solid precipitation not in showers	
	70	Intermittent fall of snowflakes slight at time of observation
	71	Continuous fall of snowflakes
	72	Intermittent fall of snowflakes moderate at time of observation
	73	Continuous fall of snowflakes
	74	Intermittent fall of snowflakes heavy at time of observation
	75	Continuous fall of snowflakes
	76	Diamond dust (with or without fog)
	77	Snow grains (with or without fog)
	78	Isolated star-like snow crystals (with or without fog)
	79	Ice pellets
ww=80–99	Showery precipitation, or precipitation with current or recent thunderstorm	
	80	Rain shower(s), slight
	81	Rain shower(s), moderate or heavy
	82	Rain shower(s), violent
	83	Shower(s) of rain and snow mixed, slight
	84	Shower(s) of rain and snow mixed, moderate or heavy
	85	Snow shower(s), slight
	86	Snow shower(s), moderate or heavy
	87	Shower(s) of snow pellets or small hail, with or without rain or rain and snow mixed slight
	88	rain or rain and snow mixed moderate or heavy
	89	Shower(s) of hail ³ , with or without rain or rain and snow mixed, not associated with thunder slight
	90	Thunderstorm during the preceding hour but not at time of observation moderate or heavy
	91	Slight rain at time of observation
	92	Moderate or heavy rain at time of observation
	93	Slight snow, or rain and snow mixed or hail ³ , at time of observation
	94	Moderate or heavy snow, or rain and snow mixed or hail ³ , at time of observation
	95	Thunderstorm, slight or moderate, without hail ³ , but with rain and/or snow at time of observation
	96	Thunderstorm, slight or moderate, with hail ³ at time of observation
	97	Thunderstorm, heavy, without hail ³ , but with rain and/or snow at time of observation Thunderstorm at time of observation
	98	Thunderstorm combined with duststorm or sandstorm at time of observation
	99	Thunderstorm, heavy, with hail ³ , at time of observation
Notes	1. The expression “at the station” refers to a land station or a ship. 2. Tornado cloud or waterspout. 3. Hail, small hail, snow pellets (French: grêle, grésil ou neige roulée).	

4680

W_aW_a	<i>Present weather reported from an automatic weather station</i>
Code figure	
00	No significant weather observed

Continued overleaf

METEOROLOGICAL CODES

01	Clouds generally dissolving or becoming less developed during the past hour
02	State of sky on the whole unchanged during the past hour
03	Clouds generally forming or developing during the past hour
04	Haze or smoke, or dust in suspension in the air, visibility equal to, or greater than, 1 km
05	Haze or smoke, or dust in suspension in the air, visibility less than 1 km
06-09	Reserved
10	Mist
11	Diamond dust
12	Distant lightning
13-17	Reserved
18	Squalls
19	Reserved
Code figures 20-26 are used to report precipitation, fog (or ice fog) or thunderstorm at the station during the preceding hour but not at the time of observation.	
20	Fog
21	PRECIPITATION
22	Drizzle (not freezing) or snow grains
23	Rain (not freezing)
24	Snow
25	Freezing drizzle or freezing rain
26	Thunderstorm (with or without precipitation)
27	BLOWING OR DRIFTING SNOW OR SAND
28	Blowing or drifting snow or sand, visibility equal to, or greater than, 1 km
29	Blowing or drifting snow or sand, visibility less than 1 km
30	FOG
31	Fog or ice in patches
32	Fog or ice fog, has become thinner during the past hour
33	Fog or ice fog, no appreciable change during the past hour
34	Fog or ice fog, has begun or become thicker during the past hour
35	Fog, depositing rime
36-39	Reserved
40	PRECIPITATION
41	Precipitation, slight or moderate
42	Precipitation, heavy
43	Liquid precipitation, slight or moderate
44	Liquid precipitation, heavy
45	Solid precipitation, slight or moderate
46	Solid precipitation, heavy
47	Freezing precipitation, slight or moderate
48	Freezing precipitation, heavy
49	Reserved
50	DRIZZLE

Continued on next page

METEOROLOGICAL CODES

51	Drizzle, not freezing, slight
52	Drizzle, not freezing, moderate
53	Drizzle, not freezing, heavy
54	Drizzle, freezing, slight
55	Drizzle, freezing, moderate
56	Drizzle, freezing, heavy
57	Drizzle and rain, slight
58	Drizzle and rain, moderate or heavy
59	Reserved
60	RAIN
61	Rain, not freezing, slight
62	Rain, not freezing, moderate
63	Rain, not freezing, heavy
64	Rain, freezing, slight
65	Rain, freezing, moderate
66	Rain, freezing, heavy
67	Rain (or drizzle) and snow, slight
68	Rain (or drizzle) and snow, moderate or heavy
69	Reserved
70	SNOW
71	Snow, slight
72	Snow, moderate
73	Snow, heavy
74	Ice pellets, slight
75	Ice pellets, moderate
76	Ice pellets, heavy
77	Snow grains
78	Ice crystals
79	Reserved
80	SHOWER(S) or INTERMITTENT PRECIPITATION
81	Rain shower(s) or intermittent rain, slight
82	Rain shower(s) or intermittent rain, moderate
83	Rain shower(s) or intermittent rain, heavy
84	Rain shower(s) or intermittent rain, violent
85	Snow shower(s) or intermittent snow, slight
86	Snow shower(s) or intermittent snow, moderate
87	Snow shower(s) or intermittent snow, heavy
88	Reserved
89	Hail
90	THUNDERSTORM
91	Thunderstorm, slight or moderate, with no precipitation
92	Thunderstorm, slight or moderate, with rain showers and/or snow showers
93	Thunderstorm, slight or moderate, with hail
94	Thunderstorm, heavy, with no precipitation

Continued overleaf

METEOROLOGICAL CODES

95	Thunderstorm, heavy, with rain showers and/or snow showers	
96	Thunderstorm, heavy, with hail	
97-98	Reserved	
99	Tornado	
Notes	1.	This code table includes terms on several levels to cover simple and increasingly complex stations.
	2.	Generic terms for weather (e.g. fog, drizzle) are intended for use at stations capable of determining types of weather but no other information. Generic terms are included in the code table using all capital letters.
	3.	Code figures for generic precipitation (code figures 40-48) are arranged in order of increasing complexity. For example, a very simple station that can sense only the presence or absence of precipitation would use code figure 40 (precipitation). At the next level, a station capable of sensing amount but not type would use code figure 41 or 42. A station capable of sensing gross type (liquid, solid, freezing) and amount would use code figures 43-48. A station capable of reporting actual types of precipitation (e.g. drizzle or rain), but not the amount, would use the appropriate whole decile number (e.g. 50 for generic drizzle, 60 for generic rain).

5239

z_i	<i>Present ice situation and trend of conditions over preceding three hours</i>	
Code figure		
0	Ship in open water with floating ice in sight	
1	Ship in easily penetrable ice; conditions improving	Ship in ice
2	Ship in easily penetrable ice; conditions not changing	
3	Ship in easily penetrable ice; conditions worsening	
4	Ship in ice difficult to penetrate; conditions improving	
5	Ship in ice difficult to penetrate; conditions not changing	
6	Ice forming and floes freezing together	Ship in ice difficult to penetrate and conditions worsening
7	Ice under slight pressure	
8	Ice under moderate or severe pressure	
9	Ship beset	
/	Unable to report, because of darkness or lack of visibility	

DRAFT

ICE REPORTS

ABOUT BALTICE.ORG

Baltice.org is a single access point for reliable and up to date information related to winter navigation in the Baltic Sea area. This site gathers information and instructions from icebreaking authorities from all the Baltic Sea countries e.g. Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Russia and Sweden.

The aim of the site is to extend the knowledge of winter navigation and prevailing conditions in the area during ice season. The site provides information such as: ice reports, charts, icebreaking, reporting details and training courses, together with links to the various country specific hydrographic and meteorological authority websites.

THE BALTIC SEA ICE CODE

The code is intended to be used for the reporting of ice conditions in fairways, harbour areas, coast sectors and selected sea routes. It is used by the following countries: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Netherlands, Norway, Poland, Russia and Sweden.

Further information can be found on the Baltic Sea Ice Services website www.bsis-ice.de, in particular under the "Technical Information" section.

CODE FORM

ICE AA 1A_BS_BT_BK_B 2A_BS_BT_BK_B . . . nA_BS_BT_BK_B
BB 1A_BS_BT_BK_B 2A_BS_BT_BK_B . . . nA_BS_BT_BK_B
CC etc.

SYMBOLIC LETTERS

AA BB etc	Index letters defining districts for fairway sections or sea areas to which the following 5-figure groups refer
1 2 . . . n	Identifier figures of code groups referring to fairway sections or sea areas within the districts defined by AA, BB, CC etc. The number of sections or areas within each district cannot exceed 9
A _B	Amount and arrangement of sea ice (code table A _B)
S _B	Stage of ice development (code table S _B)
T _B	Topography or form of ice (code table T _B)
K _B	Navigational conditions in ice (code table K _B)

Notes:

- (1) When a section is free of ice the corresponding group may be omitted from the report. It should however always be coded as n0//KB the first two days after it has become ice free and only omitted the third day if the ice free conditions continue.
- (2) When all sections within a district are ice free the whole district shall be omitted from the report.
- (3) The districts for which ice information is issued by countries using this code are indicated for each country in the following pages:

CODE TABLES

A_B — Amount and arrangement of sea ice

Code
figure

- 0 Ice free
- 1 Open water — concentration less than 1/10
- 2 Very open pack ice — concentration 1/10 to less than 4/10
- 3 Open pack ice — concentration 4/10 to 6/10
- 4 Close pack ice — concentration 7/10 to 8/10
- 5 Very close pack ice — concentration 9/10 to 9+/10*
- 6 Compact pack ice, including consolidated pack ice — concentration 10/10
- 7 Fast ice with pack ice outside
- 8 Fast ice
- 9 Lead in very close or compact pack ice or along the fast ice edge
- / Unable to report
- * 9+/10 means 10/10 ice concentration with small openings

Note: The higher code figure has greater priority in reporting

S_B — Stage of ice development

Code

figure

- 0 New ice or dark nilas (less than 5 cm thick)
- 1 Light nilas (5–10 cm thick) or ice rind
- 2 Grey ice (10–15 cm thick)
- 3 Grey-white ice (15–30 cm thick)
- 4 Thin first year ice first stage (30–50 cm thick)
- 5 Thin first year ice second stage (50–70 cm thick)
- 6 Medium first year ice (70–120 cm thick)
- 7 Ice predominantly thinner than 15 cm with some thicker ice
- 8 Ice predominantly 15–30 cm with some ice thicker than 30 cm
- 9 Ice predominantly thicker than 30 cm with some thinner ice
- / No information or unable to report

Note: If A_B is reported as "0", S_B should be reported as /

T_B — Topography or form of ice

Code

figure

- 0 Pancake ice, ice cakes, brash ice — less than 20 m across
- 1 Small ice floes — 20–100 m across
- 2 Medium ice floes — 100–500 m across
- 3 Big ice floes — 500–2000 m across
- 4 Vast or giant ice floes — more than 2000 m across — or level ice
- 5 Rafted ice
- 6 Compacted slush or shuga, or compacted brash ice
- 7 Hummocked or ridged ice
- 8 Thaw holes or many puddles on the ice
- 9 Rotten ice
- / No information or unable to report

- Notes:
- (1) The figures 0 to 4 — forms of ice — should be used only if the ice concentration is less than 7/10 and no compacted ice is present; in this case T_B = 4 means vast ice floes. The figures 4 to 9 should be reported if the ice concentration is more than 7/10; in this case T_B = 4 means level ice.
 - (2) If A_B is reported as "0", T_B should be reported as /

K_B — Navigation conditions in ice

Code

figure

- 0 Navigation unobstructed
- 1 Navigation difficult or dangerous for wooden vessels without ice sheathing
- 2 Navigation difficult for unstrengthened or low-powered vessels built of iron or steel. Navigation for wooden vessels even with ice sheathing not advisable
- 3 Navigation without icebreaker assistance possible only for high-powered vessels of strong construction and suitable for navigation in ice
- 4 Navigation proceeds in lead or a broken ice-channel without the assistance of an icebreaker
- 5 Icebreaker assistance can only be given to vessels suitable for navigation in ice and of special size
- 6 Icebreaker assistance can only be given to vessels of special ice class and of special size
- 7 Icebreaker assistance can only be given to vessels after special permission
- 8 Navigation temporarily closed
- 9 Navigation has ceased
- / Unknown

DENMARK

Diagram page 290

AA	(1) Sea area N of Hammeren	EE	(1) Sea area W of Sjællands Rev (Route T)
	(2) Fairway to Rønne		(2) Sea area W of Hesselø (Route T)
	(3) Sea area between Rønne and Falsterbo		(3) Sea area E of Anholt (Route T)
	(4) Sea area off Falsterbo Rev		(4) Sea area W of Fladen Lt (Route T)
	(5) Fairway through Drogden		(5) Sea area NW of Kummelbanke (Route T)
	(6) Fairway to København		(6) Sea area N of Skagen (Route T)
BB	(1) Sea area W of Ven	FF	(1) Southern entrance to Lillebælt, Skjoldnæs
	(2) Sea area E of Ven		(2) Sea area off Helnæs
	(3) Sea area off Helsingør		(3) Fairway to Åbenrå — Enstedværket
	(4) Sea area off Nakkehoved		(4) Sea area off Assens
	(5) Sea area S of Hesselø		(5) Kolding Yderfjord to the bridges
	(6) Fairway to Isefjorden — Kyndbyværket		(6) Fairway to Esbjerg
CC	(1) Sea area off Møn lighthouse (Route T)	GG	(1) Fairway at Fredericia to the bridges
	(2) Sea area S of Gedser (Route T)		(2) Sea area N of Æbelø
	(3) Sea area S of Rødby Harbour (Route T)		(3) Fairway to Odense
	(4) Sea area SE of Keldsnor (Route T)		(4) Sea area at Vesborg lighthouse
	(5) Sea area off Spodsbjerg (Route T)		(5) Sea area S of Sletterhage
	(6) Sea area W of Omø (Route T)		(6) Fairway to Århus
DD	(1) Agersø Sund — Stigsnæs	HH	(1) Sea area off Fornæs
	(2) Store bælt, western part		(2) Fairway to Randers
	(3) Store bælt, eastern part (Route T)		(3) Entrance at Hals Barre
	(4) Sea area E of Romsø (Route T)		(4) Fairway to Aalborg
	(5) Fairway to Kalundborg — oil harbour		(5) Sea area NW of Læsø
	(6) Sea area W of Røsnæs (Route T)		(6) Sea area off Hirsholmene

The Danish Ice Service

The Danish Ice Service consists of two separate services, the Ice Reporting Service and the Ice Breaking Service.

The purpose of the Danish Ice Service is to assist shipping to and from Danish ports within Danish waters.

Shipping is assisted as close as possible to the port of destination where the remaining icebreaking is taken over by the port's own icebreaking resources.

When ice conditions begin to affect shipping, the Admiral Danish Fleet will commit the naval icebreakers and charter icebreaking tugs as required to assist shipping in Danish waters.

Assistance is given according to the following priority:

Vessels in distress.

Vessels transporting live animals.

Vessels transporting passengers.

Vessels transporting cargoes of special importance.

All vessels in need.

As the naval icebreakers are not able to navigate the Limfjord west of Aalborg due to their draft, Admiral Danish Fleet has a contract with a tug company to be standby for icebreaking in this area at the Ice Service disposal.

Contact:

Danish Ice Service

Joint Services Defence Command, Marine Staff

Daily Ice Reports

Tel: +45 728 50000
+45 728 12056
+45 728 50369
+45 728 50364 (Ice Reports and Observations)

e-mail: mas@sok.dk

Website: www.forsvaret.dk/istjenesten (Ice information is in Danish only).

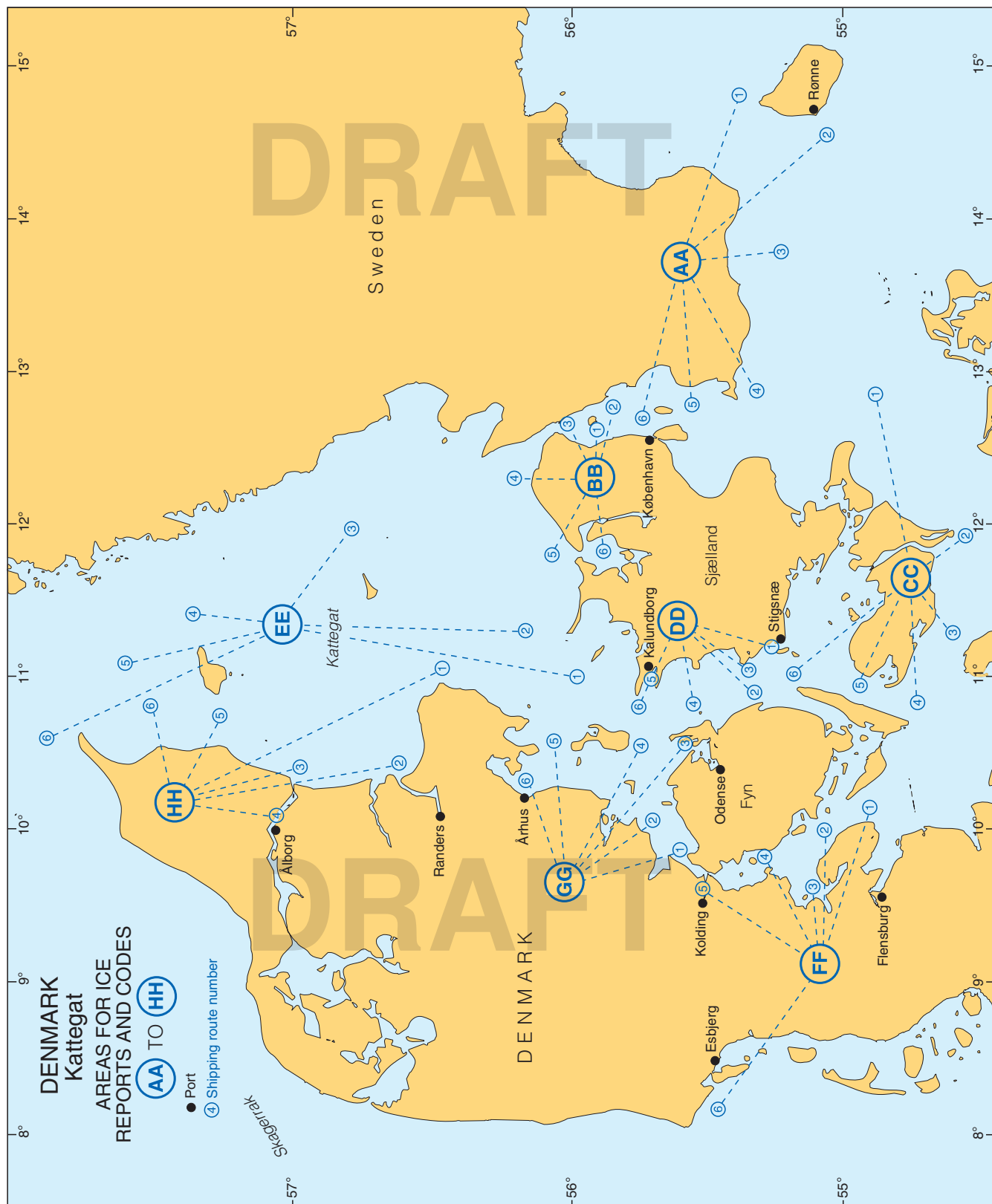
Tel: +45 894 33208/33407
Fax: +45 894 33244

Ice Breaker Assistance

Within the following areas the Danish Ice Service may activate icebreaker assistance to shipping from 15 December to 31 March.

- Limfjord West of Aalborg
- Limfjord between Aalborg and Hals Barre
- Waters South of Funen
- Smaalandsfarvandet (waters South of Zealand)

Ships bound for a port in one of these areas must contact the Danish Ice Service in a timely manner, giving their estimated time of arrival, so that the icebreaker service can be coordinated. Contact the Joint Services Defence Command above.



- AA** (1) Narva-Jõesuu — Kunda
 (2) Kunda Harbour and bay
 (3) Kunda Harbour — Tallinn
 (4) Muuga Harbour and bay
 (5) Tallinn Harbour and bay
 (6) Tallinn — Osmussaar
 (7) Osmussaar — Ristna
 (8) Ristna — Írbenskiy Strait
- BB** (1) Pärnu Harbour and bay
 (2) Pärnu — Írbenskiy Strait (eastern end)
 (3) Írbenskiy Strait
- CC** (1) Muhuväin

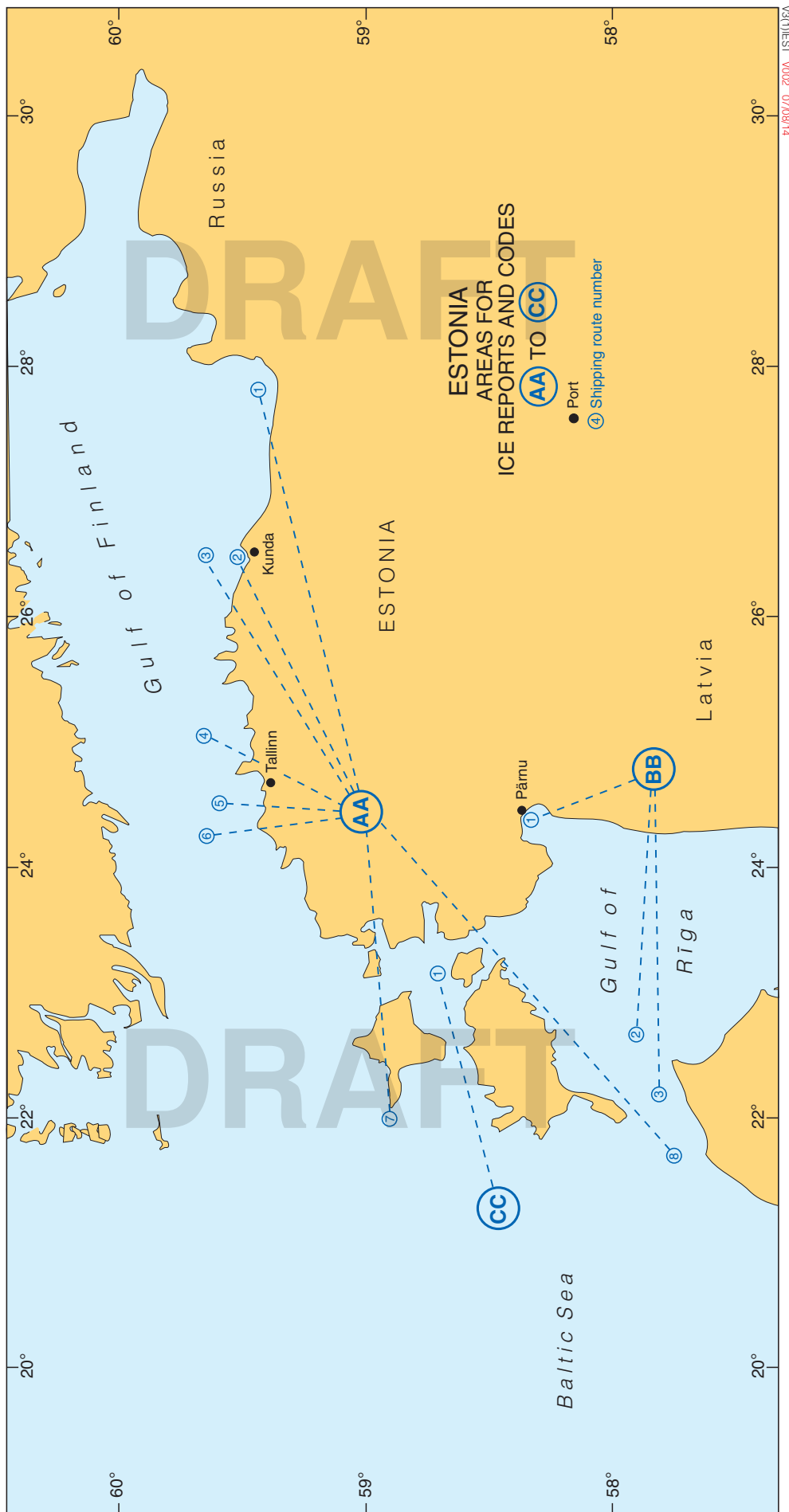
Contact:

Estonian Weather Service

Tel: +372 666 0924
 +372 666 0923
 Fax: +372 666 0909
 e-mail: teenused@envir.ee
 Website: www.ilmateenistus.ee

Estonian Maritime Administration Winter Navigation Department

Tel: +372 620 5769 (H24)
 +372 620 5707 (0800-1700 Mon-Fri)
 Fax: +372 620 5766
 e-mail: winternavigation@vta.ee
 Website: www.vta.ee



V3(1)EST V002 07/08/14

FINLAND

Diagrams pages 295 and 296

AA	(1) Röyttä - Etukari (2) Etukari - Ristinmatala (3) Ajos - Ristinmatala (4) Ristinmatala - Kemi 2 (5) Kemi 2 - Kemi 1 (6) Sea area SW of Kemi 1 (7) Kemi 2 - Ulkokrunni - Virpiniemi	LL	(1) Maarianhamina - Marhällan (2) Sea area off Nyhamn and Marhällan (3) The middle part of the Åland Sea (4) Sea S of Lågskär
BB	(1) Oulu Harbour - Kattilankalla (2) Kattilankalla - Oulu 1 (3) Sea area SW of Oulu 1 (4) The open sea N of the latitude of Marjaniemi	MM	(1) Naantali and Turku - Rajakari (2) Rajakari - Lövskär
CC	(1) Raahe Harbour - Heikinkari (2) Heikinkari - Raahe Lt (3) Raahe Lt - Nahkiainen (4) Sea between the latitudes of Marjaniemi - Ulkokalla	NN	(1) Lövskär - Korra (2) Korra - Isokari (3) Lövskär - Berghamn (4) Berghamn - Stora Sottunga (5) Stora Sottunga - Ledsjär (6) Sea area off Rödhamn
DD	(1) Rahja Harbour - Välimatala (2) Välimatala to route Ulkokalla - Yksivi (3) Sea between the latitudes of Ulkokalla - Pietarsaari	OO	(1) Lövskär - Grisselborg (2) Grisselborg - Norparskär (3) Sea area of Vidskär (4) Utö - Suomen Leijona (5) Sea S of Suomen Leijona
EE	(1) Ykspihlaja - Repskär (2) Repskär - Kokkola Lt (3) Sea off Kokkola Lt (4) Pietarsaari - Kallan (5) Sea area off Kallan (6) Latitude of Pietarsaari - NE of Nordvalen	PP	(1) Hanko Harbour - Hanko 1 (2) Sea S of Hanko 1 (3) Hanko - Vitgrund (4) Vitgrund - Utö
FF	(1) Sea area ENE of Nordvalen (2) Nordvalen - Sea to W of Norrskär (3) Vaskiluoto - Ensten (4) Ensten - Vaasa Lt (5) Vaasa Lt - Norrskär (6) Sea area SW of Norrskär	QQ	(1) Koverhar - Hästö Busö (2) Hästö Busö - Ajax (3) Sea S of Ajax
GG	(1) Kaskinen - Sälgrund (2) Sea area off Sälgrund (3) The open sea N of the latitude of Yttergrund	RR	(1) Inkoo and Kantvik - Sea off Porkkala (2) Sea area off Porkkala (3) Sea S of Porkkala Lt
HH	(1) Pori - Route Pori Lt - Säppi (2) Route Pori Lt - Säppi - Sea to W (3) The high seas the length of Yttergrund and Rauma	SS	(1) Helsinki Harbours - Harmaja (2) Harmaja - Helsinki Lt (3) Helsinki Lt - Sea S of Porkkala Lt (4) Helsinki - Porkkala - Rönnskär, fairway (5) Helsinki, Vuosaari - Eestiluoto (6) Eestiluoto - Helsinki Lt
II	(1) Rauma Harbour - Kylmäpihlaja (2) Kylmäpihlaja - Rauma Lt (3) Sea W of Rauma Lt (4) The open sea S of latitude of Rauma	TT	(1) Porvoo Harbour - Varlax (2) Varlax - Porvoo Lt (3) Porvoo Lt - Kalbådagrund (4) Kalbådagrund - Helsinki Lt (5) Valko Harbour - Täktarn (6) Archipelago fairway Boistö - Glosholm (7) Archipelago fairway Glosholm - Helsinki
JJ	(1) Uusikaupunki Harbour - Kirsta (2) Kirsta - Isokari (3) Isokari - Sandbäck (4) Sea area off Sandbäck	UU	(1) Kotka - Viikari (2) Viikari - Orrengrund (3) Orrengrund - Tiiskeri (4) Tiiskeri - Kalbådagrund (5) Hamina - Suurmusta (6) Suurmusta - Merikari (7) Merikari - Kaunissaari
KK	(1) Sea N of Sälskär (2) Sea N of Märket (3) Sea W of Märket (4) Sea S of Märket		

The Ice Service of The Finnish Meteorological Institute monitors ice conditions and developments on a daily basis and issues ice charts, ice reports and ice forecasts based on the data it collects and analyses. The daily ice chart and ice report includes a description of current ice conditions and information about the icebreakers' operational areas. Announcements are also given about traffic restrictions, ship routes, advance notification obligations, etc.

The ice report is read daily at 12:45 (LT) in Finnish on Radio Suomi and in Swedish on Radio Vega. Ice charts, ice reports and ice forecasts can be ordered from the Meteorological Institute. The orders are chargeable and can be delivered by mail, fax or e-mail. The Ice Service of the Meteorological Institute can also answers questions about the ice situation, ice winter forecasts and any other expert questions related to ice.

Mariners are also advised to seek information regarding winter navigation on the BIMWeb website www.baltice.org, where the following information is available free of charge: daily ice chart covering the whole Baltic Sea area, an ice report, the positions and assistance plans of icebreakers, traffic restrictions in force and other useful information.

ICE REPORTS

The Finnish Transport Agency's Winter Navigation Unit is able to answer queries relating to traffic restrictions, exemptions, ice conditions and other related matters. The unit also provides information about exceptional situations and current matters, all of which can be found on their website or can be supplied by e-mail if required. Please supply your contact information to the e-mail address listed below if this is the case.

Arctia Shipping Ltd. responds to inquiries concerning icebreaker operations. Their website provides information about icebreakers, crew changing dates and assistance areas etc.

CONTACT DETAILS:

Finnish Meteorological Institute (FMI): Finnish Ice Service

Tel: +358 29 5393464
Fax: +358 29 5393413
E-mail: ice@fmi.fi
Website: <http://en.ilmatiiteenlaitos.fi/ice-conditions>

Finnish Transport Agency: Ice Breaking Services

Tel: +358 295 343000 (Switchboard 0800–1615 LT)
+358 295 343322 (Head of Winter Navigation Unit)
+358 295 343328 (Senior Maritime Officer – traffic restrictions)
Fax: –
E-mail: winternavigation@fta.fi
Website: www.fta.fi
www.liikennevirasto.fi/web/en/merchant-shipping/winter-navigation

Arctia Shipping Ltd.

Tel: +358 46 8767050 (H24)
E-mail: icebreakers@arctia.fi
Website: www.arctia.fi/front_page

Alfons Håkans AS (Finnish Branch)

Tel: +358 2515500
+358 5063304 (Service number H24)
E-mail: office.turku@alfonshakans.fi
Website: www.alfonshakans.fi

ICE-BREAKERS:

Arctia ice-breaker contact details are as follows:

NOTE: All Arctia ice-breakers listen to VHF Ch 16 and MF 2332 kHz

Name: **Urho**
Call Sign: OHMS
Tel: +358 (0)30 6207500
Mobile: +358 (0)400 219681
E-mail: urho.bridge@arctia.fi

Name: **Sisu**
Call Sign: OHMW
Tel: +358 (0)30 6207400
Mobile: +358 (0)400 219682
E-mail: sisu.bridge@arctia.fi

Name: **Otso**
Call Sign: OIRT
Tel: +358 (0)30 6207300
Mobile: +358 (0)400 219680
E-mail: otso.bridge@arctia.fi

Name: **Kontio**
Call Sign: OIRV
Tel: +358 (0)30 6207200
Mobile: +358 (0)400 592747
E-mail: kontio.bridge@arctia.fi

Name: **Voima**
Call Sign: OHLW
Tel: +358 (0)30 6207650
Mobile: +358 (0)400 318156
E-mail: voima.bridge@arctia.fi

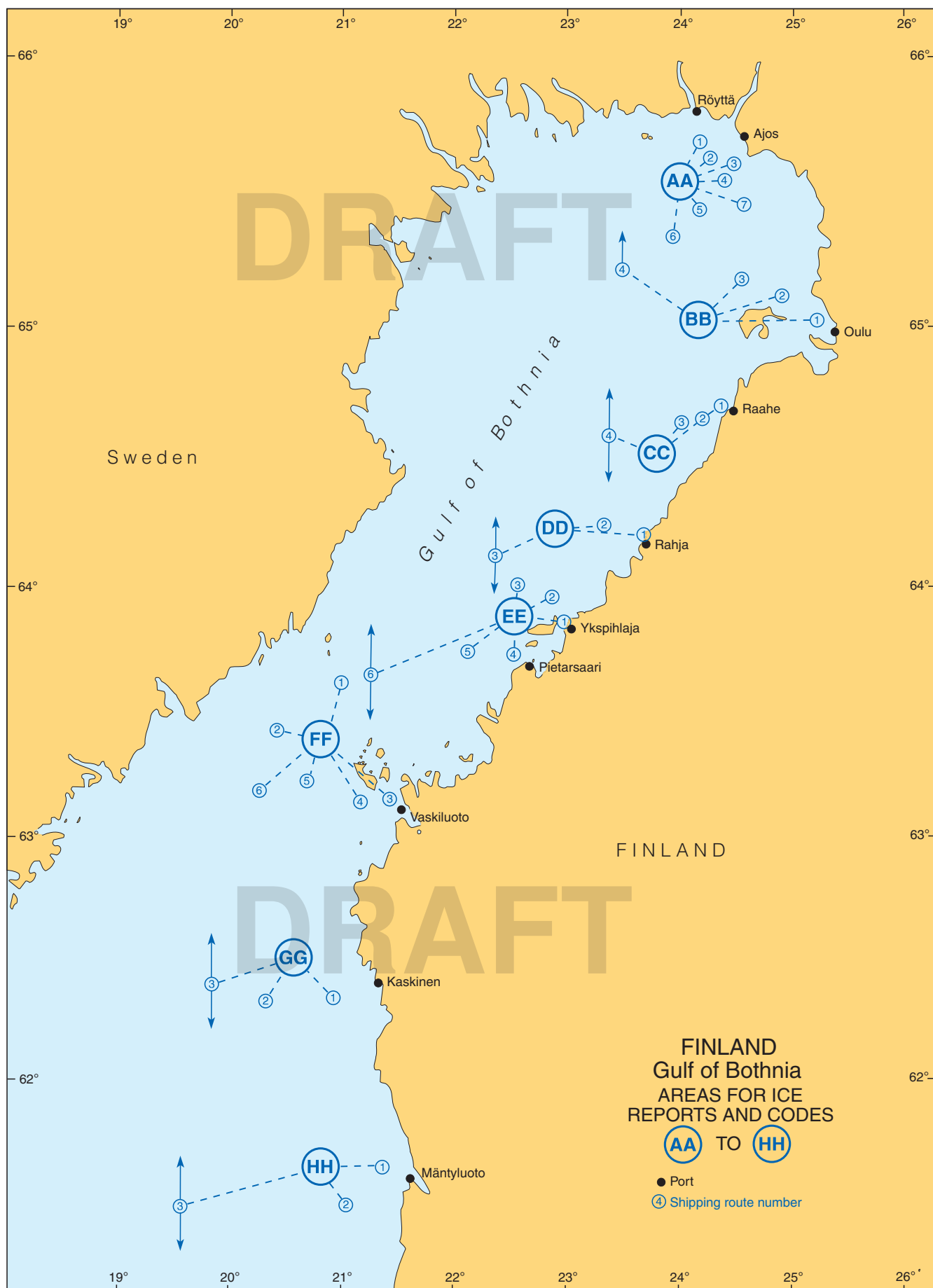
Name: **Fennica**
Call Sign: OJAD
Tel: +358 (0)30 6207700
Mobile: +358 (0)400 107157
E-mail: fennica.bridge@arctia.fi

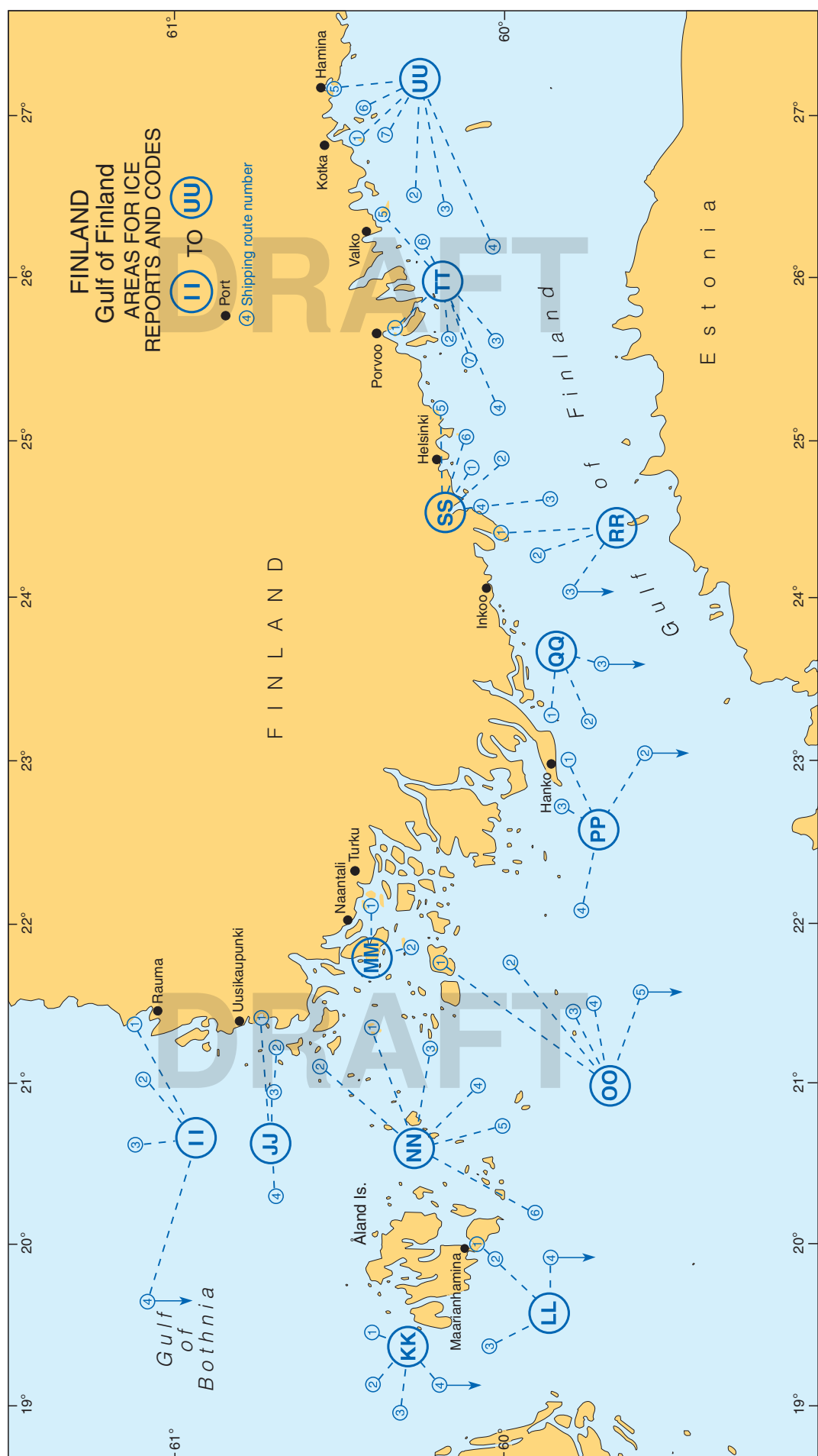
Name: **Nordica**
Call Sign: OJAE
Tel: +358 (0)30 6207800
Mobile: +358 (0)400 246551
E-mail: nordica.bridge@arctia.fi

Name: **Polaris**
Call Sign: OJQT
Tel: +358 (0)942 450459
Mobile: +358 (0)468 767900
E-mail: polaris.bridge@arctia.fi

Alfons Håkans AS (Finnish Branch) ice-breaker contact details are as follows:

Name: **Zeus**
Call Sign: OJHB
Mobile: +358 (0)400 184031
E-mail: tug.zeus@alfonshakans.fi





GERMANY

Diagrams page 299

AA	(1)	Stralsund to Palmer Ort	FF	(1)	Flensburg to Holnis
	(2)	Palmer Ort to Freesendorfer Haken		(2)	Holnis to Neukirchen
	(3)	Osttief		(3)	Neukirchen to Kalkgrund
	(4)	Landtief channel		(4)	Sea area off Falshöft
	(5)	Sassnitz, port	GG	(1)	Holtenau, Canal Entrance
	(6)	Sea area off Sassnitz		(2)	Kanal, Holtenau to Rendsburg
	(7)	Sea area off Arkona		(3)	Kanal, Rendsburg to Brunsbüttel
BB	(1)	Wolgast to Peenemünde		(4)	Brunsbüttel, Canal Entrance
	(2)	Peenemünde to Ruden	HH	(1)	Hamburg-Landungsbrücken, Elbe
CC	(1)	Rostock to Warnemünde		(2)	Stadersand, Elbe
	(2)	Rostock port		(3)	Brunsbüttel, Elbe
	(3)	Warnemünde, Seekanal	II	(4)	Cuxhaven to Neuwerk
	(4)	Sea area off Warnemünde		(5)	Sea area off light-vessel, Elbe
	(5)	Rostock, sea area North of navigation buoy		(1)	Bremen, Weser
DD	(1)	Wismar to Walfisch		(2)	Brake, Weser
	(2)	Walfisch to Timmendorf		(3)	Bremerhaven, Weser
	(3)	Timmendorf to Wismar navigation buoy		(4)	Hohe-Weg-lighthouse, channel
	(4)	Lübeck to Travemünde		(5)	Alte Weser, channel
	(5)	Travemünde Harbour		(6)	Neue Weser, channel
	(6)	Sea area off Travemünde	KK	(1)	Wilhelmshaven Harbour entrance
EE	(7)	Sea area off Dahmeshöved		(2)	Wilhelmshaven Tankerlöschbrücke
	(1)	Holtenau to Laboe		(3)	Schillig, Jade
	(2)	Sea area off Bülk		(4)	Wangerooger channel
	(3)	Sea area NE of Kiel lighthouse	LL	(1)	Emden and outer harbour
	(4)	Sea area off Westermarsdors		(2)	Emden to Randzelgat
	(5)	Sea area off Marienleuchte		(3)	Borkum, Randzelgat, Ems
	(6)	Eastern entrance of Fehmarnbelt		(4)	Borkum, Westerems

The Eisdienst (Ice Service) of Bundesamt für Seeschifffahrt und Hydrographie (BSH) provides ice reports, ice charts and station reports using the Baltic Sea Ice Code, information on icebreakers and restrictions to navigation, satellite images and derived thematic maps. All ice reports and charts issued by the Ice Service are published on the Internet.

The ice report is issued daily from Monday to Friday, from late November to early June and covers the whole of the Baltic Sea and coastal area of the North Sea. It includes station reports, regional overviews and forecasts for the next 4–5 days. Additionally there are announcements of restrictions to navigation, together with the operational areas and possible assistance of icebreakers. Once a week a reference ice chart covering the entire Baltic Sea region is attached. During the ice-season an ice chart covering the western region of the Baltic Sea and the North Sea coast is updated daily, if ice is present. The ice charts are also available as S-411-ice for use in a suitable ECDIS. All details are published on the Internet at:

www.bsh.de/de/Meeresdaten/Beobachtungen/Eis/index.jsp

www.bsis-ice.de

The ice charts are also available as S-10x-ice for use in a suitable ECDIS.

Contact:

Bundesamt für Seeschifffahrt und Hydrographie (BSH)

Tel: +49 381 4563780/4563782/4563787

Fax: +49 381 4563949

e-mail: ice@bsh.de

Website: www.bsh.de/en/Marine_data/Observations/Ice/index.jsp
www.bsis-ice.de

Ice Breaking Service

Federal Waterways and Shipping Agency

Northern Region Office

Tel: +49 431 33948120

Fax: +49 431 33946399

e-mail: raven.kurtz@wsv-bund.de

Website: www.wsd-nord.wsv.de

ICE BREAKING SERVICE (Baltic Coast):

The Ice Service, which includes the Ice-breaking Service and Ice Reporting, assists vessels in German Baltic waters during ice conditions. In the occurrence of ice, 3 Ice Service Centres (ISC) are set up:

ICE REPORTS

Ice Service Centre	Area
Ice Service Centre Kiel-Holtenau	Nord-Ostsee Kanal (Kiel Canal)
Ice Service Centre Lübeck	Western Baltic from the German/Danish border to longitude 11 ° 42' 00E (Ob Buk Lt)
Ice Service Centre Stralsund	Western and southern Baltic from longitude 11 ° 42' 00E to the eastern German border

CONTACT DETAILS:**Ice Service Centre Kiel-Holtenau: From km 0-0 to km 49-5**

Call: Kiel Kanal 2
VHF: Ch 02
Tel: +49(0)4852 885362
+49(0)4852 885369 (outside office hours)
+49(0)4852 885400
+49(0)4852 885407 (outside office hours)
Fax:
E-mail: -

Ice Service Centre Kiel-Holtenau: From km 49-5 to km 98-7

Call: Kiel Kanal 3
VHF: Ch 03
Tel: +49(0)431 3603483
+49(0)4852 885469 (outside office hours)
+49(0)431 3603296
+49(0)4852 885407 (outside office hours)
Fax:
E-mail: nautik.wsa-brunswick@wsv.bund.de

Ice Service Centre Lübeck

Call: Trave Traffic
Kiel Traffic
VHF: Ch 13 (Trave Traffic)
Ch 67 (Kiel Traffic)
Tel: +49(0)451 6208360
+49(0)451 6208362
+49(0)4502 8475511 (outside office hours)
Fax: +49(0)451 6208190
E-mail: wsa-luebeck@wsv.bund.de
vkz-travemuende@wsv.bund.de

Ice Service Centre Stralsund

Call: Stralsund Traffic
Sassnitz Traffic
Warnemünde Traffic
VHF: Ch 13 (Sassnitz Traffic)
Ch 67 (Stralsund Traffic)
Ch 73 (Warnemünde Traffic)
Tel: +49(0)3831 249360
+49(0)381 20671841 (outside office hours)
Fax: +49(0)381 20671845
E-mail: wsa-stalsund@wsv.bund.de
nvd.wsa-stralsund@wsv.bund.de

ICE-BREAKERS:

Ice-breakers and their contact details are as follows:

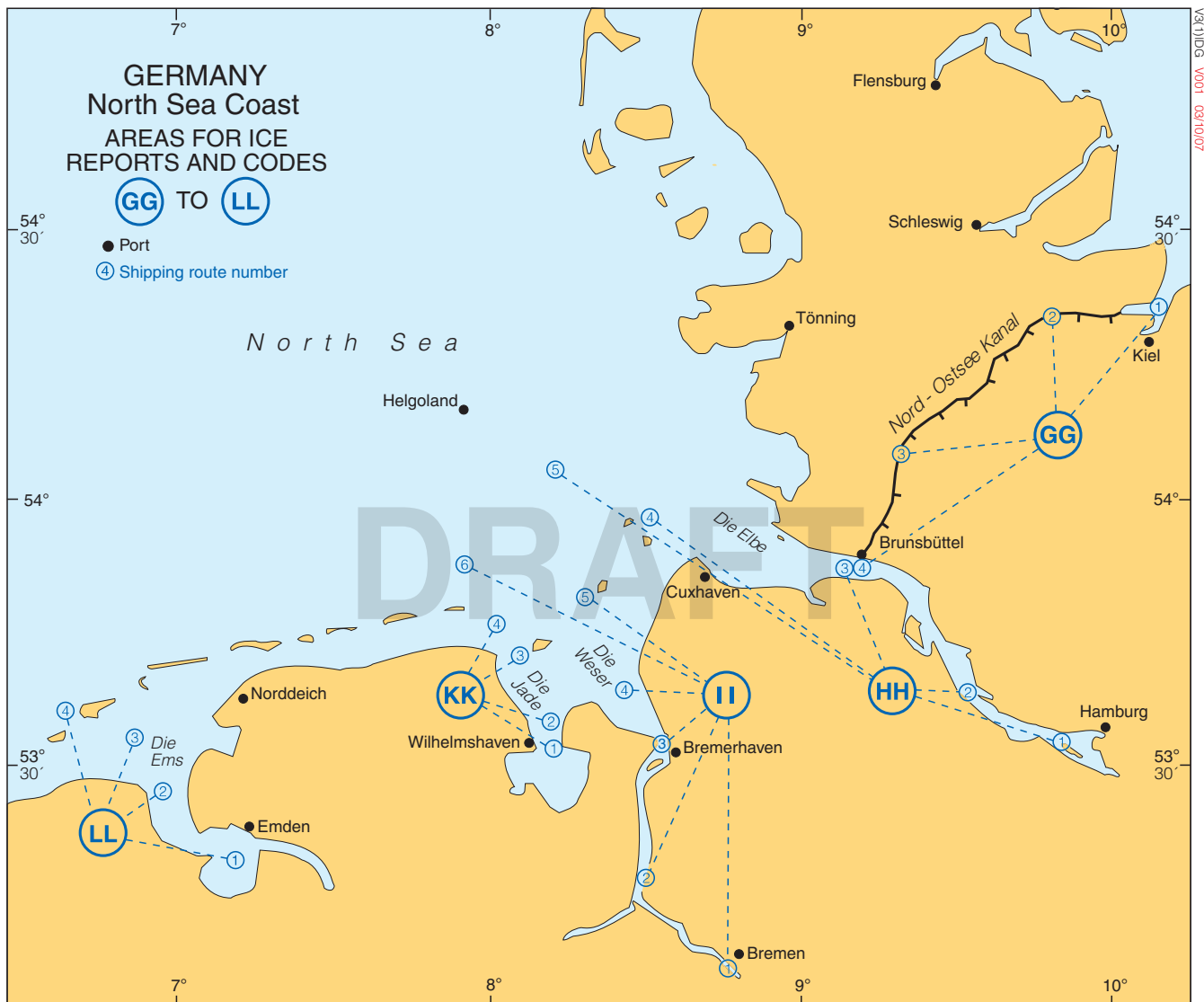
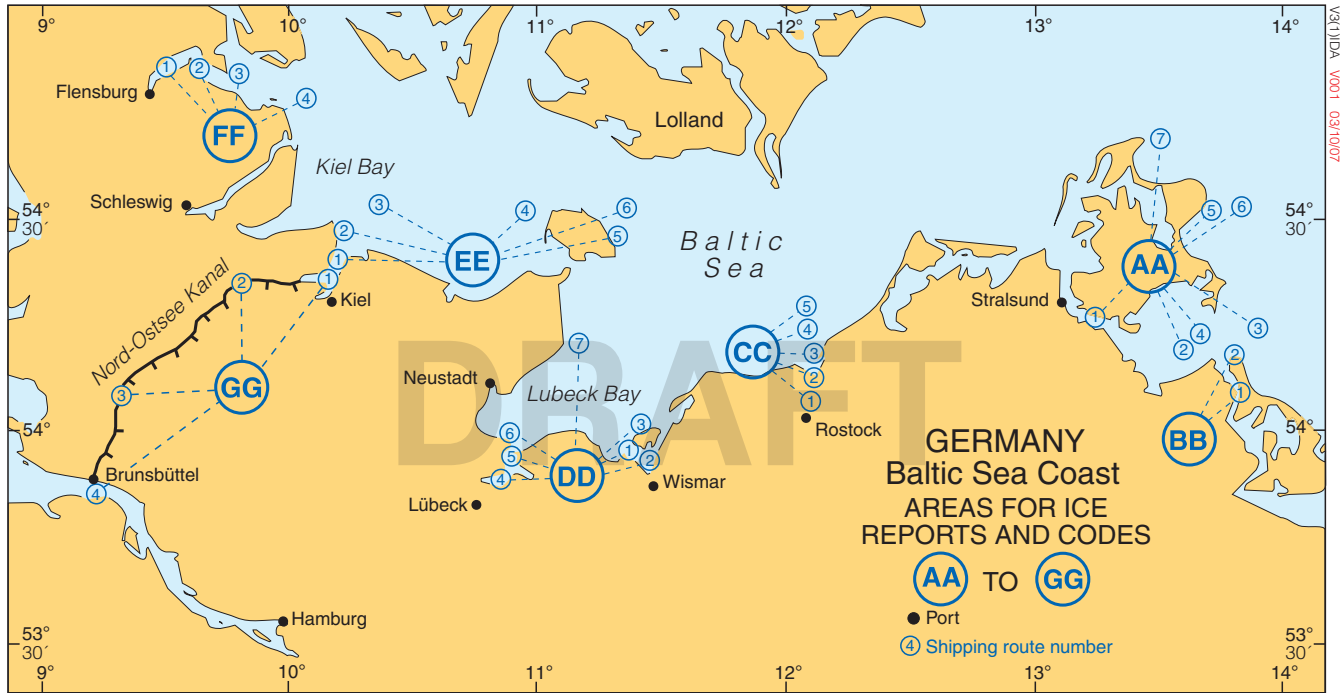
Name: Arkona	Name: Mellum	Name: Neuwerk
Call Sign: DBBU	Call Sign: DBPG	Call Sign: DBJM
VHF: Ch 06 10 16	VHF: Ch 06 10 16	VHF: Ch 06 10 16
Tel: +49(0)151 17417210 +49(0)151 17417211	Tel: +49(0)171 8349083 -	Tel: +49(0)171 7652140 -
Fax: +49(0)151 177445285	Fax: +49(0)171 8356949	Fax: +49(0)171 7683718
Inmarsat: -	Inmarsat: 761651659	Inmarsat: 773166488
Inmarsat F77: 764034224	Inmarsat F77: -	Inmarsat F77: -
Inmarsat Fax: 600365055	Inmarsat Fax: 600273385	Inmarsat Fax: 783252371
Inmarsat Telex: -	Inmarsat Telex: 1121334	Inmarsat Telex: -
Iridium: +881 621 442000	Iridium: -	Iridium: -
E-mail: wsa.stralsund-arkona@t-online.de	E-mail: gs-mellum@t-online.de	E-mail: neuwerk.wsa-cux@t-online.de

PROCEDURE:

- Requests for ice-breaking assistance will normally be directed to the appropriate ISC or exceptionally to an ice-breaker working in the corresponding area.
- Requests should contain the following information:
 - Vessel's name
 - Call sign
 - Nationality
 - Size
 - Ice class
 - Engine power
 - Position
 - Destination
- During the reported voyage, vessels should follow the directions given by the ISC. After initial contact with the ISC or an ice-breaker, vessels should maintain a continuous radio watch, unless otherwise stipulated.

NOTES:

- The Ice Reporting Service is carried out by the Bundesamt für Seeschifffahrt und Hydrographie in Rostock.
- In addition, information concerning the ice situation can be obtained from any of the 3 ISCs.



GREENLAND

Greenland Ice Service

DMI Ice Service and Ice Patrol Narsarsuaq collect information regarding ice conditions in the waters around Greenland and distribute this information to vessels primarily as ice charts and reports.

DMI Ice Service or Ice Patrol Narsarsuaq can be contacted for information about issued or planned ice charts.

DMI Ice Service, Copenhagen:

- Ice Charting. Primarily based on information received from radar carrying satellites¹.

Ice Patrol Narsarsuaq, Greenland:

- Inshore Ice Report.
- Reduced Ice Report.
- Ice piloting by helicopter, primarily for inshore sailing routes in South Greenland¹
- Distribution of Ice Charts, Inshore Ice Report and Reduced Ice Report.

Note: Additional ice charts and ice piloting can be obtained and this special service must generally be ordered no less than three days in advance.

Ice Charts

Cape Farewell Area: Covers the waters around Cape Farewell: primarily from Paamiut (Frederikshåb) along the west coast to Cape Farewell and to Tingmiarmiut along the east coast, south of 62°N.

West Coast Area:

Covers areas on the west coast of Greenland north of 62°N. The covered areas depend on the ice situation.

East Coast Area:

Covers areas on the east coast of Greenland north of 62°N. The covered areas depend on the ice situation.

Reduced Ice Report

The Reduced Ice Report indicates the outer limits of sea ice concentrations and is prepared for a new update of the Cape Farewell ice chart.

Inshore Ice Report

The Inshore Ice Report covers the inshore routes in the southern part of Greenland:

Paamiut - Törnårssuk - Qaqortoq - Nanortalik - Prins Christians Sund.

Before any flight it will be determined what exact area will be covered, according to the ice situation and traffic in the area.

NAVTEX:

Ice Reports are broadcast using NAVTEX, see Radio Weather Services and Navigational Warnings section, GREENLAND.

Coastal radio stations:

On request Ice Reports can be obtained in English, Greenlandic and Danish from Aasiaat radio station H24, see Radio Weather Services and Navigational Warnings section, GREENLAND.

Ice charts via Fax:

In order to poll ice information from Ice Patrol Narsarsuaq:

Fax: +299 665344 Cape Farewell Ice Chart, the weekly Greenlandic ice chart and most recent Inshore Ice Report.

Fax: +299 665247 East and west coast ice charts, the weekly Greenlandic ice chart and most recent Inshore Ice Report.

Ice Charts via e-mail:

The Ice Patrol Narsarsuaq is able to send ice charts by e-mail in pdf format. (One chart needs about 20 kB in 100 dpi and about 90 kB in 300 dpi). Any vessel, company or other users may sign up for the e-mail distribution.

Please specify which chart(s) should be included in the distribution (Cape Farewell, east coast or west coast).

Contact: e-mail: isc@greenet.gl

Internet:

All ice charts and inshore ice reports can be obtained via Internet.

www.dmi.dk/en/groenland/hav/ice-charts: Ice Charts

www.dmi.dk/groenland/hav/ismelding: Inshore Ice Report, only available in Danish. The Inshore Ice Report can be made in English on request to Ice Patrol Narsarsuaq.

Communication between the Ice Patrol helicopter and commercial vessels:

The helicopter can be contacted on VHF Channel 16, call sign: ISRECCO

Contact Information

Telephone: +299 665244,
+299 665247 or

+881 631420563 (Satellite Telephone)

+45 39157315

e-mail: isc@greenet.gl

iskort@dm.dk

Website: www.dmi.dk/en/groenland/hav/ice-charts

Ice Patrol Narsarsuaq for ice conditions during office hours, Mon–Fri:
0800–1200, 1300–1600 LT.

Ice Patrol Narsarsuaq may also be contacted outside office hours in urgent cases.

DMI Ice Service can be contacted for planned ice charts and requests for further ice information.

Ice Patrol Narsarsuaq

DMI Ice Service

LATVIA

Diagram page 302

- AA** (1) Rīga Harbour
(2) Rīga Harbour — Mērsrags
(3) Mērsrags — Irbe Strait
(4) Irbe Strait
- BB** (1) Ventspils Harbour
(2) Irbe Strait — Ventspils Harbour
- CC** (1) Liepāja Harbour
(2) Ventspils Harbour — Liepāja Harbour
(3) Liepāja Harbour — Lithuanian waters

Contact:

State Ltd. "Latvian Environment, Geology and Meteorology Centre"

Tel: +371 67032600
Fax: +371 67145154
e-mail: lvgmc@lvgmc.lv
Website: www.meteo.lv

Icebreaker Service:

Freeport of Riga Authority
Harbour Master

Tel: +371 67082000 67082035
Fax: +371 67323117
e-mail: captain@rop.lv
Website: www.rop.lv

Icebreaker:

VARMA

Tel: +371 29341982, +371 28362968
Fax: +371 29344270
e-mail: varma@rbflote.lv

LITHUANIA

Diagram page 302

- AA** (1) Klaipėda Harbour
(2) Klaipėda — Latvian waters
(3) Klaipėda — Russian waters

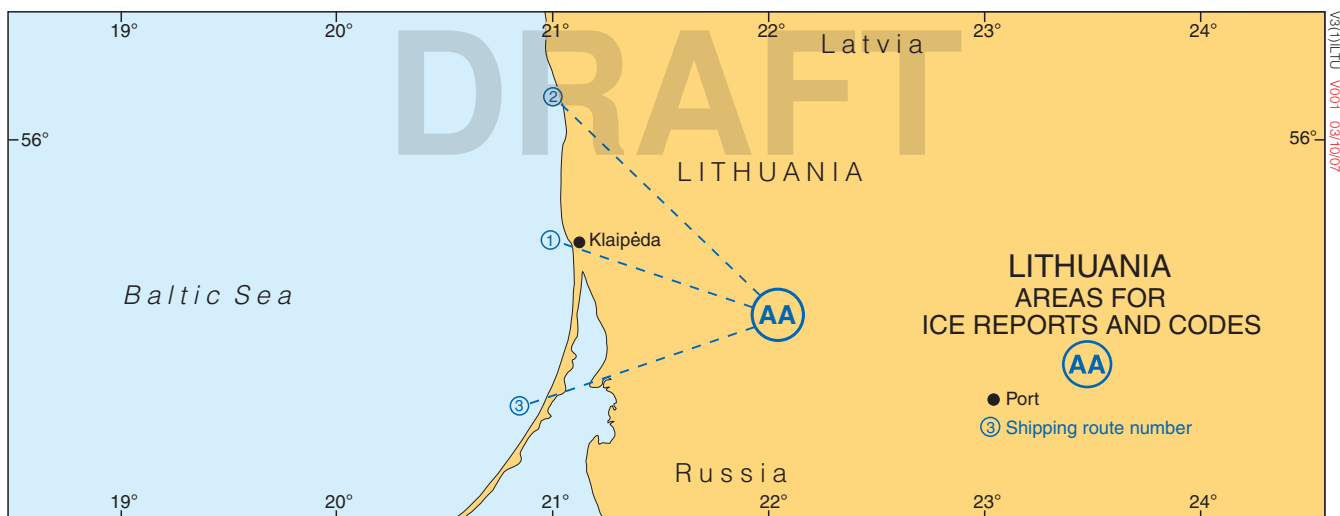
Contact:

Harbour Master Klaipėda State Seaport

Tel: +370 46499688
Fax: +370 46499666
e-mail: ukt@port.lt
Website: www.portofklaipeda.lt

Lithuanian Hydrometeorological Service (LHMS)

Tel: +370 52751194
Fax: +370 52728874
e-mail: lhmt@meteo.lt
Website: www.meteo.lt

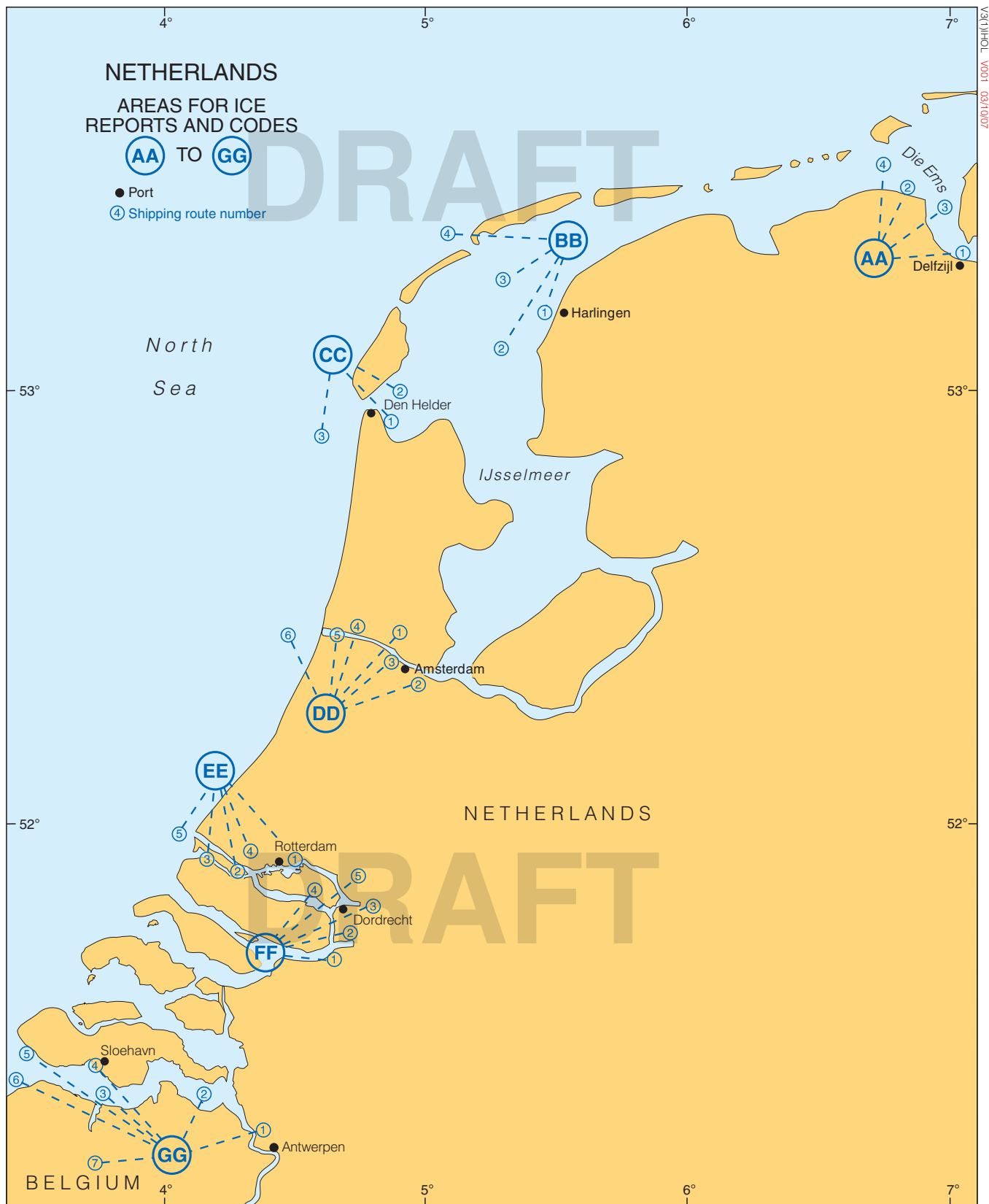


- AA** (1) Delfzijl Harbour
- (2) Eemshaven
- (3) Eems: Oterdum — Eemshaven
- (4) Eems: Eemshaven — Hubertgat
- BB** (1) Harlingen Harbour
- (2) Along Pollendam
- (3) Blauwe Slenk
- (4) Vliestroom and Stortemelk
- CC** (1) Den Helder Harbour
- (2) Texelstroom and Marsdiep
- (3) Schulpengat
- DD** (1) Branch canal G and Zaandam Harbour
- (2) Amsterdam East Harbour area
- (3) Amsterdam West Harbour area
- (4) Branch canal A (Beverwijk)
- (5) Nordzeekanaal
- (6) IJmuiden locks — fairway buoy
- EE** (1) Nieuwe Maas and Harbours
- (2) Botlek Harbours
- (3) Europoort
- (4) New Waterway
- (5) Hook of Holland — fairway buoy
- FF** (1) Moerdijk Harbour
- (2) Moerdijk — Dordrecht
- (3) Dordrecht Harbours
- (4) Oude Maas
- (5) Noord
- GG** (1) Antwerpen Harbours
- (2) Schelde: Antwerpen — Hansweert
- (3) Schelde: Hansweert — Vlissingen
- (4) Sloehavn
- (5) Oostgat
- (6) Wielingen
- (7) Terneuzen Canal — Gent

Contact:

Rijkswaterstaat

Tel: +31 320 298 888
 Fax: +31 320 298 580
 e-mail: infocentrum@rws.nl
 Website: www.vaarweginformatie.nl



NORWAY

Diagram page 306

AA	(1)	Sekken (Halden)	FF	(1)	Tjømekjæla (Tønsberg)
	(2)	Singlefjorden (Halden)		(2)	Sandefjorden (Sandefjord)
	(3)	Svinesund - Halden (Halden)		(3)	Inside Svenner (Sandefjord)
	(4)	Torbjørnskjær (Oslofjorden)		(4)	Outside Svenner (Sandefjord)
	(5)	Struten (Oslofjorden)		(5)	Larviksfjorden (Larvik)
	(6)	Løperen (Fredrikstad)		(6)	Langesundsbukta (Porsgrunn)
BB	(1)	Østerelva (Fredrikstad)	GG	(1)	Breviksfjorden (Porsgrunn)
	(2)	Leira (Fredrikstad)		(2)	Frierfjorden (Porsgrunn)
	(3)	Vesterelva (Fredrikstad)		(3)	Jomfrulandsrenna (Kragerø)
	(4)	Rauøyfjorden (Oslofjorden)		(4)	Outside Jomfruland (Kragerø)
	(5)	Verlebukta (Moss)		(5)	Skåtøysund (Kragerø)
	(6)	Mossesundet (Moss)		(6)	Langårsund (Kragerø)
CC	(1)	Oslo - Spro (Oslo)	HH	(1)	Kragerøfjorden (Kragerø)
	(2)	Spro - Drøbak (Oslofjorden)		(2)	Grønholmsgapet (Risør)
	(3)	Drøbak - Filtvet (Oslofjorden)		(3)	Stangholmsgapet (Risør)
	(4)	Filtvet - Gullholmen (Oslofjorden)		(4)	Lyngøfjorden (Tvedestrand)
	(5)	Drammensfjorden (Drammen)		(5)	Outside Lyngør (Tvedestrand)
	(6)	Breiangen (Oslofjorden)		(6)	Tvedestrandsfjorden (Tvedestrand)
DD	(1)	Langrunnen (Horten)	II	(1)	Tromøysund (Arendal)
	(2)	Gullholmen - Mefjordbåen (Oslofjorden)		(2)	Galdesund (Arendal)
	(3)	Mefjordbåen - Fulehuk (Oslofjorden)		(3)	Inside Torungen (Arendal)
	(4)	Fulehuk - Færder (Oslofjorden)		(4)	Outside Torungen (Arendal)
	(5)	West Færder (Oslofjorden)		(5)	Grimstad (Grimstad)
	(6)	South Færder (Oslofjorden)		(6)	Inside Homborsund (Grimstad)
EE	(1)	Torgersøygapet (Tønsberg)	JJ	(1)	Outside Homborsund (Grimstad)
	(2)	Husøysund (Tønsberg)		(2)	Lillesand (Lillesand)
	(3)	Tønsberg indre havn (Tønsberg)		(3)	Kristiansandsfjorden (Kristiansand)
	(4)	Vestfjorden (Tønsberg)		(4)	Outside Oksøy (Kristiansand)
	(5)	Leisteinløpet (Tønsberg)			
	(6)	Vrengen (Tønsberg)			

The Norwegian Coastal Administration provides the national Ice Service which has two main tasks:

1. Provide ship traffic with updated information on ice conditions in Norwegian waters from the Swedish border to Kristiansand.
2. Icebreaking in main and secondary fairways outside port areas.

Ice reports are available from 1 Dec–31 March.

Contact:

Norwegian Coastal Administration

Norwegian Ice Service

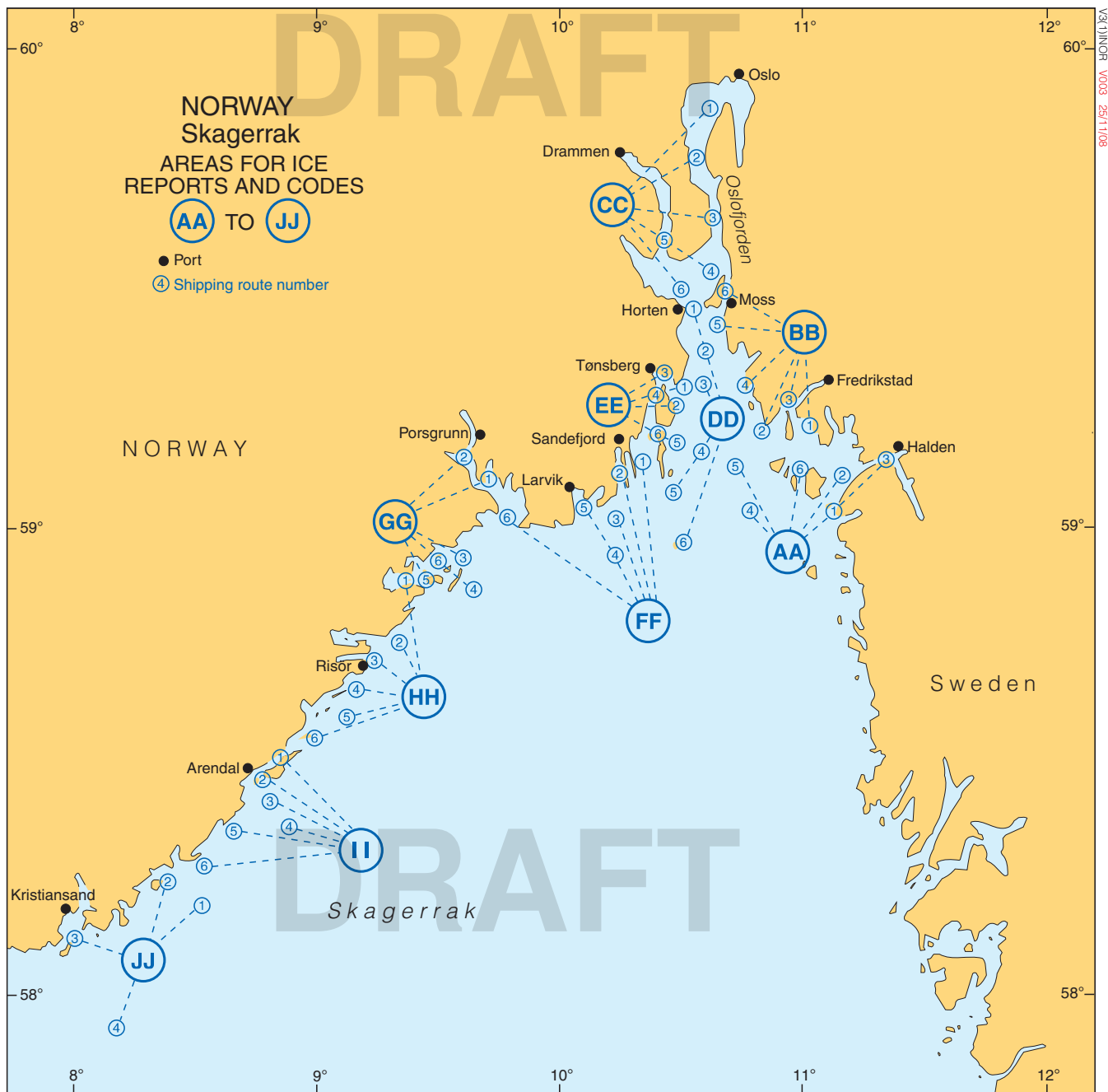
Tel: +47 37019759 / +47 37019725

Mobile: +47 41765255 / +47 90077605

Fax: +47 37019701

e-mail: ismelding@kystverket.no

Website: www.kystverket.no/en/EN_Maritime-Services/Reporting-and-Information-Services/Ice-Service



POLAND

Diagram page 308

- | | |
|---|--|
| AA (1) Sea area off Krynica Morska
(2) Gdańsk port
(3) Gdańsk, Port Północny
(4) Sea area off Gdańsk
(5) Gdynia, port
(6) Sea area off Gdynia
(7) Sea area S of Helu
(8) Sea area E of Helu
(9) Sea area N of Helu | BB (1) Sea area off Rozewie
(2) Ustka, port
(3) Sea area off Ustka
(4) Darłowo port
(5) Sea off Darłowo
(6) Kotobrzeg, port
(7) Sea area off Kotobrzeg
CC (1) Zalew Szczeciński
(2) Szczecin, port
(3) Świnoujście — Szczecin, fairway
(4) Świnoujście, port
(5) Sea area off Świnoujście |
|---|--|

Contacts:

Institute of Meteorology & Water Management (IMGW):

Hydrological Forecasting Office,
Gdynia

Tel: +48 586288146
+48 586288147

Fax: +48 586288163 (General Office)

e-mail: hydrologia.gdynia@imgw.pl

Website: www.imgw.pl
www.baltyk.pogodynka.pl

Marine Meteorological Forecasting Office,
Gdynia

+48 586288150
+48 586288151

—
meteo.gdynia@imgw.pl

Marine Meteorological Forecasting Office,
Szczecin

+48 914342012

—

—

Icebreaker Service:

Central Coast Region, Słupsk

Tel: +48 598 474258
+48 598 474232

Fax: —

e-mail: iap@umsl.gov.pl

Website:

West Coast Region, Szczecin

+48 914 403596
+48 914 330697

—

abialowas@ums.gov.pl

East Coast Region, Gdynia

+48 586 202853 (07:15-15:15)
+48 583 353630 (07:15-15:15)
+48 586 210705 (duty officer H24)
+48 586 616051
+48 586 200591 (H24)
kpgdynia@umgdy.gov.pl
kapitanat.gdynia@umgdy.gov.pl (H24)
www.umgdy.gov.pl

Note: The Harbour Master for the Port of Gdynia is the coordinator of icebreaking services for the East Coast Region.

RUSSIA (BALTIC AND GULF OF FINLAND)

Diagrams page 308

- | | |
|--|--|
| AA (1) Sankt Peterburg Harbour
(2) Sankt Peterburg — Kotlin (eastern point)
(3) Kotlin (eastern point) — Tolbukhin
(4) Tolbukhin — Shepelevskiy
(5) Shepelevskiy — Seskar
(6) Seskar — Sommers
(7) Sommers — Gogland (southern point)
(8) Gogland (southern point) — Meridian of Kunda | BB (1) Vyborg Harbour and Bay
(2) Vichrevoj — Sommers
(3) B'yërkëzund
(4) Bol'shoy Berëzovyy (eastern point) — Shepelevskiy
CC (1) Luzhskaya Guba
(2) Luzhskaya Guba — Line between Moshchnyy and Seskar
DD (1) Kaliningrad Harbour |
|--|--|

Contacts:

Port Captain: 'Great' Port of St. Petersburg

Tel: +7 812 2451675 / 7149264

Fax: +7 812 3274021

e-mail: public@mail.pasp.ru

Website: www.pasp.ru/sluzhba_kapitana_morskogo_porta_bo

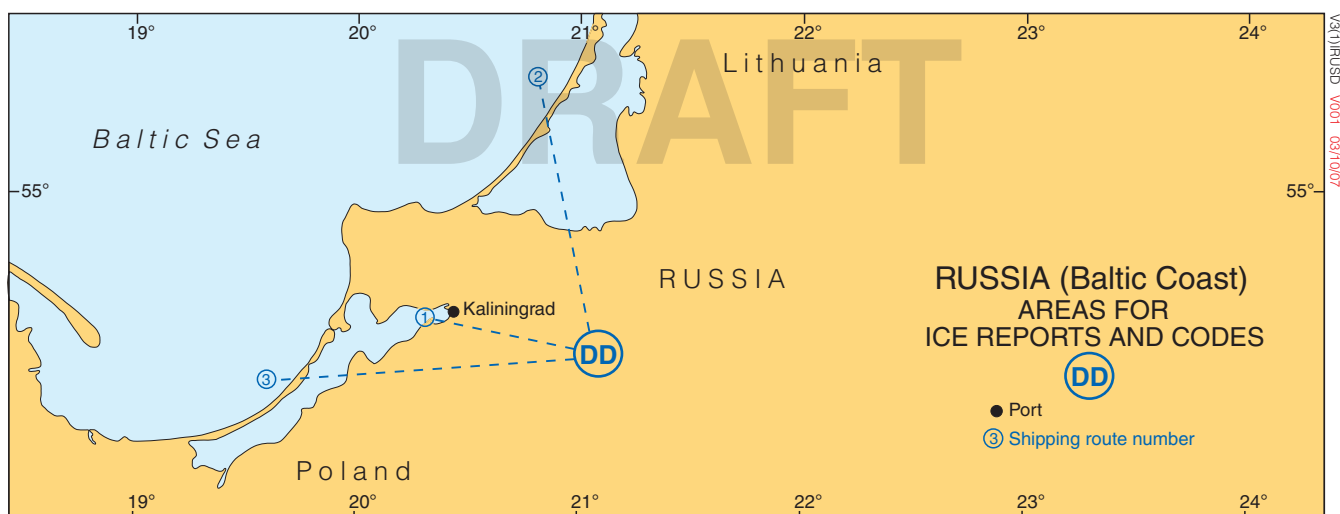
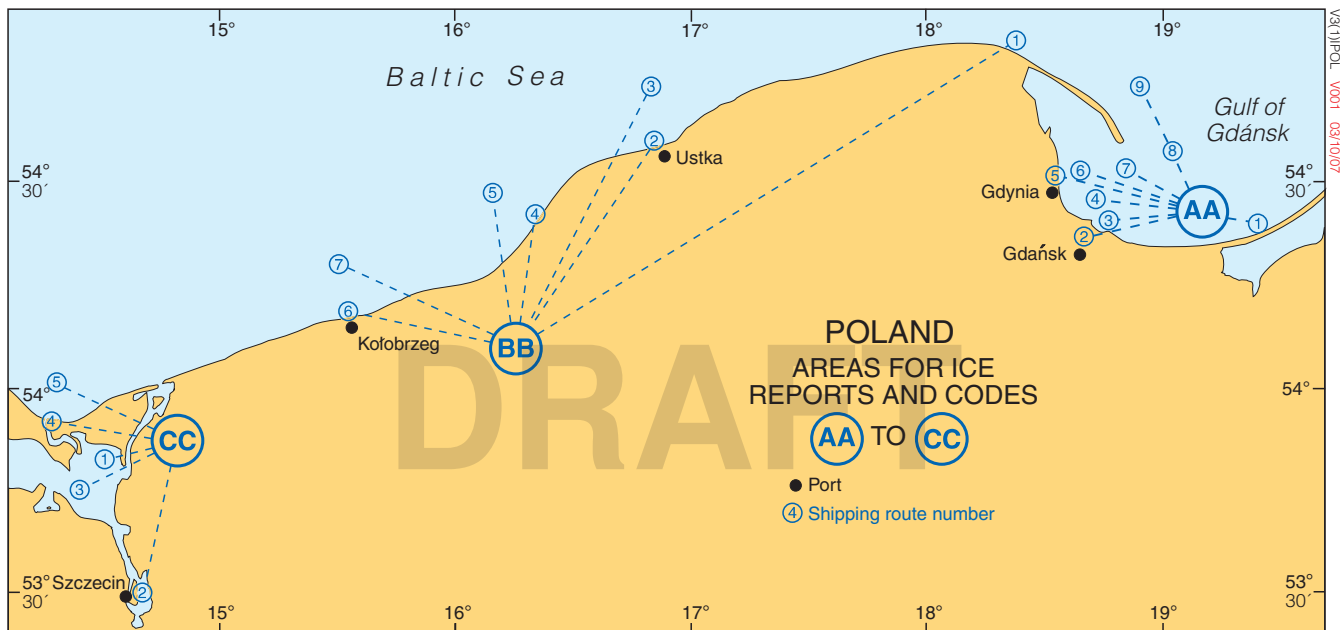
Ice Operations Headquarters — H24 (All Russian ports)

Tel: +7 812 6801930 (Emergency Only)

Tel: +7 812 6801977 / +7 921 4440747

e-mail: shlo@pasp.ru

Website: www.pasp.ru/informaciya_shtaba_ledokolnyh_ope



RUSSIA (NORTHERN SEA ROUTE)

Diagram page 311

Overview

The Northern Sea Route (NSR), is traditionally a major transport corridor for Russia, but in recent years is rapidly becoming an alternative route between the ports of Europe and South-East Asia. Shipping is attracted mainly by the significant reduction in voyage time and associated costs, as well as the absence of threats from pirates.

The NSR comprises all routes from the Barents to the Chukchi Sea and the Bering Strait suitable for shipping. It includes the Arctic seas and part of the Arctic Ocean, limited by the Russian economic zone. The NSR is divided into the West and East regions as follows:

West Region:

This stretches from the meridian of Cape Zhelaniya, eastern coastline of the Novaya Zemlya archipelago and the western boundaries of the straits of Matochkin Shar, Kara Strait, Yugorskiy Shar to 125°E. It includes stretches of the Yenisei River to the port of Dudinka, the Khatanga River to the port of Khatanga and the Ob Gulf to the line connecting capes Kamenniy and Trekhbugorniy.

East Region:

This stretches from 125°E to the parallel of Dezhnev Cap in the Bering Strait, including sections of the Kolyma River to the port of Zelyoniy Mys.

The Northern Sea Route Administration

Ships wishing to transit via the NSR should first contact the Northern Sea Route Administration, using the contact details listed below, in order to understand the regulations for navigating in these waters. The NSRA was established by the Russian Federation and has the following main functions within the NSR waters:

1. Obtaining and considering the submitted applications and issuing the permissions for navigation through the NSR.
2. Issuing the certificates of the ice pilotage.
3. Researching weather, ice, navigational and other conditions.
4. Coordination of installation of navigational aids and harmonisation of regions to carry out hydrographic surveys operations.
5. Assistance in the organization of search and rescue operations.
6. Assistance in eliminating the consequences of pollution from vessels of harmful substances, sewage or garbage.
7. Providing the information services in relation to the waters of the NSR, e.g. the organisation of navigation, requirements of safe navigation etc.
8. Making recommendations about development of routes of navigation, use of the icebreaking fleet and navigational conditions.
9. Timely data retrieval, from Russian hydrometeorological services and provision of hydrometeorological forecasts and ice analysis.

The NSRA website includes a wealth of useful information, in both Russian and English, including: current information, icebreaker assistance/pilotage, navigational information, ice/weather forecasts, SAR and pollution reporting contacts.

CONTACT DETAILS:**Northern Sea Route Administration**

3/6 Petrovka St., Moscow, Russia, 109544.

Tel/Fax: +7 (0)495 6261069

E-mail: nsra@morflot.ru *(for applications to navigate the NSR waters)*
 nsra-info@morflot.ru *(for sending the daily captain's report at 1200 Moscow LT)*
 LukashinaAN@morflot.ru *(for all messages except applications)*

Website: www.nsra.ru/en/celi_funktsii/

Ice-breakers:Name: **Admiral Makarov**

Shipping Company: OAO (FESCO)

Call Sign: UGSN

MMSI: 273148110

Inmarsat C: 427302057

Inmarsat F77: 764626488

764626489

754626490

Inmarsat F77 Fax: 764626491

Name: **Vaigach**

Shipping Company: FSUE (Atomflot)

Call Sign: UBNY

MMSI: 273133100

Inmarsat C: –

Inmarsat F77: 764715293

764715295

Inmarsat F77 Fax: 764715296

Name:

Dranitsyn

Shipping Company: FSUE (Rosmorport)

Call Sign: UCJP

MMSI: 273138300

Inmarsat C: –

Inmarsat F77: 761137871

761137873

Inmarsat F77 Fax: 761137874

Name: **Taimyr**

Shipping Company: FSUE (Atomflot)

Call Sign: UEMM

MMSI: 273135100

Inmarsat C: –

Inmarsat F77: 761142068

761142070

Inmarsat F77 Fax: 761142071

Name:

Yamal

Shipping Company: FSUE (Atomflot)

Call Sign: UCJT

MMSI: 273132400

Inmarsat C: –

Inmarsat F77: 761136943

761136945

Inmarsat F77 Fax: 761136946

Name:

Krasin

Shipping Company: OAO (FESCO)

Call Sign: UIFY

MMSI: 273143900

Inmarsat C: 427321058

Inmarsat F77: 764596070

764596071

764596072

Inmarsat F77 Fax: 764596073

Name: **50 Let Pobedy**

Shipping Company: FSUE (Atomflot)

Call Sign: UGYU

MMSI: 273316240

Inmarsat C: 427351996

Inmarsat F77: 764660542

764660543

761120938

761120939



SWEDEN

Diagrams pages 314, 315 and 316

AA	(1)	Karlsborg — Malören	LL	(1)	Norrköping — Hargökalv
	(2)	Sea area off Malören		(2)	Hargökalv — Vinterklasen — N Kränkan
	(3)	Luleå — Björnklack		(3)	Oxelösund Harbour
	(4)	Björnklack — Farstugrunden		(4)	Järnverket — Lillhammaren — N Kränkan
	(5)	E and SE of Farstugrunden		(5)	Sea area off Gustaf Dalén
	(6)	Sandgronn fairway	MM	(1)	Sea area W of Gotska Sandön
	(7)	Rödkallen — Norströmsgrund		(2)	Sea area off Visby
BB	(1)	Haraholmen — Nygrån		(3)	W of Stora Karlsö
	(2)	Sea area off Nygrån	NN	(4)	Sea area off Hoburgen
	(3)	Skelleftehamn — Gåsören		(5)	Sea area off Magö (Slite)
	(4)	Sea area off Gåsören		(6)	Sea area off Fårö
	(5)	Sea area off Bjuröklubb		(1)	Västervik — Marsholmen — Idö
CC	(1)	NE of Nordvalen		(2)	Sea area off Idö
	(2)	SW of Nordvalen	OO	(3)	Oskarshamn — Furön
	(3)	Västra Kvarnen (W of Holmöarne)		(4)	Furön — Ölands Norra Udde
	(4)	Umeå — Våktaren		(5)	Sea area off Ölands Norra Udde
	(5)	SE of Våktaren		(1)	Blå Jungfrun — Kalmar
	(6)	Sea area NE and SE of Sydostbotten		(2)	Kalmar — Utgrunden
DD	(1)	Husum Fairway		(3)	Utgrunden — Ölands Södra Udde
	(2)	Örnsköldsvik — Hörnskatan	PP	(4)	Sea area SE of Ölands Södra Udde
	(3)	Hörnskatan — Skagsudde		(1)	Karlskrona — Aspö
	(4)	Sea area off Skagsudde		(2)	Sea area off Aspö
	(5)	Fairway W of Ulvöarna		(3)	Fairway to Karlshamn
	(6)	Sea area E of Ulvöarna		(4)	Fairway to Åhus
EE	(1)	Ångermanälven above Sandö bridge		(5)	Sea area off Sandhammaren
	(2)	Ångermanälven below Sandö bridge	RR	(6)	Fairway to Trelleborg
	(3)	Härnösand — Härnön		(7)	Sea area SE of Falsterbo Rev
	(4)	Sea area off Härnön		(1)	Sea area N of Falsterbo Rev
	(5)	Sundsvall — Draghallan		(2)	Drogden Passage
	(6)	Draghallan — Åstholmsudde	SS	(3)	Flintrännan
FF	(7)	Sea area off Åstholmsudde		(4)	Fairway to Malmö
	(1)	Hudiksvallsfjärden		(5)	The Sound between Malmö and Ven
	(2)	Iggesund — Agö		(6)	The Sound E of Ven
	(3)	Sea area off Agö		(7)	The Sound off Helsingborg
	(4)	Sandarne — Hällgrund		(8)	W and S of Kullen
	(5)	Sea area off Hällgrund	TT	(1)	Fairway to Halmstad
GG	(6)	Ljusnefjärden — Storjungfrun		(2)	Fairway to Varberg
	(7)	Sea area off Storjungfrun		(3)	Sea area W of Nidingen
	(1)	Gävle — Eggegrund		(4)	Knippelholmen — Böttö (Göteborg)
	(2)	Sea area off Eggegrund		(5)	Vinga Sand and Danaöfjord
	(3)	Sea area off Örskär		(6)	Buskär — Trubaduren — Vinga
	(4)	Öregrundsgrepen	UU¹	(7)	Sea area off Trubaduren and Vinga
HH	(5)	Passage at Grundkallen		(1)	Uddevalle — Stenungsund
	(1)	Passage at Understen		(2)	Stenungsund — Hätteberget
	(2)	Sea area off Svartklubben		(3)	Sea area off Hätteberget
	(3)	Hallstavik — Svartklubben		(4)	Sea area off Måseskär
	(4)	Sea area at Söderarm and Tjärven		(5)	Brofjorden — Dynabrott
	(5)	Stockholm — Trälhavet — Klövholmen		(6)	Sea area off Dynabrott and Gäven
II	(2)	Trälhavet — Furusund — Kapellskär	UU¹	(7)	Kosterfjorden
	(3)	Kapellskär — Söderarm		(8)	Sea area off Nordkoster
	(4)	Klövholmen — Sandhamn		(1)	Göta älv
	(5)	Sea area off Sandhamn		(2)	Trollhätte canal — Dalbo bridge
	(6)	Trollharan — Langgarn		(3)	Vänersborgsviken
	(7)	Mysingen		(4)	Fairway through Lurö archipelago
KK	(8)	Nynäshamn — Landsort		(5)	Fairway to Gruvön
	(9)	Sea area S of Landsort		(6)	Fairway to Karlstad
	(1)	Köping — Kviksund		(7)	Fairway to Kristinehamn
	(2)	Västerås — Grönsö		(8)	Fairway to Otterbäcken
	(3)	Grönsö — Södertälje		(9)	Fairway to Lidköping
	(4)	Stockholm — Södertälje			
KK	(5)	Södertälje — Fifong			
	(6)	Fifong — Landsort			

¹Inland waterway area UU, is not shown on diagram for editorial reasons.

ICE REPORTS

The purpose of the Swedish Ice Service is to:

Collect and map the Sea Surface Temperature conditions in the Skagerrak, Kattegat, Baltic Sea, Gulf of Bothnia, Gulf of Finland, Gulf of Riga and Lake Vänern, twice a week, on Mondays and Thursdays, all year.
Map the ice conditions in the above mentioned areas as well as on Lake Mälaren daily during the winter period November – May.
Provide information on present ice conditions and ice restrictions.
On request, issue ice formation / ice drift forecasts (chargeable service).
Keep an updated database comprising general ice conditions in the Baltic region, from 1961 to present.
Keep a detailed database (Baltic Sea Ice Code) including ice conditions to Swedish fairways and ports.
Provide expertise on ice related enquiries (chargeable service).

Also available online through cooperation with the Swedish Maritime Administration:

daily ice chart (published approx 1000 UTC)
ice report (published approx 1000 UTC)
ice restrictions (published approx 1000 UTC)
fairway codes (published approx 1200 UTC)

Current ice charts can be transmitted to vessels free of charge via telefax or e-mail. Please contact the Swedish Ice Service (see below). The Swedish ice chart is also re-transmitted by Pinneberg (DDH/DDK) (See Radio-Facsimile section). Current ice charts of the Baltic Sea, Kattegat and Skagerrak can also be obtained from the following websites:

www.baltice.org
www.smhi.se
www.fmi.fi

Office hours during the winter period, December–May: weekdays 0730–1530 UTC, Saturdays and Sundays 0830–1300 UTC.

Contact:

Swedish Meteorological & Hydrological Institute (SMHI): Swedish Ice Service

Tel: +46 11 4958500
+46 11 4958533
+46 11 4958000 (Switchboard, Mon–Fri 0800–1630 LT)
Fax: +46 11 4958053
ice@smhi.se or ice@prod.smhi.se
e-mail: weatherrouting@smhi.se (Custom information - chargeable)
www.smhi.se
Website: www.smhi.se/icereport
www.smhi.se/iceservice
www.smhi.se/icechart

Swedish Maritime Administration: Ice Breaking Service

Tel: +46 77 1632525 (Operations Centre H24 during the ice season)
+46 77 1630000 (Switchboard 0800–1640 LT)
+46 10 4784757 (Head of Ice Breaking Dept.)
Fax: +46 11 103100
e-mail: opc@sjofartsverket.se
Website: www.sjofartsverket.se/winternavigation

Navigation close to shore and near archipelagos

Mariners are reminded of the need as far as possible, to keep to fairways shown on charts or the unofficial ones used by local passenger boats and islanders. During the ice season areas may be closed to navigation and/or speed restrictions imposed, to avoid ice being broken where it is used by islanders for transportation. Such restrictions are announced in Swedish Notice to Mariners (see 'Maritime Safety Information (MSI) on the Internet' section for Sweden). Before breaking any new channels consideration should be given as to the impact on local island inhabitants and an e-mail report as to the intention sent to fartyg@skridsko.net. The text in the e-mail will automatically be published on the website www.skridsko.net/mail/fartyg.

Ice-Breakers

Vessels receiving assistance should maintain a continuous listening watch on the VHF channel specified by the ice-breaker. Calls to ice-breakers may be connected through Coast Radio Stations, Ice Information Service or by satellite telephone / e-mail. See ALRS Vol 1 and Vol 6 for relevant details. The state ice-breakers are: Oden, Ymer, Frej, Atle and Ale. The buoytender vessels Baltica, Scandia and other suitable vessels are chartered as necessary. For a vessel to obtain state ice-breaker assistance, it must conform to the Finnish-Swedish ice class (or equivalent) and the minimum deadweight (dwt) applicable to the specific ice region, according to the restrictions imposed by the Swedish Maritime Administration.

State ice-breaker contact details are as follows:

NOTE: All state ice-breakers listen to VHF Ch 16 and MF 2332 kHz

Name: **Ale**
Call Sign: SBPQ
Tel: +46 (0)31 3344952
E-mail: bridge@ale.sjofartsverket.se

Name: **Frej**
Call Sign: SBPT
Tel: +46 (0) 31 3344940
E-mail: bridge@frej.sjofartsverket.se

Name: **Baltica**
Call Sign: SJOY
Tel: +46 (0)10 4785700
E-mail: baltica@sjofartsverket.se

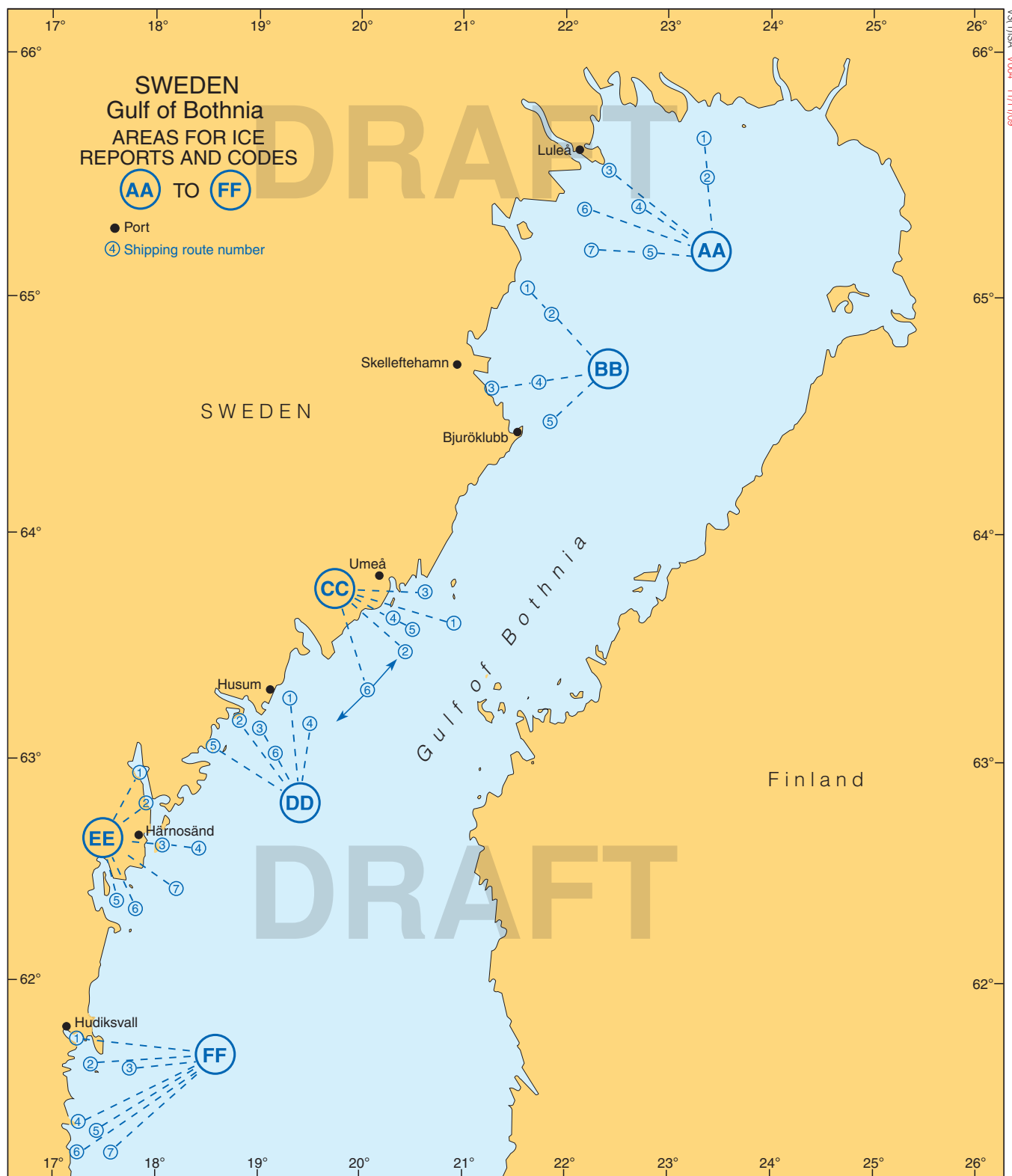
Name: **Atle**
Call Sign: SBPR
Tel: +46 (0)31 3344948
E-mail: bridge@atle.sjofartsverket.se

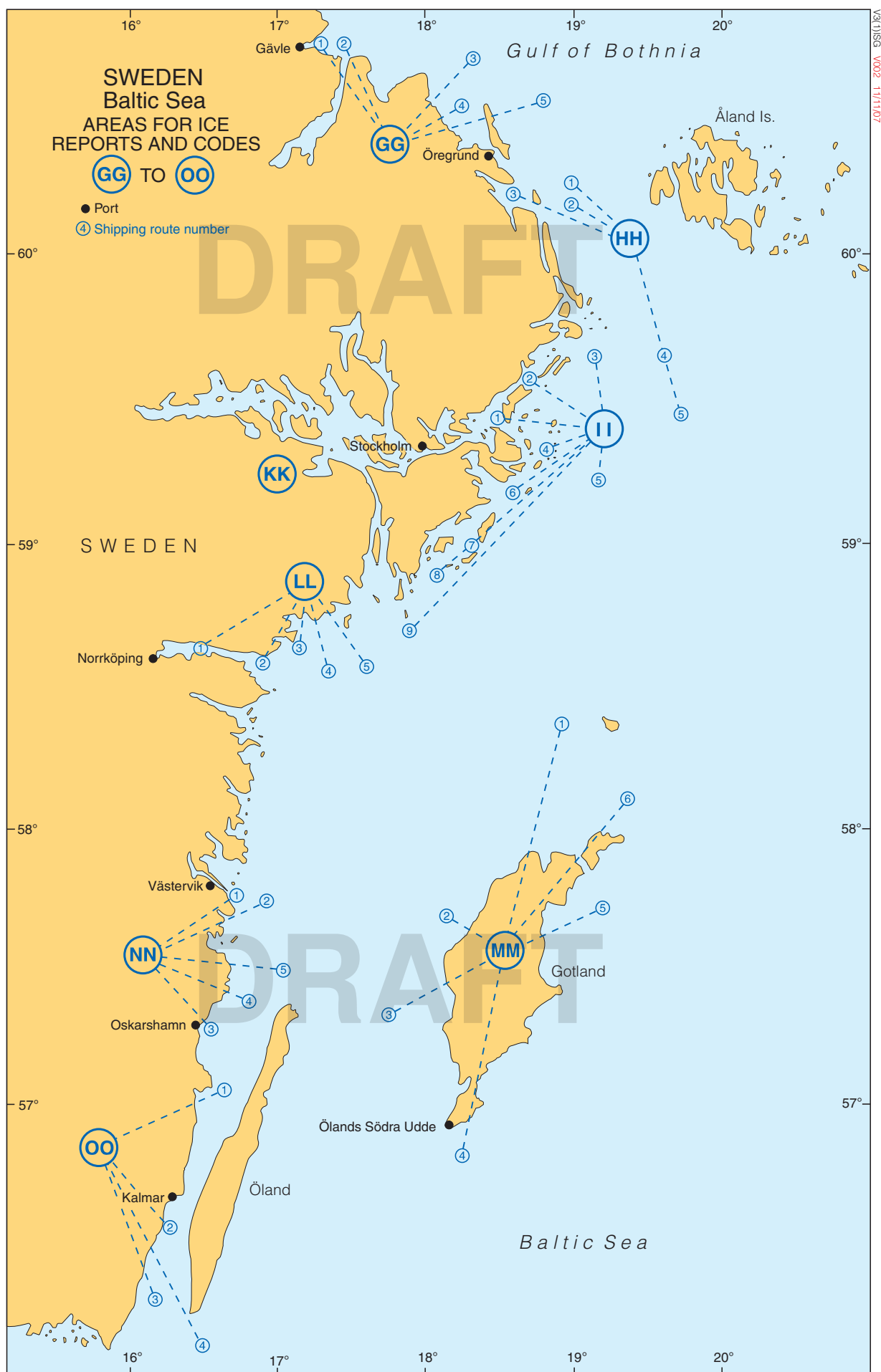
Name: **Oden**
Call Sign: SMLQ
Tel: +46 (0) 31 3345511
E-mail: bridge@ib-oden.se

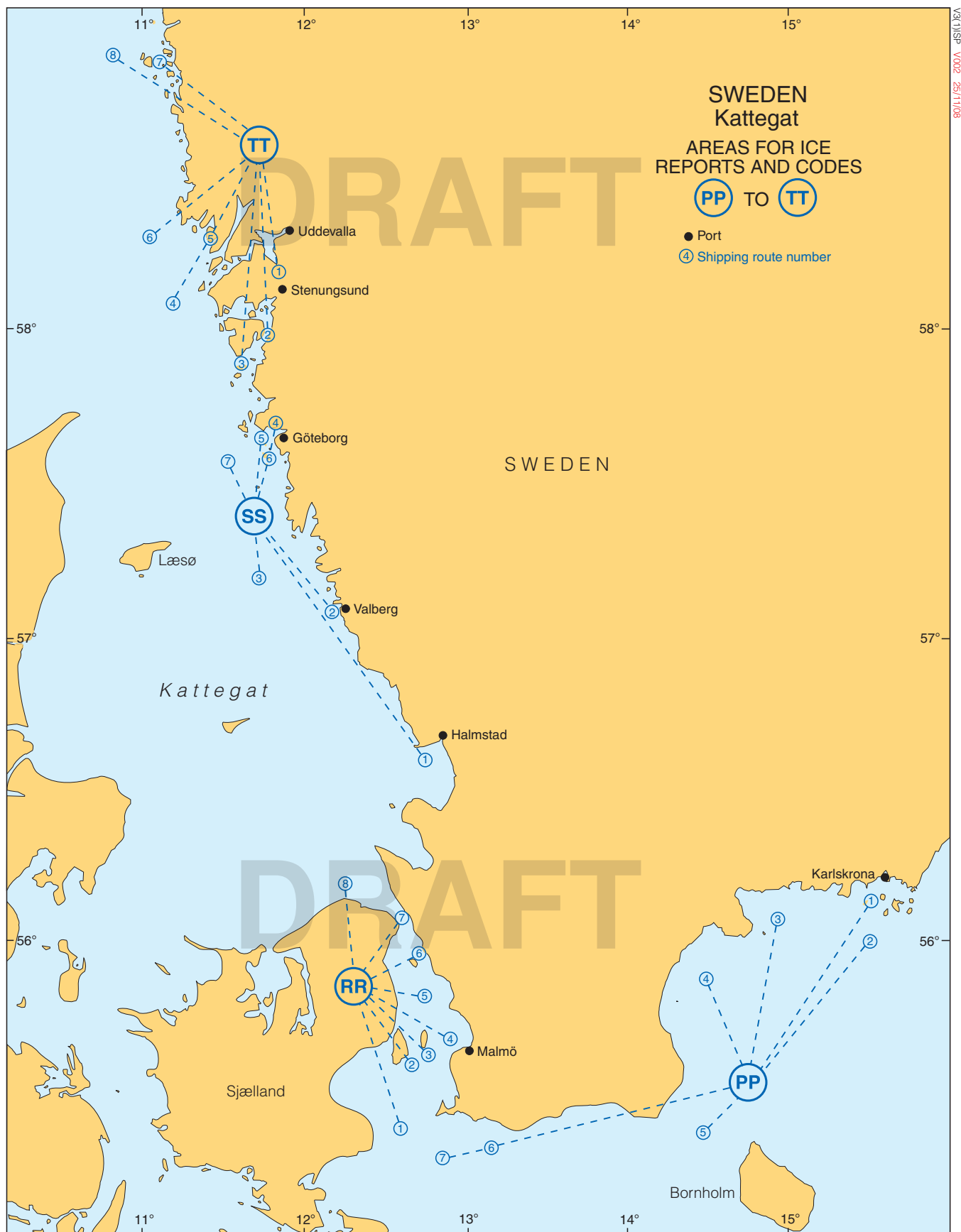
Name: **Scandia**
Call Sign: SKFZ
Tel: +46 (0)10 4785771
E-mail: scandica@sjofartsverket.se

Name: **Thetis**
Call Sign: 5BMW4
Tel: +358 40 5294886
E-mail: tug.thetis@alfonshakans.com

Name: **Ymer**
Call Sign: SDIA
Tel: +46 (0) 31 3344944
E-mail: bridge@ymmer.sjofartsverket.se







TABLES

BEAUFORT NOTATION

Beaufort Letters	Weather
b	Blue sky (0–1) clouded.
bc	Sky partly (1–3) clouded.
c	Cloudy (more than 3 clouded).
d	Drizzle.
e	Wet air (without precipitation).
f	Fog.
fs	Fog over sea (coast station).
fg	Fog over low ground (inland station).
g	Gale (Beaufort Force 8 or 9 maintained for period of not less than 10 minutes).
G	Storm (Beaufort Force 10 maintained for period of not less than 10 minutes).
h	Hail.
jp	Precipitation in sight of station.
kq	Line squall.
ks	Storm of drifting snow.
kz	Sandstorm or dust storm.
l	Lightning.
m	Mist.
o	Overcast sky (i.e. completely covered with a uniform layer of thick or heavy cloud).
p	Passing showers.
q	Squally weather.
r	Rain.
rs	Sleet.
s	Snow.
t	Thunder.
tlr or tls	Thunderstorm with rain or snow.
u	Ugly, threatening sky.
v	Unusual visibility.
w	Dew.
x	Hoar frost.
y	Dry air.
z	Haze.

BEAUFORT SCALE OF WIND FORCE

Beaufort force	Descriptive Term	Mean velocity		SPECIFICATIONS	Probable wave height* in metres
		Knots	m/s		
0	Calm	<1	0–0.2	Sea like a mirror.	—
1	Light air	1–3	0.3–1.5	Ripples with the appearance of scales are formed, but without foam crests.	0.1 (0.1)
2	Light breeze	4–6	1.6–3.3	Small wavelets, still short but more pronounced; crests have a glassy appearance and do not break.	0.2 (0.3)
3	Gentle breeze	7–10	3.4–5.4	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses.	0.6 (1)
4	Moderate breeze	11–16	5.5–7.9	Small waves, becoming longer; fairly frequent white horses.	1 (1.5)
5	Fresh breeze	17–21	8.0–10.7	Moderate waves, taking a more pronounced long form; many white horses are formed (chance of some spray).	2 (2.5)
6	Strong breeze	22–27	10.8–13.8	Large waves begin to form; the white foam crests are more extensive everywhere (probably some spray).	3 (4)
7	Near gale	28–33	13.9–17.1	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	4 (5.5)
8	Gale	34–40	17.2–20.7	Moderately high waves of greater length; edges of crests begin to break into the spindrift; the foam is blown in well-marked streaks along the direction of the wind.	5.5 (7.5)
9	Strong gale	41–47	20.8–24.4	High waves; dense streaks of foam along the direction of the wind; crests of waves begin to topple, tumble and roll over; spray may affect visibility.	7 (10)

Continued overleaf

TABLES

10	Storm	48–55	24·5–28·4	Very high waves with long overhanging crests; the resulting foam, in great patches, is blown in dense white streaks along the direction of the wind; on the whole, the surface of the sea takes a white appearance; the tumbling of the sea becomes heavy and shock-like; visibility affected.	9 (12·5)
11	Violent storm	56–63	28·5–32·6	Exceptionally high waves (small and medium-sized vessels might be for a time lost to view behind the waves); the sea is completely covered with long white patches of foam lying along the direction of the wind; everywhere the edges of the wave crests are blown into froth; visibility affected.	11·5 (16)
12	Hurricane	64 and over	32·7 and over	The air is filled with foam and spray; sea completely white with driving spray; visibility very seriously affected.	14 (—)

* This table is only intended as a guide to show roughly what may be expected in the open sea, remote from land. It should never be used in the reverse way; i.e. for logging or reporting the state of the sea. In enclosed waters, or when near land, with an off-shore wind, wave heights will be smaller and the waves steeper. Figures in brackets indicate the probable/maximum height of waves.

WAVES

DESCRIPTIVE TERMS REFERRING TO WAVES

(A) For length of SWELL waves:

	<i>Length in feet</i>	<i>Length in metres</i>
Short	0–300	0–100
Average	300–600	100–200
Long	over 600	over 200

(B) For height of SWELL waves:

	<i>Height in feet</i>	<i>Height in metres</i>
Low	0–7	0–2
Moderate	7–13	2–4
Heavy	over 13	over 4

(C) For height of SEA waves:

<i>Code Figure</i>	<i>Height in feet</i>	<i>Height in metres*</i>
0. Calm—glassy	0	0
1. Calm—rippled	0 – $\frac{1}{3}$	0 – 0·1
2. Smooth—wavelets	$\frac{1}{3}$ – 1	0·1 – 0·5
3. Slight	1 $\frac{2}{3}$ – 4	0·5 – 1·25
4. Moderate	4 – 8	1·25 – 2·5
5. Rough	8 – 13	2·5 – 4
6. Very rough	13 – 20	4 – 6
7. High	20 – 30	6 – 9
8. Very high	30 – 45	9 – 14
9. Phenomenal	over 45	over 14

*The average wave height as obtained from the large well-formed waves of the wave system being observed.

Note — In all cases the exact bounding length or height is included in the lower category, e.g. a sea of 4 m (13 feet) is described as "Rough".

Some authorities may give the height of the waves in feet or metres instead of the above descriptive terms.

TABLES

CONVERSION TABLES

TABLE FOR CONVERSION OF DEGREES FAHRENHEIT (F.) INTO DEGREES CELSIUS (C.) AND DEGREES ABSOLUTE (K.)

F.	C.	K.	F.	C.	K.	F.	C.	K.	F.	C.	K.
20	-6.7	266.3	45	7.2	280.2	70	21.1	294.1	95	35.0	308.0
21	-6.1	266.9	46	7.8	280.8	71	21.7	294.7	96	35.6	308.6
22	-5.6	267.4	47	8.3	281.3	72	22.2	295.2	97	36.1	309.1
23	-5.0	268.0	48	8.9	281.9	73	22.8	295.8	98	36.7	309.7
24	-4.4	268.6	49	9.4	282.4	74	23.3	296.3	99	37.2	310.2
25	-3.9	269.1	50	10.0	283.0	75	23.9	296.9	100	37.8	310.8
26	-3.3	269.7	51	10.6	283.6	76	24.4	297.4	101	38.3	311.3
27	-2.8	270.2	52	11.1	284.1	77	25.0	298.0	102	38.9	311.9
28	-2.2	270.8	53	11.7	284.5	78	25.6	298.6	103	39.4	312.4
29	-1.7	271.3	54	12.2	285.2	79	26.1	299.1	104	40.0	313.0
30	-1.1	271.9	55	12.8	285.8	80	26.7	299.7	105	40.6	313.6
31	-0.6	272.4	56	13.3	286.3	81	27.2	300.2	106	41.1	314.1
32	0.0	273.0	57	13.9	286.9	82	27.8	300.8	107	41.7	314.7
33	+0.6	273.6	58	14.4	287.4	83	28.3	301.3	108	42.2	315.2
34	1.1	274.1	59	15.0	288.0	84	28.9	301.9	109	42.8	315.8
35	1.7	274.7	60	15.6	288.6	85	29.4	302.4	110	43.3	316.3
36	2.2	275.2	61	16.1	289.1	86	30.0	303.0	111	43.9	316.9
37	2.8	275.8	62	16.7	289.7	87	30.6	303.6	112	44.4	317.4
38	3.3	276.3	63	17.2	290.2	88	31.1	304.1	113	45.0	318.0
39	3.9	276.9	64	17.8	290.8	89	31.7	304.7	114	45.6	318.6
40	4.4	277.4	65	18.3	291.3	90	32.2	305.2	115	46.1	319.1
41	5.0	278.0	66	18.9	291.9	91	32.8	305.8	116	46.7	319.7
42	5.6	278.6	67	19.4	292.4	92	33.3	306.3	117	47.2	320.2
43	6.1	279.1	68	20.0	293.0	93	33.9	306.9	118	47.8	320.8
44	6.7	279.7	69	20.6	293.6	94	34.4	307.4	119	48.3	321.3

TABLE FOR CONVERSION OF RAINFALL IN INCHES INTO MILLIMETRES

Inches	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
	Millimetres									
0.0	0.00	0.25	0.51	0.76	1.02	1.27	1.52	1.78	2.03	2.29
0.1	2.54	2.79	3.05	3.30	3.56	3.81	4.06	4.32	4.57	4.83
0.2	5.08	5.33	5.59	5.84	6.10	6.35	6.60	6.86	7.11	7.37
0.3	7.62	7.87	8.13	8.38	8.64	8.89	9.14	9.40	9.65	9.91
0.4	10.16	10.41	10.67	10.92	11.18	11.43	11.68	11.94	12.19	12.45
0.5	12.70	12.95	13.21	13.46	13.72	13.97	14.22	14.48	14.73	14.99
0.6	15.24	15.49	15.75	16.00	16.26	16.51	16.76	17.02	17.27	17.53
0.7	17.78	18.03	18.29	18.54	18.80	19.05	19.30	19.56	19.81	20.07
0.8	20.32	20.57	20.83	21.08	21.34	21.59	21.84	22.10	22.35	22.61
0.9	22.86	23.11	23.37	23.62	23.88	24.13	24.38	24.64	24.89	25.15
1.0	25.40	25.65	25.91	26.16	26.42	26.67	26.92	27.18	27.43	27.69
1.1	27.94	28.19	28.45	28.70	28.96	29.21	29.46	29.72	29.97	30.23
1.2	30.48	30.73	30.99	31.24	31.50	31.75	32.00	32.26	32.51	32.77
1.3	33.02	33.27	33.53	33.78	34.04	34.29	34.54	34.80	35.05	35.31
1.4	35.56	35.81	36.07	36.32	36.58	36.83	37.08	37.34	37.59	37.85
1.5	38.10	38.35	38.61	38.86	39.12	39.37	39.62	39.88	40.13	40.39
1.6	40.64	40.89	41.15	41.40	41.66	41.91	42.16	42.42	42.67	42.93
1.7	43.18	43.43	43.69	43.94	44.20	44.45	44.70	44.90	45.21	45.47
1.8	45.72	45.97	46.23	46.48	46.74	46.99	47.24	47.50	47.75	48.01
1.9	48.26	48.51	48.77	49.02	49.28	49.53	49.78	50.04	50.29	50.55
2.0	50.80	51.05	51.31	51.56	51.82	52.07	52.32	52.58	52.83	53.09

TABLES

TABLE FOR CONVERTING BAROMETRIC READINGS IN INCHES INTO MILLIMETRES

Inches	-00	-01	-02	-03	-04	-05	-06	-07	-08	-09
	Millimetres									
27-0	685.8	686.0	686.3	686.6	686.8	687.1	687.3	687.6	687.8	688.1
.1	688.3	688.6	688.8	689.1	689.3	689.6	689.9	690.1	690.4	690.6
.2	690.9	691.1	691.4	691.6	691.9	692.1	692.4	692.7	692.9	693.2
.3	693.4	693.7	693.9	694.2	694.4	694.7	694.9	695.2	695.4	695.7
.4	696.0	696.2	696.5	696.7	697.0	697.2	697.5	697.7	697.9	698.2
.5	698.5	698.7	699.0	699.3	699.5	699.8	700.1	700.3	700.5	700.8
.6	701.0	701.3	701.5	701.8	702.0	702.3	702.6	702.8	703.1	703.3
.7	703.6	703.8	704.1	704.3	704.6	704.8	705.1	705.4	705.6	705.9
.8	706.1	706.4	706.6	706.9	707.1	707.4	707.6	707.9	708.1	708.4
.9	708.7	708.9	709.2	709.4	709.7	709.9	710.2	710.4	710.7	710.9
28-0	711.2	711.4	711.7	712.0	712.2	712.5	712.7	713.0	713.2	713.5
.1	713.7	714.0	714.2	714.5	714.7	715.0	715.3	715.5	715.8	716.0
.2	716.3	716.5	716.8	717.1	717.3	717.5	717.8	718.0	718.3	718.6
.3	718.8	719.1	719.3	719.6	719.8	720.1	720.3	720.6	720.8	721.1
.4	721.4	721.6	721.9	722.1	722.4	722.6	722.9	723.1	723.4	723.6
.5	723.9	724.1	724.4	724.7	724.9	725.2	725.4	725.7	725.9	726.2
.6	726.4	726.7	726.9	727.2	727.4	727.7	728.0	728.2	728.5	728.7
.7	729.0	729.2	729.5	729.7	729.9	730.2	730.5	730.7	731.0	731.3
.8	731.5	731.8	732.0	732.3	732.5	732.8	733.0	733.3	733.5	733.8
.9	734.1	734.3	734.6	734.8	735.1	735.3	735.6	735.8	736.1	736.3
29-0	736.6	736.8	737.1	737.4	737.6	737.9	738.1	738.4	738.6	738.9
.1	739.1	739.4	739.6	739.9	740.1	740.4	740.7	740.9	741.2	741.4
.2	741.7	741.9	742.2	742.4	742.7	742.9	743.2	743.4	743.7	744.0
.3	744.2	744.5	744.7	745.0	745.2	745.5	745.7	745.9	746.2	746.5
.4	746.8	747.0	747.3	747.5	747.7	748.1	748.3	748.5	748.8	749.0
.5	749.3	749.5	749.8	750.1	750.3	750.6	750.8	751.1	751.3	751.6
.6	751.8	752.1	752.3	752.6	752.8	753.1	753.4	753.6	753.9	754.1
.7	754.4	754.6	754.8	755.1	755.4	755.6	755.9	756.1	756.4	756.7
.8	756.9	757.2	757.4	757.7	757.9	758.2	758.4	758.7	758.9	759.2
.9	759.5	759.7	760.0	760.2	760.5	760.7	761.0	761.2	761.5	761.7
30-0	762.0	762.2	762.5	762.8	763.0	763.3	763.5	763.8	764.0	764.3
.1	764.5	764.8	765.0	765.3	765.5	765.8	766.1	766.3	766.6	766.8
.2	767.1	767.3	767.6	767.8	768.1	768.3	768.6	768.8	769.1	769.4
.3	769.6	769.9	770.1	770.4	770.6	770.9	771.1	771.4	771.6	771.9
.4	772.2	772.4	772.7	772.9	773.2	773.4	773.7	773.9	774.2	774.4
.5	774.7	774.9	775.2	775.5	775.7	776.0	776.2	776.5	776.7	777.0
.6	777.2	777.5	777.7	778.0	778.2	778.5	778.8	779.0	779.3	779.5
.7	779.8	780.0	780.3	780.5	780.8	781.0	781.3	781.5	781.8	782.1
.8	782.3	782.6	782.8	783.1	783.3	783.6	783.8	784.1	784.3	784.6
.9	784.9	785.1	785.4	785.6	785.9	786.2	786.4	786.6	786.9	787.1
31-0	787.4	787.6	787.9	788.2	788.4	788.7	788.9	789.2	789.4	789.7
.1	789.9	790.2	790.4	790.7	790.9	791.2	791.5	791.7	792.0	792.2
.2	792.5	792.7	793.0	793.2	793.5	793.7	794.0	794.2	794.5	794.8
.3	795.1	795.3	795.5	795.8	796.0	796.3	796.5	796.8	797.0	797.3
.4	797.6	797.8	798.1	798.3	798.6	798.8	799.1	799.3	799.6	799.8

TABLES

TABLE FOR CONVERTING BAROMETRIC READINGS IN INCHES INTO HECTOPASCALS(Equivalents of Hectopascals in Inches of Mercury at 32°F and Standard Gravity 980-665 cm/sec².)

Mercury Inches	-00	-01	-02	-03	-04	-05	-06	-07	-08	-09
	Hectopascals									
27-0	914.3	914.7	915.0	915.3	915.7	916.0	916.4	916.7	917.0	917.4
27-1	917.7	918.1	918.4	918.7	919.1	919.4	919.7	920.1	920.4	920.8
27-2	921.1	921.4	921.8	922.1	922.5	922.8	923.1	923.5	923.8	924.1
27-3	924.5	924.8	925.2	925.5	925.8	926.2	926.5	926.9	927.2	927.5
27-4	927.9	928.2	928.5	928.9	929.2	929.6	929.9	930.2	930.6	930.9
27-5	931.3	931.6	931.9	932.3	932.6	933.0	933.3	933.6	934.0	934.3
27-6	934.6	935.0	935.3	935.7	936.0	936.3	936.7	937.0	937.4	937.7
27-7	938.0	938.4	938.7	939.0	939.4	939.7	940.1	940.4	940.7	941.1
27-8	941.4	941.8	942.1	942.4	942.8	943.1	943.4	943.8	944.1	944.5
27-9	944.8	945.1	945.5	945.8	946.2	946.5	946.8	947.2	947.5	947.9
28-0	948.2	948.5	948.9	949.2	949.5	949.9	950.2	950.6	950.9	951.2
28-1	951.6	951.9	952.3	952.6	952.9	953.3	953.6	953.9	954.3	954.6
28-2	955.0	955.3	955.6	956.0	956.3	956.7	957.0	957.3	957.7	958.0
28-3	958.3	958.7	959.0	959.4	959.7	960.0	960.4	960.7	961.1	961.4
28-4	961.7	962.1	962.4	962.8	963.1	963.4	963.8	964.1	964.4	964.8
28-5	965.1	965.5	965.8	966.1	966.5	966.8	967.2	967.5	967.8	968.2
28-6	968.5	968.8	969.2	969.5	969.9	970.2	970.5	970.9	971.2	971.6
28-7	971.9	972.2	972.6	972.9	973.2	973.6	973.9	974.3	974.6	974.9
28-8	975.3	975.6	976.0	976.3	976.6	977.0	977.3	977.7	978.0	978.3
28-9	978.7	979.0	979.3	979.7	980.0	980.4	980.7	981.0	981.4	981.7
29-0	982.1	982.4	982.7	983.1	983.4	983.7	984.1	984.4	984.8	985.1
29-1	985.4	985.8	986.1	986.5	986.8	987.1	987.5	987.8	988.1	988.5
29-2	988.8	989.2	989.5	989.8	990.2	990.5	990.9	991.2	991.5	991.9
29-3	992.2	992.6	992.9	993.2	993.6	993.9	994.2	994.6	994.9	995.3
29-4	995.6	995.9	996.3	996.6	997.0	997.3	997.6	998.0	998.3	998.6
29-5	999.0	999.3	999.7	1000.0	1000.3	1000.7	1001.0	1001.4	1001.7	1002.0
29-6	1002.4	1002.7	1003.0	1003.4	1003.7	1004.1	1004.4	1004.7	1005.1	1005.4
29-7	1005.8	1006.1	1006.4	1006.8	1007.1	1007.5	1007.8	1008.1	1008.5	1008.8
29-8	1009.1	1009.5	1009.8	1010.2	1010.5	1010.8	1011.2	1011.5	1011.9	1012.2
29-9	1012.5	1012.9	1013.2	1013.5	1013.9	1014.2	1014.6	1014.9	1015.2	1015.6
30-0	1015.9	1016.3	1016.6	1016.9	1017.3	1017.6	1017.9	1018.3	1018.6	1019.0
30-1	1019.3	1019.6	1020.0	1020.3	1020.7	1021.0	1021.3	1021.7	1022.0	1022.4
30-2	1022.7	1023.0	1023.4	1023.7	1024.0	1024.4	1024.7	1025.1	1025.4	1025.7
30-3	1026.1	1026.4	1026.8	1027.1	1027.4	1027.8	1028.1	1028.4	1028.8	1029.1
30-4	1029.5	1029.8	1030.1	1030.5	1030.8	1031.2	1031.5	1031.8	1032.2	1032.5
30-5	1032.8	1033.2	1033.5	1033.9	1034.2	1034.5	1034.9	1035.2	1035.6	1035.9
30-6	1036.2	1036.6	1036.9	1037.3	1037.6	1037.9	1038.3	1038.6	1038.9	1039.3
30-7	1039.6	1040.0	1040.3	1040.6	1041.0	1041.3	1041.7	1042.0	1042.3	1042.7
30-8	1043.0	1043.3	1043.7	1044.0	1044.4	1044.7	1045.0	1045.4	1045.7	1046.1
30-9	1046.4	1046.7	1047.1	1047.4	1047.7	1048.1	1048.4	1048.8	1049.1	1049.4
<i>Thousandths of an inch</i>										
Mercury Inches	-001	-002	-003	-004	-005	-006	-007	-008	-009	
Hectopascals	.0	.1	.1	.1	.2	.2	.2	.3	.3	

TABLES

TABLE FOR CONVERTING BAROMETRIC READINGS IN MILLIMETRES INTO HECTOPASCALS(Equivalents of Hectopascals in Millimetres of Mercury at 32°F and Standard Gravity 980.665 cm/sec².)

Millimetres	0-0	0-1	0-2	0-3	0-4	0-5	0-6	0-7	0-8	0-9
	Hectopascals									
710	946.6	946.7	946.9	947.0	947.1	947.3	947.4	947.5	947.7	947.8
711	947.9	948.1	948.2	948.3	948.5	948.6	948.7	948.9	949.0	949.1
712	949.3	949.4	949.5	949.7	949.8	949.9	950.1	950.2	950.3	950.5
713	950.6	950.7	950.9	951.0	951.1	951.3	951.4	951.5	951.7	951.8
714	951.9	952.1	952.2	952.3	952.5	952.6	952.7	952.9	953.0	953.1
715	953.3	953.4	953.5	953.7	953.8	953.9	954.1	954.2	954.3	954.5
716	954.6	954.7	954.9	955.0	955.1	955.3	955.4	955.5	955.7	955.8
717	955.9	956.1	956.2	956.3	956.5	956.6	956.7	956.9	957.0	957.1
718	957.3	957.4	957.5	957.7	957.8	957.9	958.1	958.2	958.3	958.5
719	958.6	958.7	958.9	959.0	959.1	959.3	959.4	959.5	959.7	959.8
720	959.9	960.1	960.2	960.3	960.5	960.6	960.7	960.9	961.0	961.1
721	961.3	961.4	961.5	961.7	961.8	961.9	962.1	962.2	962.3	962.5
722	962.6	962.7	962.9	963.0	963.1	963.3	963.4	963.5	963.7	963.8
723	963.9	964.1	964.2	964.3	964.5	964.6	964.7	964.9	965.0	965.1
724	965.3	965.4	965.5	965.7	965.8	965.9	966.1	966.2	966.3	966.4
725	966.6	966.7	966.9	967.0	967.1	967.3	967.4	967.5	967.7	967.8
726	967.9	968.1	968.2	968.3	968.5	968.6	968.7	968.9	969.0	969.1
727	969.3	969.4	969.5	969.7	969.8	969.9	970.1	970.2	970.3	970.5
728	970.6	970.7	970.9	971.0	971.1	971.3	971.4	971.5	971.7	971.8
729	971.9	972.1	972.2	972.3	972.5	972.6	972.7	972.9	973.0	973.1
730	973.3	973.4	973.5	973.7	973.8	973.9	974.1	974.2	974.3	974.5
731	974.6	974.7	974.9	975.0	975.1	975.3	975.4	975.5	975.7	975.8
732	975.9	976.1	976.2	976.3	976.5	976.6	976.7	976.9	977.0	977.1
733	977.3	977.4	977.5	977.7	977.8	977.9	978.1	978.2	978.3	978.5
734	978.6	978.7	978.9	979.0	979.1	979.3	979.4	979.5	979.7	979.8
735	979.9	980.1	980.2	980.3	980.4	980.6	980.7	980.8	981.0	981.1
736	981.2	981.4	981.5	981.6	981.8	981.9	982.0	982.2	982.3	982.4
737	982.6	982.7	982.8	983.0	983.1	983.2	983.4	983.5	983.6	983.8
738	983.9	984.0	984.2	984.3	984.4	984.6	984.7	984.8	985.0	985.1
739	985.2	985.4	985.5	985.6	985.8	985.9	986.0	986.2	986.3	986.4
740	986.6	986.7	986.8	987.0	987.1	987.2	987.4	987.5	987.6	987.8
741	987.9	988.0	988.2	988.3	988.4	988.6	988.7	988.8	989.0	989.1
742	989.2	989.4	989.5	989.6	989.8	989.9	990.0	990.2	990.3	990.4
743	990.6	990.7	990.8	991.0	991.1	991.2	991.4	991.5	991.6	991.8
744	991.9	992.0	992.2	992.3	992.4	992.6	992.7	992.8	993.0	993.1
745	993.2	993.4	993.5	993.6	993.8	993.9	994.0	994.2	994.3	994.4
746	994.6	994.7	994.8	995.0	995.1	995.2	995.4	995.5	995.6	995.8
747	995.9	996.0	996.2	996.3	996.4	996.6	996.7	996.8	997.0	997.1
748	997.2	997.4	997.5	997.6	997.8	997.9	998.0	998.2	998.3	998.4
749	998.6	998.7	998.8	999.0	999.1	999.2	999.4	999.5	999.6	999.8
750	999.9	1000.0	1000.2	1000.3	1000.4	1000.6	1000.7	1000.8	1001.0	1001.1
751	1001.2	1001.4	1001.5	1001.6	1001.8	1001.9	1002.0	1002.2	1002.3	1002.4
752	1002.6	1002.7	1002.8	1003.0	1003.1	1003.2	1003.4	1003.5	1003.6	1003.8
753	1003.9	1004.0	1004.2	1004.3	1004.4	1004.6	1004.7	1004.8	1005.0	1005.1
754	1005.2	1005.4	1005.5	1005.6	1005.8	1005.9	1006.0	1006.2	1006.3	1006.4
755	1006.6	1006.7	1006.8	1007.0	1007.1	1007.2	1007.4	1007.5	1007.6	1007.8
756	1007.9	1008.0	1008.2	1008.3	1008.4	1008.6	1008.7	1008.8	1009.0	1009.1
757	1009.2	1009.4	1009.5	1009.6	1009.8	1009.9	1010.0	1010.2	1010.3	1010.4
758	1010.6	1010.7	1010.8	1011.0	1011.1	1011.2	1011.4	1011.5	1011.6	1011.8
759	1011.9	1012.0	1012.2	1012.3	1012.4	1012.6	1012.7	1012.8	1013.0	1013.1
760	1013.2	1013.4	1013.5	1013.6	1013.8	1013.9	1014.0	1014.2	1014.3	1014.4
761	1014.6	1014.7	1014.8	1015.0	1015.1	1015.2	1015.4	1015.5	1015.6	1015.8
762	1015.9	1016.0	1016.2	1016.3	1016.4	1016.6	1016.7	1016.8	1017.0	1017.1
763	1017.2	1017.4	1017.5	1017.6	1017.8	1017.9	1018.0	1018.2	1018.3	1018.4

Continued on next page

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Millimetres	0·0	0·1	0·2	0·3	0·4	0·5	0·6	0·7	0·8	0·9
	Hectopascals									
764	1018·6	1018·7	1018·8	1019·0	1019·1	1019·2	1019·4	1019·5	1019·6	1019·8
765	1019·9	1020·0	1020·2	1020·3	1020·4	1020·6	1020·7	1020·8	1021·0	1021·1
766	1021·2	1021·4	1021·5	1021·6	1021·8	1021·9	1022·0	1022·2	1022·3	1022·4
767	1022·6	1022·7	1022·8	1023·0	1023·1	1023·2	1023·4	1023·5	1023·6	1023·8
768	1023·9	1024·0	1024·2	1024·3	1024·4	1024·6	1024·7	1024·8	1025·0	1025·1
769	1025·2	1025·4	1025·5	1025·6	1025·8	1025·9	1026·0	1026·2	1026·3	1026·4
770	1026·6	1026·7	1026·8	1027·0	1027·1	1027·2	1027·4	1027·5	1027·6	1027·8
771	1027·9	1028·0	1028·2	1028·3	1028·4	1028·6	1028·7	1028·8	1029·0	1029·1
772	1029·2	1029·4	1029·5	1029·6	1029·8	1029·9	1030·0	1030·2	1030·3	1030·4
773	1030·6	1030·7	1030·8	1031·0	1031·1	1031·2	1031·4	1031·5	1031·6	1031·8
774	1031·9	1032·0	1032·2	1032·3	1032·4	1032·6	1032·7	1032·8	1033·0	1033·1
775	1033·2	1033·4	1033·5	1033·6	1033·8	1033·9	1034·0	1034·2	1034·3	1034·4
776	1034·6	1034·7	1034·8	1035·0	1035·1	1035·2	1035·4	1035·5	1035·6	1035·8
777	1035·9	1036·0	1036·2	1036·3	1036·4	1036·6	1036·7	1036·8	1037·0	1037·1
778	1037·2	1037·4	1037·5	1037·6	1037·8	1037·9	1038·0	1038·2	1038·3	1038·4
779	1038·6	1038·7	1038·8	1039·0	1039·1	1039·2	1039·4	1039·5	1039·6	1039·8
780	1039·9	1040·0	1040·2	1040·3	1040·4	1040·6	1040·7	1040·8	1041·0	1041·1
781	1041·2	1041·4	1041·5	1041·6	1041·8	1041·9	1042·0	1042·2	1042·3	1042·4
782	1042·6	1042·7	1042·8	1043·0	1043·1	1043·2	1043·4	1043·5	1043·6	1043·8
783	1043·9	1044·0	1044·2	1044·3	1044·4	1044·6	1044·7	1044·8	1045·0	1045·1
784	1045·2	1045·4	1045·5	1045·6	1045·8	1045·9	1046·0	1046·2	1046·3	1046·4
785	1046·6	1046·7	1046·8	1047·0	1047·1	1047·2	1047·4	1047·5	1047·6	1047·8
786	1047·9	1048·0	1048·2	1048·3	1048·4	1048·6	1048·7	1048·8	1049·0	1049·1
787	1049·2	1049·4	1049·5	1049·6	1049·8	1049·9	1050·0	1050·2	1050·3	1050·4
788	1050·6	1050·7	1050·8	1051·0	1051·1	1051·2	1051·4	1051·5	1051·6	1051·8
789	1051·9	1052·0	1052·2	1052·3	1052·4	1052·6	1052·7	1052·8	1053·0	1053·1

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TABLES

**WIND VELOCITY — TABLE FOR CONVERTING KNOTS TO:
MILES PER HOUR, METRES PER SECOND AND KILOMETRES PER HOUR**

(1 International Nautical Mile = 6,076.12 feet = 1,852 metres)

Knots	Miles per hour	Metres per second	Kilometres per hour	Knots	Miles per hour	Metres per second	Kilometres per hour
1	1.15	0.51	1.85	51	58.69	26.24	94.45
2	2.30	1.03	3.70	52	59.84	26.75	96.30
3	3.45	1.54	5.56	53	60.99	27.27	98.16
4	4.60	2.06	7.41	54	62.14	27.78	100.01
5	5.75	2.57	9.26	55	63.29	28.29	101.86
6	6.90	3.09	11.11	56	64.44	28.81	103.71
7	8.05	3.60	12.96	57	65.59	29.32	105.56
8	9.21	4.12	14.82	58	66.74	29.84	107.42
9	10.36	4.63	16.67	59	67.89	30.35	109.27
10	11.51	5.14	18.52	60	69.05	30.87	111.12
11	12.66	5.66	20.37	61	70.20	31.38	112.97
12	13.81	6.17	22.22	62	71.35	31.90	114.82
13	14.96	6.69	24.08	63	72.50	32.41	116.68
14	16.11	7.20	25.93	64	73.65	32.92	118.53
15	17.26	7.72	27.78	65	74.80	33.44	120.38
16	18.41	8.23	29.63	66	75.95	33.95	122.23
17	19.56	8.75	31.48	67	77.10	34.47	124.08
18	20.71	9.26	33.34	68	78.25	34.98	125.94
19	21.86	9.77	35.19	69	79.40	35.50	127.79
20	23.02	10.29	37.04	70	80.55	36.01	129.64
21	24.17	10.80	38.89	71	81.70	36.53	131.49
22	25.32	11.32	40.74	72	82.86	37.04	133.34
23	26.47	11.83	42.60	73	84.01	37.55	135.20
24	27.62	12.35	44.45	74	85.16	38.07	137.05
25	28.77	12.86	46.30	75	86.31	38.58	138.90
26	29.92	13.38	48.15	76	87.46	39.10	140.75
27	31.07	13.89	50.00	77	88.61	39.61	142.60
28	32.22	14.40	51.86	78	89.76	40.13	144.46
29	33.37	14.92	53.71	79	90.91	40.64	146.31
30	34.52	15.43	55.56	80	92.06	41.16	148.16
31	35.67	15.95	57.41	81	93.21	41.67	150.01
32	36.82	16.46	59.26	82	94.36	42.18	151.86
33	37.98	16.98	61.12	83	95.51	42.70	153.72
34	39.13	17.49	62.97	84	96.67	43.21	155.57
35	40.28	18.01	64.82	85	97.82	43.73	157.42
36	41.43	18.52	66.67	86	98.97	44.24	159.27
37	42.58	19.03	68.52	87	100.12	44.76	161.12
38	43.73	19.55	70.38	88	101.27	45.27	162.98
39	44.88	20.06	72.23	89	102.42	45.79	164.83
40	46.03	20.58	74.08	90	103.57	46.30	166.68
41	47.18	21.09	75.93	91	104.72	46.81	168.53
42	48.33	21.61	77.78	92	105.87	47.33	170.38
43	49.48	22.12	79.64	93	107.02	47.84	172.24
44	50.63	22.64	81.49	94	108.17	48.36	174.09
45	51.78	23.15	83.34	95	109.32	48.87	175.94
46	52.94	23.66	85.19	96	110.47	49.39	177.79
47	54.09	24.18	87.04	97	111.62	49.90	179.64
48	55.24	24.69	88.90	98	112.78	50.42	181.50
49	56.39	25.21	90.75	99	113.93	50.93	183.35
50	57.54	25.72	92.60	100	115.08	51.44	185.20

WEATHER 'APPS'

An emerging technology exists in the form of software Weather Applications or 'Apps' for use on a number of different mobile devices. The development of such technology is intrinsically dynamic and it would be an impossible task to attempt to list all such software and its capabilities as it is released. Therefore, this section only seeks to give the mariner an overview of some of the Apps/mobile services that are provided by national weather agencies and it should be born in mind that many others are available. It should be noted that 'Apps' must be typically downloaded and installed from an online store, although some are actually free.

The mariner is strongly advised to note the points below:

1. The internet is not part of the Maritime Safety Information system and should **never** be relied upon as the only means to obtain the latest forecast and warning information. Access to the service may be interrupted or delayed from time to time, updates may also be delayed. Please refer to GMDSS services, INMARSAT SafetyNET or international NAVTEX for the latest information.
2. Some of the Apps listed below cover general and coastal weather only and **not** dedicated maritime forecasts.
3. When using these web pages and Apps, always check that the page on your screen is **not** from your cache. Use the Refresh or Reload button if in any doubt.
4. Versions available
 - (a) **Android 'Apps'** refers to stand-alone applications designed to run on the operating system developed by Google for smartphones.
 - (b) **iPhone 'Apps'** refers to stand-alone applications designed to run on the Apple iPhone.
 - (c) **Mobile Compatible** refers to a mobile version of a standard website that is optimised for viewing on a mobile device such as a smartphone or tablet.
 - (d) **Mobile (Cell) Phone Compatible** refers to a more simple text page form of a website, that is optimised for viewing on a 'standard' mobile (cell) phone.
 - (e) **Tablet 'Apps'** refer to stand-alone applications designed to run on either the Apple iPad and/or Windows tablet devices as described.
5. The UKHO in no way endorses any of the products listed in this section.

Weather 'Apps' for Mobile, Tablet and iPhone Devices

World Meteorological Organisation: www.wmo.int

My WorldWeather

Overview: <http://www.unric.org/en/apps-directory/27437-myworldweather-wmo>

My WorldWeather is the mobile version of the World Weather Information Service (WWIS) website. The application detects the user's location and provides official city weather information for over 1700 cities around the world. The App is available in nine languages and has been developed by the Hong Kong Observatory, with assistance from the WMO.

Android Download: https://play.google.com/store/apps/details?id=hko.my_world_weather

Download the Android version of My WorldWeather.

iPhone Download: <http://itunes.apple.com/ae/app/myweather/id453654229?mt=8>

Download the iPhone version of My WorldWeather.

UK Met Office: www.metoffice.gov.uk

Weather Application

Overview: <http://www.metoffice.gov.uk/services/mobile-digital-services/weather-app>

Free to download, 5 day forecast for around 7000 UK and 6000 international locations, 3 hourly forecasts for today and up to five days ahead.

Android Download: <https://play.google.com/store/apps/details?id=uk.gov.metoffice.android>

Download the Android version of Met Office Weather Application.

iPhone Download: <https://itunes.apple.com/gb/app/met-office-weather-application/id331122086?mt=8>

Download the iPhone version of Met Office Weather Application

Mobile Compatible: <http://www.metoffice.gov.uk/mobile>

Provides mobile compatible Surface Pressure Charts and forecast information including: Marine observations, Gale/Storm warnings, Forecasts for Shipping, Inshore Waters, Coastal up to 60 nm of Shetland Isles, High Seas and Extended Outlook.

NOAA National Ocean Service: <http://oceanservice.noaa.gov/>

Overview: NOAA produces a wide range of apps and services which are of interest to the mariner including: Marine Forecasts, Hawaii Tsunami Information Service, WhaleALERT, Marine Debris Tracker and many more.

Android Download: <http://oceanservice.noaa.gov/mobile.html#android>

Download a wide range of Android compatible Apps which are of interest to the mariner.

iPhone and iPad Download: <http://oceanservice.noaa.gov/mobile.html#iphone>

Download a wide range of Apple compatible Apps and services available for iPhone and iOS devices, which are of interest to the mariner.

Mobile Compatible: <http://oceanservice.noaa.gov/mobile.html>

Links to a wide range of mobile compatible websites and services which are of interest to the mariner.

Mobile (Cell) Phone Compatible: <http://cell.weather.gov/marine/marine.htm>

NWS Marine Forecast mobile/cell phone compatible text pages for High Seas, Offshore, Navtex, Local Marine, Hurricane, Tsunami, Radiofax Charts and Buoy/C-Man observations.

MetService New Zealand: www.metservice.com

MetService Marine

Overview: <http://about.metservice.com/our-company/ways-to-get-the-weather/weather-on-your-/>

MetService Marine is a specific marine weather application, giving all coastal and recreational marine forecast from metservice.com. It also provides severe weather information, tides, 7-5 minute Rain Radar, 3 day rainfall forecast imagery with wind barbs, surface pressure maps. The app is developed for smartphones and does not support tablets.

Android Download: <https://play.google.com/store/apps/details?id=com.metservice.marine>

iPhone Download: <https://itunes.apple.com/us/app/metservice-marine/id783127076?ls=1&mt=8>

Mobile Compatible: <http://m.metservice.com/>

Brazilian Navy Hydrographic Office: <https://www.mar.mil.br/dhn/chm/meteo/indexing.htm>

Boletim ao Mar (Sea Bulletins)

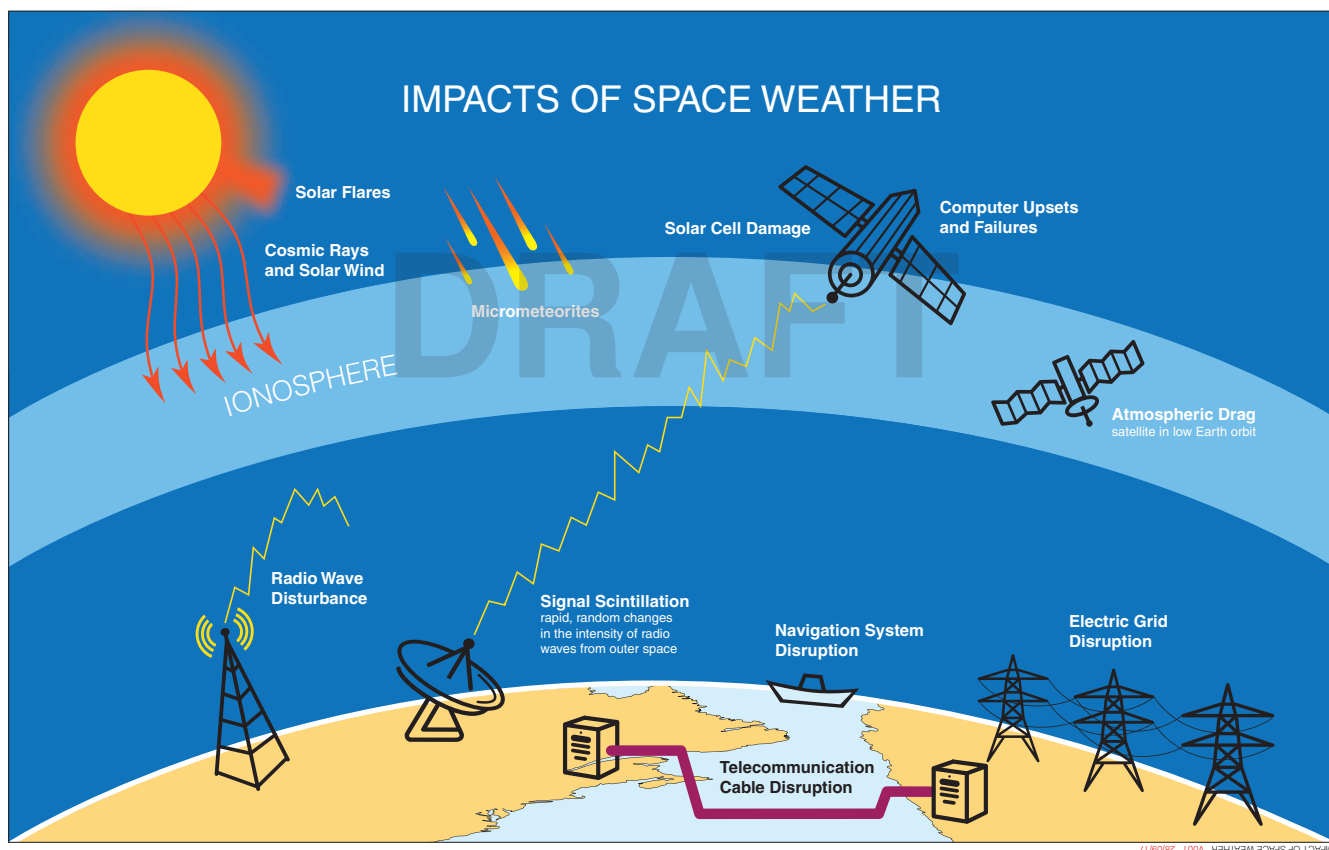
Overview: <http://boletimaomar.com.br/>

Boletim ao Mar is a specific marine weather app which gives access to daily bulletins on weather and sea conditions for the next 24 and 48 hour periods, it also provides marine weather warnings and Notice to Mariners for relevant Brazilian nautical publications. The app is free and is available in both Androd and Apple formats in Portuguese.

Android Download: https://play.google.com/store/apps/details?id=com.intersectio.Boletim&hl=en_GB

iPhone Download: <https://itunes.apple.com/gb/app/boletim-ao-mar/id1043871953?mt=8>

SPACE WEATHER



Space Weather and the Effect on Maritime Communication and Navigation

Although it may not be immediately apparent, space weather can directly impact the mariner in several ways of which they should be aware. Space weather generally begins at the sun, which produces several different phenomena which can disrupt radio and satellite communications on Earth. The most notable effects include:

The Solar Wind:

A continuous stream of charged particles released by the sun, produced as a result of its 'normal' nuclear reaction process. These particles travel at several hundred kilometers per second and can take 2-3 days to reach Earth.

Sunspots:

The Sun follows an approximate 11-year cycle of sunspots, the visible signs of an increased solar magnetic field. The period during which sunspots occur are referred to as the 'maxima' and generally last somewhere between 3-5 years, although this can vary considerably. During a sunspot maximum, solar flares can erupt.

Solar Flares:

Strong magnetic field loops often extending outside the surface of the sun which, when they break up, release huge amounts of charged matter e.g. ultraviolet light, x-rays and various other charged particles into space, at speeds much larger than the solar wind. These are called Coronal Mass Ejections or CMEs and when they are directed towards the Earth can trigger a 'geomagnetic storm'.

Electromagnetic Radiation:

Besides the outflow of the above highly charged particles, the Sun also continually emits electromagnetic radiation which travels at the speed of light, reaching the Earth in a little under 8 minutes. The extreme end of the UV and X-ray parts of the spectrum are responsible for breaking apart, or 'ionising' the molecules which form part of the upper atmosphere, into positively and negatively charged particles. This layer of the atmosphere is unsurprisingly named the 'ionosphere' and the free charges it contains can have a major influence on radio/GPS signal paths, depending on the time of day, season and solar cycle.

Low level space weather events occur on a regular basis and usually have only minor effects. However, severe cases can cause major disruption and risk, such that most governments view it as one of the highest priority natural hazards, due to our increasing dependence on technology and the effects space weather can have on it. Space weather events have the potential for widespread failure of power supplies, radio and satellite communication blackouts, compass fluctuations, GPS navigation errors and the subsequent havoc that would be inflicted on aviation and marine traffic worldwide if one or more of the GNSS satellites were to be damaged. In 2012 the Earth had a near miss when the largest solar storm since 1859 was directed towards its orbit. If it had occurred only one week earlier, the planet would have been directly in its path . . .

Practical Effects on the Mariner:

At frequencies in the 1 to 30 MHz range, solar flares can cause changes in ionospheric density and structure, thereby modifying the path of radio signals, causing 'fading', interference and even blocking HF transmissions completely (radio blackout). Additionally, the speed at which VHF GPS signals travel through the ionosphere can be affected. The resulting delay and refraction (scintillation) of the signal's path, can lead to a decreased in the accuracy of GPS receivers of up to 100m and/or temporary loss of satellite 'lock'. This has obvious consequences for the mariner, particularly for those using dynamic positioning or navigating an area congested with hazards.

Whilst most radio frequencies will be affected to some degree by space weather, HF radio communications (and MF at night), are particularly susceptible. In a typical sequence of space weather storms, the first impacts are felt during the solar flare itself. The solar x-rays from the sun penetrate to the bottom of the ionosphere (to around 80 km), where the atmosphere is ionised and creates an increased, thicker, 'D layer'. The D-layer acts both as a reflector of radio waves at some frequencies and an absorber of waves at others. The 'radio blackout' associated with solar flares, occurs on the dayside region of Earth and is most intense when the sun is directly overhead.

Another type of space weather, the radiation storm, is caused by energetic solar protons and can also disrupt HF radio communication. The protons are guided by Earth's magnetic field so that they collide with the upper atmosphere near the north and south poles. The fast-moving protons have a similar affect to the x-ray photons and create an enhanced D-Layer, thus blocking HF radio communication at high latitudes. During aurora displays, the electrons can affect other layers of the ionosphere and have similar disrupting and blocking effects, which occur mostly on the night side of the polar regions of Earth, where the aurora is most intense and most frequent.

Satellite communications tend to use high frequency signals: Ultra High Frequency (UHF), 300 MHz to 3 GHz and Super High Frequency (SHF), 3–30 GHz. Radio signals propagating to and from a satellite in orbit are similarly affected and the results are highly variable. Up to a point, the effects of space weather on satellite communications can be mitigated through engineering design solutions, but even so, space weather can lead to a total loss of communication.

Considering that the Global Maritime Distress and Safety System relies on effective radio and satellite communication, the mariner is well advised to take space weather conditions into account.

Space Weather Forecast Scales:

NOAA (the USA's National Oceanic and Atmospheric Administration), has developed a range of scales which are sometimes referenced by other meteorological services around the world when it comes to issuing space weather predictions. These scales were developed as a way of describing the likely environmental disturbances for three main solar weather event types: radio blackouts, geomagnetic storms and solar radiation. The scales have numbered levels, similar to hurricanes and earthquakes, in order to convey their severity and may be more easily interpreted than the standard scientific technical descriptions – see diagrams.

Geomagnetic Storms				
Category		Effect	Physical Measure	Average Frequency (1 cycle = 11 years)
Scale	Descriptor	Duration of event will influence severity of effects	Kp values determined every 3 hours	Number of storm events when Kp level was met (number of storm days)
G5	Extreme	Power Systems: Widespread voltage control problems, some grid systems may experience complete collapse or blackouts. Transformers may experience damage. Comms: HF radio blackout on the entire sunlit side of the Earth lasting for several days. Navigation: GPS signals errors in positioning for several days on the sunlit side of earth, which may also spread to the night side.	Kp = 9	4 per cycle (4 days per cycle)
G4	Severe	Power Systems: Possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid. Comms: HF radio propagation sporadic. Navigation: GPS navigation degraded for hours and low-frequency radio navigation disrupted.	Kp = 8	100 per cycle (60 days per cycle)
G3	Strong	Power Systems: Voltage corrections may be required, false alarms triggered on some protection devices. Comms: HF radio may be intermittent and low-frequency radio navigation problems may occur. Navigation: GPS and low-frequency navigation may experience intermittent problems.	Kp = 7	200 per cycle (130 days per cycle)
G2	Moderate	Power Systems: High latitude power systems may experience voltage alarms and long-term storms may cause transformer damage. Comms: HF radio propagation can fade at higher latitudes.	Kp = 6	600 per cycle (360 days per cycle)
G1	Minor	Power Systems: Weak power grid fluctuation can occur.	Kp = 5	1700 per cycle (900 days per cycle)

Radio Blackouts				
Category		Effect	Physical Measure	Average Frequency (1 cycle = 11 years)
Scale	Descriptor	Duration of event will influence severity of effects	GOES X-ray peak brightness by class and by flux	Number of events when flux level was met (number of storm days)
R5	Extreme	Comms: HF radio complete on the entire sunlit side of the Earth lasting several hours. Navigation: GPS increased position errors for several hours on sunlit side of Earth, which may spread into the night side. Low-frequency navigation signals may similarly experience outages on sunlit side of Earth, causing loss in positioning.	X20 (2×10^{-3})	Fewer than 1 per cycle
R4	Severe	Comms: HF radio blackout likely for several hours on most of the sunlit side of Earth. Navigation: GPS navigation may suffer minor disruptions on sunlit side of Earth. Low-frequency navigation signals may suffer positional degradation for several hours.	X10 (10^{-3})	8 per cycle (8 days per cycle)
R3	Strong	Comms: HF radio blackout likely for about an hour over a wide area of the sunlit side of Earth. Navigation: Low-frequency navigation signals may suffer positional degradation for about an hour.	X1 (10^{-4})	175 per cycle (140 days per cycle)
R2	Moderate	Comms: HF radio limited blackout on sunlit side of the Earth for tens of minutes. Navigation: Low-frequency navigation signals may suffer positional degradation for tens of minutes.	M5 (5×10^{-5})	350 per cycle (300 days per cycle)
R1	Minor	Comms: HF radio minor degradation of signal on the sunlit side of Earth with occasional loss of contact. Navigation: Low-frequency navigation signals may suffer periods of brief degradation.	M1 (10^{-5})	2000 per cycle (950 days per cycle)

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Solar Radiation Storms				
Category		Effect	Physical Measure	Average Frequency (1 cycle = 11 years)
Scale	Descriptor	Duration of event will influence severity of effects	Flux level of ≥ 10 MeV particles (ions)	Number of events when flux level was met (number of storm days)
S5	Extreme	Comms: HF radio complete blackout possible throughout the polar regions. Sat Comms may be affected if satellites are damaged. Navigation: GPS satellites may be damaged or position errors may make navigation operations extremely difficult.	10^5	Fewer than 1 per cycle
S4	Severe	Comms: HF radio blackout likely in polar regions. Navigation: GPS navigation maybe degraded for several days.	10^4	3 per cycle
S3	Strong	Comms: HF radio degraded in polar regions. Navigation: GPS position errors likely.	10^3	200 per cycle (130 days per cycle)
S2	Moderate	Comms: HF radio propagation can fade at higher latitudes. Navigation: GPS position errors possible in polar regions.	10^2	600 per cycle (360 days per cycle)
S1	Minor	Comms: Minor impacts on HF radio in polar regions.	10	1700 per cycle (900 days per cycle)

Space Weather Forecast Useful Websites:

Some examples of space weather forecasts offered by meteorological agencies around the world can be found below, but please note that the list is not exhaustive. The main summaries on all the sites listed are available in English:

NOAA (National Oceanographic and Atmospheric Administration):

www.swpc.noaa.gov/products/space-weather-advisory-outlook

ISES (International Space Environment Service):

www.spaceweather.org

UK Met Office:

www.metoffice.gov.uk/public/weather/space-weather

BOM: (Australian Bureau of Meteorology):

www.sws.bom.gov.au/Space_Weather

SANSA (South African National Space Agency):

<https://spaceweather.sansa.org.za/products-and-services/forecasts-and-predictions>

LAPAN (Indonesian National Institute of Aeronautics and Space):

<http://swifts.sains.lapan.go.id>

Korean Space Weather Center:

<http://spaceweather.rra.go.kr>

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