TARGET

NAVTEX
PRO-PLUS

INSTALLATION AND
USER INSTRUCTIONS

NASA
MARINE INSTRUMENTS

NASA MARINE Ltd.
BOULTON ROAD
STEVENAGE
HERTS. SG1 4QG
(01438) 354033

*If the internal battery is completely discharged,
it is sometimes necessary to re-boot the unit by
pressing the ENTER, UP and DOWN keys together.*

Contents

NAVTEX Transmissions

NAVTEX is information broadcast as radio signals by coastal navigation authorities world-wide.

The transmitted signals can travel long distances under favourable circumstances, and so stations within hundreds of miles of each other in each region of the world transmit at different times of the day. Doing so prevents their transmissions interfering, and producing unintelligible signals at the receiver.

Each transmitting station has an identifying letter (known as the "station ident"), which is allocated by the authorities to ensure that no nearby station in each region of the world shares the same letter. A selection of Navarea 1 (United Kingdom) transmitter station idents is shown in the table below. World-wide station idents and transmission times are listed in the Admiralty List of Radio Signals, Volume 3, published by Her Majesty's Stationery Office (HMSO).

Ident letter		
A	Corsen (Cross)	
B	Bodo	
C	Murmansk	
D	Grimeton	
G	Cullercoats	
H	BjuroKlubb	
J	Givslovshammar	
K	Niton (French coast)	
L	Rogaland	
M	Oostende	
O	Portpatrick	
P	Netherlands Coastguard	
Q	Malin Head	
R	Reykjavik	
S	Niton	
T	Onstende	
U	Stavnas	
V	Vardo	
W	Valentia Radio	

NAVTEX messages always start with a two-letter code, where the first letter represents the station (as shown above) and the second the letter represents the message type (listed below). The two-letter code is followed by a two-digit message number between 1 and 99, and then the message proper.

Each user has different preferences for which stations and messages they want to record (that is, to copy to the display screen and save). The Target NAVTEX Pro Plus has facilities for including or rejecting selected station idents and message types so that only desired messages are recorded. The process of selecting station and message types for recording or ignoring is called *programming*.

All messages are displayed in real time. Only messages programmed in are recorded, whereas those programmed out (rejected) are simply displayed as they arrive, and are not saved. It is a simple matter to return to the programming screens during standby and to change the programming to suit the user's requirements at any time.

However, a universal convention is to transmit distress or search and rescue messages with a message type D, which NAVTEX receivers are required always to display and record. The Target NAVTEX Pro Plus does so, and to indicate this fact, D cannot be programmed out.

MESSAGE Type Ident	Description of message type
A	Navigation warnings covering the station's area
B	Gale Warnings
C	Ice Reports
D	Search and Rescue information (Distress messages)
E	Weather Forecasts
F	Pilot messages
G	Decca information
H	LORAN-C information
I	Omega information
J	SATNAV information
L	Rig lists, submarine and gunnery information
V	Rig movements
Z	No messages on hand

NAVTEX Message types

The Target NAVTEX Pro Plus can store almost 800 lines of text in its memory. New messages are always stored after the previous message. When the memory is full, the unit continues to write the latest message over the oldest, without interruption. Saved messages can be viewed by scrolling backwards and forwards though the memory when in standby, using the UP and DOWN keys.

INSTALLATION

Select a position which remains dry at all times and where lighting is adequate. Avoid direct sunlight as this may cause the display to overheat. Screw down the mounting cradle and fit the receiver unit using the side knobs. Adjust the unit for easy viewing and tighten the side knobs to lock into position. The unit is designed to run from the boat's 12 volt D.C. power supply. The Pro Plus is supplied with a fused power cable. Connect the red lead to positive, and the lead with a black stripe to negative.

If the unit is to be used on a domestic electricity supply then it must be used in conjunction with a 12 volt D.C. power supply. The negative terminal of the power supply **must be grounded to the mains ground** to achieve adequate signal strength: simply having a ground on the case of the power supply is not satisfactory.

INSTALLATION OF ANTENNA

Owing to the low frequency of the signal, it is not necessary to mount the antenna at a great height. However, many types of electrical apparatus emit interference. Troublesome items are alternators, ignition coils, motors, strip lights, invertors, etc., and it is important that the antenna be mounted well clear of such sources of interference for best results. Select a position as far from likely sources of interference as is practical, and mount the aerial using the flange on the base. Ensure that the antenna is at least 30 cms from other metal structures that are parallel to it. A mounting bracket suitable for a 25mm rail is available from your chandler or direct from NASA Marine if required. Run the aerial lead back to the receiver and push the

moulded plug into the socket. The cable can be shortened or lengthened using standard 75 ohm co-axial cable. Alternatively a 7 metre extension cable is available from your chandler.

GETTING STARTED

When the NAVTEX Pro Plus is first connected to 12 volt power, the unit runs an extensive set of self-tests, followed by display of the Welcome screen if its internal battery is flat. If no words appear on the screen, first check that 12 volts is present at the unit. Next, adjust the control at the rear of the unit to improve the display contrast to suit the lighting conditions.

Operation of the unit is controlled by the three keys beside the display screen. In all cases except scrolling, no action is done until the key, or keys, are released. The keys control operating mode, memory clearing, station or message programming, listening for messages in Standby, and scrolling through previously recorded messages. The Welcome screen includes a summary of how the unit is used and programmed. The operation of the Target NAVTEX Pro Plus in each of its modes is described in the next sections.

If the internal battery is not flat, the internal tests will normally return the unit to the Standby state, using the stored settings, waiting for incoming messages, and continuing normal operation as it was before power was removed. However, it first checks whether any stations and messages are selected, and displays a warning if none are selected. The previous settings may have been lost if the battery was almost flat when the unit is switched on again. It is therefore wise to check the settings briefly if the unit has been off for a long period.

Target NAVTEX Pro Plus Operating instructions.

When the unit is first switched on with a flat battery, it is necessary to define which stations and messages should be recorded and retained for later examination, and which should be ignored. Stations and messages are *programmed* separately. If a station or message is to be ignored, it is said to be "programmed out". If it is to be recorded, it is said to be "programmed in".

To simplify Programming, recording or ignoring any *message type* applies to all *stations* which are amongst those to be recorded. If a station is programmed out, no messages are recorded. If a station is programmed in, only those *message types* programmed in will be recorded. In other words, it is necessary to program in a station AND a message type to record it. Messages with either a station ident or message type not included in the receiver's list of those programmed in will be ignored (that is, not recorded and saved for later reading).

Target NAVTEX Pro Plus Welcome

This is the mode which appears when the unit is switched on with a flat battery. It can also be accessed at any time by pressing all three buttons at the same time. Two options are available from the Welcome menu:

Press ENTER to go to the Main menu;

Pressing this key switches to the Target NAVTEX Pro Plus Main menu (see below)

Press UP & DOWN together to clear old messages

This command is very powerful, because it wipes irretrievably _all the messages_ which are saved in the unit, leaving it blank. Clearing the message memory does not affect the settings of stations and message types to be recorded or ignored. Programming of the selections is done separately, as described below.

To clear the memory, both the UP and DOWN keys must be pressed at the same time. They need not be released at the same time. No action takes place until both have been released, whereupon a warning message is displayed to enable the user to change the decision. UP and DOWN must be pressed together again as shown on screen to confirm clearing the memory. If any other key is pressed, the user returns to the Welcome screen.

Main Menu

The Main Menu is the usual point of return from all the subsequent selections. Four different actions can be commanded from this menu, as follows:

Press ENTER to go to Standby Menu

Pressing this key moves the user to the Standby Menu, where several options are offered.

Press UP to program stations

Pressing this key moves to the station programming menu (see below).

Press DOWN to program messages

Pressing this key moves to the message programming menu (see below).

Press UP & DOWN together to clear old messages

This option is the same as described above in the Welcome Menu.

Station and Message Programming Menus

These screens work in identical fashions. The first word in the bottom line shows whether stations or messages are being programmed. The second word is a summary of the situation for the station or message list A to Z, which completes the bottom line.

When first entered, the screen has a flashing underline on the first letter of the summary word, which can be "All", "Some", or "None". The underline is a _cursor_ marking where the effect of the UP or the DOWN key being pressed is seen. Pressing UP updates the setting at the cursor position. The summary word describes the number selected in the stations or messages A to Z

Press UP to update programming

If the cursor is under the summary word, pressing UP will alternate the selection between all selected and all ignored. Selection of recording (programming in) is denoted by the letter being in CAPITAL LETTERS, and ignoring (programming out) is denoted by the letter being in lower case. If the cursor is under any of the individual letters, pressing UP alternates between RECORD and ignore. At all times, the summary word indicates the status of the whole set of selections.

Press DOWN to move on to the next station or message

Pressing the DOWN key moves the cursor position one to the right. The cursor starts in the summary position, and advances one place at a time with each successive key press, which is completed when the finger is removed from the key. When the cursor is under "Z" (or "z"), pressing DOWN moves the cursor back to the summary word.

The UP and DOWN keys may be used as often as necessary to get the capital letters to set the stations or messages to be recorded, and the lower case letters to set the stations or messages which are to be ignored.

Standby Menu

Press ENTER to view Receive Options

Moves to a screen listing the standby options as described in STANDBY below.

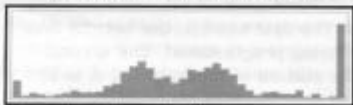### Press UP and DOWN together to view the received signal spectrum

In this mode, the system offers an analysis of the received signal spectrum (the intensity distribution over the received signal band).

No signal present. Background level, no reception.

Weak signal above background level. Some corrections, few stars.

Weak signal near background level. Many corrections, some stars.
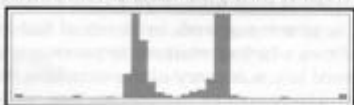
Strong signal. No corrections, no stars.

The received signals are narrow-band frequency modulated (FM) data representing the "0"s and "1"s which make up the characters being received. The spectrum shows the quality of the signal separation between the two received frequencies. Typical spectra for various signal conditions are shown on the Figure above. A long press on the ENTER key in the Spectrum mode returns to the Main Menu.

Receive Options

This screen lists the operating modes when in the Standby mode, as described below.

Press ENTER during Standby

A brief press on ENTER switches the backlight on or off.

A long press on ENTER returns to the Main Menu.

Press UP or DOWN during Standby

The operation of UP and DOWN keys should be thought of as controlling the viewing window position over the recorded text messages, which are saved as if they are on a continuous loop of paper. Normal reading of messages is down the page, so DOWN is pressed to move the screen down the "page" of stored messages. Likewise, UP moves up the message list.

Pressing UP moves the viewing window up to the start of each message one at a time.

Pressing the DOWN key moves the viewing window down a line, so messages can be read a line at a time. The last place in memory is marked with a double line across the screen. The messages below the line are the oldest messages and those above are the most recent.

If the DOWN key is kept pressed, the window will continue to scroll down to facilitate moving rapidly through the list of recorded messages. Releasing the key immediately stops scrolling at the point reached. If the key is kept pressed for long enough to scroll back to where scrolling started, the scrolling stops, to prevent getting lost in the available recordings. At any time during scrolling, pressing ENTER returns the system to Standby, pointing to the end of the last received message, or to where a new message is being recorded.

The unit automatically returns to Standby if the keys remain untouched for about three minutes.

Standby

When this mode is entered, the word "Stby" is shown in the bottom left corner of the screen, and the rest of the bottom line is blank. The upper seven lines show the last received messages (if any), as shown below.
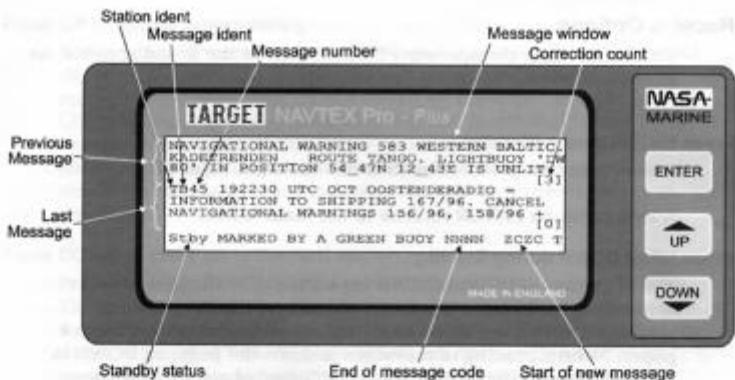
Standby display screen

When new messages arrive, their station and message idents are checked for recording or ignoring. If the messages are to be recorded, they are added after the last message. When the memory is full, new messages are written in sequence over the oldest messages saved in the memory. If they are to be ignored, they are simply displayed in the bottom line of the screen.

The bottom line always shows what is being received. As soon as the start of message signal (ZCZC and a valid station ident and message ident) is received, the idents and the message number are copied to the Stby position, signifying what is coming in. If both letters are in capitals, it is a valid message. The Target NAVTEX Pro Plus shifts the old message up a line to mark the new message with a clear line, and starts copying the new message one word at a time into the bottom line. The ZCZC start signal is not copied. When the message ends, the recorded message moves up a line, and "Stby" returns to the clear bottom line.

When an incoming message is detected, but the station or message idents are not programmed in, the message is written only to the bottom line of the display. It is scrolled to the left at irregular intervals to assist the reading of the incoming message. The station and message idents and the message number are copied to the Stby position in the bottom line. If either ident letter is in its respective record list, it is shown in upper case, and if not, the ident letter is shown in lower case.

Any station or message ident which is not an upper case letter is ignored. However, any D (distress, or search and rescue) message is always recorded whether or not D is included in the record list, as required by international conventions. The end of message signal (NNNN, presumably standing for "Message ends"—(NNNNs!)) is visible only when messages are not being recorded.

In all messages, each character is transmitted twice in a system known as Forward Error Correction (FEC). If an error is detected, the second copy of

the character is used, unless it too is corrupted. Such uncorrectable characters are marked with a star (*), as required by the international conventions for NAVTEX message displays. The Pro Plus counts the number of corrections made during each message and prints the number in the gap at the end of the message. The number of corrections is always larger than the number of visible stars because many corrections are successful. The number of corrections in a message is a measure of the signal quality: the fewer the better.

Sometimes a second station starts transmission before another has finished. This results in a new ZCZC being received before the NNNN of the first has been received. A "Bad Signal" message is printed in the gap between the first and the new message to show what has happened.

If too many errors occur close together, the unit will wait and try to re-synchronise to an error-free signal again. If the signal loss occurs during recording, and the end-of-message signal (NNNN) is missed, false data will continue to be recorded. After about 25 seconds of failure to re-acquire the signal, the unit drops automatically back to Standby to prevent the memory being filled with rubbish and stars. The lost signal is marked by a "Lost Signal" message before the error count.

INTERNAL BATTERY

An internal battery is fitted to protect data in the memory during loss of external power. The battery is automatically charged when the unit is connected to an external power source. It takes 40 hours to charge the internal battery fully. In the event of loss of external power, the programmed stations and messages, and the text in the message memory will be stored for about a week.

When the unit is switched on from new, or after the internal battery has gone flat, "garbage" is usually stored in the message memory. It is a matter of taste whether to clear it, but it is advisable to clear out-of-date messages from the memory to avoid being confused by them, and to confirm that the desired stations and messages are correctly selected.

TROUBLE SHOOTING

PROBLEM	LIKELY CAUSE	REMEDY
No screen display	No power to Pro Plus	Check 12V supply, and fuse in power lead.
No screen display	Pro Plus did not start correctly from flat battery	Press all three keys AT THE SAME TIME to do a hard reset to Welcome Menu.
No screen display.	Contrast control wrongly set	Adjust contrast control at rear of unit (look for clear and black screens at ends of adjustment range) to obtain best contrast.
Menus are displayed, but no signal received"	No signals are being transmitted at present.	Wait a few hours with all Stations and Message types programmed in.

PROBLEM	LIKELY CAUSE	REMEDY
Menus are displayed, but no signal received.	Antenna is not plugged in, or is badly sited	Plug it in. Ensure it is at least 30cm from other metal structures that are parallel to it.
Menus are displayed, but signals are received with many corrections and "*"s.	Poor signal strength or high interference	Check performance of Pro Plus when: Move antenna to higher less obstructed location. Disconnect mains umbilical supply. Temporarily switch off other electrical systems such as fridges, strip lights, invertors, etc. which may be interfering with reception.
Menus are displayed, but signals are received with many corrections and "*"s.	The stations programmed in are a long distance away.	Temporarily programme in at least one local station and wait at least 4 hours to confirm that it is recorded correctly.
Menus are displayed, but no signal received.	The antenna cable has been cut and rejoined.	The centre conductor of the coaxial cable MUST be soldered. Failure to solder the cable will result in poor or no reception.
Backlighting is OFF when it has been switched ON.	The backlighting remains on for only two minutes when no keys are pressed.	Briefly press the ENTER key to switch the backlight on again.

WORLDWIDE NAVTEX NAVAREA LISTS

Note: stations listed in *italics* are planned or on trial.

Navarea 1 is shown on Page 2

NAVAREA II - FRANCE

D	La Coruna (Finisterre)		R	Commandantes Nunes Riberio
F	Horta		I	Las Palmas
G	Tarifa		M	Casablanca

NAVAREA III - SPAIN

W	La Garde (Toulon)		U	*Ancona*
X	*Cabo La Nao*		R	*Roma*
T	*Cagliari*		S	*Augusta*

O	Malta
Q	Split
K	Kerkyra
H	Iraklion
D	Istanbul
L	Limnos
I	Izmir
F	Antalya
M	Cyprus

E	Samsun
P	Hefa (Haifa)
N	Ismalia (Serapeum)
J	Varna
C	Odessa
B	Mariupol
A	Novorossiysk
N	*Alexandria*

NAVAREA IV - USA

X	Labrador (Cartwright)
C-D	Sept-Iles
P	Thunder Bay
W-T	Montreal
O	St Johns
Q-S	Sydney
U-V	Yarmouth
H	Wiarton

N	Portsmouth
B	Bermuda
G	New Orleans
F-K (Ice Reports only)	Boston
A	Miami
R	San Juan

NAVAREA V - BRAZIL
No stations on hand

NAVAREA VI - ARGENTINA

G	*Rosario*
F	Buenos Aries
E	*Mar del Plata*
D	Bahia Blanca

C	Comodoro Rivadavia
B	Rio Gallegos
A	*Ushuaia*

NAVAREA VII - SOUTH AFRICA

B	*Walvis Bay*
C	Cape Town

I	*Port Elizabeth*
O	Durban

NAVAREA VIII - INDIA

G	Bombay

P	Madras

NAVAREA IX - PAKISTAN

M	Muscat
B	Bahrain
G	Damman

H	Jeddah
X	Ismailia (Serapeum)

NAVAREA X - AUSTRALIA
No stations on hand

NAVAREA XI - JAPAN

J	Otaru		M	Zhanjiang
K	Kushiro		F	Krung Threp (Bangkok)
R	Dalian			
H	Moji		V	Guam
S	Tianjin		C	Singapore
A	Vladivostock		E	Jakarta
Q	Shanghai		D	Ujungpandang (Makassar)
G	Naha			
O	Fuzhou		B	Amboina (Ambon)
N	Guangzhou		A	Jayapura
L	Hong Kong			

NAVAREA XII - USA

F	Kodiak		C	Point Reyes (San Francisco)
X	Adak			
D	Prince Rupert		O	Honolulu
H	Tofino			
W	Astoria			
Q	Long Beach			

NAVAREA XIII - RUSSIA

F	Providenia Bukhta		C	Petropavlovsk
E	Beringovskiy		B	Kholmsk
D	Magadan			

NAVAREA XIV - NEW ZEALAND
No stations on hand

NAVAREA XV - CHILE

A	Antofagasta Radionaval		D	Puerto Montt
A	Ushuaia		E	Magallanes
B	Valparaiso Playa Ancha		F	Isla de Pascua
C	Talcahuano			

NAVAREA XVI - PERU

S	Paita		W	Mollendo
U	Callao			

ADMIRALTY CHART AGENTS

The Admiralty List of Radio Signals, Volume 3, is obtainable from Her Majesty's Stationery Office, or from:

Kelvin Hughes
145, Minories
LONDON EC3 1NH
Tel: National 0207 709 9076
International + 44 207 709 9076

Captain O.M. Watts
7, Dover Street
Piccadilly
LONDON W1X 3PJ
Tel: National 0207 493 4633
International + 44 207 493 4633

Addendum To navtex Pro Plus instructions
for
SERIES II TWO CHANNEL RECEIVER

The series II navtex can receive either the international (518 kHz) or the national (490 kHz) service.

To select the desired service go to the programming menu. Select either MESSAGES or STATIONS. The service can be changed by simultaneously pressing the UP and DOWN keys.

In the UK, Niton, Cullercoats and Portpatrick transmit inshore forecasts twice daily on the national service. The international service provides a full navtex service in the English language worldwide.

Note. Navtex stations use a different 'ident' letter for the national service than the international service. e.g.:

National	ident	International		ident
Niton	I	Niton	E	
Portpatrick	C	Portpatrick	O	
Cullercoats	U	Cullercoats	G	

The series II receiver allows the stations and message settings for the national service to be set independently of the stations and messages for the international service. The service (nat. Or int) can also be changed from the standby screen by simultaneously pressing the UP and DOWN keys.

IMPORTANT

THE 'IDENT' CODE LETTER FOR NITON 'INTERNATIONAL'
HAS CHANGED TO 'E'. OTHER STATIONS REMAIN THE SAME AS
PREVIOUS.

A second, local channel has been made available for local language trans-
missions* (NATIONAL) Currently, the only countries where this is avail-
able are France (where it is used for Navtex in the local language) and the
UK (where it is used in the English language for inshore weather fore-
casts.)

IMPORTANT

The operators of the Navtex service have allocated a different station 'ident'
letter for stations operating on the local channel. E.g. - 'Niton' has the ident
letter **E** on the international channel and the letter **I** on the local channel.

UK Stations operating on International channel (518kHz)

Niton	(E)	In
Portpatrick	(O)	English
Cullercoats	(G)	Language

Stations currently operating on local channel (490kHz)

Niton	(I)	In
Portpatrick	(C)	English
Cullercoats	(U)	language
Corsen	(E)	In
La Garde	(S)	French
Niton French coast	(A)	language

* Check with Admiralty list radio signals volume 5 for details.