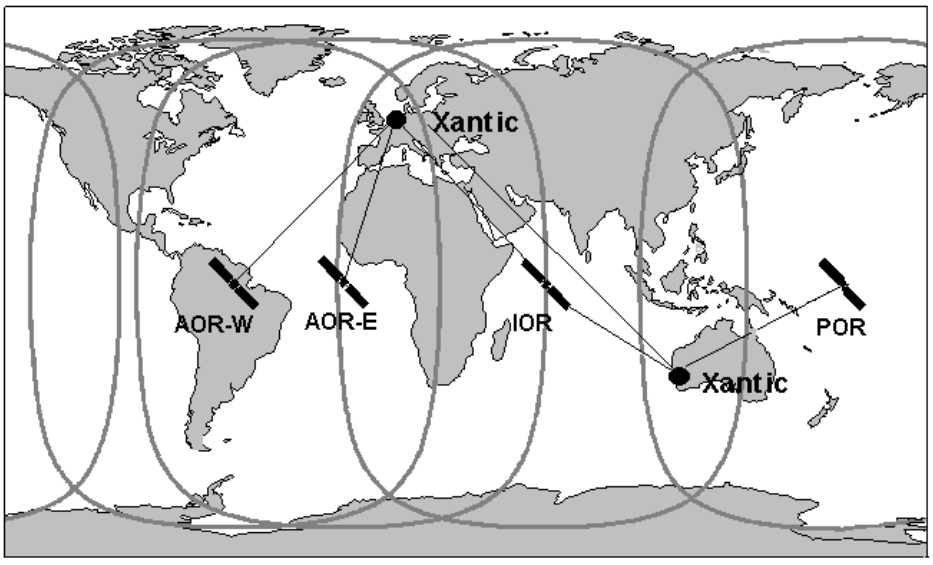
Date: 13 June 2002

INMARSAT-C

Data Reporting & Polling services

User manual



This edition of this User Manual has been updated with information available at the date of issue. This edition supersedes all earlier versions of this manual.

This publication has been compiled with the greatest possible care, but no rights may be derived from its contents.

Content

1 INTRODUCTION: general information

1.1 About this manual

This manual describes the principles of Data Reporting and Polling and how to set-up this service via Xantic. This Inmarsat-C service with worldwide coverage offers fleet managers a fast and cost effective method of data transmission.
In general Data Reporting and Polling is integrated in logistic information systems (for instance a fleet management system). This manual does not give a description of the different systems.

1.2 Customer Services

For more information on Data Reporting, Polling and other Xantic services please contact:

Xantic website: **www.xantic.net**

Xantic Customer Services
Email: service@xantic.net

Access via Australia
Tel: +61 7 5498 0000
Fax: +61 7 5498 0098
Telex: (71) 22432 TELCSC AA

Access via the Netherlands
Tel: +31 70 343 4543
Fax: +31 70 343 4796

Access from Inmarsat-C terminal:
Special Access Code: 68 (free of charge)

1.3 Registration for the Data Reporting and Polling service

Before you can use the service you have to register at Xantic. After your account has been established, Xantic Customer Services will provide you with the following information:

- **DNID number + member number(s).**
- **Username and password for access via telephone-modem, X25 datanet, telex, Internet TCP/IP and optional for Internet e-mail.**

Contact Xantic Customer Services for an **application form** or download it from our website: www.xantic.net/products/Inmarsat C.

1.4 Billing and charges

The Data Reporting and Polling service requires direct billing from Xantic. Each month you will receive a specified bill containing:

- charge per Poll.
- charge for each data report depending on the size:
  small (1-8 bytes)
  medium (9-20 bytes)
  large (21-32 bytes)
- initial registration fee per DNID if applicable
- set-up fee per terminal ID if applicable

A price list is available at Xantic Customer Services and at our website.

2 What are Data Reporting and Polling?

Data Reporting and Polling are Xantic Value Added Services based on Inmarsat-C.

The Data Reporting service is intended for transferring small quantities of data (e.g. a position report) from an Inmarsat-C terminal to a predetermined address. This predetermined address could be an Internet email address, a telex, telephone-modem, X25 datanet or fax (delivery to an Internet TCP/IP adress will be implemented in the future).

The Polling service allows a fleet manager to send small quantities of data to one or more Inmarsat-C terminals. The Poll or telecommand may initiate some action, for example ask for a Data Report to be transmitted or for a pump to be turned off.

2.1 Data Reporting

Data Reports make efficient use of the Inmarsat-C system. Data packets limited to a maximum of 256 bits (32 bytes) are transmitted via signalling channels of the Inmarsat-C network. Time and costs are saved by avoiding switching to a messaging channel.

Data Reports can be sent directly from a C-terminal or commanded with a Poll.

- **Directly**
  Most C-terminals can transmit Data Reports manually by means of an operator or be programmed for automatic transmission at pre-set intervals.
- **With Poll command**
  The same can be achieved from a remote location (e.g. a fleet management system) by sending a Poll to the C-terminal commanding the sending of a Data Report.

For details on how to configure the C-terminal for Data Reporting consult the manufacturers' manual of the C-terminal..

2.2 Polling

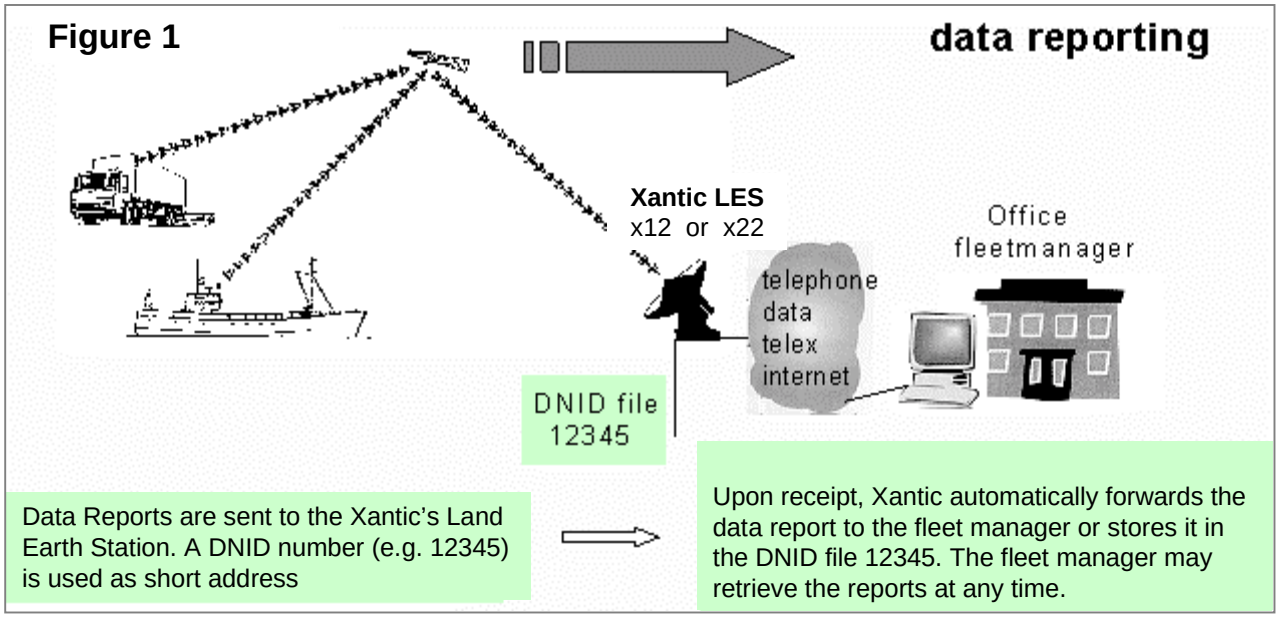
A Poll is a short command to an individual C-terminal or group of C-terminals initiating some action, controlled by the software of the C-terminal. A fleet manager can ask for data reports, with for instance the position of his ships or trucks.

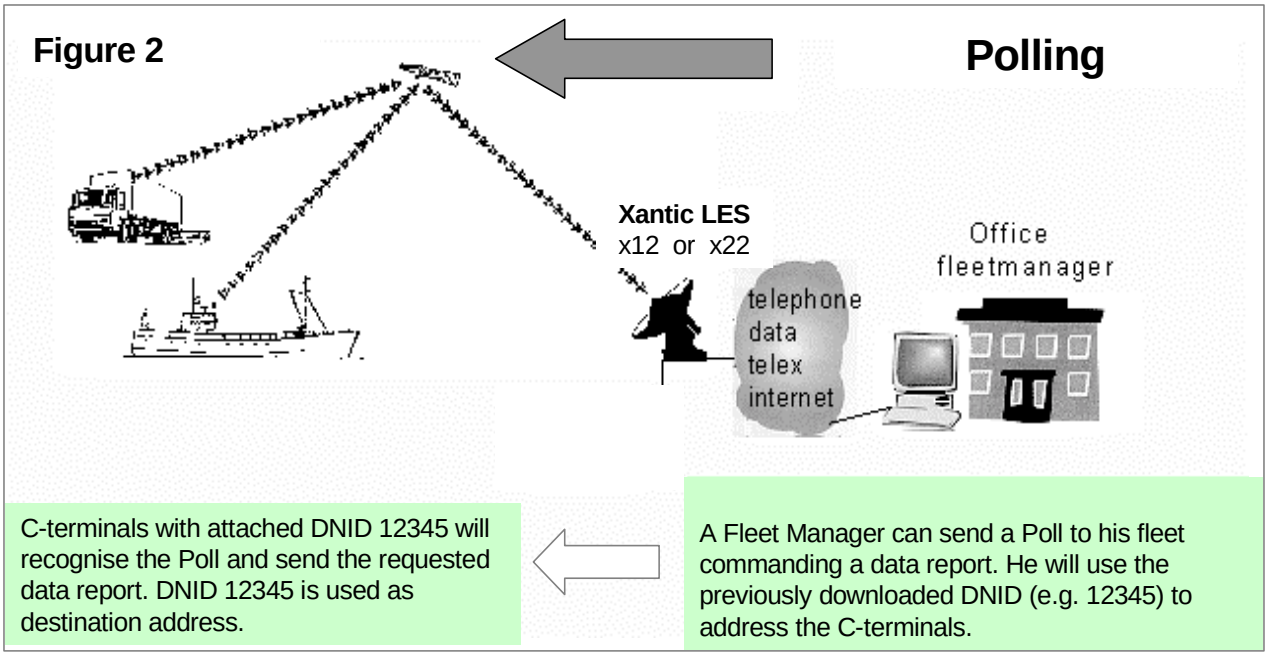
Polls can be sent via Internet e-mail or with the 2-stage access method via telex, telephone-modem, X25 datanet or TCP/IP (see chapter 6 and7).
For information about Poll formats see Appendix A.

In order to make a C-terminal respond to a Poll it must be configured correctly. For details consult the manufacturers manual of the C-terminal.

2.2.1 Overview of Data Reporting and Polling

(DNID 12345 is fictional)





3 DNID (Data Closed Network Identification Digit)

3.1 A DNID (Data Closed Network Identification Digit) is necessary

To allow Data Reporting and Polling, a closed network must be created between one or more C-terminals and the fleet owner at his office.
In this closed network a short address is used in the form of a unique DNID number. Inmarsat-C terminals will address the data report to this DNID. The Xantic systems will know how to route the data report to its destination address. The DNID is also used in Polls.

One DNID can be used for up to 256 C-terminals. To discriminate between C-terminals with the same DNID, each C-terminal is given a member number.

To set up the service, Xantic will issue a DNID and download this DNID plus the member number over the satellite link to the C-terminal, where it will be stored.

3.2 How a DNID is used in the closed network

- Polls to individual C-terminals should be addressed to a DNID indicating the individual member number.
- Each time a C-terminal sends a data report, it uses the DNID as the destination address.
- Depending on the arrangement with the fleet manager Xantic will directly deliver the data report via internet e-mail, PSTN (telephone modem), PSDN (X25 datanet), fax or telex, or store the data report in a DNID file. The fleetmanager may access the DNID file and retrieve the data reports at a convenient time.

3.3 Xantic has to download DNIDs

Upon receipt of a completed application form, Xantic will issue a DNID (maximum of 5 digits). This DNID will be downloaded via an encoded message to the C-terminal(s) and stored in the C-terminals' memory.

3.4 One DNID for a group of C-terminals requires member numbers

One DNID can be downloaded into a group of up to 256 C-terminals. On the application form you can add member numbers to the mobile numbers of the C-terminals. Otherwise the Xantic's Customer Service will assign the member numbers.

3.5 More DNID's in one terminal

More DNIDs can be downloaded in an individual C-terminal. Different DNIDs allow the sending of e.g. position- or temperature reports or delivery of reports to different delivery addresses. The

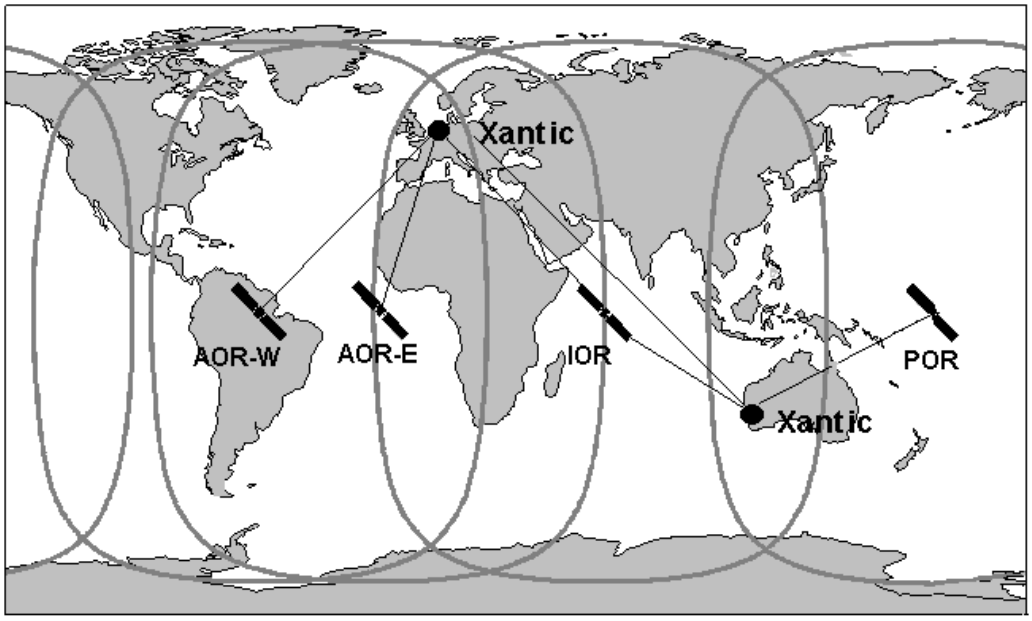
maximum number of DNID's depends on the type of C-terminal (consult the manufacturers specifications).

3.6 DNID's are linked with Inmarsat Ocean Regions

The Data Reporting and Polling service is available in all four Inmarsat Ocean Regions. A DNID is only linked with the Ocean Region in which it is downloaded. Consequently if a C-terminal enters a new Region the DNID has to be downloaded again. If the DNID was previously downloaded in that area this will not be necessary.

A DNID can only be downloaded in the Ocean Region where the C-terminal is logged in.

AOR-W: Atlantic Ocean Region – West
AOR-E: Atlantic Ocean Region – East
IOR: Indian Ocean Region
POR: Pacific Ocean Region



4 Download procedure for DNID's

Downloading of DNID's will be performed by Xantic after receipt of the completed application form from the fleet manager.

Xantic has two Land Earth Stations(LES) and two LES ID (12 and 22) providing global coverage for Inmarsat-C.

Xantic Inmarsat-C LES IDs

LES-ID	AORW	AORE	IOR	POR
12	012	112	312	212
22	022	122	322	222

(*) use this manual for LES ID 22 from 22 June 2002 for AOR-East and West, and from 25 October 2002 for POR and IOR.

In the application form you should indicate which LES ID would you like to use. Xantic could activate a DNID for you for both LES ID. In this case, a double DNID download charge applies.

Xantic will:

- issue a DNID number for the LES ID you have indicated in the form;
- download this DNID with member number into the requested C-terminal(s)
  (Note that on the application form you should add member numbers to the mobile ID-numbers and indicate in which Ocean Region the C-terminal is located).
- create a DNID file in the database at the Xantic LES
- issue you with an Internet (email) or 2-stage user-ID and password
- inform you

You can start using the service as soon as you receive the confirmation.

4.1 Checking succesfull downloading

The encoded message necessary for downloading a DNID is broadcasted by the Xantic Land Earth Station via the satellite link. In some cases the broadcasted messages may have been missed by the addressed C-terminal.

Successful downloading can be checked at the DNID Status Screen of your C-terminal(s). For detailed instructions consult the manufacturers manual.

4.2 Possible problems during downloading

Problem	Solution
The C-terminal was not present in the indicated Ocean Region.	Contact Customer Services and start a new download procedure in the correct Ocean Region.
The C-terminal is not logged in or switched off.	The C-terminal must be urged to switch on and log in.
The download message may have been missed because the C-terminal was busy communicating messages or lost contact with the satellite for a short while (e.g. passed a bridge or tunnel).	Contact Customer Services and start a new download procedure.

4.3 New and existing DNID's to new terminals

Requests for downloading new and existing DNID's should be completed on the application form. After receipt Customer Services will download the DNID into the requested C-terminal(s) and inform you.

4.4 Existing DNID's to new Ocean Regions

C-terminals can only respond to Polls if the DNID was downloaded in that specific Ocean Region. As soon as a C-terminal enters an Ocean Region in which the DNID was never before downloaded you have to contact Customer Services for a new download procedure. Such a download request can also be sent directly from the C-terminal using the two-digit code 68# (free of charge).

Fleet managers are advised to keep record of their DNID's in use and Ocean Regions where they are downloaded.

4.5 Deleting DNID's

Please inform Customer Services when DNID's are not in use anymore or when a C-terminal has a new owner. Customer Services will carry out the deletion of the DNID in the C-terminal.

5 Delivery of Data reports

The data reports sent from C-terminals will be deposited into a DNID file in the database at Xantic's LES. Now there are three possibilities:

1. **Data-reports can be delivered immediately** to your fleet management system.
2. **Data-reports can be delivered at specified intervals.**
3. **Data reports can be retrieved from the DNID file at Xantic.** The DNID file should be contacted via 2-stage access (see chapter 7). The contents of the DNID file can be retrieved with the command **DNID** followed by the **DNID number** and **Ocean Region digit**.

   For example type **DNID,12345,3** if you want to retrieve the data report(s) from a C-terminal sailing in the Indian Ocean using DNID 12345.

Ocean Region Digits

0 = Atlantic Ocean West 1 = Atlantic Ocean East

2 = Pacific Ocean 3 = Indian Ocean

Network	Is delivery possible?	Is retrieval possible?
Internet e-mail	yes	no
Telephone-modem (PSTN)	yes	yes
X25 datanet (PSDN)	yes	yes
Internet TCP/IP	no	yes
Telex	yes	yes
Fax	yes	no

For detailed information contact Xantic Customer Services.

5.1 Data Reports in raw data or plain language

By default, data reports be delivered as raw data (decode type: "no conversion"). Most fleet management systems will translate raw data into the right format.
However Xantic can also deliver the data reports in plain language (decode type: "textual conversion"). This will be necessary for delivery on fax or telex (or email if you wish to read the report directly). Please indicate this on the application form.

5.2 Delivery of data reports via Internet e-mail

As soon as a data report is received at Xantic the system will check the DNID file to find out what to do. If the data report has to be delivered via e-mail the message will be delivered to the registered e-mail address. Data reports in plain language will be delivered as normal body-part. Raw data reports will be delivered in an attachment.

In the "from" field of the e-mail you will find the domain name <**c.xantic.net**> preceded by the member number of the mobile within the DNID.

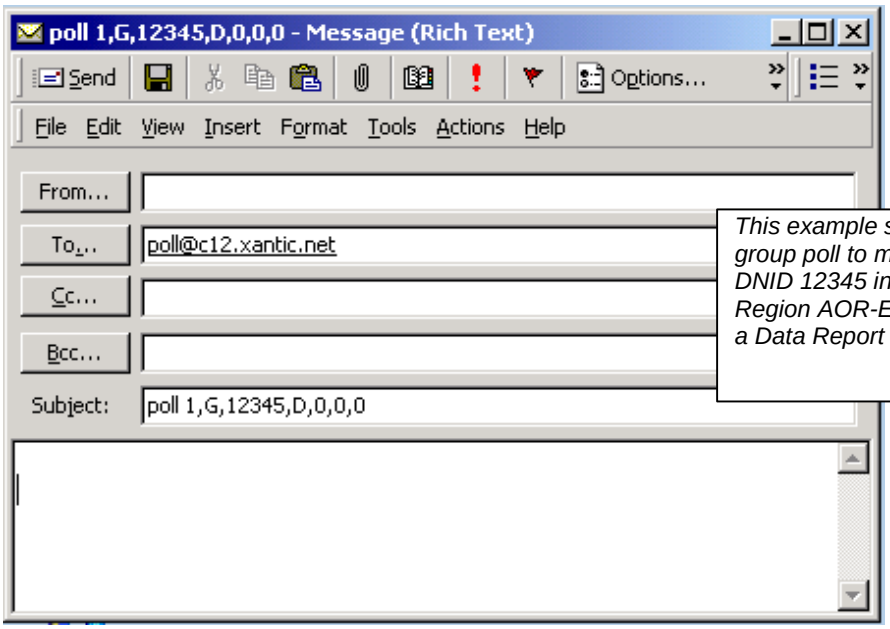
For example: **1@c.xantic.net** contains a data report sent from a C-terminal belonging to a certain DNID with member number 1.

6 Polling via the Internet (e-mail)

Polls can be sent via Internet e-mail. Only registered users can use this facility.
When you send an email to our gateway, Xantic will verify the legitimacy of the originator. Xantic allows two methods of authentication: a) Xantic checks whether the email address of the originator has been registered at Xantic to send polls, b) if the email address is not registered, Xantic will check the legitimacy of the originator by looking at the two first rows of the body text containing a valid (registered) userid and password (this two lines will be deleted previously to sending the poll to the satellite).

6.1 How to send a Poll

Polls should be addressed to poll@c.xantic.net or poll@c12.xantic.net for LES ID **12** and poll@c22.xantic.net for LES ID 22. The Poll command and parameters should be put in the "subject" field. The parameters are separated by a comma, colon or space. The complete syntax for the Poll command is listed in Appendix A.



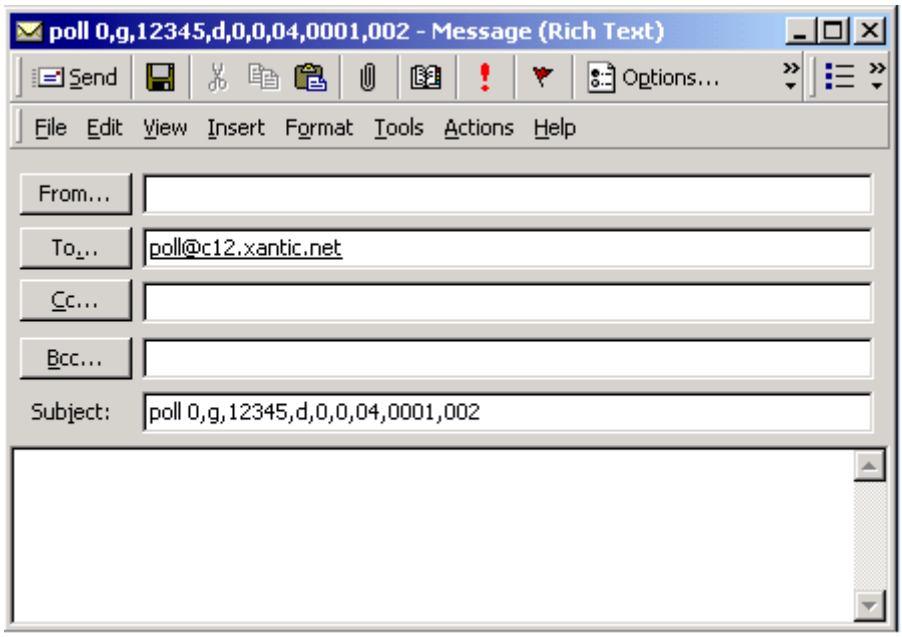
If using userid & password legitimation instead of your email address:

To: poll@c12.xantic.net
Cc:
Subject: poll 1,G,12345,D,0,0,0
---
userid:<your username>
password:<your password>

your text if poll with text

6.2 How to send a poll to program a group of terminals

The following screen dump shows a group poll. Mobiles with DNID 12345 in AOR-W are requested to send 2 data reports per day, starting at 0001 UTC. Note that to initiate the sending of these data reports, you need to send a second poll command: <poll 0,g,12345,d,0,0,05>.



7 Instructions for 2-stage access to Xantic (LES 12 and LES 22)

For sending Polls and retrieving data-reports the 2-stage access method can be used. After registration you will receive a Username and Password. For details about Poll commands see Appendix A.

In the examples below we use as username **0000username** and as password **password.**

The following instructions must be used to access Xantic LES 12 all ocean regions via the "Two Stage Access" method. They are also applicable for Xantic LES 22 from 21/22 June 2002 for the Atlantic Ocean Regions West and East (022 and 122) and from 24/25 October 2002 for the Pacific and Indian Ocean Regions (222 and 322).

The examples below show the dial-in numbers / addresses corresponding to LES 12 / access number in The Netherlands (Burum).

Very Important REMARK !
For LES 12 PSDN access number in Australia and dial-in numbers/ addresses corresponding to LES 22 please consult **Appendix B: Xantic Inmarsat-C dial-in numbers / addresses.**

7.1 Via PSDN X25 datanet:

Modem setting: 8 bits, 1 stopbit, no parity
If you want to use the X-modem protocol, type: **poll -x**, followed by the parameters. If you want to repeat a Poll, type: **poll –r <reference number>**.

Xantic	***You***	***Remarks***
	02041594044	*select datanet number Xantic (in this example for LES 12)*
Welcome to BURUM LES PSDN Services		
Please enter username:	**0000username**	
Please enter password:	**password**	
>		*after the prompt > you have access to the commands Poll and DNID*
	quit	*end the connection*

7.2 Via PSTN modem:

Modem setting: 8 bits, 1 stopbit, no parity
If you want to use the X-modem protocol, type: **poll -x**, followed by the parameters. If you want to repeat a Poll, type: **poll -r <reference number>**.

Xantic	*You*	*Remarks*
	31594249310	*select telephone number Xantic (in this example LES 12)*
Welcome to BURUM LES PSTN Services		
Please enter username:	**0000username**	
Please enter password:	**Password**	
>		*after the prompt > you have access to the commands Poll and DNID*
	Quit	*end the connection*

7.3 Via telex:

Xantic	*You*	*Remarks*
	04473100+	*select telex number Xantic (in this example for LES 12)*
73100 busc nl	**your answerback**	
Burum land earth station 21-aug 2001 08:10		
Enter user ID and PIN:	**0000username password**	
Cmd:		*after **cmd** you have access to the commands Poll and DNID*
	Exit	*end the connection*

7.4 Via TCP/IP

Access to Inmarsat-C via the Internet

Access to the Internet is accomplished by having a connection via an Internet Service Provider available at your premises. This can be a dial-up Internet account or a permanent office LAN connection to the Internet. Once having access to the Internet, you call the Land Earth Station (LES), and when the call is accepted, you have access to the Poll and DNID commands.

Telnet Access

Telnet access to the T&T Inmarsat-C is currently available in an *unencrypted* mode. An *encrypted* mode is proposed for the future. The unencrypted mode means that all data, including PIN numbers and passwords are not secured nor authenticated.

The Xantic TCP/IP access addresses for LES 12 and LES 22 are provided in Appendix B.

After telneting to one of Xantic IP addresses, you will be presented with the Inmarsat-C 'Please enter username:' prompt. **From this stage the system works just like the normal PSDN (X.25) or PSTN access**.

7.5 How to send a poll using Two-Stage access

Type **poll <parameters>**
e.g. **poll 1,g,12345,d,0,0,0**
To finish, type: **.s** (pstn and psdn only) or **nnnn** (telex)
to end the connection use **quit** (PSDN/PSTN) or **exit** (telex)

7.6 How to retrieve data reports using Two-Stage access

Type **DNID-number,ocean region number** (AOR-W=0, AOR-E=1 IOR=3 POR=2)
e.g. to retrieve reports from DNID 12345 in the IOR type **DNID,12345,3**
to end the connection use **quit** (PSDN/PSTN) or **exit** (telex)

APPENDIX A - Poll parameters

The Poll command syntax is:
POLL<ocean><P1><P2><P3><P4><P5><P6><P7><P8><P9><P10>

Separation of the Poll parameters on the command line can be done by comma, colon or space. Below you find an explanation of all Poll parameters.

Only the necessary parameters have to be entered.

All Poll commands contain a Data Network ID (DNID). The DNID has to be downloaded to individual C-terminals before Polling can be utilised.

Code	Significance	Description
<ocean>	The ocean region	0 = AOR-W; 1 = AOR-E 2 = POR 3 = IOR
P1	Poll type	g = group poll i = individual poll
P2	DNID	up to 5 digits
P3	Response type	d = data report m = message channel n = no response
P4	Sub-address	0 – 255
P5	Address	for a group poll: 0; for an individual poll: the mobile's Inmarsat-C ID number
P6	Command type	00 = send unreserved report as required 04 = program unreserved data reporting 05 = initiate unreserved data reporting 06 = stop unreserved data reserving 09 = data transmission
P7	Member number used in download DNID poll command	1 - 255 (1 = default)
P8	start frame	4 digits (0001 – 9999) start frame number to program regular unreserved data reporting. (0 = default)
P9	number of reports per 24 hours	3 digit number which indicated the number of data reports to be sent over 24 hours period (maximum 500)
P10	Acknowledgement	0 - 1 (0 = default / no acknowledgement)

APPENDIX B – Dial-in numbers / addresses

Xantic INMARSAT-C terrestrial access dial-in numbers for both LES Ids 12 and 22

Access mode	Access number in	Dial in numbers for LES 12 T&T platform	Dial in numbers for LES 22 T&T platform From 21/6/02
PSDN (X25)	Netherlands	02041594044	None
	Australia	0505293150012 (b)	0505293050022
PSTN	Netherlands	*ISDN /Asynchronous* Domestic Netherlands: 0594 249 310 International: + 31 594 249 310	None
	Australia	None	ISDN / Asynchronous Domestic Australia: 08 9302 6344 International +61 8 9302 6344
Two Stage Access Telex	Netherlands	Domestic NL: 73100 International +4473100	None
	Australia	None	(c) Domestic Australia: 105050 International: +71105050
One stage Telex	Netherlands & Australia	Nr. Region + InmC ID AORW: 5844xxxxxxxx AORE: 5814xxxxxxxx POR: 5824xxxxxxxx IOR: 5834xxxxxxxx	AORW: 5844xxxxxxxx (d) AORE: 5814xxxxxxxx (d) POR: 5824xxxxxxxx IOR: 5834xxxxxxxx
Internet TCP/ IP Unencrypted	Australia & Netherlands	203.38.76.152	203.38.76.154 (a)
Internet E-mail	Normal messages	4xxxxxxxx@c.xantic.net	4xxxxxxxx@c.xantic.net
	Polls	poll@c12.xantic.net	poll@c22.xantic.net (e)
	EGC (FleetNET, SafetyNET)	egc@c12.xantic.net	egc@c22.xantic.net (e)

(a) Available from 21 June 2002 for the Atlantic Ocean Regions East and West and from 24 October 2002 for IOR and POR.

(b) Asia-Pacific PSDN (X25) access to LES id 12 planned to be ready on 21st June 2002

(c) Available 21st June 2002.

(d) During 21/6 until 25/10, messages sent to the Atlantic Regions will not be redirected to the IOR/POR in case the terminal is not in the Atlantic regions; the sender will receive a negative delivery notification; in this case re-send your message to the IOR/POR. Same remark applies in the reverse case. Users are advised to send the messages to the right Ocean Region to minimize inconveniences. From 25/10 we will offer automatic global location (e.g. if message sent to the AORE and vessel not there, our systems will locate it and send the message to the correct ocean regions).

(e) Not available yet. Planned to be ready in November / December 2002.

APPENDIX C – Glossary

++++	Used in telex: End of transmission signal.
AAB	Automatic Answer Back, see answer back.
ABS	Absent. Used in telex communications to indicate that the mobile station is logged out or not present in the area of which the telex number has been chosen.
answerback	Station identification, mainly used in telex to identify the party on the line.
AOR-E	Atlantic Ocean Region-East: Area served by the satellite above the eastern part of the Atlantic Ocean.
AOR-W	Atlantic Ocean Region-West: Area served by the satellite above the western part of the Atlantic Ocean.
ASCII	American Standard of Coded Information Interchange.
bit	Binary digit, element of the binary numbering system.
BPS	Bits per second.
bt or BT	Begin text, indicates that at that position the text of a message starts.
byte	Group of bits (mostly 8) designating a character.
C-email	Name to Xantic's C-email gateway service, connecting the Inmarsat-C network to the Internet (formerly called Sat400).
CES	Coast Earth Station, also called LES or Land Earth Station for land mobile use.
CI	Conversation impossible.
cmd or CMD	Command.
Compander	Compression-Expander, system to reduce noise in an Inmarsat-A voice channel(not used for Inmarsat-C)
DNIC	Data Network Identification Code.
DNID	Data Network IDentification.
EGC	Enhanced Group Call
ENID	Enhanced Network IDentity. Identification for groups of mobiles, enabling them to receive EGC messages.
EOM-signal	End Of Message signal as used in telex communications (NNNN).
EOT-signal	End Of Transmission signal as used in telex communications (++++).
FleetNET	One of the EGC services of Inmarsat-C, used to send selective broadcast-messages to groups of mobiles.
ga or GA	Go Ahead: you may transmit.
GMDSS	Global Maritime Distress and Safety System. Inmarsat-C is one of the communication systems supporting GMDSS.
GPS	Global Positioning System. Navigation system based on satellite technology.
HEX	Hexadecimal.
ID	Identification.
IOR	Area served by the satellite above the Indian Ocean.
itd	Input transaction accepted for delivery.
itr	Input transaction rejected.
LES	Land Earth Station, also called Coast Earth Station (CES) Maritime.

lf or LF	Line feed.
MES	Mobile Earth Station, mobile terminal for land use.
Modem	Modulator DEmodulator, used to transmit and receive digital signals via analogue telephone lines.
MSG	Message.
NA	Not Admitted. (In Inmarsat C telex communications to indicate that the mobile station is excluded from all traffic).
NDN	Non Delivery Notification.
NNNN	Used in telex: End of message signal.
NP	No Party. Used in telex communications to indicate that the mobile station is unknown or not yet commissioned.
NUA (X.25)	Network User Address.
PC	Personal Computer.
PDN	Positive Delivery Notification.
PIN	Personal Identification Number (used for security).
Poll	A short message transmitted to one or more mobiles to generate an action by the mobile(s). This may be used to program a mobile terminal or to initiate a data report.
POR	Area served by the satellite above the Pacific Ocean.
PSDN	Public Switched Data Network.
PSTN	Public Switched Telephone Network.
PTN	Public Telex Network.
rej	Rejected.
SAC	Special Access Code: short code replacing a terrestrial address
SafetyNET	One of the Inmarsat-C Enhanced Group Call services, used for the distribution of maritime safety information.
Sat400	Former name to Xantic's C-email gateway service, connecting the Inmarsat-C network to the Internet.
SAT.PC	Xantic's user friendly PC software package for the office and at home.
SES	Ship Earth Station, mobile terminal for maritime use.
store-and-forward	Messages are temporarily stored for later transmission, opposed to real time or "on-line" communications.
STX	Start of Text.
STX-character	Start of Text indicator.
Tcp / IP	Abbreviation for **Transmission Control Protocl / Internet Protocol.** Two interrelated protocols that are part of the Internet protocol suite. TCP operates on the OSI transport layer and breaks data into packets. IP operates on the OSI network layer and routes packets..
Telnet	The TCP/IP standard network virtual that is used for remote terminal connection service and that allows a user at one site to interact with systems at other sites as if that user terminal were directly connected to computers at those sites.
WRU	Used in telex: Who are you.
X-modem protocol	Transmission protocol for file transfer via PSTN with automatic error detection and correction.
X.25	Access protocol for a packet switched data network.