



User manual

[What Is the Vessel Monitoring System](#)
[Hardware and Software Requirements](#)
[User Interface](#)
[Initial Entry](#)
[How to Begin](#)
[Main Menu](#)
[Active Control of Vessels](#)
[Polling](#)
[Working with E-mail](#)
[Special Technical Functions](#)
[Implementation of Features for Lite Version *Victoria-Text*](#)
[Additional Features of the Advanced Version *Victoria-Technics*](#)

What Is the Vessel Monitoring System

The Vessel Monitoring System (VMS) *Victoria* is intended for real-time vessel monitoring and *Inmarsat-C* communications via satellites e-mail. The system provides archiving the collected routing data of vessels to analyze them.

VMS *Victoria* is available online in the Internet. A friendly user interface with data mapping makes an education cycle very short because it applies a standard browser like *Microsoft Internet Explorer* или *Netscape Communicator*. Three powerful servers are connected to the fast Internet line that provides the capability to serve few hundred users simultaneously.

VMS *Victoria* employs three advanced technologies:

- satellite positioning GPS,
- satellite communications *Inmarsat-C*,
- Internet.

Hardware and Software Requirements

A standard work place is a computer connected to the Internet either with a dedicated line or dialup connection. The browser *Internet Explorer* or *Netscape Communicator* version 4.0 or later is required.

If you use the old browser of the version 3.0 then the system suggests you to update the browser with downloading the last free version.

Using a map user interface you have to download the additional client software *Autodesk Mapguide Viewer*. The downloading session is a one time procedure made only once for the first entry. It takes few minutes. Other entries from the same computer use the downloaded viewer.

If you use [Netscape Communicator 4.0+](#), download [Viewer \(plug-in\)](#) . Then start *mapguide_plugin.exe*. After the self-extraction of files start *setup.exe* in the directory created.

If you use [Internet Explorer 4.0+](#), download [Active-X component](#). Then start *activex.exe*. After the self-extraction of files start *setup.exe* in the directory created.

Notice that the Active-X component downloading is initiated automatically with the first entry to the map interface if your Internet Explorer setup is default.

User Interface

1. Standard Graphics User Interface of the *Victoria-Standard*

It allows you to employ all main features which are implemented in the system. It required either a dedicated line or dialup access to the Internet with throughput of at least 19200bps. If the throughput is lower or the line is noisy then downloading maps of 100 to 150Kb takes too much time to be comfortable. The *Victoria-Text* version is recommended for use in the case.

2. Text User Interface in the lite version *Victoria-Text*

It cuts the required Internet traffic to the minimum level because data are not represented on a map. The text interface is recommended for poor Internet connection.

3. Advanced Technical Graphics User Interface of the *Victoria-Technics*

It requires technical knowledge on how a mobile Inmarsat-C unit works. However it pays back you with an extended set of operations to program mobile units and optimize polling. It allows you to poll in a circle, rectangle etc area. Telemetry is supported that provides the opportunity to collect data from different devices and sensors onboard a vessel.

Initial Entry

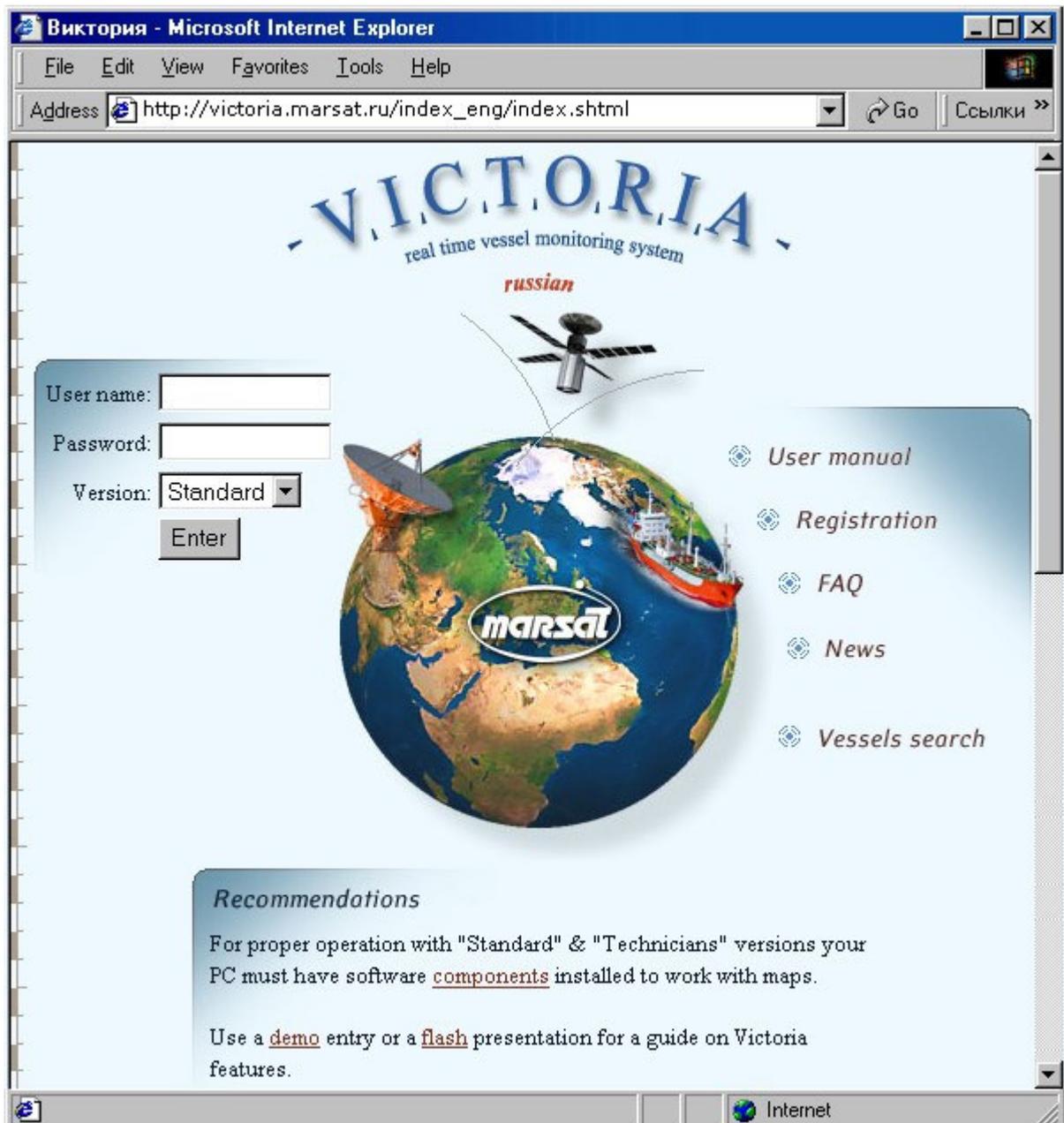
Enter the website *victoria.marsat.ru* using a browser. If you are going to use a graphics user interface with maps then first download *Autodesk MapGuide Viewer*.

If you use *Internet Explorer* with default settings then you computer download and install the viewer automatically. If your browser is *Netscape Communicator* then download the viewer from the website www.mapguide.com , unzip it and start *setup.exe* to install the required plugin.

You may check if vessels of your interest are included in the system database. To perform the check use the button *Seach Vessels* at the home page.

How to Begin

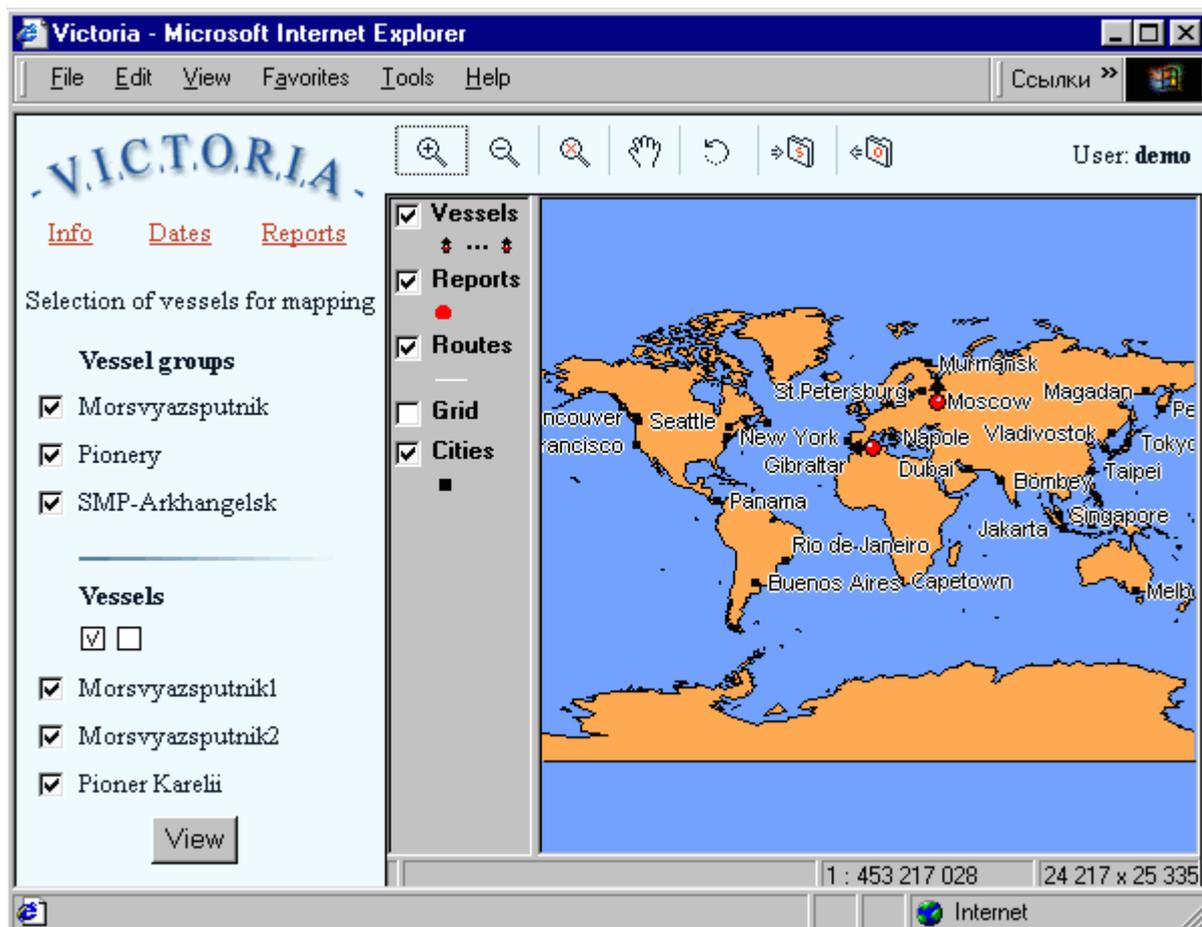
Enter the Internet with a browser and type the website name *victoria.marsat.ru*. Then you see the *Victoria* home page. There are few versions to select on the page. A demo version does not need in a password. To use other three versions *Text*, *Standard*, or *Technics* you have to login with a password assigned in a registration. The registration provides you with access rights to specific vessels and features of the system. Select the version and press the button *Enter*.



The following text below describes how to work with the *Standard* version. Differences of alternative versions are described at the end of the manual.

Main Menu

After the login and version selection are made you receive a world map on the screen. There is a list of vessels which you are authorized to monitor at the left side of the screen.



Checkboxes for groups and vessels are intended for selection of those you would like to view on the map. The checked square button marks all the checkboxes, the empty box button cancels the selection.

Press the button *View* to put the selected vessels on the map. All vessels are represented with red circles which are placed at points where last data reports with latitude and longitudes were received. The black arrow is directed according to the course.

Further control is assisted with:

seven positions of the picture menu located on the top of the map,
three positions *Info*, *Dates*, and *Reports* at the top of the vessel list,
pulldown menu of the right mouse button.

The five left buttons of the picture menu control the map representation.



The features are:

zoom in and window selection,
zoom out,
back to the world map,
move the window,

refresh the map on request. The system does the refreshing operation every ten minutes and updates vessel positions on the map automatically if new data are received. Mandatory data reports for all vessels in the system are sent usually twice a day. The system provides an opportunity to poll selected vessels and update position data with the shorter period up to ten minutes.

The left field of the map shows a legend for map layers. The layers look like transparent sheets with different data on them. The layers can be either visible or invisible.

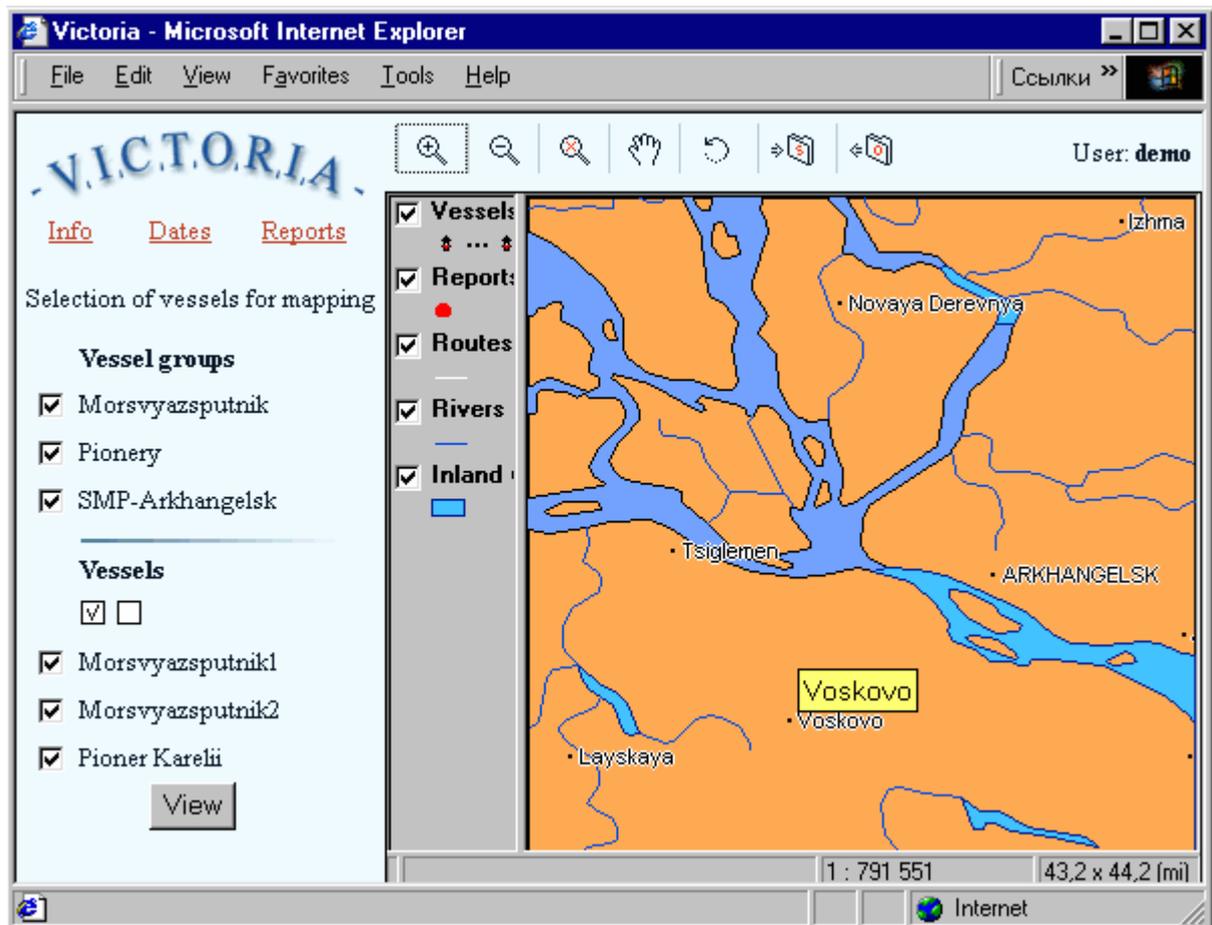


The layer with a checked box is visible on the map. The example is the layer called *Vessels*. On the contrary, the layer *Grid* is invisible until the box is checked. Vice versa, you have to empty the checkbox to make the layer invisible. It is a useful operation particularly for the layer *Routes* since a white line of the route can be redundant if rivers are only ways for the vessel of interest. When a map scale changes then a set of layers changes sometimes. If you zoom in far enough then additional layers like *Inland waters* appear on the map, and the layer *Grid* becomes visible by default.

Major layers:

- Vessels* provides positions of vessels of interest,
- Waypoints* consists of positions where data reports were sent from the vessels,
- Routes* is connection of the waypoints with white lines to highlight temporal succession of the data reports,
- Cities* shows positions of populated places with names,
- Grid* makes the screen looking like a regular paper map with latitudes and longitudes.

The world map is generalized. However the greater a scale the better a basemap. While you zoom in then the portion of the detailed map is loaded to your computer if the scale threshold of the map representation is crossed. The most detailed map of the world coastline is of the scale of 1:1,000,000. If it is loaded then the layers *Inland waters* and *Rivers* are invisible by default since they implies heavy Internet traffic if requested.



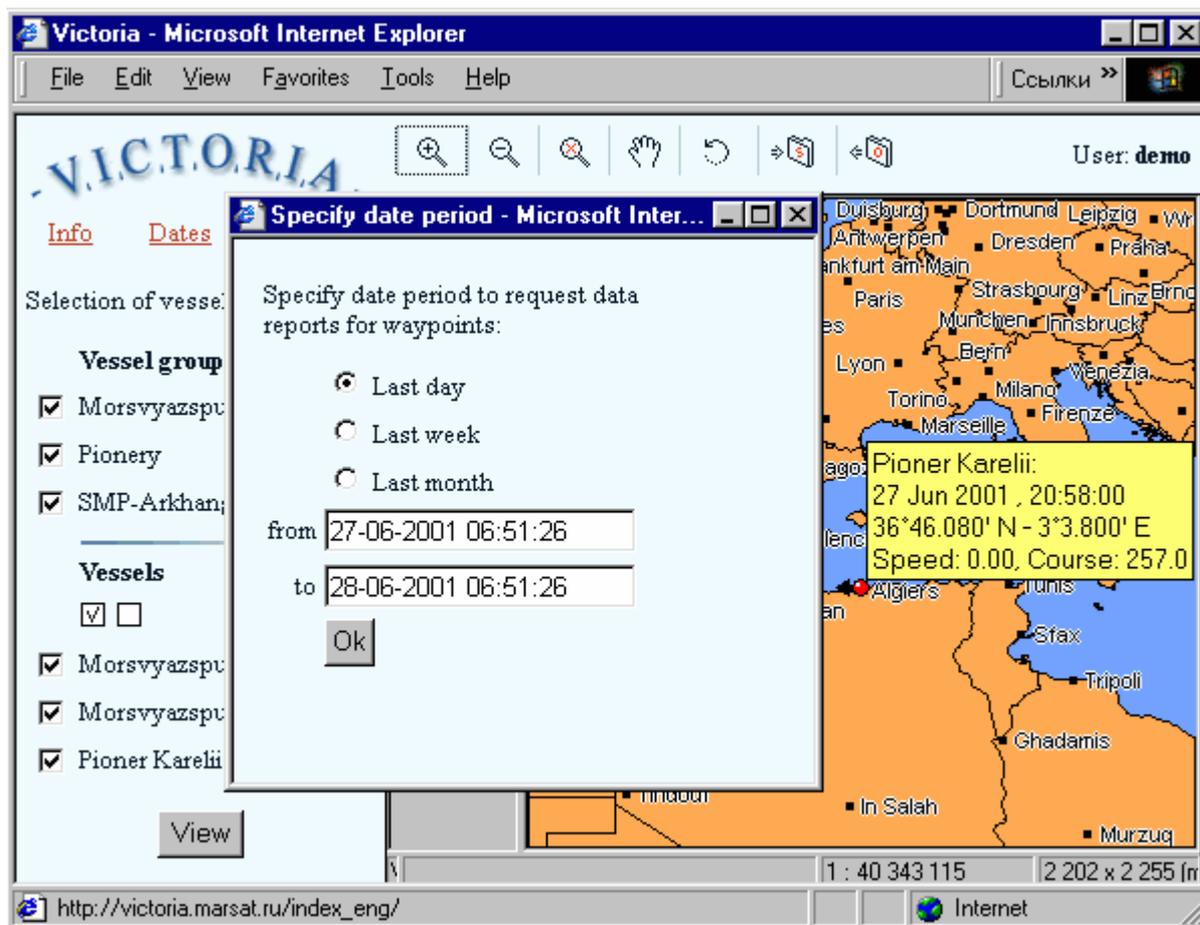
New child windows are created if you select buttons below the title:



- Info** provides information about selected vessels from a database,
- Dates** allows to specify a period to show routes and data reports in all requests that follow the date input,
- Reports** produces a table with data reports within the period specified.

The child windows consist of text information.

The period is of one day by default. There is a simple choice to specify either the last week or the last month. The most flexible way is provided with setting dates in two white rectangles where you may enter an initial date and an final date of the period of interest. A date format is presented in the example below:



You may specify any period including historical that is the final date is not necessary means today. Then data reports and messages of the period are available for analysis from the database. The final date can be a date in a future. If you enter the present date then you have to update it for new portion of data very soon. It is recommended to set the last day of the year as the final date of the period that is in the future. The shorter period the faster data loading through the Internet.

The text window can be exported from the system. It is easy to save data as a *dbf*-file or *csv*-file in your computer for further processing with *Excel* or another software.

Victoria - Microsoft Internet Explorer

File Edit View Favorites Tools Help Ссылки

Victoria

Info Dates Reports

Reports - Microsoft Internet Explorer

Export format CSV DBF

«Pioner Karelii»

Date	Latitude	Longitude	Course	Speed
27 Jun 2001 , 20:58:00	36°46.080' N	3°3.800' E	257.0	0.00
27 Jun 2001 , 08:58:00	36°46.080' N	3°3.800' E	257.0	0.00
26 Jun 2001 , 20:58:00	36°46.080' N	3°3.800' E	257.0	0.00
25 Jun 2001 , 20:58:00	36°46.080' N	3°3.800' E	257.0	0.00
25 Jun 2001 , 08:58:00	36°46.080' N	3°3.800' E	284.0	0.00
24 Jun 2001 , 20:58:00	36°46.080' N	3°3.800' E	284.0	0.00
23 Jun 2001 , 20:58:00	36°46.080' N	3°3.800' E	284.0	0.00

Pioner Karelii:
27 Jun 2001 , 20:58:00
36°46.080' N - 3°3.800' E
Speed: 0.00, Course: 257.0

http://victoria.marsat.ru/index_eng/

To select a vessel you have to click the left mouse button near the vessel position on the map. A request for the info or reports is related to the selected vessels only. However if there is no vessels selected in the session then the request is made for all vessels you are authorized to monitor.

Specifying a scale and a period you receive a map of your vessels with routes for the period from the system. The routes are shown as white broken lines with segments between red dots of data reports. The less time between consecutive data reports the better approximation of the real route with the broken line. On the contrary, if data reports are received just once a day then the broken line might cross the land on the map. It is common for rivers. Then it is more convenient to make the layer *Routes* invisible if you monitor river vessels.

Vessels

Reports

Routes

Grid

Cities

Rivers

Pioner Karelii
39°0.400' N - 0°6.520' W
19 Jun 2001 , 08:58:00

If a cursor is near an object then a yellow rectangle with information on the object appears. The object means either a symbol of a vessel position, or a line of a route, or a red dot of a data report. The information is either a vessel name, or time, etc.

Sometimes it is useful to save a map and data as a whole like a bookmark. It provides you an opportunity to retrieve the information when a new session starts. Two buttons of the picture menu allow you to save and retrieve a configuration:



Retrieve configuration that is saved for last time when the button *Save configuration* is pressed,

Save configuration that consists of information about a map scale, borders of the map, a list of selected vessels, and a specified period.

If the configuration is saved then it is easy to get the same picture on the screen as at the moment when the button *Save configuration* has been pressed for the last time. The configuration is saved in your computer. Press the button *Retrieve configuration* and get the last configuration on the screen without extra operations.

Active Control of Vessels

The following consecutive operations are typical for VMS *Victoria*:

1. A user registers a vessel with the VMS *Victoria* provided the vessel is equipped with an *Inmarsat-C* mobile unit.
2. Staff of the Monitoring Centre registers the mobile unit for use with the LES *Eik* in Norway.
3. The LES initializes the mobile unit via satellite communications for the service and makes remote programming of the unit with a Data network id (DNID).
4. Staff of the Monitoring Centre makes remote programming of the mobile unit with the DNID to receive regular data reports automatically with the period adapted to requirements of the present national regulations. For example, it might be twice a day. The data report consists of time, latitude, longitude, speed and course.
5. The mobile unit transmits data reports automatically twice a day to the LES, the LES delivers the data to servers of the VMS *Victoria* via the Internet.
6. VMS *Victoria* receives the data reports, puts them in a database, and provides mapping.
7. A user enters the VMS *Victoria* via the Internet with a personal login and password. Using an Internet browser the user can monitor vessels which he is authorized to work with.

An *Inmarsat-C* mobile unit can be included in few groups provided few DNID's are registered. When the additional DNID's are employed you can poll your vessels any time you want. The poll provides updated information on positions of the vessels. The VMS *Victoria* allows to make easier e-mail exchange with vessels. The first registered DNID is usually intended for

mandatory data reports according to national regulations. Optimal division of the fleet onto groups minimizes communication charges since an individual poll is just twice cheaper than a group poll which can serve up to 255 vessels simultaneously.

To provide a user with a capability to poll vessels the Monitoring Centre staff follows the guideline:

User provides a fleet name.

User divides the fleet onto groups (optional).

Staff of the Monitoring Centre assigns a DNID to the fleet.

Staff of the Monitoring Centre assigns an individual DNID to each group (optional).

Registering a single group you get an opportunity to poll the whole fleet and individual vessels. If few groups are registered then you benefit of flexible polls of separate groups. Any period of automatic data reports can be set by yourself. Since DNID's are different the programming does not influence the mandatory data reporting.

Either a single vessel, or a selected group of vessels, or the whole fleet can be mapped on the display. To select a vessel for further requests you have to click the left mouse button when a cursor is near the symbol of the vessel. Few vessels can be selected with click and drag.

If the right mouse button pressed then the following pulldown menu appears:



You may specify one of the following operations:

- Polling
- Group polling
- Send message
- Read messages
- Group call
- Other functions

If the position *Other functions* is selected then a list of special functions is proposed for further operations:

Distance
Print
Copy
Scale
Bookmark
Select
View

The special functions add convenient features for an active user but not necessary for regular operations.

Polling

1. *Polling* is a procedure to request information on position, speed and course from a mobile unit. The *Poll* command allows you:

Poll a vessel.

Program an *Inmarsat-C* mobile unit for regular unreserved data reporting, a period between data reports, and an initial moment for the first report.

Stop regular unreserved data reporting.

The window *Poll* shows a selected vessel with a mobile unit onboard. Select an option *once* if you need just a single poll. If you select regular data reporting then few parameters should be specified. There is an opportunity to send a brief text message within the poll command, for example, *You will be met by captain Smith*. A white field is dedicated for the text. To send the request press the button *Send*.

Select vessels for polling - Microsoft Internet Explorer

Back Forward Stop Refresh Home Search Favorites History Mail

VICTORIA

Poll: Once

Unreserved data reporting every starting at

Commands:

Program unreserved data reporting (command type 04)

Initiate unreserved data reporting (command type 05)

Stop unreserved data reporting

Message text:

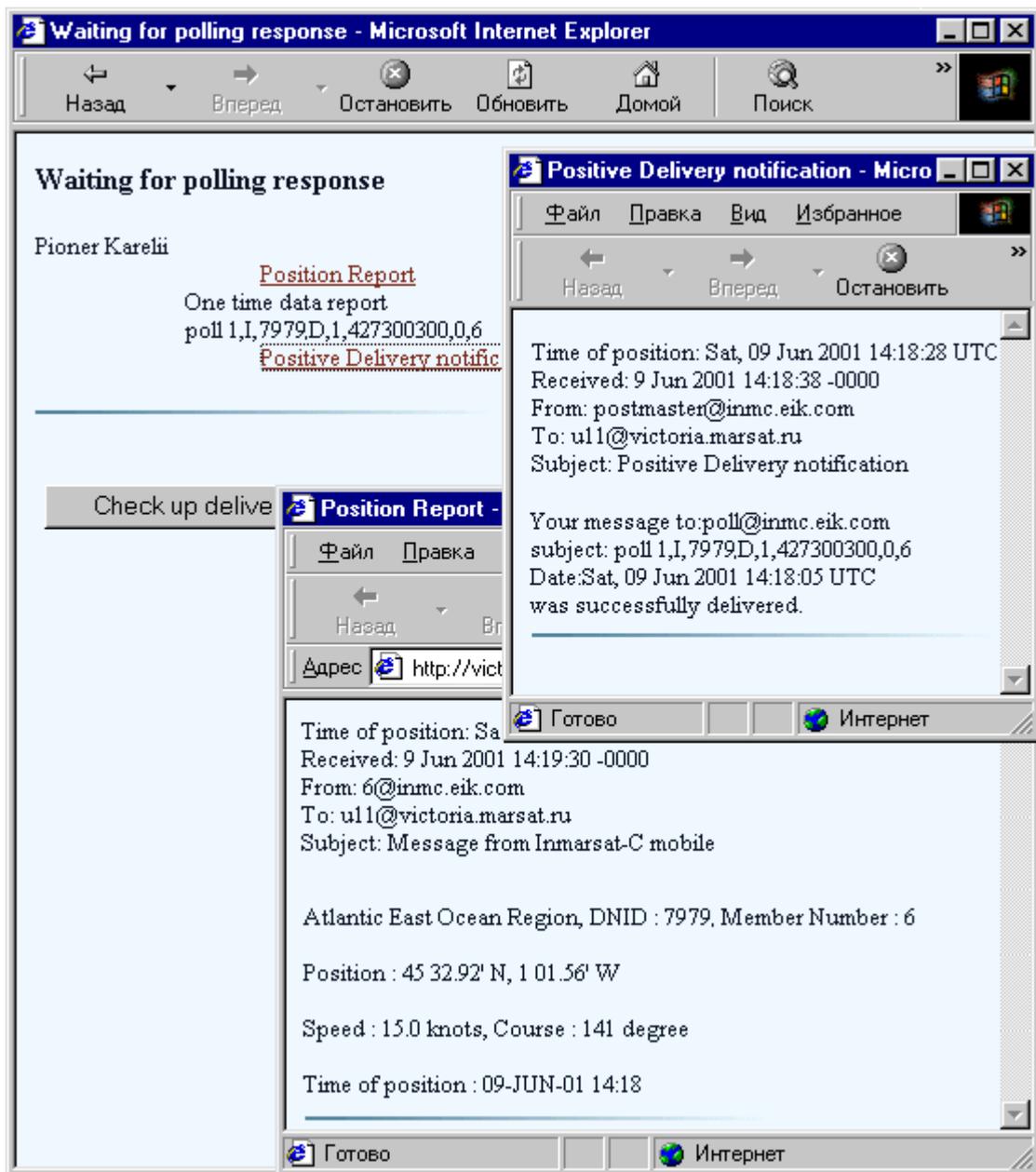
 If mobile unit is not registered for ocean region then it is not shown in the list for poll!

«Pioner Karelii»

Date of last data report: 27 Jun 2001 , 20:58:00

Group		Ocean
Pionery	<input type="checkbox"/>	Atlantic Ocean east
SMP-Arkhangelsk	<input checked="" type="checkbox"/>	Atlantic Ocean east

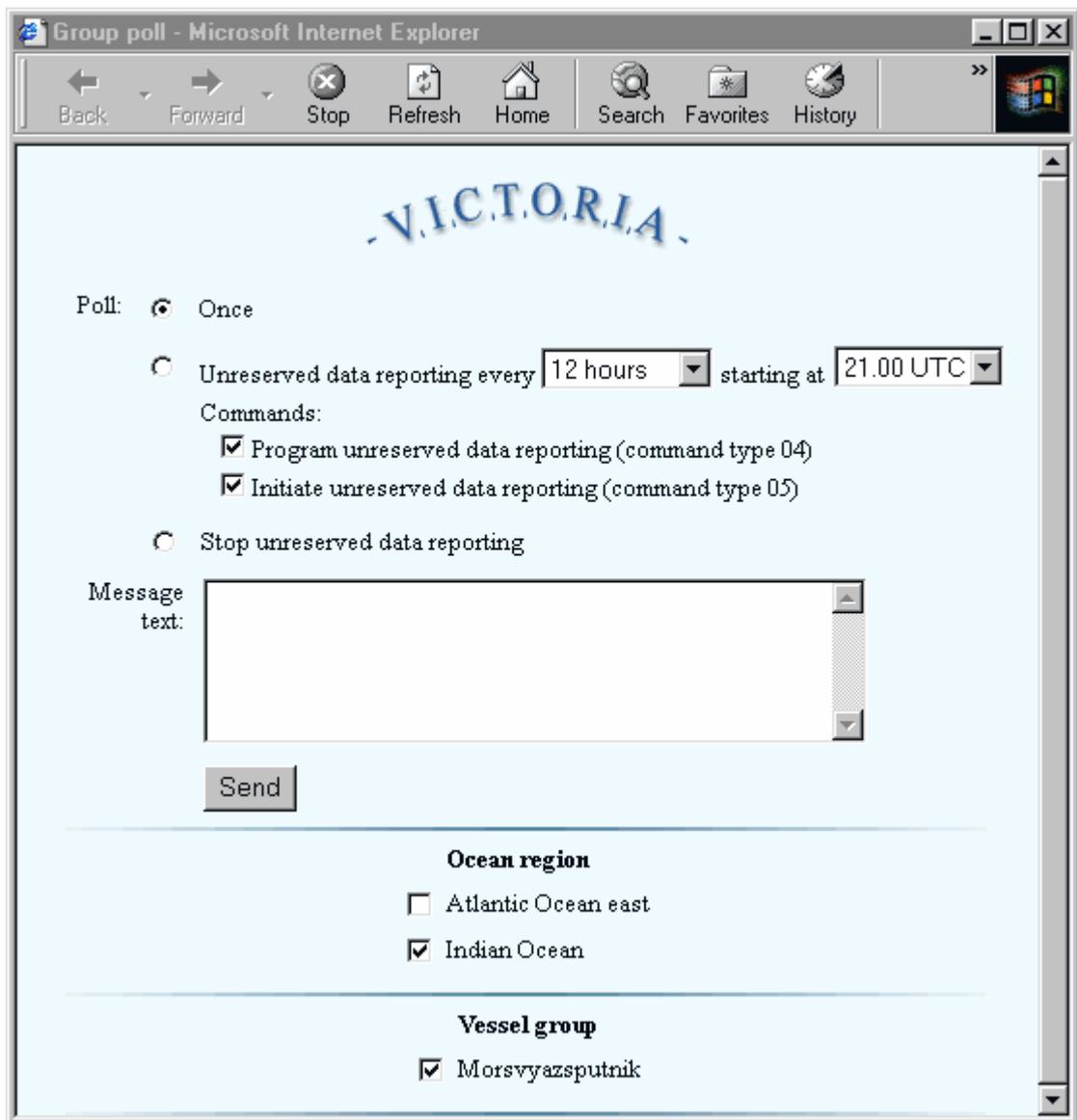
The request goes through the chain of communications *User - Monitoring Centre server - Internet - LES - Vessel mobile unit - Reply of the unit - LES - Internet - Monitoring Centre server - The User*. You can look at how the request goes through the chain using a special window that is shown below. Press the button *Check delivery* to update the information.



The following messages *Data report not received* or *Positive Delivery Notification not received* are shown until the proper message is received. After the Positive Delivery Notification or Data Report is received you can read the message in a separate window clicking the underlined message type requested.

2. Group poll

There is another economical way to send a poll command to a group of vessels. The group poll provides the opportunity to do it. The option *Group Poll* is in a pulldown menu of the right mouse button.

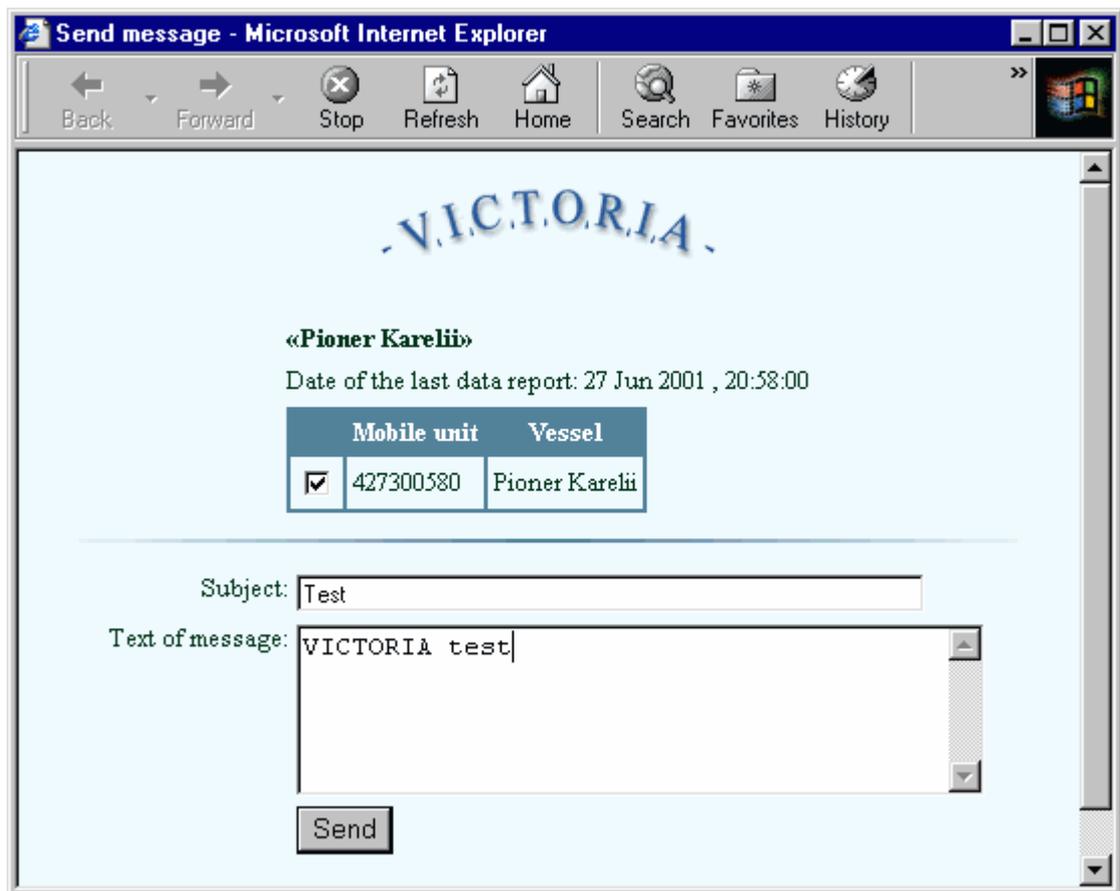


You can poll or program for regular data reporting all vessel of a group with a single operation. The group is associated with a Data network id (DNID) which is downloaded once to individual vessels before polling can be used. The group or DNID is made according to your request by the Monitoring Centre after your registration. The group can include the whole fleet or its portion, they can be many. The poll window allows you to select the group that provides the best communication and minimizes total communication charges.

E-mail

Send message

You can use *Victoria* to send and receive e-mail messages to and from vessels. The special window *Send message* assists you to make it as easy as possible. Just select a vessel, specify the option *Send message* in the pulldown menu and type you message in a white rectangle. Then press the button *Send* to complete the operation:



Read message

Choosing the option you get an access to all messages from vessels and the LES which are located in the system database. The messages are divided into sections. Regular text messages from vessels can be found under the head *Non-classified Messages*. To get a list of messages in a section, you have to double click the section title in the left frame of the window. To read an individual message, double click the message title in the upper frame of the window. The text is immediately shown in the down right frame. The example is represented below.

E-mail messages - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Position Report (Messages: 52)

Subject	From:	To:	Sent:	Received:
Message from Inmarsat-C mobile	6@inmc.eik.com	u11@victoria.marsat.ru	2001-06-27 21:01:46	2001-06-27 21:03:54
Message from Inmarsat-C mobile	6@inmc.eik.com	u11@victoria.marsat.ru	2001-06-27 09:00:14	2001-06-27 10:25:22

Message types

- [Acknowledgement](#)
- [LES-Operator](#)
- [Message for Forwarding](#)
- [NAFO report](#)
- [Negative Delivery notification](#)
- [Negative Delivery notification - group](#)
- [Other Messages](#)
- [Position Report](#)
- [Positive Delivery notification](#)
- [Positive Delivery notification - group](#)
- [Telemetry](#)

Time of position: Wed, 27 Jun 2001 21:01:46 UTC
 Received: 27 Jun 2001 21:03:54 -0000
 From: 30@inmc.eik.com
 To: u11@victoria.marsat.ru
 Subject: Message from Inmarsat-C mobile

Atlantic East Ocean Region, DNID : 7979, Member Number : 6

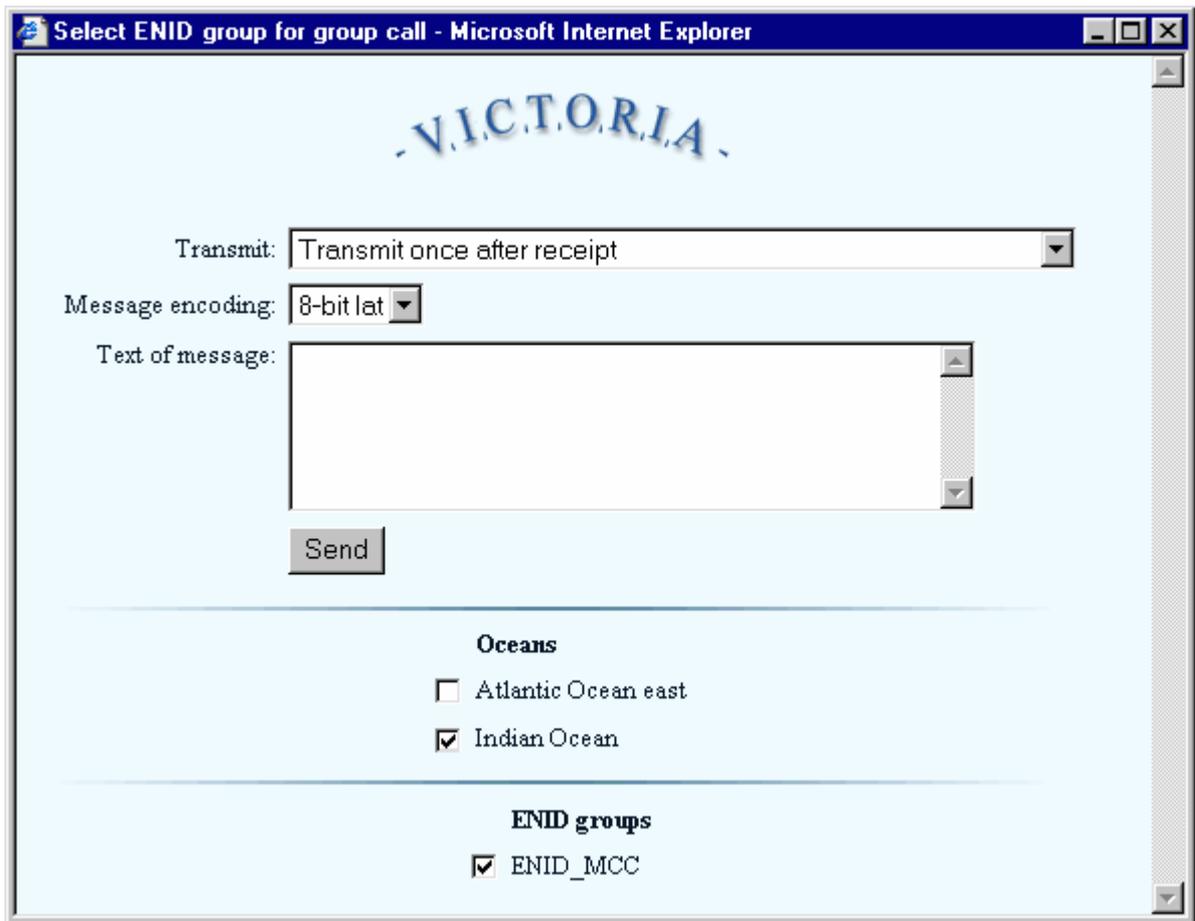
Position : 36 46.08' N, 3 03.80' E

Speed : 0.0 knots, Course : 257 degree

Time of position : 27-JUN-01 20:58

Group Call

The option provides an opportunity to broadcast a common text to many vessels with repetitions. Before you have to register an EGC network id (ENID) with the Monitoring Centre. The ENID is downloaded once to individual vessels before the vessel will recognise it.



Other Functions

The functions are intended to an advanced user to save time in the intensive work. They employ built-in functions of the GIS core *Autodesk Mapguide*.

The main options are following:

Distance provides a range measurement tool.

Print allows you to print the map from the screen.

Copy copies the screen as a bitmap file.

Scale provides an opportunity to specify it by numbers but not graphically.

Bookmark provides an easy way to get selected areas on the screen.

Select is an advance tool to select vessels and other objects on the map within a circle or a polygon.

Implementation of Features for Lite Version *Victoria-Text*

If your Internet channel is slow then the *Lite* version is a proper solution since it minimizes the Internet channel load. The *Lite* version may be selected on the main page. Its interface is based on text and tables but not graphics. Therefore no need to download the *Mapguide Viewer* for mapping data.

Victoria - Microsoft Internet Explorer

File Edit View Favorites Tools Help Ссылки >>

VICTORIA [[Poll](#)] [[Group poll](#)] [[Send message](#)] [[Read message](#)] User: **demo**
[[Group call](#)]

[Info](#) [Dates](#) [Reports](#)

Selection of vessels for mapping

Polling	Mail	Vessel	Call sign	Latitude	Longitude	Last report
P	M	Morsvyazputnik1	331	55°40.600' N	37°37.440' E	29 Mar 2001 , 05:46:00
P	M	Morsvyazputnik2	248	55°40.520' N	37°37.440' E	25 May 2001 , 09:52:00
P	M	Pioner Karelii	UEIS	36°46.080' N	3°3.800' E	27 Jun 2001 , 20:58:00

Vessel groups

Morsvyazputnik
 Pionery
 SMP-Arkhangelsk

Vessels

Morsvyazputnik1
 Morsvyazputnik2
 Pioner Karelii

Internet

Many features of the *Standard* version are supported in the *Lite* version. The followings are among them:

- select vessel
- polling
- view route
- vessel info access
- read message
- send message
- group call
- specify period

You receive all the information with tables and text including a list of selected vessels in a table instead of a map. The information is identical to the *Standard* version.

Additional Features of the Advanced Version *Victoria-Technics*

The advanced interface requires technical knowledge on how a mobile *Inmarsat-C* unit works. However it pays back since the advanced features include poll optimization using an extended set of poll operations. It supports telemetry that is polling multiple devices and sensors which are connected to the mobile unit.

Group poll - Microsoft Internet Explorer

Back Forward Stop Refresh Home Search Favorites History Mail

-VICTORIA-

Poll: Once

Unreserved data reporting every starting at

Commands:

Program unreserved data reporting (command type 04)

Initiate unreserved data reporting (command type 05)

Stop unreserved data reporting

Message text:

Messages requested from mobile unit:

Data report

Acknowledgement

<input checked="" type="radio"/> Circular area poll	<input type="radio"/> Rectangle area poll	<input type="radio"/> Area poll
Central point	SW corner	Navarea
Latitude: <input type="text"/> degrees	Latitude: <input type="text"/> degrees	<input type="text"/>
Longitude: <input type="text"/> degrees	Longitude: <input type="text"/> degrees	
Distance of the center: <input type="text"/> n.m.	Height: <input type="text"/> n.m.	
	Width: <input type="text"/> n.m.	

Ocean region

Atlantic Ocean east

Indian Ocean

Vessel group

Morsvyazputnik

Sub-address:

The extended set includes:

Circular area poll,
Rectangular area poll,
Navarea poll.

You can specify a sub-address at the mobile unit which selects connected devices or sensors like a GPS device. Using the feature enter the sub-address number which is any value from 0 to 255. It corresponds to a device for the poll. The feature is especially useful for telemetry. The data can be collected from multiple devices provided each is supplied with a unique sub-address.

[Home](#) [Login](#) [User manual](#) [Registration](#) [FAQ](#) [Vessels search](#)



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