FLEET-DEQ (Monitoring Control and Rescue System)

1. Features and Capacities of the System

The System is intended for the tracking of the group of vessels, belonging to the company.

The System allows to:

- to obtain and to store communications about the position, the course, the speed of the vessel and so different texts communications - about events on the vessel, in the production activity and so on.

- to calculate the current position of the vessel on the basis from the last communication about the course and the speed.

- to enter communications about the change of the vessel's state (in sea, in repair), communications about urgencies, operator's short notes about the vessel.

- to enter and to correct information about the vessel (type, name, call sign, e-mail and so on).

- to reflect communications obtained from the vessel and the communications entered by the operators in form of table.

- to correct communications about vessel's position.

- to reflect company's group of vessels in form of table.

- to search for company's vessels, the nearest of the selection (it reveals loxodromic distance and course).

- to display past or future company's vessels moving on basis of the obtained information, during any period with a given speed.

- to reflect company's vessels position on the chart.

- to reflect company's vessels additional information (depth underneath vessel and so on) on the chart.

- to reflect time according to any time zone.

- to select individually the vessel's outline (icon) and the vessel's outline colour for chartping on the chart of each company's vessels.

- to calculate the distance and the course between two points (vessels) from the chart. (Distance calculator)

- to calculate the route of the vessel's motion from the chart (distance and course between the rotary points, the addition/removal of rotary points to any route place, the overall route length) (routes calculator).

- to note the vessels on the chart for which is entered the communication about the emergency.

- to note the fact of entry of the vessel in one of the ports (ports data base consist of more than 4000 ports).

- to search for the selected vessel on the chart, to centre the chart according to the obtained vessel.

- to reflect information to reflect the information of the noted vessel on the chart, to select the vessel on the chart.

- to reflect the chart of diverse sizes (now, are supported ARCS and BSB sizes, subsequently is planned the S-57 support).

- to add into the system new charts which interest the regions user.

If the user doesn't have the chart of any region, the so-called Synthetic chart, made on basis of the heights of the earth's surface with a step of 30 seconds, is given to the user.

DBMS (Data Base Managment System) PostgreSQL is used for storing of communication and information about the vessels, which makes possible for user to develop and to use its own programs for processing of this information.

2. System Configuration

The System is built according to the configuration of the final customer - WEB server. Any WEB - browser, which supports standards DHTML and CSS, particularly Internet Explorer 6.0, Netscape 7.0, Mozilla working under the control of the operating systems Linux and Windows, can appear as a client. The System does not require the installation of any specialized programs at the customer work sites. Work sites can be territorially spread; it is also possible to work with the system through the global Internet network. Server - computer is under the control of the operating system Linux. In case of obtaining communications about the vessel's position by e-mail, the server must have capabilities for the connection to the Internet network for obtaining the mail communication. Client place can work under OC Windows control (the most common OC at the given moment) and under the OC Linux control. The customer system, who works under the OC Linux control, is reliably protected from the virus attacks and the attempts of the unsanctioned access.

3. System Users

The System users are divided into the classes according to the right of access to the system. The system administrator assigns one or several roles for each user, on basis of which he can carry out in the system these or other actions.

Typical roles:

- The system administrator - can add new users into the system, change the roles of the existing users and modify their passwords.

- The data administrator - can change data of vessels, vessel's positions in the communications.

- The privileged user - can display data of vessels positions during previous periods.

- The simple user - can just consult the position of vessels.

The roles quantity and the users rights in each role can be invidually disposed for the concrete system installation. Besides roles, the groups can also be determinate for the users. The user can just manage the vessels of his group.

4. Reception of communications about the vessel position

The System can receive communication about the vessel position using electronic mail (the protocol - SMTP). For that, the user will find a mailbox in the server of the system, into which must come the communications from company's vessels. The work is also possible when communications enter into another (external) mailbox). The System can ask periodically this mailbox (by the protocol POP3) and take communications about position away from there. The regime of taking communications without their removal from the mailbox is also possible; it allows using this system with another monitoring system. The sources of communications - air terminals Inmarsat C, AIS (in that case this one requires the installation of the sub-system of transfer of communications AIS) or formatted e-mail communications. In the future, the reception of communications will also be possible from other sources - SMS, air terminals Thuraya, COM port in NMEA format and so on.

5. Work with the system

The system customer place is represented by the browser window, which is divided in following regions - chart space and information window. The information window has a variable size (it changes by the manager buttons or by the mouse). So, it is possible to reduce the information window (turned into an icon) and to increase the chart space. The system menu is present in the information window, it consists of following points:

- Hide - reduce the information window.
- Chart - menu of the chart administration (zoom, scale selection, shift of chart centre).
- Vessel - information about the selected vessel (vessel selection, search on the chart, window for entering communications about the vessels state, display of communications from the vessel, change vessel and outline description on the chart, change position's data in the communications).
- Group - information about all company's vessels. Search of the nearest vessels to the selection.
- Play - the display of the information about the vessels position.
- Options - options of chart mapping and the selection of the time zone (chart pallet, type of chart - Synthetic or Navigation, the parameters of objects and inscriptions mapping on the Synthetic chart, the parameters of vessels mapping).

On the chart, there is:
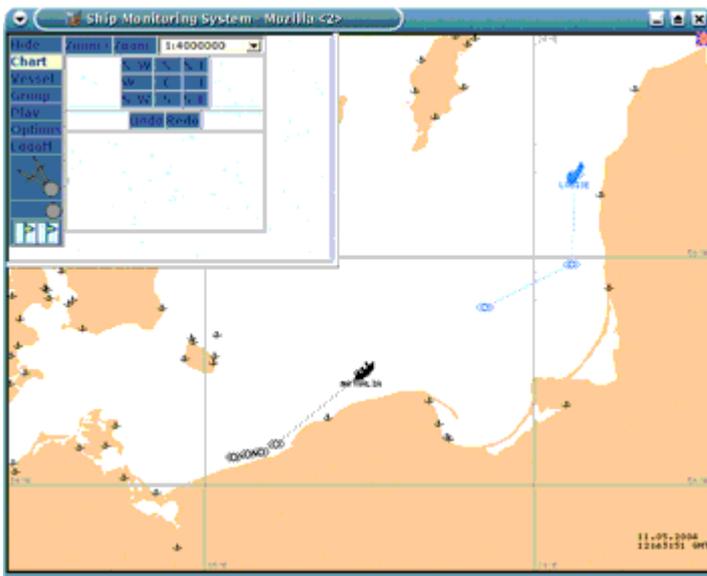
Current position indicator

Vessels symbols

Date and time

The selected vessel is noted as

With the scale change, the vessels symbols change too and new elements appear.
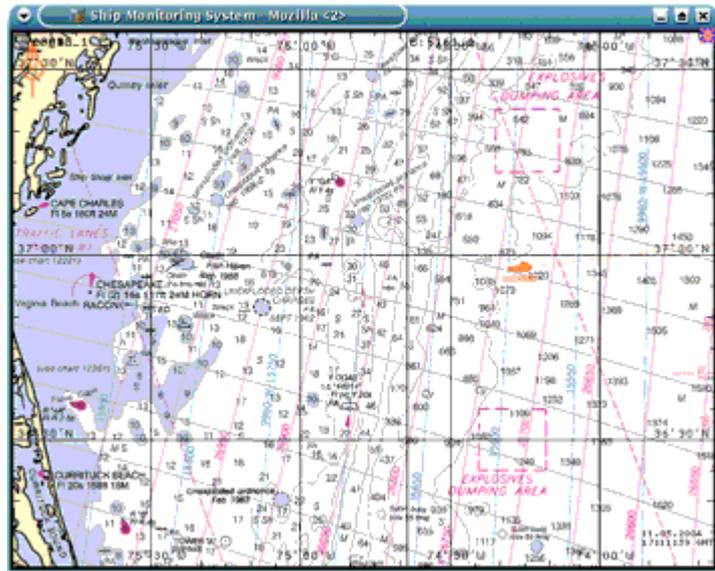
In the information window, are also located buttons for the monitoring of the route construction and also switching on/switching off the position indicator and the distance calculator.
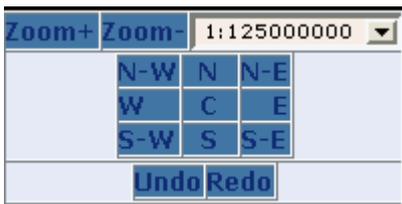
6. The Hide function - Hides the information window

 The point is intended to turn the information window into an icon with purpose to maximize the chart space. A click on the icon opens the information window again.

7. The Chart function - control of the chart

 The point is intended for the chart mapping control. Here, it is possible to change the scale of the reflected chart, using Zoom+ and Zoom- buttons and/or using the list of scale selection. The N-W, N, N-E, W, E, S-W, S, S-E buttons are intended for moving the reflected region to the appropriate direction, the C button - for centering the chart according to the current position. The Undo and Redo buttons serve to cancel the last according to the change of reflect. The Undo and Redo buttons also act for the control of changes in the reflected regions produced using the keyboard or the mouse.
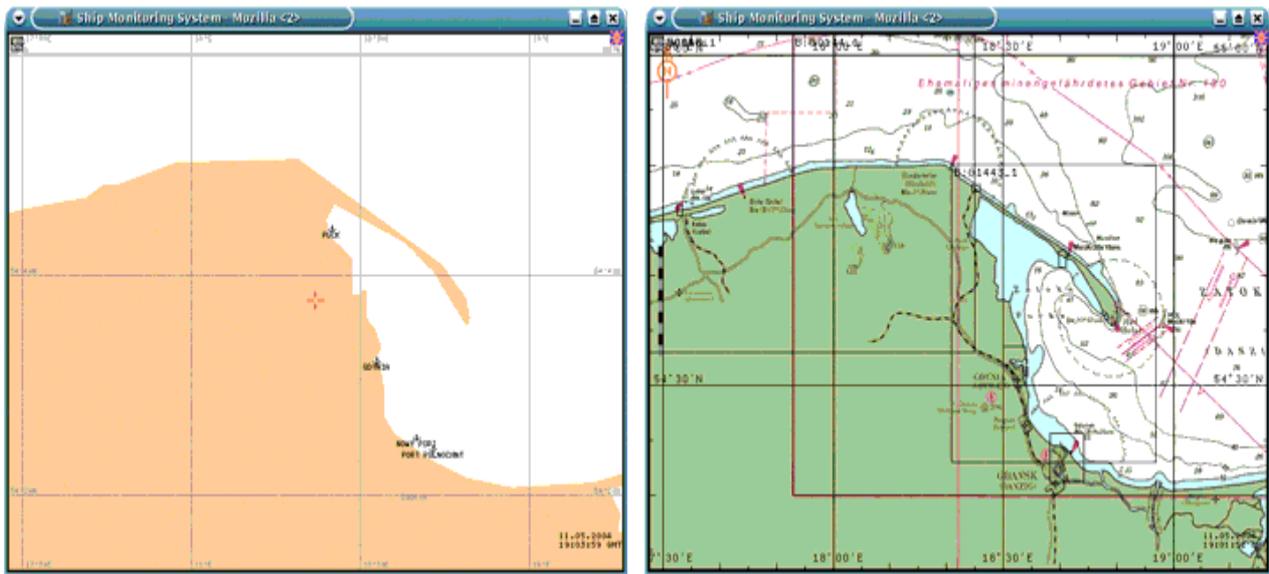
8. Control of the Mouse

- Click on the left mouse button - to place the indicator
- The double click - to centre
- Click on the right mouse button - to centre
- with the decrease
- The move with the pressed left mouse button - the part (region) selection
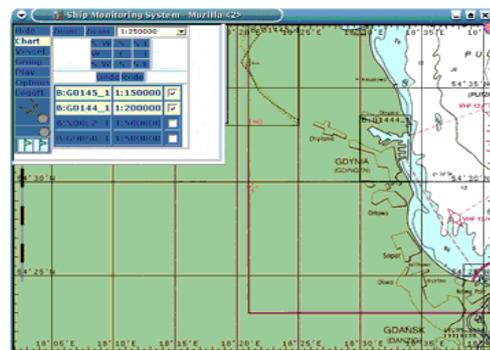
9. Control of the buttons

Cursor movement + <ctrl>	The indicator shift (+ <ctrl> - accelerated)
space	Centering on the indicator
c	To switch on/switch off the distance calculator
Enter	To add a point into the scale calculator
DEL	To remove a point from the scale calculator
f	To find the selected vessel
j	The information window boundary downward
k	The information window boundary upward
h	The information window boundary to the left
l	The information window boundary to the right
z	To hide the information window
n	The centre of the chart to the North
s	The centre of the chart to the South
w	The centre of the chart to the West
e	The centre of the chart to the East
+	To increase scale
-	To decrease scale
*	To increase the scale strongly
/	To decrease the scale strongly
x	To switch the type of the chart (navigation/simple)
u	Undo
r	Redo

10. Chart selection

The system can show the ARCS and BSB formats charts; in the nearest future it will be able to support charts of other sizes. The charts collection for the region which interests the user must be acquired by the system user. The synthetic chart, made on basis of the chart of heights of the earth's surface with a step of 30 seconds, is delivered with the system. The minimum of necessary objects (ports, geographical names, depth) is located on the synthetic chart for the tasks of vessels monitoring. The synthetic chart can also be recommended for the work place, connected with the server by means of the low speed line of communications - substantially, it has a smaller size than the chart of other formats.

In case of the presence of several charts for this region, the user has a possibility to select the necessary collection of charts.

11. To switch on/off the position indicator

 The button switches on/off the mapping of the geographical coordinates of the mouse cursor.
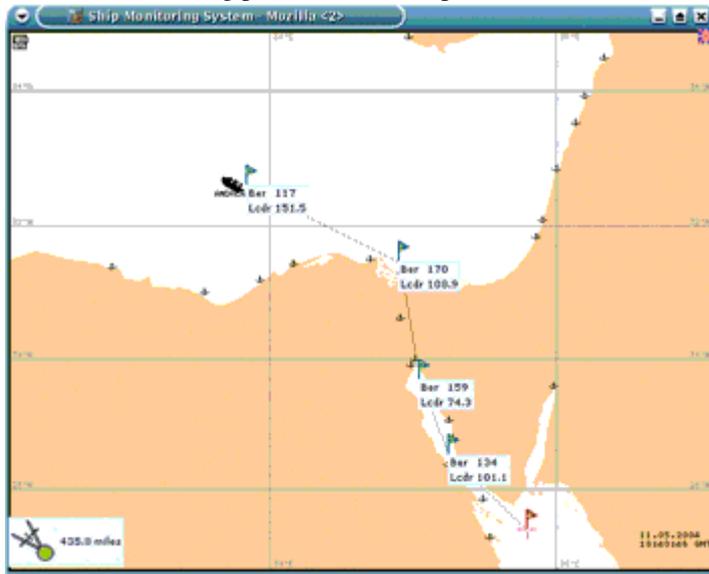
12. The distance calculator

 The button switches on/switches off the distance calculator - the distance mapping (on the loxodromic) and the course, from the position indicator to the mouse cursor.

13. The route calculator

Route consists of turning points. Turning point is shown on the chart by flag with the label, in which are written the distance on the loxodromic and the course, for the motion to the following turning point. One of the turning points is a current point for the route edition. This point is designated by a red flag. The selection of the current point is done by the mouse. On pressing the Enter button, a turning point is put after the current point and all points are renumbered. On pressing the DEL button the current point is moved away. The turning point can also be added/moved away with the calculator buttons. The current route length is shown in the left lower angle of the screen.

14. Vessel function - information about the selected vessel

This point serves for mapping and correction of the information about the selected vessel (when the user has the appropriated privileges). The vessel is selected with the given list or by the mouse clicking on the image of the vessel on the chart.

The sub-paragraph Info of this point, serves for changing the vessel's data, which determine its view on the chart (Type determines the vessels silhouette, Color, respectively, its colour). After data's editing, it is necessary to press the "OK" key to fix the changes.

"Find" button serves for searching the selected vessel and for centering the chart relatively to it.

The sub-paragraph Status - to enter the communication about the emergency or about the vessel's status change (Normal/Shipyard).
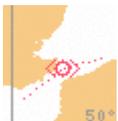
The sub-paragraph Add. Info - the control (oversee)/the addition of the short notes about the vessel, and also, of the text communications came from the vessel.

The sub-paragraph Messages - the control (oversee) and (with presence of rights) the correction about the vessel position. Here, it's also possible to add new communication about the position with the button:

The sub-paragraph Messages - the control (oversee) and (with presence of rights) the correction about the vessel position. Here, it's also possible to add new communication about the position with the button:

It's necessary to press the Ref num field of the appropriate communication for the correction of the communication about the position.

	Time	Ref num	Lat	Lon	Course	Speed
	07.01.04:14.38	17891438	49°51.54 N	10°39.51 W	270.0	16.0
	06.08.03:12.54	806582	49°6.44 N	0°36.8 E	277.0	15.3
	11.07.03:22.40	313314	49°27.72 N	0°11.52 E	259.0	0.0
	11.07.03:18.32	311133	49°37.36 N	0°6.04 W	176.0	15.3
	11.07.03:14.21	307349	50°33.4 N	0°23.48 E	251.0	17.0
	11.07.03:10.06	302292	51°11.92 N	1°43.44 E	225.0	13.4
	11.07.03:06.09	296750	51°24.56 N	3°3.04 E	262.0	13.1
	11.07.03:01.45	294282	51°21 N	4°15.48 E	297.0	10.0
	10.07.03:21.35	292086	51°16.76 N	4°22.56 E	298.0	0.0
	10.07.03:17.22	289360	51°16.76 N	4°22.56 E	189.0	0.0
	10.07.03:13.13	284408	51°16.76 N	4°22.56 E	359.0	0.0

In this case, the position of the current transmission will appear on the chart and the form for the transmission editing - in the information window. The new coordinates can be removed from the chart using the current position indicator.

Message Time	11.07.03:10.06
Ref num	302292
Course	225.0
Speed	13.4
Latitude	51°11.92 N
Longitude	1°43.44 E

OK Cancel Reset Delete

"OK" button - fixes changes,
"Cancel" - cancels editing,
"Reset" - returns the communication to the initial state,
"Delete" - moves away the given communication.

15. Group function - information about all company's vessels

	Name	Code	Last mess. time	Distance	
	Adelina	156:1	11.05.04:19.43	0.0	→
	in shipyard				
	ANDREA	ANDREA	07.01.04:14.22	1586.0	→
	obsolete data				
	BEATRICE	BEATRI	07.01.04:14.23	2334.0	→
	obsolete data				
	FRANCOISE	FRANCO	07.01.04:14.25	3219.0	→
	obsolete data				
	LOUISE	LOUISE	11.05.04:12.37	1048.0	→
	in sea				

The vessel's name and code, the time of the last transmission, the distance to the selected vessel in miles (on the loxodromic) and the vessel's state are represented in the table.
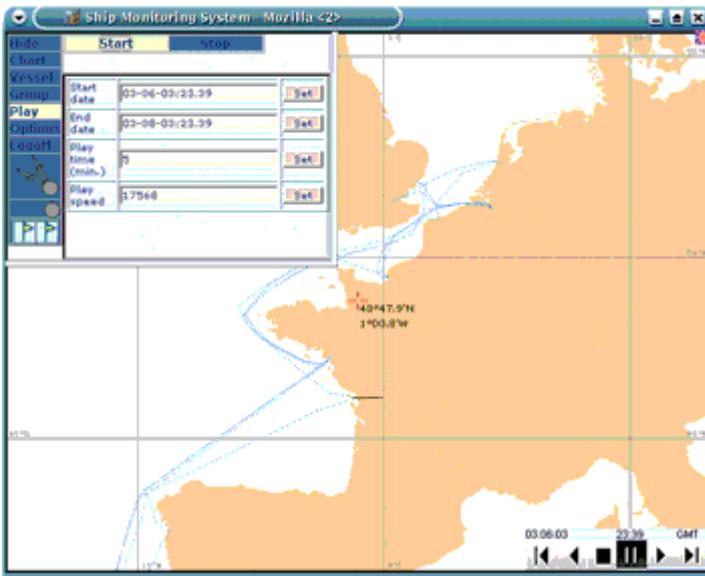
Pressing the appropriate inscription of title, the table is sorted on this column. Thus, in order to find all vessels the most nearest to the selected vessel, it is necessary to press the Distance title.

Furthermore, in the table are also present manager buttons:

Serves for the search of the vessel (analogous with the "Find" button in point Vessel).

Draws a line from the given vessel to the selected one.

16. The Play function - display of information about the vessels position

The form for entering the player parameters will appear in the Information window:

- The date of the beginning of the display
- The date of the end of the display
- The time of the display
- The speed of the display

It is necessary to establish the date of beginning, end, time or speed and press the "Start" button. After that, in the right lower angle of the chart window, hours will be changed into the Control Panel of the player, and the vessels routes will appear during the display period.

The form for entering the player parameters will appear in the Information window:

- The date of the beginning of the display
- The date of the end of the display
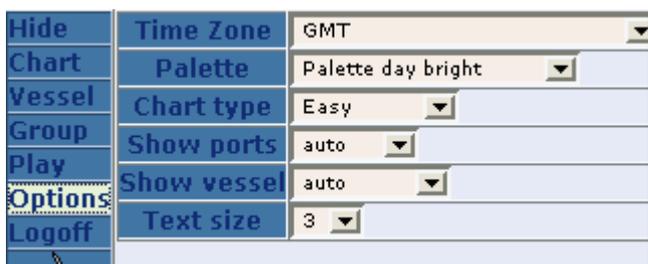- The time of the display
- The speed of the display

It is necessary to establish the date of beginning, end, time or speed and press the "Start" button. After that, in the right lower angle of the chart window, hours will be changed into the Control Panel of the player, and the vessels routes will appear during the display period.

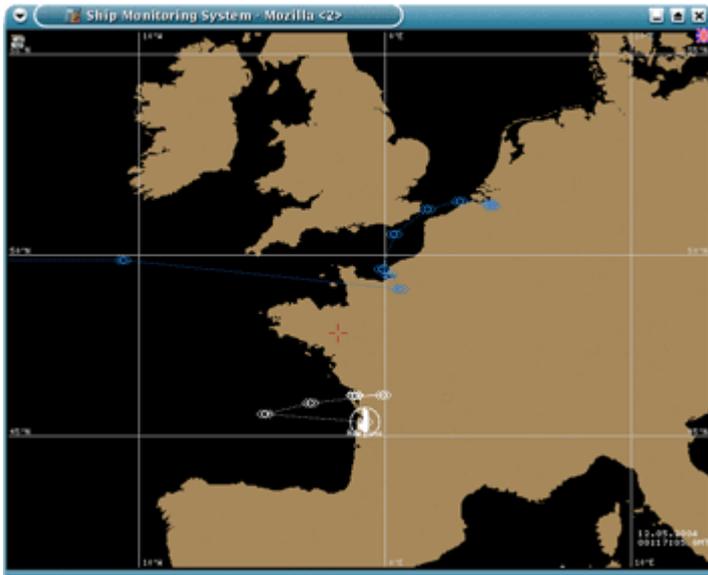## 17. The buttons of the Player Control Panel

- To begin
- To wind back
- Output of the regime
- Pause/Start
- To wind forward
- To pass into the end

18. Options function - options of the layout of the chart and selection of the time zone

The point is used to select the mode of the optimum layout for the given working place. Here, it is possible to select the time zone, the pallet, the type of reflected chart - Synthetic or Navigation, the mode of layout of the ports (for the Synthetic chart), of the vessels and the size of the police for the inscriptions on the chart.

19. Logoff function - to disconnect the system

After having achieved the work with the system on a given working place, it's necessary to be disconnected from the server. If it is not done (for example, only to close the browser window) so with the following connection to the system, it is the session of the same user under the same name which will be continued. The user's session is safeguarded approximately 10-15 minutes, and, if another user uses your computer during this time, he will have the possibility to continue work with the system having your rights. To avoid it, it is necessary to be always disconnected from the server when you are leaving the work place. Also, Logoff makes possible to the user to enter in the system under another name and another password, for example, in order to increase its privileges in the system.