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VTS - VESSEL TRAFFIC SERVICES.DEVELOPMENT IN CONSTANTA

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***Abstract**: By VTS conference in Bergen in 2008 was implemented 96 such systems in 27 countries. Initially, states have implemented their own VTS system, established the rules to be followed by participants in maritime traffic when entering the area of responsibility. Thus there were procedures vary from country to country, to be followed and met by vessels in the area, which caused enough problems to watch teams, especially in areas where passing ships transiting the VTS centre under the responsibility of the another. To limit this confusion, which sometimes give rise to serious accidents since the 80s, the International Maritime Organization was also involved in this situation, making a VTS Guide, designed to standardize practices related to monitoring and directing traffic. Have been mentioned types of activities and services that a centre must meet to be considered VTS centre, which led to a standardization not only in the process, but also the types of equipment used and the method of preparation and training of VTS operators.*
***Key-words**: direction and monitoring of shipping traffic, IMO, Vessel Traffic Services, VTS operators, VTS Guide, IMO*

1. INTRODUCTION

In 1946 the British Admiralty, in conjunction with the Harbor Board, carried out experiments with naval radar equipment set up ashore at Liverpool. That confirmed the potential usefulness of shore-based radar. Similar experiments were carried out at Southampton, Halifax, Le Havre and Long Beach.

The world's first harbor control radar was actually installed at the end of Victoria Pier, Douglas, Isle of Man. Air Vice-Marshall Sir Geoffrey Rhodes Bromet, KBE CB DSO who was Lieutenant Governor of the Island at the time, inaugurated it on 27 February 1948. The system was manufactured and installed by Cossor Radar Ltd.

In the same year, the Sperry Gyroscope Company together with Cossor installed the world's first specially designed port radar system at the Port of Liverpool. The First Sea Lord, Admiral Sir John HD Cunningham, inaugurated it on 27 July. Sir Thomas AL Brocklebank, Bart., Chairman of the Mersey Docks and Harbor Board, had taken considerable interest in the radar project from its original conception. As a ship owner he was particularly interested in the safety and quick turn-round of his ships. The delay of one hour could easily have extended to the loss of a tide. Such a system put Liverpool into the record books as being the pioneer of European Vessel Traffic Services (VTS).

Other countries quickly followed using a radar system and a radio for communicating to vessels. At this time commercial radar, which made it possible under almost all weather conditions to observe vessel traffic from the shore, was comparatively new. In combination with radio, a traffic surveillance system was achieved and real time information exchange between the shore and ships became possible.

2. THE STRUCTURE OF A VTS SISTEM

There are generally three distinct types of VTS centers, depending on the area they serve:

- Coastal VTS Centre, located in coastal areas where shipping is high risk;
- River VTS Centre, especially for piloting and navigation at river-sea portions of the main rivers;
- Port VTS Centre, designed to monitor and direct docks traffic and adjacent roadstead.

The main activities of a VTS centre can have a very complex character; they depend primarily on the technical equipment available to the institution.

Generally any VTS system provides the following functions:

- Vessel traffic monitoring that is the point of departure / arrival area of jurisdiction of the VTS center, in order to increase safety of navigation, namely to ensure protection of the marine environment against pollution by reducing the risk of collision, stranding, accidental pollution or voluntary;
- Coordination and monitoring of vessel traffic transiting the area, so that all ships covered by the incidence of the centre to be identified;
- Supervision and management of ships carrying dangerous goods. This type of vessel is given special attention because of the risks posed by the goods transported to the marine environment;
- Guiding of ships in adverse weather conditions or the failure of navigation systems;
- Optimization of piloting, by maintaining a useful exchange of information coast-ship-coast, especially in regard to traffic signals and other information on navigation and safety maneuvers;
- Surveillance vessels at fairway, sailing line or TSS (Traffic Separation Schemes), to see if they comply with navigation within these areas;
- Restoring film events that led to accident water, based on;
- Recording data on the trajectories of ships involved;
- Coordination of search and rescue (SAR);
- Control and protection of marine natural resources in the area of jurisdiction;
- Detecting smuggling, illegal fishing, and illegal immigration;
-Support with timely information other institutions related to shipping: customs, piloting, towing, coastguard, etc.
-Display real-time dynamic traffic situation on ECDIS (Electronic Chart Display and Information System) corresponding controlled area;
- Centralized control and tracking communications coast-ship and ship-ship
-Record and replay data on the evolution of targets, including communications;
- Storing the general vessels data;
- Generating of ships moving plan for a harbor area;
- Monitoring anchorages;
- Monitoring of lighting systems.

In addition, given the potential for storage of these data and using appropriate software, can do simulations, forecasts and analysis for:

- Management of the ports waters;
- Management of special purpose ships;
- Design and management of anchorages;
- Management of berths and port services;
- Generating reports and statistics;

- Planning maneuvers;

Initially, states have implemented their own VTS system, established the legal status and responsibilities of VTS centre, that the rules to be followed by participants in maritime traffic when entering the responsibility of the VTS system. Thus there were procedures vary from country to country, to be followed and met by vessels in the area, which caused enough problems to watch teams, especially in areas where passing ships transiting the VTS centre under the responsibility of the another.

To limit this confusion, which sometimes give rise to serious accidents since the 80s, the International Maritime Organization (IMO) was also involved in this industry, making a VTS Guide, designed to standardize practices related to monitoring and directing traffic. Moreover, they mentioned the types of activities and services that a centre must meet to be considered as a VTS centre, which led to standardization not only in the process, but also types of equipment used and the manner of preparation and training of VTS operators.

Since 1985, the European Community is actively involved in developing programs aimed at the main organization of a unified European VTS. Thus was born COST 301 program (Committee Science & Technology. Project 301), followed later in 1991 the program EURNET (European Community Research for Transportation. These two projects aimed at raising standards VTS systems required to fulfill all the functions listed above, as well as standardization and compatibility of systems of work, ensuring easy cooperation between different regional VTS centers and the ongoing exchange of information and data.

3. INTERACTION SHIP – VTS

In terms of team watch the most important thing is how to make communication between the ship and coastal VTS station, that way they reach the ship information increase the safety of navigation.

To facilitate such communications, international organizations engaged in shipping (IALA-International Association of marine aids to navigation and Lighthouse Authorities, IAPH-International Association of Ports and Harbors', IMPA-International Maritime Pilots Associations and IMO) developed in 1986 a VTS Guide, which contains a useful set of instructions to the master when the zone of

- Integration with administration or regional port information system.

responsibility of a VTS centre and shall be required to ensure communications with it.

This guide is provided ships sailing through the documents (Admiralty List of Radio Signals vol. 6: Pilot Services, Vessel Traffic Services and Port Operations). The conceived of the guide allows easy use and updating of specific instructions VTS area.

Until the introduction of Automatic Identification Systems, the first operation you have to carry officer in watch when entering the area covered is VTS contacted by VHF station for transmission of vessel data report. IMO standardized form to be sent this report (Ship Reporting System). Therefore officer in watch must submit all information required to observe and report and order that such information must be issued.

4. TABLE I. IMO ITEMS FOR SHIP REPORTING SYSTEM

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A	ALPHA	Ship	Name, call sign or ship station identity and flag
B	BRAVO	Date and time of event	A 6 digit group giving day of month (first two digits), hours and minutes (last four digits). If other than UTC state time zone used
C	CHARLIE	Position	A 4 digit group giving latitude in degrees and minutes suffixed with N (north) or S (south) and a 5 digit group giving longitude in degrees and minutes suffixed with E (east) or W (west); or
D	DELTA	Position	True bearing (first 3 digits) and distance (state distance) in nautical miles from a clearly identified landmark (state landmark)
E	ECHO	True course	A 3 digit group
F	FOXTROT	Speed in knots and tenths of knots	A 3 digit group
G	GOLF	Port of departure	Name of last port of call
H	HOTEL	Date, time and point of entry into system	Entry time expressed as in (B) and entry position expressed as in (C) or (D)
I	INDIA	Destination and expected time of arrival	Name of port and date time group expressed as in (B)
J	JULIET	Pilot	State whether a deep sea or local pilot is on board
K	KILO	Date, time and point exit from system	Exit time expressed as in (B) and exit position of expressed as in (C) or (D)
L	LIMA	Route information	Intended track
M	MIKE	Radio	State in full names of communications stations/frequencies guarded
N	NOVEMBER	Time of next report	Date time group expressed as in (B)
O	OSCAR	Maximum present static draught in metres	4 digit group giving metres and centimetres

P	PAPA	Cargo on board	Cargo and brief details of any dangerous cargoes as well as harmful substances and gases that could endanger persons or the environment
Q	QUEBEC	Defects, damage, deficiencies, limitations	Brief details of defects, damage, deficiencies, or other limitations
R	ROMEO	Description of pollution or dangerous goods lost overboard	Brief details of type of pollution (oil, chemicals, etc) or dangerous goods lost overboard; position expressed as in (C) or (D)
S	SIERRA	Weather conditions	Brief details of weather and sea conditions prevailing
T	TANCO	Ship's representative and/or owner	Details of name and particulars of ship's representative and/or owner for provision of information
U	UNIFORM	Ship size and type	Details of length, breadth, tonnage and type etc as required
V	VICTOR	Medical personnel	Doctor, physicians' assistant, nurse, no medic
W	WHISKEY	Total number of persons on board	State number
X	X-RAV	Miscellaneous Any	Any other information

All this information will be stored in the database VTS centre will make target identification that appears on the traffic, target those having attached an identification label.

Thus VTS operator can track if the target compile route announced, and if the ship has some technical limitations will be given extra attention, up to guide her away, to navigate safely through the area.

Prerogatives of a vessel in the VTS area are not limited to transmission of the report. To get an accurate picture of how well the exchange of information while ship-coast, will play the procedural guide for Constanta VTS station.

5. CONSTANTA VTS GUIDE

Constanta VTS belongs to Maritime Co-ordination Centre under the supervision of Romanian Naval Authority.

Service is available 24 hours continuously, VTS operators working in shifts in order to rotate the operators for regular breaks.

Constanta VTS Zone contains the maritime zone limited by a sector circle of 12 nautical miles, with the centre at Lat. 44°10'.2N, Long.028°39'.6 E (Constanta VTS office).

VTS Personnel use in communications English language based on the Standard Marine Communication Phrases (IMO -SMCP) and/or Romanian language as the case it may be.

Page 1 contains a table of general information and Separation Scheme No. 1

1. General information and reports:

-All vessels, irrespective of their flag and size, navigating in Constanta VTS zone shall to comply with the rules.

-VTS Operations do not relive the master of his responsibility for the safe navigation of his ship.

-Constanta VTS may issue directions to enhance navigation and vessel safety and protect the marine environment.

-All vessels will be given instructions including berthing schedule or anchor position.

-When under way in the VTS area, vessels are always under radar control and must follow instructions of VTS operators.

-In the VTS area all vessels shall report to Constanta VTS on VHF CH 67 when entering the TSS, when entering or leaving the VTS area and any movement and/or changing of anchorage position within the VTS area.

-All vessels in the VTS area must keep a continuous listening watch, and report their movements on VHF CH 67.

-All vessels bound to Constanta port shall use the Constanta approach Traffic Separation Scheme.

2. Reporting Scheme No. 1

Pre-entry reports:

i) The Operator, Agent or Master of a vessel bound for a port in the operational area of the VTS should report the relevant information:

a) at least 24 hours prior to arrival; or

b) at the latest, at the time when the vessel leaves its previous port, if the voyage takes less than 24 hours; or

c) if the port of call is unknown or changes during the voyage, as soon as this information becomes available

ii) The Operator, Agent or Master of a vessel bound for a Romanian port should report the relevant information:

a) at least 24 hours prior to arrival for Security Level 1; or

b) at least 48 hours prior to arrival for Security Level 2 & 3.

Page 2 includes limits Constanta VTS, traffic separation schemes and anchorage

- Entry reports:

On entering VTS zone all vessels bound for a port in the operational area of the VTS should report: IMO SRS items: Alpha, Delta, Golf, India, Oscar, Papa, Tango, Uniform, Whiskey, X-ray.

If ships do crossing VTS Constanta area whiteout enter in Constanta Port, they must transmit IMO items SRS: Alpha, Charlie or Delta, India, Kilo, Quebec end the position when they leave the area.

- Departure reports:

To departure will report IMO SRS items: Alpha, Delta, India, Oscar, Papa

- Emergency reports:

All vessels shall immediately report any incident or accident which can affect safety or security, environmental protection or efficient traffic organization.

Any of the following conditions must be immediately reported:

1. Any defect or discrepancy in an Aid to navigation
2. Any condition that may impair a vessel ability to safely navigate or maneuver
3. Any pollution incident
4. Any hazard to navigation
5. Involvement in a marine casualty
6. Adverse weather and visibility conditions
7. Another vessel in apparent difficulty
8. Any situation susceptible to lead to an incident or navigation event
9. Security incidents

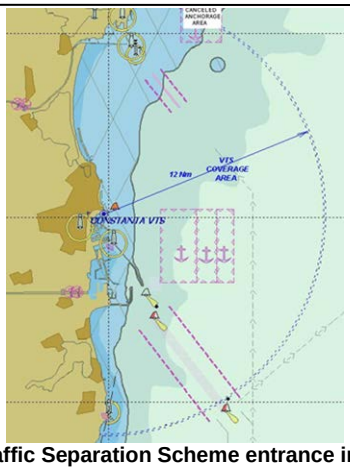

Figure I. Traffic Separation Scheme entrance in Constanta

Page 3 includes reporting scheme No.2 and anchor information

- Constanta anchorage area

The anchorage area of Constanta Port has the dimensions of 4x4 nautical miles, being limited to the North and South by the parallels: 44º10'.50 N and 44º06'.50 N and to the East and West by the meridians of 028º49'.50 E and 028º44'.00 E.

The meridians of 028º46'.50 E and 028º48'.20 E divide the port roasted into 3 zones numbered from the West to the East:

- ZONE No.1 anchorage for vessels up to 40,000 GRT (excepting tankers);
- ZONE No.2 anchorage for vessels over 40,000 GRT (excepting tankers);
-ZONE No.3 anchorage for tankers, LPG carriers and vessels carrying dangerous cargoes.

The roadstead has a depth of the water between 25 m and 30 m allowing a safe anchorage for 40 - 50 large vessels.

Page 4 contains information supplied to the ship and steering

i) Provide information at the request of a vessel

Information Services

Provide information when deemed necessary by the VTS, or at the request of a vessel. This information can include the following:

- Position, intention and destination of vessels.
- Traffic movement.
- Weather conditions.
- Anchorage area and facilities in the outer and inner roads.
- Navigation restrictions/obstructions.
- Any other relevant information needed by vessels.

Navigational Assistance Service

Provide at request or at any time it is needed, assistance to vessels and monitoring its effects in case of:

- High traffic density.
- Poor visibility or bad weather.
- Potential danger, etc.

Traffic Organization Service

Control traffic flow by information, warning, advice or instruction in order to prevent potential dangerous situations, navigation incidents and accidents.

ii) Pilotage service

Pilotage is compulsory for berthing, unberthing and shifting and is available 24 hours a day. The vessel's Master should advise the Agent at least 12 hours before arrival in the port roadstead.

Approaching Constanta Port

Approaching the Port of Constanta should be performed on courses as it is recommended by "Notice to Mariners", the passage through the traffic separation scheme for vessels bounded to Constanta being compulsory.

a) The limits of the separation zone are marked by safe water buoys in position:

- North limit Lat. 44º 04'.50 N; Long.028º 43'.34 E, and
- South limit Lat. 43º 59'.41 N; Long.028º 48'.74 E.

b) Entrance direction into the port using TSS is NW (True course = 322º),

c) Exit navigation direction from the port using TSS is general direction SE (True course = 142º),

- The length of TSS navigational channel is 6.4 Nm;
- The breadth of TSS navigational channel is 0.8 Nm;
- The width of the separation zone is 0.5 Nm.

6. CONCLUSION

Given the importance of preparing the VTS operators to potentially dangerous situations due to increasing maritime traffic, Naval Academy "Mircea Cel Bătrân" acquired in the Ship Simulator Management Complex on an axle of the virtual simulation software for the VTS centre. Thus, for the first time technical conditions exist to train those highly qualified personnel in our country conclusion section is not compulsory. Although a conclusion may review the main points of the paper

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