



**REPUBLIC OF BULGARIA
MINISTRY OF TRANSPORTATION, INFORMATIONAL
TECHNOLOGIES AND COMMUNICATIONS**

1000 Sofia, 9 “Diakon Ignatii” str.,
tel.: (+359 2) 940 9771
fax:(+359 2) 988 5094

www.mtitc.government.bg
mail@mtitc.government.bg

**Directorate
„Unit for investigation of accidents in the aviation, maritime and rail
road transport”**

FINAL REPORT

On

**Investigation of very serious marine accident, occurred on 29.11.2010 in
Black Sea, in the territorial sea of Republic of Bulgaria, with motor
vessel “Karam 1” and motor tanker “Alessandro DP”**



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The aim of the investigation is to settle the circumstances, reasons and the consequences, at which the accident has occurred and progressed and it is not aimed at establishing guilty or responsibility.

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Note: The accident is described using local time (Standard Coordinated Time UTC + 2,00 hours)

3. List of used abbreviations

VDR

Voyage Data Recorder – Device recording all data from the navigation devices, the speed of the engine and the voice commands and conversations.

AIS

Automated Identification System – It is applied to all vessels above 300 GT. Each vessel with installed AIS system periodically emits in the VHF range (161.975 MHz and 162.025 MHz) packages of data with its location, heading, speed and some more important statistic data – name of the ship, IMO and MMSI numbers, dimensions, draught, etc.

VTMIS

Vessel Traffic Management and Information System – System for management of the ship traffic and informational services for the shipping.

BSSRAR

Bulgarian Sea Search and rescue Area of Responsibility

The limits of the BSSRAR are defined by an act of Executive Agency Marine Administration

Navy	Naval forces
EAMA	Executive Agency Marine Administration
MI	Ministry of Interior
MoD	Ministry of Defence
MTITC	Ministry of the Transportation, Information Technologies and Communications
MRCC	Marine rescue coordination center
NSBP	National Service Border Police
ODO BuNavy	On-duty officer of Bulgarian Navy
M/V	motor vessel
M/T	motor tanker
GMDSS	Global Maritime Distress and Safety System Global marine system for distress and safety

MMSI	Maritime Mobile Service Identity – identification number of the GMDSS radio equipment
ϕ	geographical latitude
λ	geographical longitude
N	North
E	East
S	South
W	West
EPIRB	EPIRB - Emergency Position Indicating Radio Beacon Emergency radio buoy, radio beacon from the EPIRB type, with which usually are equipped the vessels. The beacon is activated in emergency situations. It emits distress signals to the satellite system <u>Cospas-Sarsat</u> . The system calculates the coordinates of the point of emergency and transmits them to a ground station.
EQUASIS	Information system, developed in cooperation between the European Commission and the French Marine administration, merging the available data for the ship from open public and private sources.
COSPAS-SARSAT	International satellite system for search and rescue. The system is serviced from 40 operational centres all around the world. The program is founded in result of intergovernmental agreement signed in 1988 by 4 founding countries – France, USA, Canada and former USSR.
NAVTEX	Narrow-band direct printing telegraph equipment for receiving meteorological or navigational information.
JULIETTE AREA	Meteorological warnings for the JULIETTE area in the frame of the international service NAVTEX are emitted by Varna radio - LZW at 518 kHz frequency immediately after receiving and after at 01:30, 05:30, 09:30, 13:30, 17:30 and 21:30 UTC. Servicing areas from 1 to 3 are west of the 32 nd meridian including the JULIETTE area. The servicing of JULIETTE area is part of the international program GMDSS. In accordance with the international conventions the sector assures the activities of the Marine Search and Rescue Center during search and rescue (SAR) operations.
UTC	Coordinated universal time
PARIS MOU	Europe and North Atlantic region Port State Control. Memorandum signed in Paris in 1982. It started the campaign against the port visits of ships not covering the standards of the states signed the Memorandum. It entered in to force on 1 st July 1982.
ISM	International Safety Management Code International Code for management of the safety exploitation of ships and prevention of pollution.

The below used definitions are used in compliance with the “International Convention for Search and Rescue at Sea” – 1979.

- 1) Search. Operation usually coordinated from rescue and coordination center or rescue sub-center with usage of the available personal and means for location of people in distress.
- 2) Rescue. Operation for locating people in distress, performing first medical aid or other care and transportation of the people to a safe place.
- 3) Search and rescue. Conduction in case of distress an observation, communication, coordination and performance of operations for search and rescue, including ensuring of medical consultations, first medical aid or evacuation, with the usage of public and private resources, including aircrafts, ships and other sailing vessels and installations.
- 4) Search and Rescue Area. Area with defined dimensions, connected with a rescue and coordination center, in which search and rescue activities are provided.
- 5) Rescue-coordination center. A unit responsible for the organizing of effective search and rescue and for coordination of the on-going search and rescue operations in the search and rescue area.
- 6) Rescue sub-center. A unit subordinated to the rescue-coordination center and founded to assist of the latter in accordance with special regulations of the responsible authorities.
- 7) Search and Rescue means. All mobile means, including the assigned search and rescue units, used for conducting of search and rescue operations.
- 8) Search and Rescue Unit. A unit completed with trained personal and equipped with equipment, tasked for fast conduction of search and rescue operations.
- 9) Emergency Phase. A general term that means, in connection to the case, phase of uncertainty, alert or distress.
- 10) Phase of Uncertainty. A situation with existing uncertainty for the safety of a person, ship or other vessel..
- 11) Phase of Alert. A situation with existing danger for person, ship of other vessel.
- 12) Phase of Distress. A situation with existing reasonable certainty that a person, ship or other vessels are object of serious and imminent danger and need immediate help.

4. Factual Information

On 29.11.2010 at 17:35 h the on-duty ship traffic operator – Burgas heard on VHF 16th channel a phrase „Alessandro DP red to red”. The attempt to perform a connection on the

same channel with m/t Alessandro DP was unsuccessful. At 17:40 h through Varna Radio in the MRCC Varna was received distress signal emitted from m/t Alessandro DP. The accident occurred at approximately 10 nautical miles south-east from Cape Emine in possible coordinates 42° 34' N and 028° 03' E. M/T Alessandro DP reported for collision with another ship, that sunk and for significant damages on itself. MRCC declared Phase of Distress. After performing the initial activities and in accordance with the respected operational procedures the ODO in National Service Border Police and ODO in BuNavy were informed and were asked for their assistance.

An area for search and rescue was defined with the SAR-PC program and a search and rescue operation is performed from 18:00 h on 29.11.2010 till 16:18 h on 30.11.2010 r. Ships from BuNavy, NS Border Police and EAMA and a helicopter from Bulgarian Air Force participated in it.

1 members from the crew of m/s “Karam 1” were rescued from a rescue boat from m/t “Alessandro DP” and 1 person by border police boat 526. Three members from the “Karam 1” crew rescued themselves by jumping on the board of m/t “Alessandro DP” just after the collision of the two ships.

The other 5 members from the m/s “Karam 1” are declared for missing without trace as result of the sinking of m/s “Karam 1”.

5. Technical data for the ships:

- m/s “Karam 1”



In accordance with the Temporally Certificate for registration issued by the International Ship Register of Sierra Leone on 24.11.2010 and valid till 23.05.2011:

- Name: „Karam 1”;
- Ship Identification: IMO number 7516711;
- Call signal: 9LB2306, MMSI 667002127;
- Nationality: Sierra Leone;
- Registration: Sierra Leone on 30.03.2007;
- Port of registry: Freetown
- Gross tonnage: 2265;
- Net tonnage: 1329;
- Deadweight: 3605;
- Length – 86.76 m;
- Breadth: 13.60 m;
- Board height: 5.5 m;
- Maximum draught: 6.96 m;
- Type – general cargo ship;
- Built: 1977 in „Stoczina gdanska im Lenina” Gdansk, Poland;
- Cargo holds: two
- Main engine – 4SA H. Gegielski Z.P.M. power rated at 1480 kW, one propeller.
- Ship owner: Hugo Navigation Ltd., Tartous, Syria

- **m/t „Alessandro DP”**



In accordance with „Act for nationality” issued by the Marine Administration of Kingdom of Netherlands on 21.08.2009 and Class Certificater valid till 08.08.2012:

- Name: „Alessandro DP”;
- Ship Identification: IMO number 9384162;
- Call signal: PBRL, MMSI 245756000;
- Nationality: The Netherlands;
- Registration under Dutch flag 10 March 2009;
- Port of registration: Rotterdam
- Gross tonnage: 11186;
- Net tonnage: 4931;
- Deadweight: 17101;
- Length - 138.09 m;
- Breadth: 23.00 m;
- Minimal board height: 2.733 m;
- Maximum draught in accordance with the “International Load Line Certificate” issued by Classification Society RINA: 9.28 m;
- Type – chemicals carrier tanker;
- Built: 2007 in „C. NAVALE DE POLI s.p.a.” Pelestrina, Italy;
- Cargo holds: 19 tanks;
- Main engine - 1 diesel engine, WARTSILA 6L46 type, with full power rated at 6300 kW, one propeller and thruster rated at 625 kW power.
- Ship Owner – Alessandro Shipping B.V., Rotterdam, he Netherlands

6. Information for the voyage of the ships:

- for m/s “Karam 1”:

In accordance with Certificate for Departure №V00403 from 28.11.2010, issued by State Enterprise “Port Infrastructure”, m/s “Karam1” left Port Varna at 16.30 h on 28.11.2010.

The ship has a crew of 10 persons. Sails under the flag of Sierra Leone.

Destination of the voyage: Port Karabiga, Turkey.

Cargo - 2 600 metric ton metal scrap in bulk.

Draught: bow = 1.83 m, stern = 2.83 m, middle = 2.35 m.

Amount of fuel and oil at departure: approximately 7 t.

Ship documentation and certificates that the Commission succeeded to obtain from the Ship Register of Sierra Leone in New Orleans and from its representative office in Constance (Romania):

1. Temporally Certificate for minimum crew number from 24.11.2010 valid till 23.05.2011, issued in Tartous, Syria.
2. Temporally Certificate for ship radio from 24.11.2010 valid till 23.05.2011, issued in Tartous, Syria.
3. Temporally Certificate for Registration from 24.11.2010 valid till 23.05.2011, issued in Tartous, Syria.

4. Attestation Letter for Synopsis from 24.11.2010 valid till 23.05.2011, issued at Tartous, Syria.
5. Temporally Class Certificate issued by the International Ship register in Varna on 26.11.2010 and valid till 30.01.2011.
6. Certificate for the safety of the structure of a cargo ship issued by the International ship Register in Varna on 26.11.2010 and valid till 30.01.2011.
7. International Load Line Certificate issued by the International Ship Register in Varna on 26.11.2010 and valid till 25.04.2011 г.
8. Temporally international tonnage certificate, issued by the International Ship Register in Varna on 26.11.2010 and valid for no more than 5 months.
9. Temporally Certificate for management of the safety issued by the International Ship Register in Varna on 26.11.2010 and valid till 25.04.2011.
10. Temporally Certificate for prevention of sea pollution with petroleum products issued by the International Ship Register in Varna on 26.11.2010 and valid till 25.04.2011.
11. Temporally Certificate for prevention of air pollution issued by the International Ship Register in Varna on 26.11.2010 and valid till 25.04.2011.
12. Certificate for prevention of sea pollution with ship waste issued by the International Ship Register in Varna on 26.11.2010 and valid until 25.04.2011.
13. Certificate for correspondence for transportation of hard bulk cargo issued by the International Ship Register in Varna on 26.11.2010 and valid till 25.04.2011.
14. Certificated for the antifouling system issued by the International ship Register in Varna on 26.11.2010 and valid for no more than 5 months.
15. Ship Safety Certificate issued by the International Ship Register in Varna on 26.11.2010 and valid till 25.04.2011.

- for m/t "Alessandro DP"

On 29.11.2010 m/t "Alessandro DP" was performing her voyage from Port Limas in Turkey to Port Varna-West in Bulgaria, where she should ship 10 000 t sulphuric acid for Port Moa in Cuba.

According the documentation the ship is in a good technical state. The last expanded port state control check was performed on 15.10.2010.

It was foreseen at arrival for shipping the ship to has draught of 5.30 m at bow and 5.70 m at stern.

Ship documents and certificates:

1. Certificate for Registration issued by the Netherlands Ministry of Transportation, Communal Services and the Waters on 21.08.2009.
2. Class Certificate issued by RINA – Italian Marine Register on 03.12.2007.
3. Tonnage Certificate issued by RINA on 20.08.2009.
4. International Load Line Certificate issued by RINA on 08.08.2007.
5. Certificate for the safety of the structure of a cargo ship issued by RINA on 04.11.2009.
6. Certificate for the safety of radio devices on board of cargo ship issued by RINA on 16.07.2010.
7. Certificate for prevention of sea pollution with petroleum products issued by RINA on 08.08.2007.

8. Certificate for management of the safety issued by RINA on 09.09.2009.
9. Certificate for minimum crew number issued by the Netherlands Marine Inspectorate on 04.09.2009.
10. Ship Safety Certificate issued by RINA on 14.01.2010.
11. Certificate for prevention of air pollution issued by RINA on 01.11.2010.
12. Certificated for the antifouling system issued by RINA on 10.03.2009.
13. Certificate for P&I coverage issued by GUARD-Bermuda on 27.09.2010.
14. Ship Certificate for the ship capability to transport dangerous goods issued by RINA on 24.02.2010.
15. Certificate for prevention of sea pollution with ship waste issued by RINA on 02.06.2009.
16. Synopsis.

7. Information for the crew:

- of m/v "Karam 1":

1. Captain
2. Chief mate
3. Chief Engineer
4. Second Engineer
5. Motorman
6. Motorman
7. Seaman
8. Seaman
9. Seaman
10. Seaman

- of m/t "Alexandr DP"

1. Captain
2. Chief mate
3. Second officer
4. Third officer
5. Chief Engineer
6. First Engineer
7. Second Engineer
8. Electrical fitter
9. Pump man
10. Seaman
11. Seaman
12. Seaman
13. Deck apprentice
14. Fitter
15. Cadet - engine
16. Cadet - engine
17. Cook
18. Steward
19. Junior Third officer

8. Information for the sea accident

The accident, in accordance with Art. 4, Paragraph 1, item 1 of Regulation No. 23 of MTITC, is classified as: very serious accident. – total loss of ship, total loss of cargo and loss of life.

Date and time of the sea accident: 29.11.2010 on 17:35 h.

Coordinates and location of the sea accident:

Black Sea, $\varphi = 42^{\circ} 34' N$, $\lambda = 028^{\circ} 03' E$, at approximately 10 nautical miles in southeast direction from Cape Emine in the territorial sea of Republic of Bulgaria.

Hydro-meteorological conditions in the zone of the sea accident:

Wind from NE with a speed of 8-10 m/s,

Sea with wave height of 1,5 m, Air temperature $+9^{\circ} C$, cloudy, visibility 10 nautical miles, seawater temperature $+ 11^{\circ} C - 14^{\circ} C$.

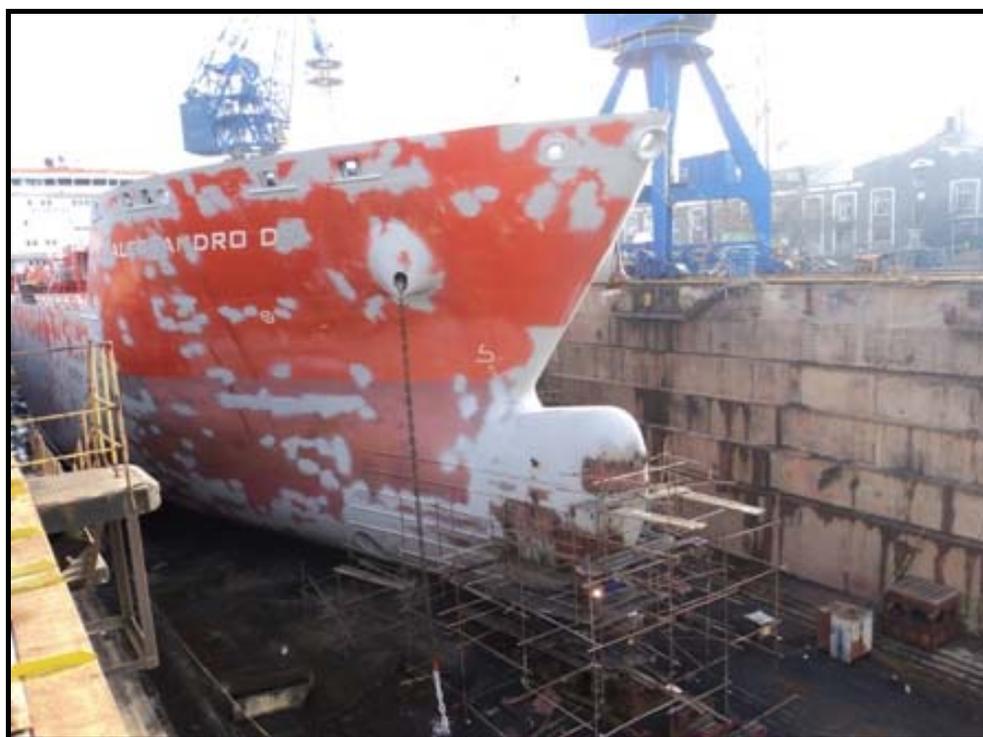
9. The consequences:

M/v “Karam 1” sunk very fast as result of serious structural damage, caused by the collision, with no sufficient time to be activated the collective rescue means and organized abandonment of the ship.

Missing - 7 members of the crew.

Three persons from the “Karam 1” crew jumped on the deck of “Alessandro DP” after the collision at the moment when the boards of the two ships were slipping to each other.

Rescued: **2 members** of the crew - **one by the rescue** boat of m/t “Alessandro DP” and one by Border Police boat 526.



m/t “Alessandro DP” after the collision seen at the dry dock in Varna

10. Description of the sea accident

On 29.11.2010 m/s “Karam 1” sails from Port Varna with cargo of metal products (scrap), with destination port of discharge Karabiga, Turkey. M/t “Alessandro DP” sails under ballast from Port Limas in Turkey to Port Varna-West for shipping of 10 000 t sulphuric acid for Port Moa in Cuba.

On 29.11.2010 on 17:10 h, the captain of m/v “Karam 1” saw on the radar screen at distance of 8 nm, bearing 20⁰ portside a vessel. The ship is sailing towards the Bosphorus at autopilot with course 162° and speed of 7 knots. On the bases of the radar data the captain estimates that the opposite ship will pass in front of the bow of “Karam 1” at distance of 7 cables and there is no need a change in the course of the ship to be performed. After 5 minutes from “Karam 1” saw the opposite ship already visual at a distance of 6 nm and saw also it’s green light on the starboard. The opinion of the “Karam 1” captain there is no danger of collision, the ships will pass clearly, as from his observations the bearing towards the other ship slowly grows.

At that same moment the other ship, “Alessandro DP”, keep course 322° and speed of approximately 14,5 knots. At distance of 10 cables the captain pf “Karam 1” changed the course with 5° to the left, without changing the speed. At distance of 4 cables the captain of m/s “Karam 1” spotted that m/t “Alessandro DP” rapidly turns to the right, with out changing the speed. The captain of m/s “Karam 1” changed to manual control, performed left turn, but with this maneuver his does not avoid the collision.

Around 17:35 h, the bulb of “Alessandro DP” engraved into approximately the middle of hold No. 1 of “Karam 1” under angle of 70-75°. The ships slipped board to board and after the ships disconnected m/s “Karam 1” took a heavy list and rapidly sunk – “according the witness’s statements for around a minute”.

11. Participation of the coastal authorities and the activities in emergency situation

Undertaken actions:

- Orientation: Declared Phase “Distress” – 17:40 h on 29.11.2010.
- Initial actions: from 18:00 h till 21:00 h on 29.11.2010.
- Planning: from 18:00 h till 19:30 h on 29.11.2010.
- Search and rescue at sea: from 18:00 h on 29.11.2010 till 18.30 h on 30.11.2010.
- Search and Rescue from the air: from 09:00 h till 11:00 h on 30.12.2010.
- Suspending of search and rescue at sea: at 18:30 h on 30.11.2010;
- Suspending of the search and rescue on land: at 17:30 h on 03.12.2010.

Planning details:

- Main object of the search: people in the water with or without individual rescue means.
- Secondary objects: rescue rafts or boats.

- Main hypothesis: hull failure, extremely fast loss of stability, capsizing and/or sinking without sufficient time for activation of the collective rescue means and organized abandonment of the ship.

Criteria for efficiency: accumulated probability for detection of the searched objects.

- Used software – SAR PC: making of prognosis for the quantity of the accumulated drift using the position of the emergency buoy of the ship (detected and tracked by Border Police boat 515), detected and checked raft and other floating objects.

Forces and means that participated in the operation:

Day 1 - 29.11.2010:

- Border Police boat 526 and 515
- Boats “Spasitel 2” and “Spasitel 4”
- Missile boat ‘Uragan’;
- M/t “Alessandro DP”;
- M/v „PALFLOT 5”
- M/v „BROTHERS 14”

Day 2 - 30.11.2010:

- AS 532 AL Cougar helicopter of BuAF
- Mine sweeper “Priboi”
- Border Police boats 525 and 534
- Boat “Spasitel 2”
- M/v „PALFLOT 5” (until 09:00 h)
- M/v „BROTHERS 14”
- M/v „DELANO”

At 17:40 h on 29.11.2010 in MRCC-Varna was received distress signal throughout Varna Radio from m/t ‘Alessandro DP’. It was reported for a collision with m/v “Karam 1”. As result of it the latter sunk in point with coordinates $\varphi = 42^{\circ} 34' N$, $\lambda = 028^{\circ} 03' E$ and part of the crew is in the water. MRCC declared Phase “Distress”.

From 17:45 h till 18:00 h the chief of “Coordination of operations for marine search and rescue - COMSR” Department at EAMA, ODO in BuNavy, ODO in Border Police Directorate – Burgas were informed and were asked to provide help. Throughout Varna Radio was ordered of the ships close to the point of the accident - „PALFLOT 5” and „Brothers 14” to provide help.

At 18:02 h the chief of COMSR Department took the command of the rescue operation.

At 18:13 h the captain of m/t “Alessandro DP” reported that searches for survivals in the water and that on the board of his ship are 3 members of the crew of the

sunken ship. A little later the rescue boat of the tanker rescue from the water one more seaman.

At 18:40 h the activated on alert Border Police boat 526 and “Spasitel 4” headed towards the point of the accident.

At 19:10 h was defined the zone for search and rescue with the usage of the SAR-PC program.

At 19:45 h Border Police boat 526 detected the EPIRB of “Karam 1”.

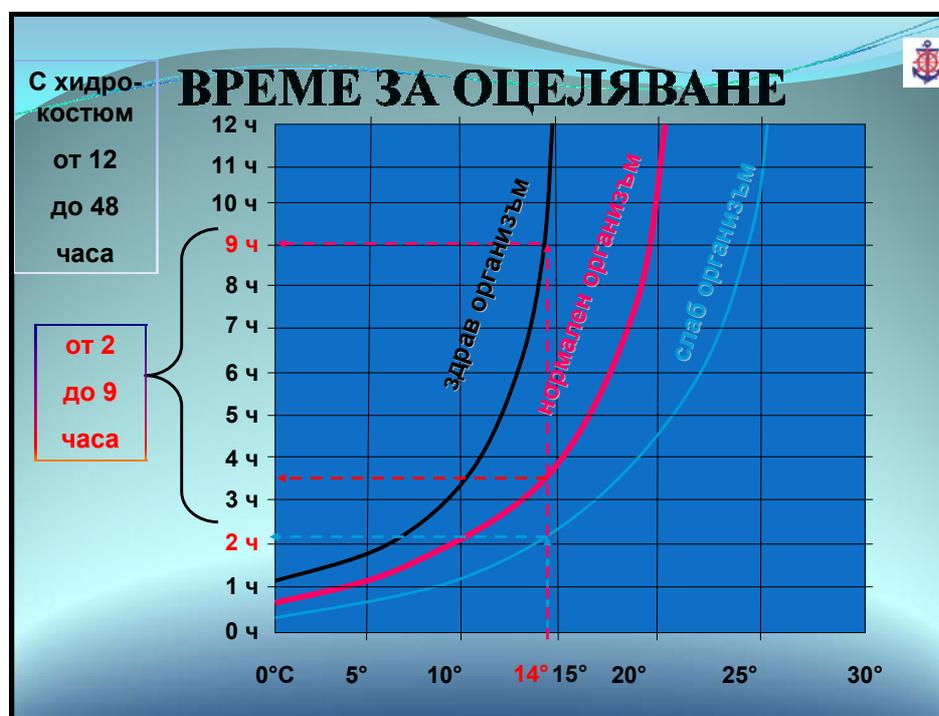
At 19:55 h was founded the automatic radio buoy in point with coordinates $\varphi = 42^{\circ} 36,01' N, \lambda = 028^{\circ} 04,03' E$.

At 20:20 h Border Police boat 526 found rescue raft with floating anchor and light with traces of people inside it.

At 20:30 h Boarder Police boat 526 “Emine” founded and collected from the water rescue raft without people inside it.

At 21:00 h Boarder Police boat 526 rescued from the water a person in point with coordinated $\varphi = 42^{\circ} 36,67' N, \lambda = 028^{\circ} 04,86' E$.

At 21:05 h the data for the coordinates of the search and rescue zone are send to the ODO in BuNavy.



From 21:15 h the ships „PALFLOT 5”, „BROTHERS 14” and „AKAR 3” start performing search for survivals.

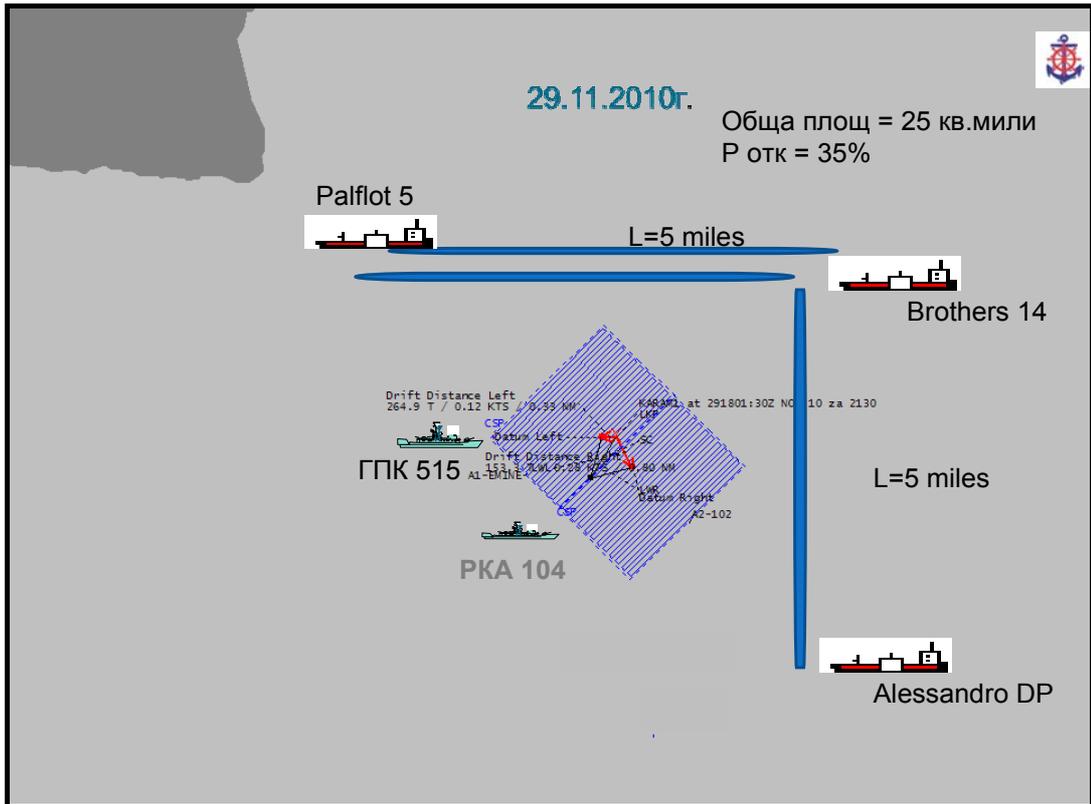
At 21:20 h boats „Spasitel 2” and “Spasitel 4” joined the operation.

At 21:40 h the Minister of Transportation, Information Technologies and Communications, the executive director of EAMA and inspectors from Direction ZRMVVJT arrived in the MRCC.

At 23:15 h the Minister of transportation asked MoD for a helicopter in order to involve it in the search at dawn.

At 00:10 h on 30.11.2010 m/t “Alessandro DP” was released from participation in the operation and she headed course to Port Varna.

At 01:00 h „Spasitel 2” was released from the operation because of ending of its fuel.



SAR zone for Cougar helicopter



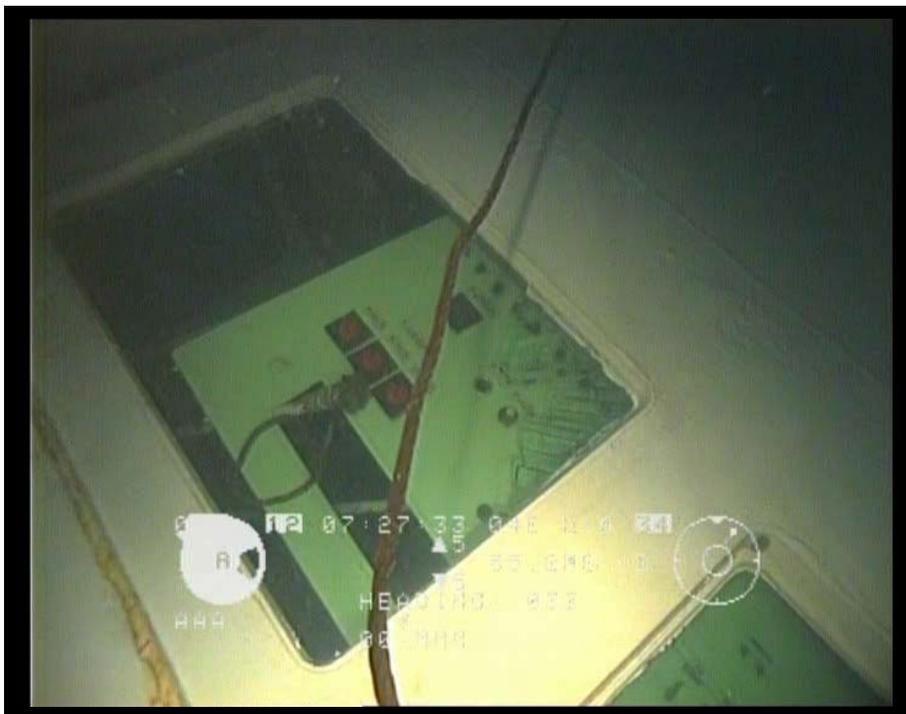
Zone of the accident – general look



The navigation bridge of m/v "Karam 1"

At 11:10 h was a diver were sent to the bottom. With signals by knocking on the hull of the sunken ship was confirmed the re are no signs of alive people inside the ship.

At 12:19 h Navy rescue ship "Proteo" weighted anchor and headed towards Navy base Varna



The navigation bridge of m/v "Karam 1"

Clearly is seen the broken window of the porthole.



13. Reconstruction of the accident

The testimonies of the captains and the on-duty officers of the two ships were used for the analyses. Apart from that were taken the data records from the VTMIS systems. There are no records of the conversations on Channel 16.

The actions of “Alessandro DP” ship:

At 12.00 h the second officer of m/t “Alessandro DP” step on duty in connection with the expected preparations for shipping in Varna. The watch was planned for 6 hours instead of the usual 4 hours. That was standard practice for ship in order to be secured time for rest of the first officer before the high tensions connected with the shipping operations. On the bridge there was also watchman.

The second officer on the watch started the tracking of m/v “Karam 1” at a distance of 12 nm and made the conclusion that the ship will pass in front of the bow. At a distance below 6 miles he made an attempt to contact “Karam 1” at Channel 16 and to ask the passing to be performed with the port sides of the two ships. There was no replay.

At a distance of 5 cables the alarm signalisation of the radar switched on signalling for a dangerous approach. Without explanation the officer on duty changes the course to right with this making the collision inevitable. The warning horn was activated and the captain went to the bridge, but only seconds later the tanker engraved slightly before the middle of m/v “Karam 1”. The captain of m/t “Alessandro DP” switched to manual control, gave “Stop” to the engine and “Full astern”.

According his testimonies both holds of “Karam 1” were opened, the ship listed to the right, the water poured rapidly in the open holds and the ship sunk within 1 minute with stern down side.

The actions of m/v “Karam 1”:

At 12:00 the captain and a seaman took the duty on the bridge. On “Karam 1” the watch is also 6 hours long. The captain changes with the Chief Officers, there are no other officers in the crew. At 17:10 h the captain spotted a ship on the right board in bearing of 20° and at a distance of 7 nm. According the radar course plotting the ship was identified as m/t “Alessandro DP” on according its evaluation the tanker will pass in front of the bow of “Karam 1” at a distance of 7 cables.

After 5 minutes the captain saw the tanker and visually at a distance of 6 nm with clearly seen green board light. The course and the speed of the two ships remained without change to a distance of 1 nm, when and the list slowly was decreasing according the observation of the captain of m/v “Karam 1”. At that moment he changed the course of the ship with 5° to portside. At that very moment at which the captain of “Karam 1” was watching that the tanker was crossing already his course, he notice the tanker rapidly to turn to starboard, straight ahead towards his ship. The captain turned to manual control and turned to portside. At that moment the distance is 4 cables and the collision is inevitable.

M/t “Alessandro DP” engraved in the middle of Hold No. 1, the boards if the two ships slipped to each other and from the inertial forces they divided apart. “Karam 1” to portside, m/t “Alessandro DP” to the starboard. During the slipping board to board the captain and two other members of the crew managed to jump on the deck of the tanker. From their they observed the sinking of their ship for a period of 1 minute with heavy list to starboard and with the bow downside.

14. Analyses for the circumstances and the reasons led to the sea accident

In the process of the investigation for the accident was found the following:

On 29.11.2010 m/v “Karam 1” sails towards the Bosphorus on autopilot with general course 162° and sped of 7 knots and m/t “Alessandro DP” sails towards Varna on autopilot with general course of 322° and speed of 14,5.

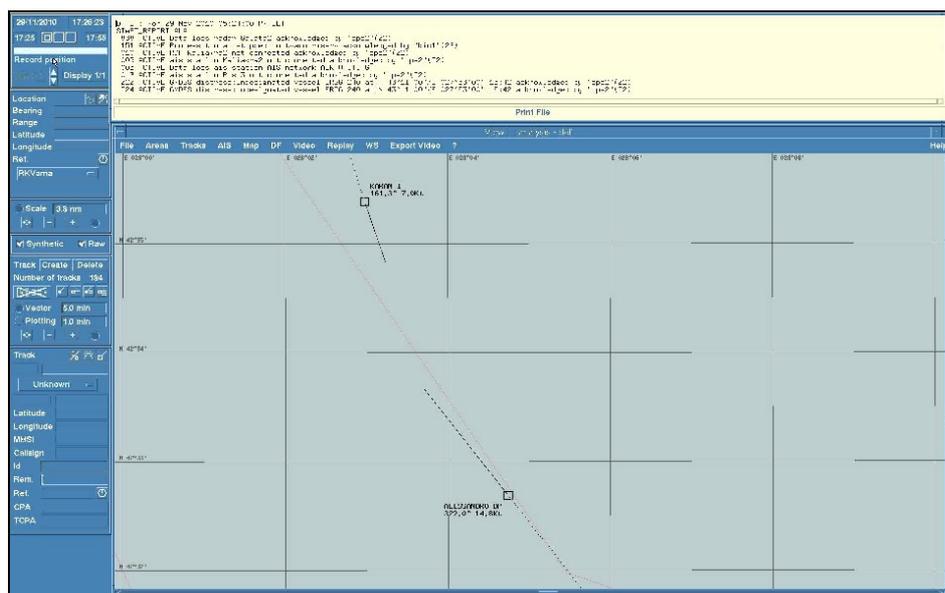


Fig.1

From the situation shown on Fig. 1 at 17:26:5 h, when the distance between the two ships is 3 nm it was clear, that no one from the two ships does not changes its course. If the officers on duty were following the change in the list, which is obligatory when the courses are crossing each other, they would found out that even without change in the course the passing will be performed with the starboards at a minimal distance of 2,5 cables.

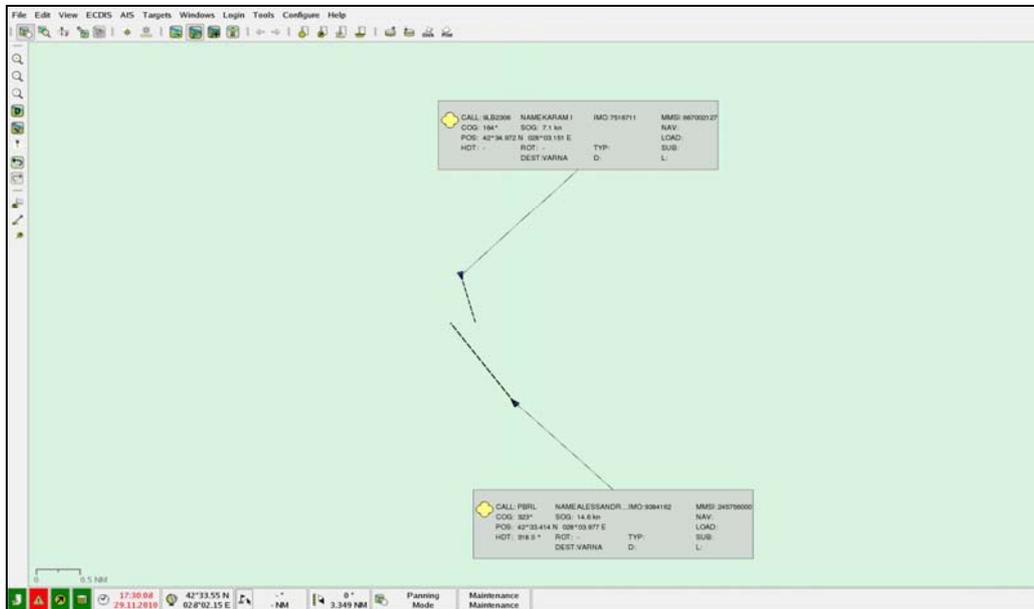


Fig. 2

At 17:30:00 h at a distance of approximately 1.8 nm as seen on Fig. 2 both ships continue their sailing without change of the course or speed. And once more without change in the course, the captains checking the change in the list would find out that the passing would be performed at a distance with the starboards.

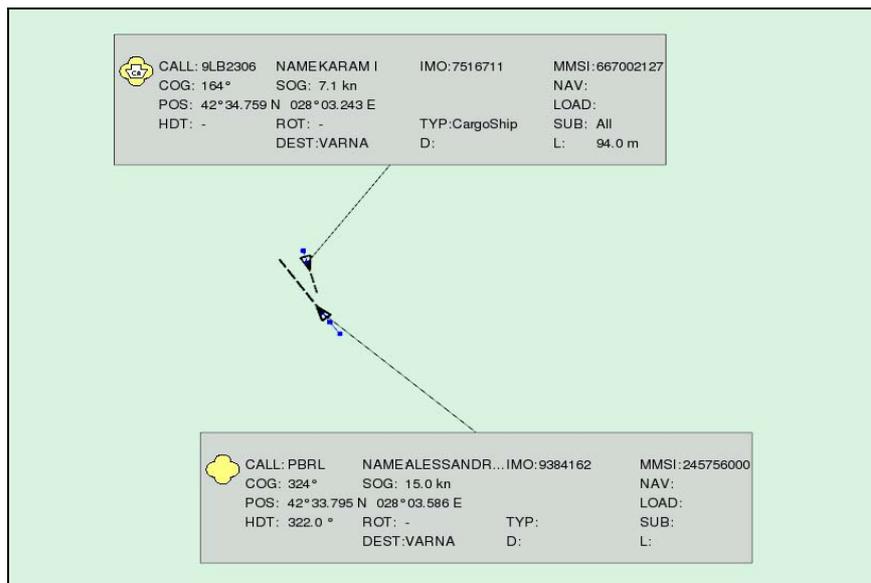


Fig. 3

At 17.32.02 h at a distance of 1,3 nm (see Fig. 3) the ships still are without change in the course and speed. M/v “Karam” observes m/t “Alessandro DP” on his course, and

“Alessandro DP” observes both board lights of “Karam 1”. In case of right evaluation on the situation and the change in the list and in such mutual location the passing would have happened with the starboards at a distance of approximately 2 cables.

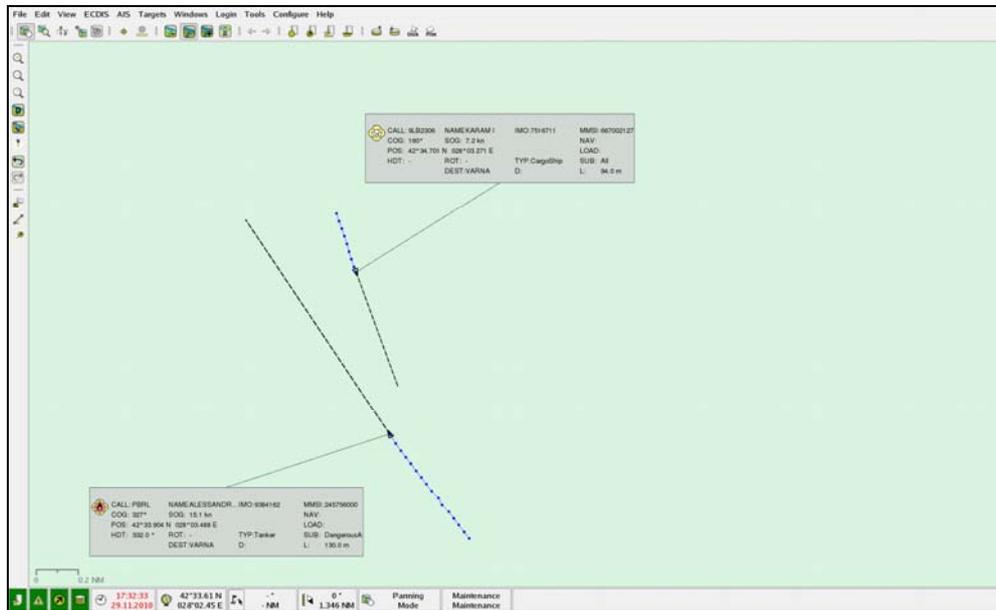


Fig. 4

At 17:32:33 h at distance of 8 cables as seen on Fig. 4, when from “Alessandro DP” were observing only the green board light of “Karam 1”, the on-duty officer on the watch started turn starboard, and the on-duty officer on board “Karam 1” changed the course with some degrees to portside as seen on Fig. 5. In such a case of approach under 1 nm its obligatory the change to manual control, that in fact was not performed in time.

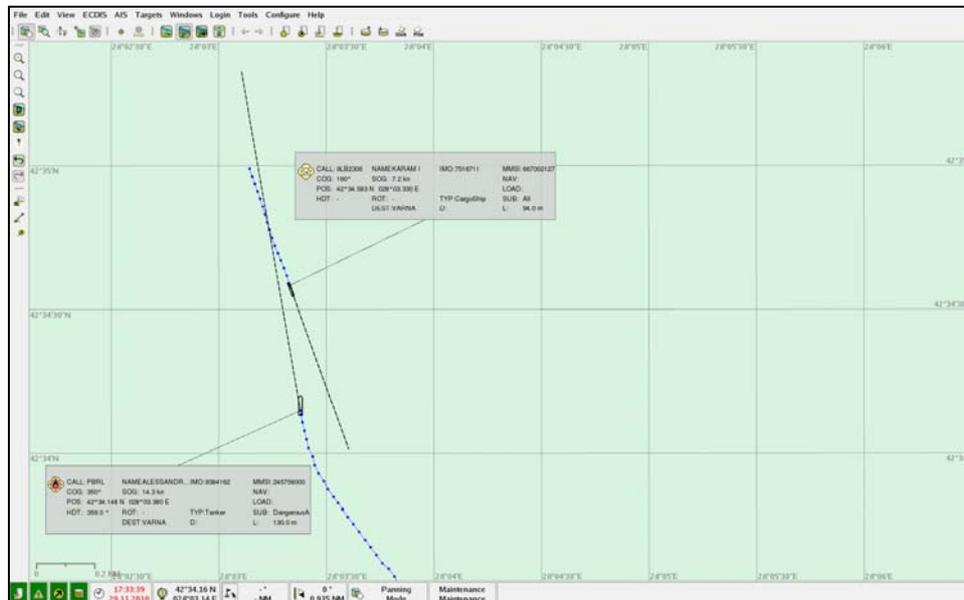


Fig. 5

In the so created situation the process went out of control as seen on Fig. 6 and after that followed the collision at full speed at 17:35 h seen on Fig. 7.

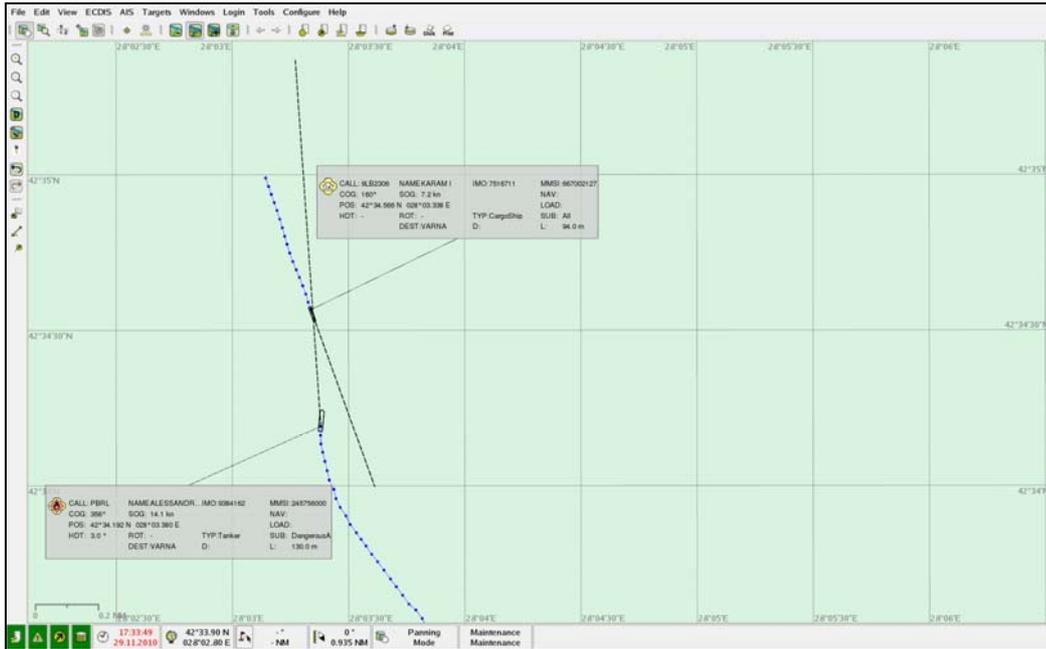


Fig. 6

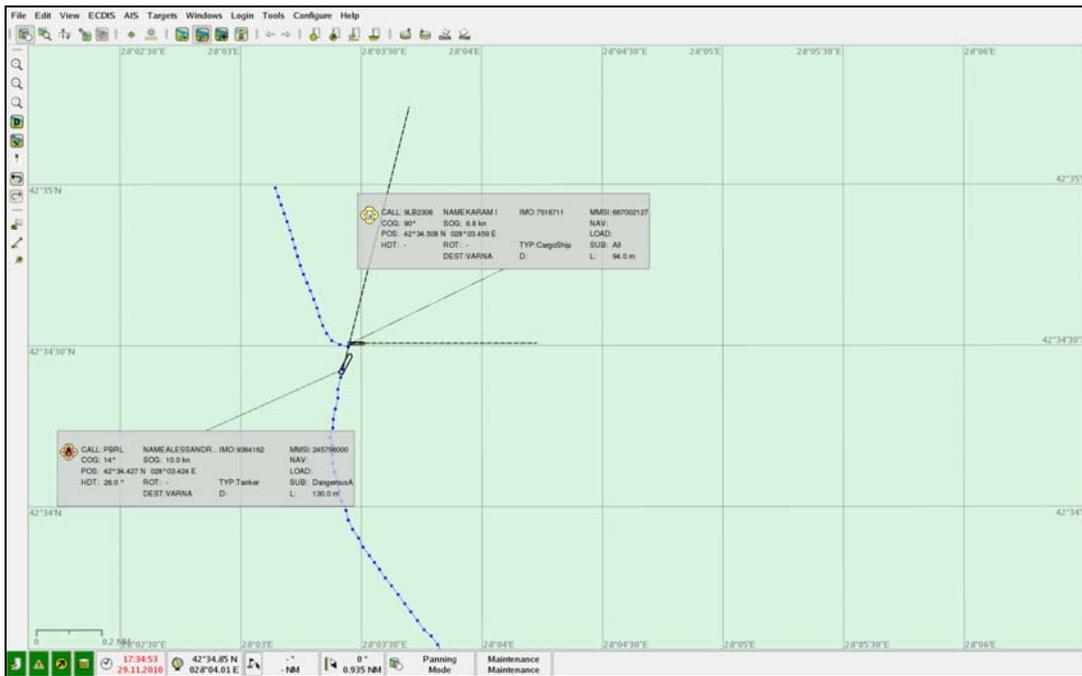


Fig. 7

15. Main reason

The collision is a result from not keeping to the International Rules for Avoiding Collisions at Sea 1972/83. According Rule 16 m/t “Alessandro DP”, seeing the red light from m/v “Karam 1” should give her the way by distinctive change in the course. The decision to change the course only when the distance was 6 cables is a late one, even more the change of the course to the starboard leads to a conflict situation.

M/v “Karam 1” from its side has not kept to Rule 17, that rules out in time actions when the ship, that should have given an advantage, has not started the needed actions. The reaction with the insufficient change of the course at a distance of 6 cables was a late one and in combination with the late manoeuvre of m/t “Alessandro” led to a collision.

Both the officer on duty on board of “Karam 1” and the officer on duty on board “Alessandro DP” have not made right conclusions from the change in the list in order to evaluate the situation. Both ships have not reacted to the situation by change in the course or by implementing “Astern” so the collision happened at “Full ahead”.

Accompanying reason

The weariness of the officer on duty because of the extended to 6 hours watch – on board of “Alessandro DP” due to the forthcoming shipping operations, and on board of “Karam 1” because of the reduced crew of only captain and first officer.

16. Voyage Data Recorder

Because of the interesting problem with the VDR device on m/t “Alessandro DP” we will stop in order to explain in details its possibilities for analyses of the events with negative final.



1. Among the respected acts of the Commission and the performed correspondence with representatives of the shipping company, that operates with m/t “Alessandro DP”, authorized by Sperry Marine service was sent on board of the ship. This service is GS Impex, Bulgaria. The ask from the Commission was the information recorded in the main block (hard disk) of VDR and relevant to the time before, during the accident and after it to be taken down and to be handed for the subsequent purposes of the investigation. The same was the ask regarding the information recorded in the capsule and relevant for the same periods of time, but recorded in the last 12 hours from the moment of the embarkment of the service on board of the ship. As there were passed more than 12 hours from the accident, the aim was to be evaluated if the record in the

capsule works normal. According the information from GS Impex, as well as in a letter with referent number 28012011/AB from 28th January 2011 by the service in Vlaardingen was found out that:

1.1. It can't be "entered" in the VDR system that means that the hard disk, respectively the programs on it could not be reached. As a result there is no access to the information recorded on the disk and it's not even possible to be evaluated what is the actual status of the VDR and more specifically the status of the recorded information. It seems that there is failure in the main computer. So there is no sense in providing to the Commission the reproducing (play back) software. **On the bases of order from the company its to be provided to the Commission in line with Resolution MSC.214(81) by IMO. On the base that there is not possibility the needed data to be extracted and to be checked with the reproducing (playback) software the Commission does not received the reproducing (playback).**

1.2. From an electronic document (enclosed) "Letter with referent number 28012011/AB from 28th of January 2011 from the service in „Vlaardingen” its was made clear that there were no records after 12.09.2010. From the letter also was made clear that:

It was not found a access to the operational system of the extracted and sent for diagnostics in „Vlaardingen” original computer from the VDR. That means the whole VDR could not work, as its computer was not working;

- The content of the disk of the computer was rehabilitated after the dismounting of the hard disk and usage of a program for rehabilitation;
 - After the encoding the data from the disk it became clear that there were normally recorded data up to 12th of September 2010;
 - After that date there are no recorder data on the disk. The statement of the service was that the operational system Windows has defected after that date. That is the reason for the fact that there are no data in the capsule also;
 - From the provided part of the technical manual is clear that after some defect and stopping of the sound alarm, there still remains light indication on BAU, as long as the system is on power.
2. After the acts performed by the Commission and the appropriate actions from the authorized service in Bulgaria, „GS Impex” Bulgaria the normal work mode of the VDR was restored and that can be seen from the enclosed Service Analyses of the Data given in letter with number PSR 754021/14.12.2010.

In that letter the service engineer explicitly has marked "The problem with BAU always showing recording and no problems was resolved by restarting the unit". That is an important note and it gives explanation some vagueness for the Commission up to that moment. The Commission, as well as the engineer has noticed that BAU indicates normal recording process throughout the indication "Recording" on BAU. As it became clear that, in fact, the system was no working after 12th of September 2010, this light

indication misleads that VDR is working. So, if there have been only light indication showing problems, it could be accepted that although there was indication “Recording” the crew should have to look after a service. But the service engineer writes that the BAU was indicating “recording” without problems.

Conclusions:

1. VDR is not a device that has straight influence for prevention of ongoing accidents, e.g. for the direct safety of the ship and the ships that are in near by vicinity. It is a device that only gives information what has happened during accidents and in any present moment. So, even not working, the device has not influenced in any way the circumstances for the accident, but only has influence over the impossibility to be taken additional information afterwards that can be used for clearing of some of these circumstances.
2. As a result of Item 1 that device could help for the analyses of the reasons and for avoidance of future accidents, including one with human loss, as in our case.
3. The possibilities given in Item 2 could be used if there was working device at the moment of the accident, before it and after it. In the case the device was not working, as this is seen from the technical expertise provided by the service and could not be used by the Commission for clearing the reasons for the accident.
4. The commission stated, that the crew possibly has not been aware for the fact that the VDR was not working. Here we have 2 possibilities: The indication on the display of the BAU saying “Recording” has misled them that the system is working properly or the crew was not sure that should ask for a service even there has been light indication.

17. Faults found by the Commission in the process of the investigation

The Commission stated that:

- The marine Rescue Coordination Center MRCC-Varna has no proper space equipped for a work by a Joint Staff from experts, participant in search and rescue operations;
- At the moment State Enterprise “Port Infrastructure”, Bulgarian navy, National Service “Border Police” and Executive Agency “Fishing and aqua cultures” has each own systems for control and surveillance of the sea area and their radar stations are located almost at one and the same locations. So instead their operations to be optimized by building a Joint System, these institutions work each on his own program and their plans rarely interact;

- During the operation for search and rescue the main device to be used were the mobile phones. That showed that the interoperability of the stationary radio-communication means of the rescue vessels and of the different institutions is not on the appropriate level;

- The representative of the ship owner on the board of m/t “Alessandro DP” forbid the crew to give data for the accident to the Commission. Only after the intervention of the Netherlands Investigation Board the Commission received assistance from the crew for the investigation.

18. Proposals:

On the base of the results from the investigation of the accident the Commission makes the following proposals, aimed to improve the safety measures:

Towards the International Marine Organization (IMO):

Taking in account this case, as well as other founded cases of wrong misleading indications on VDR и S-VDR, to be proposed for discussion official document by IMO, more specifically to the Under committee for communications, search and rescue COMSAR and to the Under committee on navigation safety NAV a document concerning the VDR and S-VDR with the following exemplary formulation:

„Improving the characteristics of the VDR and S-VDR for a reliable signalization for defects in the devices and in the software, and more specifically for adding the standards for technical realization (Performance Standards), with the aim for assuring of non stop availability of working device on the board of the vessels”.

Towards MTITC, MoD and MI:

To update and coordinate “Plan for search and rescue operation in the responsible area of Republic of Bulgaria in Black Sea” (edition 2003) in the part concerning the procedures for cooperation in cases of heavy accidents at sea demanding joint actions in search and rescue operations.

Responsible: Director of Directorate „УПКПОИБ” in MTITC Term: Six months after the receiving of the Final Report

Towards EA “Maritime Administration:

EA “Maritime Administration” to plan joint annual exercises for search and rescue using different scenarios;

Responsible: Executive Director of EAMA

Term: constant

EA ”Maritime Administration” to propose the acceleration of the integration in a effective system for traffic control of the existing systems for surveillance managed by

NS “Border Police”, SE “Port Infrastructure”, Bulgarian Navy and EA “Fishing and aqua cultures”.

Responsible: Executive Director of EAMA

Term: 30.09.2012

To provide the Maritime Rescue Coordination Center MRCC-Varna with the needed for the activities modern technical means and program products assisting the planning, organization, coordination and the implementation of the process for search and rescue in correspondence with “Plan of the search and rescue operation in the responsible zone of Republic of Bulgaria in Black Sea”;

Responsible: Executive Director of EAMA

Term: 31.03.2012

To be improved the cooperation between the responsible institutions in the system of MTITC, MoD and MI in the sphere of organization of search and rescue operations throughout performing of meetings at least twice an year for improving of the coordination and solving of the current problem;

Responsible: Executive Director of EAMA

Term: constant

To organize periodical participation of the experts and operators in the Maritime Rescue Coordination Center in training and refreshing courses on search and rescue at sea;

Responsible: Executive Director of EAMA

Term: constant

To perform the needed action in coordination with Bulgarian navy and NS “Border Police” for obligatory separation zones along the Bulgarian coast line. In correspondence of the heavy traffic of old ships and for avoidance of ecological pollution from oil tankers to be evaluated the advisability for translation of the separation zones with 5-10 nautical miles from the coast line to the open sea.

Responsible: Executive Director of EAMA

Term: 31.09.2012

Towards the ship owners of the two ships:

To remind the captains for the absolute necessity of keeping good standards for watching the bridge and for performing of timely actions in case of collision or dangerous passing regardless of the action of the other ship.

With circular letter to remind the captains for the obligations to keep the “International rules for avoidance of collisions at sea 1972/83” and the respected chapters in the Safety management systems of the companies.

The documents connected with the investigation of the accident are kept in the archive of “Unit for investigations of accidents in the air, maritime and rail road transport” Directorate.

Chairman of the Commission:

..... *Captain Liubomir Gastev*

Members of the Commission:

..... Vasil Georgiev

Chief inspector in MTITC

..... Christo Christov

Senior inspector in MTITC

..... Stephan Dimitrov

*Chief of "Technical exploitation and development" Section
SE „Port Infrastructure"*