



HELLENIC REPUBLIC



HELLENIC BUREAU FOR MARINE CASUALTIES INVESTIGATION



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Foreword

The Hellenic Bureau for Marine Casualties Investigations (HBMCI) was established by Law 4033/2011 (Government Gazette 264/12.22.2011), in the context of implementing EU Directive 2009/18/EC. HBMCI conducts technical investigations into marine casualties or marine incidents with the sole objective to identify and ascertain the circumstances and contributing factors that caused them through analysis and to draw useful conclusions and lessons learned that may lead, if necessary, to safety recommendations addressed to parties involved or stakeholders interested in a marine casualty, aiming to prevent or avoid similar future marine accidents.

The conduct of Safety Investigations into marine casualties or incidents is independent from criminal, discipline, administrative or civil proceedings whose purpose is to apportion blame or determine liability. This investigation report has been produced without taking under consideration any administrative, disciplinary, judicial (civil or criminal) proceedings and with no litigation in mind. It does not constitute legal advice in any way and should not be construed as such. It seeks to understand the sequence of events occurred on the 7th of June 2017 and resulted in the examined serious marine casualty. Fragmentary or partial disposal of the contents of this report, for other purposes than those produced may lead to misleading conclusions. The investigation report has been prepared in accordance with the format of Annex I of respective Law (Directive 2009/18/EC) and all times quoted are vessel's time unless otherwise stated as Local Time (UTC +3).

Under the above framework HBMCI has been examining the grounding of Bulk Carrier St. Gregory, which occurred on the 7th of June 2017, in the South Coast of Peloponnese (Kokkala), in Greece. This report is mainly based on information and evidence that have been derived from vessel's Voyage Data Recorder (VDR), the Hellenic Coast Guard AIS Monitoring system and the interview process.

Glossary of Abbreviations and Acronyms

1	A/B	Able seaman
2	AIS	Automatic identification system
3	ARPA	Automatic radar plotting aid
4	bfrs	Force of wind in beaufort scale
5	BNWAS	Bridge Navigational Watch Alarm System
6	CoC	Certificate of Competency
7	CoG	Course Over Ground. The actual path of a vessel with regard to the seabed, measured in degrees. Course may be relative to true north (true course) or magnetic north (magnetic course)
8	COLREGS	International regulations for preventing collisions at sea, 1972, as amended
9	DOC	Document of Compliance
10	°	degrees (of angle)
11	GMDSS	Global maritime distress and safety system
12	GOC	General Operators' Certificate for GMDSS
13	GPS	Global positioning system
14	gt	gross tonnage
15	HCG	Hellenic Coast Guard
16	HDG	Heading. The direction in which a vessel is pointed at any given moment. Heading may be relative to true north (true heading) or magnetic north (magnetic heading)
17	Integrated Marine Data Environment (IMDatE)	a technical framework that collects and combines data from EMSA's maritime applications and other external sources
18	IMO	International Maritime Organization
19	ISM	International Management Code for the safe operation of ships and for pollution prevention
20	knots	unit of speed equal to one nautical mile (1.852 km) per hour
21	KW	Kilowatt
22	L.T.	local time
23	nm	nautical miles
24	3/O	3 rd Officer
25	2/O	2 nd Officer
26	C/O	Chief Officer
27	O(s)OW	Officer(s) on the watch
28	SMC	Safety management certificate
29	SMS	Safety management system
30	SOLAS	Convention for the Safety of Life at Sea 1974, as amended
31	STCW	International Convention on Standards of Training, Certification and Watchkeeping for seafarers
32	UTC	Universal co-ordinated time
33	VDR	Voyage Data Recorder
34	VHF	Very high frequency (radio)
35	WP	Way point

1. Executive Summary

On the 7th of June 2017, at approximately 05:13 (L.T.), the B/C St. Gregory grounded on the rocky coastline at the South Coast of Peloponnese (Kokkala - Greece), in position lat: 36° 31,66 N, long: 022° 28,37 E. At the time of the marine casualty, weather conditions were reported to be with very good visibility, wind force ENE 5-6 bfrs, sea was moderate and it was still dark.

St. Gregory was en route to Sfax (Tunisia). On the 3rd of June 2017, she had departed from the port of Chernomorsk in Ukraine, where she had loaded 31.000 t of granulated sulphur in bulk.

The vessel grounded on a bottom of sand and rocks by bow up to frame number 180. As a result of the grounding, there was damage to the hull with several dents and cracks near the bulkhead between the FPTK and WBT 1SB. More specifically there were 29 cracks observed in the WBT 1P & 1S, the FPTK and the Pipetunnel. None of the crew was injured and no pollution was reported.

Following the casualty the owners contacted a Salvage Company to undertake vessel's refloating and removal and the anti-pollution response operation as well.

St. Gregory re-floated on 20th June 2017, after off loading of her cargo and anchored with the assistance of two (02) Salvage Tugs, at Gytheio anchorage sea area. On 6th of September 2017 St. Gregory was escorted by a Salvage Tug to Chalkis Shipyard, Greece, in order to undergo permanent repairs.

The HBMCI launched a safety investigation into aforementioned marine accident. The investigation Team arrived at casualty site on the 8th of June 2017. Based on the findings of the investigation process it was revealed that the OOW (00:00 – 04:00) – who was the sole watch keeper – had become inattentive at approximately 02:30 most probably due to the effects of alcohol consumption and stopped monitoring the vessel's positions in relation to the voyage plan. As a result the vessel maintained a steady course and crossed the planned WP without altering course before running aground on the South Coast of Peloponnese. The bridge navigation watch alarm system (BNWAS), which could have alerted the Master, was not operating properly. The safety investigation highlighted additional contributing factors that led to the examined marine casualty as presented in the Analysis section.

The vessel's managers, Tri Bulk Shipping Ltd, has taken action to enhance compliance with the safety management system (SMS) on all fleet vessels, with particular emphasis on control of alcohol consumption and bridge resource management.

Note:

- *This report is mainly based on information and evidence that have been derived from the interview process and information collected from those individuals involved in the marine casualty, as well as electronic positioning data provided by the competent authorities of the Hellenic Coastguard and St. Gregory's VDR data.*
- *In respect to the above grounds, Commission Regulation (EU) No 1286/2011/Annex/paragraphs 4.2 & 4.3¹ have been generated in order to properly identify causal and contributing factors led to the marine accident.*

¹ **Abstract from Com. Regulation 1286/2011 "Common methodology for investigating marine casualties and incidents".**

4.2 *Proper identification of causal factors requires timely and methodical investigation, going beyond the immediate evidence and looking for underlying conditions, which may be remote from the site of the marine casualty or incident, and which may cause other future marine casualties and marine incidents. Marine safety investigations should therefore in principle serve as a means of identifying not only immediate causal factors but also conditions that may be present in the whole operational process. To achieve this, the analysis of the evidence collected shall be thorough and iterative.*

4.3 *If a gap of information cannot be resolved and is filled in by logical extrapolation and reasonable assumptions, such extrapolation and assumptions shall be made clear in the wording of the report. A useful tool in this process can be the identification of all options and their analytical reduction to reach the most likely hypotheses.*

2. Factual Information



Figure 2 / 1: M/V ST GREGORY

2.1 Ship particulars

Vessel's name:	St. Gregory
Type of vessel:	Bulk Carrier
Flag:	Bahamas
Port of registry:	Nassau
IMO number:	9414759
Call sign:	C6YO5
DOC company:	Tri Bulk Shipping Ltd
IMO company no. (DOC):	5656373
Year built:	2010
Shipyard:	Jiangmen Nanyang Ship Engineering Co. / CHINA
Classification society:	Bureau Veritas
Length overall:	179.90 m
Breadth overall:	28.40 m
Gross tonnage:	20,809
Deadweight:	31,800 t
Main Engine max. output:	6,480 kW / 8,810 hp / 131 RPM
Hull material:	Steel

2.2 Voyage Particulars

Port of departure:	Chernomorsk, Ukraine
Port of arrival:	Sfax, Tunisia
Type of voyage:	International
Cargo information:	31,000 t of granulated sulphur in bulk
Safe Manning:	14
Manning:	19

2.3 Weather data

Wind (direction-speed):	ENE – 5/6 bfrs
Sea state:	Moderate
Visibility:	good
Light/dark:	Dark
Current:	Unknown

2.4 Marine Casualty information

Type of marine incident :	Grounding
IMO Classification:	Serious marine casualty
Date, time	06 June 2017 at 04:13 (Ship's Time) - 05:13 (L.T.) – 02:13 (UTC)
Location	South coast of Peloponnese (Kokkala), Greece
Position	36° 31,66 N – 022° 28,37 E
Ship's voyage segment:	On passage
Place on board:	Fore section & bottom - structural damages
Human factor data:	Yes
Consequences to individuals:	No injuries
Consequences to environment:	No pollution
Consequences to property:	Structural damages to vessel's fore part and Pipetunnel

capabilities (3cm and 10cm radar display),BNWAS, Autopilot, Echo sounder, Two (02) VHF's, Speed log, Course recorder. Furthermore, St. Gregory was equipped with ECDIS, only for training purposes, since she was navigating with paper charts as her primary means.

3.2 The crew

St. Gregory was operating under a crew complement of 19 seafarers including the Master, of Ukraine and Philippine nationalities. The working language was English.

The vessel's three (03) navigating officers, the C/O, the 2/O and the 3/O, shared navigational watches equally, under a 4 On –8 Off watch pattern, while at sea.

The Master, aged 57, was an Ukrainian national. He held an Ukrainian certificate of competency (STCW II/2) permitting him to sail as master on ships, of 500 G.T and above, on international voyages.

He had a sea experience as a master for 17 years and this was his first contract with this company. He had joined St. Gregory on 17th of March 2017.

The C/O, aged 36, was an Ukrainian national. He held an Ukrainian certificate of competency (STCW II/2) permitting him to sail as Chief Mate on ships, of 500 G.T. and more, on international voyages. He had a sea experience as a C/O for 5 years and had joined St. Gregory on 23rd of May 2017. He was performing the 04:00-08:00 / 16:00-20:00 OOW at sea and was also the Security Officer as well as the Safety Officer on board St. Gregory.

The 2/O, aged 28, was an Ukrainian national. He had an Ukrainian certificate of competency (STCW II/1) permitting him to sail as an Officer in charge of a navigation watch on ships, of 500 G.T and more, on international voyages. He had sailed as 2/O for 4 years and had joined St. Gregory on 17th of March 2017. He was performing the 12:00-04:00 / 00:00 – 04:00 OOW at sea and he was the navigating Officer at the time of the grounding.

The 3/O, aged 24, was also an Ukrainian national. He had an Ukrainian certificate of competency (STCW II/1) permitting him to sail as Officer in charge of a navigation watch on ships, of 500 G.T and above, on international voyages. He had joined St. Gregory on 15th of February 2017. He was performing the 08:00-12:00 / 20:00-24:00 OOW at sea.

3 ABs serving on board St. Gregory, were holding STCW II/4 Certificate of Competency, enabling them to participate in navigational watches, as look-out watchmen.

3.3 The voyage and Watchkeeping schedule

St. Gregory departed from Chernomorsk (Ukraine) on 3rd of June 2017 with a cargo of 31.000 t of granulated sulphur in bulk. The passage plan from Chernomorsk to Sfax was prepared by the 2/O and signed by the Master and the other two OsOW, according to company's SMS procedures.

St. Gregory, while at sea, was navigating under a navigational pattern of three watches performed by the 3/O (0800-1200/2000-2400), the 2/O (0000-0400/1200-1600) and the C/O (0400-0800/1600-2000). Each navigational watch also consisted of an A/B as a Look out watch, according to relevant International Regulations and vessel's SMS.

3.3.1 The 3/O's watch / 20:00-24:00

The 3/O was performing the 20:00 – 24:00 navigational watch. During his watch he changed vessel's time (from UTC +3 to UTC +2). Therefore, ship's time was adjusted one (01) hour retard. The 2/O came on the wheelhouse at approximately 23:50 in order to carry out the next watch.

Before leaving the wheelhouse, the 3/O informed the 2/O about the next W.P. (No. 8-Figure 3.4/1), in order to alter vessel's course. He didn't mention anything regarding the BNWAS operation. At around 00:10, the 3/O, having handed over the navigational watch to the 2/O left the bridge and went to his cabin to rest.

3.3.2 The 2/O's watch / 00:00-04:00

The 2/O was performing the 00:00-04:00 navigational watch. On 7th June 2017, 2/O came on wheelhouse at approximately 23:50 to take over his duties. He was informed by the 3/O about the next W.P. (No. 8) where the vessel should alter her course according to the voyage plan.

3.3.3 The C/O's watch / 04:00-08:00

The C/O was performing the 04:00-08:00 navigational watch. Therefore, he was expected to take up his duties as an OOW at 04:00, as usually. However, on the day of the casualty, there was a mismatch regarding the time C/O had on his personal watch in relation to the vessel's time. More specifically, the C/O kept on his personal watch the vessel's time as it was prior to its change by the 3/O. Therefore, the C/O's watch time was 03:30 instead of 02:30 and as a result of this, when his personal wake alarm went off at 03:30 according to his personal watch, he realized that the vessel's time was still 02:30. Therefore, he went back to sleep and he didn't wake up to take over the watch at 04:00.

3.4 The grounding

At midnight the 2/O relieved the 3/O from the navigational watch. The vessel was in autopilot steering with a HDG of 224°. Before entering the "Steno of Elafonisos" (W.P. No 8 in position 36 20' N 023 30' E), the vessel had to alter her course to 280° and proceed with a speed of 13 knots for a distance of approximately 28 n.m. before arriving at the next W.P. No 9, in position 36 25' N 022 54' E (see **Figure 3.4 / 1**). This was the exit from "Steno of Elafonisos". At that point the vessel had to change course again to 251° for a distance of 22 n.m to arrive to W.P. No 10. South of Akrotirio Tainaro, exiting the South Coasts of Peloponnese.

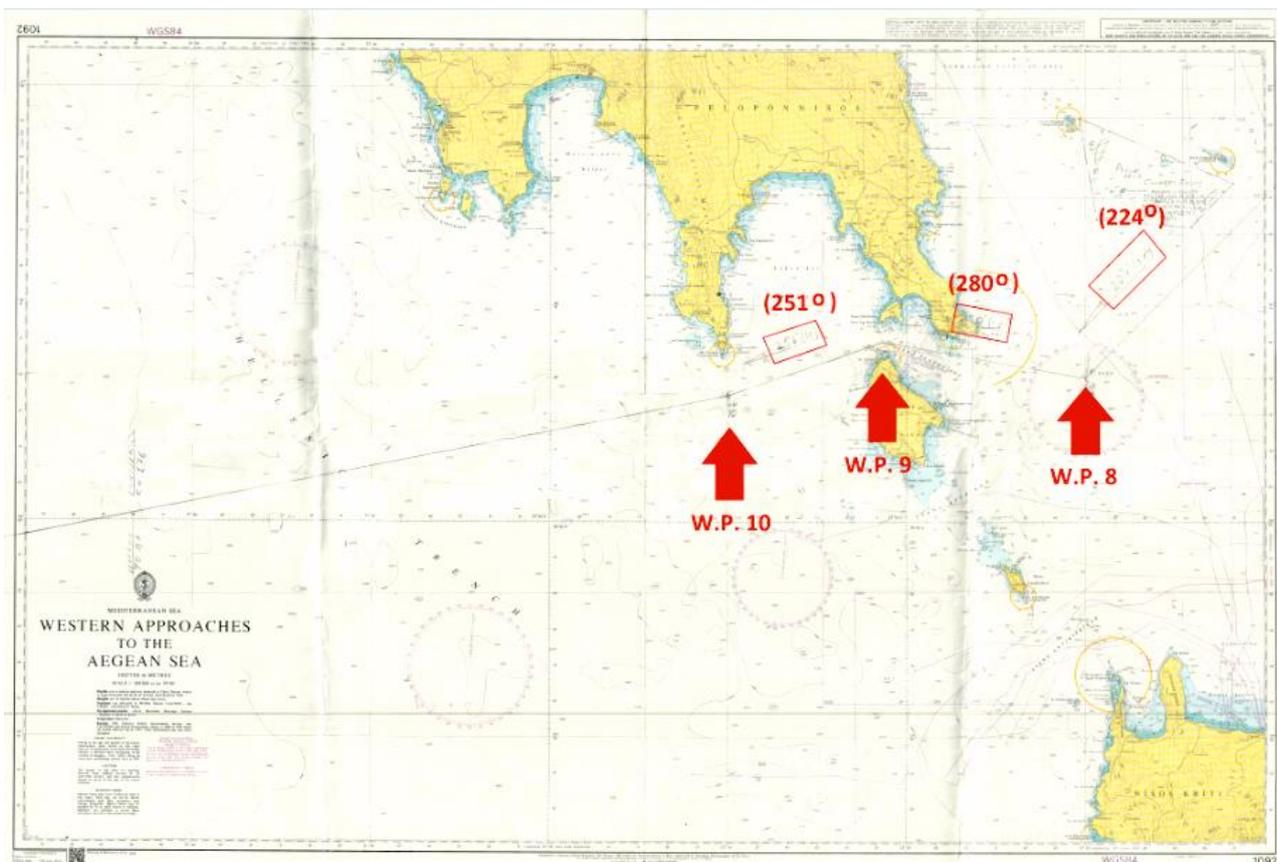


Figure 3.4 / 1: The planned route according to the Voyage Plan at the casualty sea area (the handmade notes by the OOW are highlighted in red).

After the 2/O altered the vessel's course to 284°, at approximately 00:37, the vessel continued with a steady course (see **Figure 3.4/2**). No course alteration was made by the 2/O at the planned W.P.

3.6 Salvage Operations - refloating

The Owners of St. Gregory contracted with a Salvage Company to carry out the refloating and removal operations. On the same day, a team of salvage experts who had arrived on scene, conducted an inspection on board the casualty vessel whilst divers assessed the underwater situation and damage. The grounding had caused 29 cracks in the WBT 1P & 1S, the FPTK and the Pipetunnel. Temporary emergency repairs were carried out on all damaged compartments. In order the vessel to refloat, her cargo was discharged and was then reloaded to St. Gregory, according to a plan prepared by the Salvage Operators.

On the 6th of September 2017, St. Gregory by own means and escorted by a Salvage Tug departed for Chalkis Shipyard, Greece, in order to undergo permanent repairs.

4. Analysis

The analysis of the examined marine casualty aims to identify the factors and causes that contributed to the marine casualty, taking into account the sequence of events and the collection of information during the investigation process.

4.1 The Bridge Team Composition and the Absence of a Look-out

The Deck Department numbered four (04) Officers including the Master, one (01) Bosun, three (03) ABs, and one (01) OS. According to vessel's "Shipboard working arrangement", as shown below (**Table 4.1 /1**), the watch keeping schedule at sea was performed under the "4 on-8 off" watch pattern during daytime and nighttime, assigned to the C/O, the 2/O and the 3/O, while an A/B was forming part of each navigational watch respectively, as a lookout.

	Position/rank	Watchkeeping hours	Non Watch keeping Duties
1	Master	-	0800-1700
2	C/O	0400-0800/1600-2000	0900-1200
3	2/O	0000-0400/1200-1600	0800-1200
4	3/O	2000-0000/0800-1200	1300-1700
5	AB 1	0000-0400/1200-1600	0900-1200
6	AB 2	0400-0800/1600-2000	0800-1200
7	AB 3	2000-0000/0800-1200	1300-1700

Table 4.1 / 1: St. Gregory's shipboard watch and working arrangement.

As stated before (par. 3.4) it was verified from the analysis of the VDR data that, the 2/O during his watch, was not monitoring the vessel's course according to the voyage plan. No course alteration was carried out from approximately 00:37 (Ship's time) when St Gregory passed the WP No.8, until after her next WP No.9 at approximately 02:30 (ship's time), where a change of course should be carried out to 251⁰. Consequently St Gregory continued with the same course (283⁰) until her grounding position. Additionally during that time, no sound of a door opening/closing was heard, so as to conclude that someone has left or entered the bridge. Therefore, he remained inactive during the aforementioned period of his navigational watch and until the vessel ran aground.

The relevant provisions of COLREGS 72', rule 5 in combination with STCW Part A/ Chapter VIII/Part 4-1 describe the basic principles for performing a look-out watch.²

Following the above, par. 16 of the above mentioned International Regulation (STCW/Part A/Chapter VIII / Part 4-1) allows the Master to decide the composition of a sole watch:

"16. ...the officer in charge of the navigational watch may be the sole lookout in daylight provided that, on each such occasion:

1. the situation has been carefully assessed and it has been established without doubt that it is safe to do so;

² COLREGS '72, rule 5 requires that: "Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision".

STCW/Part A/Chapter VIII / Part 4-1 states that: "13. The officer in charge of the navigational watch is the master's representative and is primarily responsible at all times for the safe navigation of the ship and for complying with the International Regulations for Preventing Collisions at Sea, 1972, as amended." Look out watch aspect is also regulated in followings par. 14 and 15 of aforementioned STCW Code, stating that: "14. A proper lookout shall be maintained at all times in compliance with rule 5 of the International Regulations for Preventing Collisions at Sea, 1972, as amended and shall serve the purpose of: .1 maintaining a continuous state of vigilance by sight and hearing, as well as by all other available means, with regard to any significant change in the operating environment; .2 fully appraising the situation and the risk of collision, stranding and other dangers to navigation; and .3 detecting ships or aircraft in distress, shipwrecked persons, wrecks, debris and other hazards to safe navigation. 15. The lookout must be able to give full attention to the keeping of a proper lookout and no other duties shall be undertaken or assigned which could interfere with that task."

2. full account has been taken of all relevant factors, including, but not limited to: State of weather; – visibility; – traffic density; - proximity of dangers to navigation; – the attention necessary when navigating in or near traffic separation schemes; and
3. assistance is immediately available to be summoned to the bridge when any change in the situation so requires” .

Based on the above, relieving the A/Bs from their look-out watch duties is not allowed under any circumstances, during night time.

As it was emerged from the records of “work and rest hours” of the ABs forming part of the navigational watch, no dedicated look-out was posted concerning the hours of darkness, on board St. Gregory prior to the casualty on the 7th of June 2017. This was also verified from the VDR audio recordings, according to which no AB was heard entering the bridge or speaking with the OOW. The absence of a posted look-out night watch (00:00-04:00) had also taken place on 4th and 5th of June 2017 (**Figure 4.1 / 1**) since the designated AB was relieved in order to be deployed for deck operations that were carried out during the day time.

TRI BULK SHIPPING LTD. S-04

(MAY 2016 - v0)

Ship's Name: ST. GREGORY		Seafarer's Full Name:		Rank: AB 1		NOT TO BE COMPLETED BY THE SEAFARER ¹																																																									
Month: JUNE		Year: 2017		Rank: AB 1																																																											
DAYS (dd/mm/yy)	Weekday	HOLIDAY	HOURS																								(1) Rest Hrs not less than 10hrs in any 24hrs period	COMMENTS	(2) Intervals of no more than 14 work hrs between rest periods.	(3) Work Hours in any 7 days period																																	
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23																																					
			ENTER LAST 6 WORK HOURS (IF ANY) OF PREVIOUS MONTH →																																																												
01/06/17	Thu		X	X	X	X							X	X	X	X	X	X	X																	13	Gangway Watch/Work on deck	11																									
02/06/17	Fri		X	X	X	X							X	X	X	X																					16	Gangway Watch	8																								
03/06/17	Sat		X	X	X	X							X	X	X	X	X	X	X																			10	Gangway Watch/Mooring operation	14																							
04/06/17	Sun												X	X	X	X	X	X	X	X	X	X																	14	Work on deck	10																						
05/06/17	Mon												X	X	X	X	X	X	X	X	X	X	X																	13	Work on deck	11																					
06/06/17	Tue		X	X	X	X														X	X	X	X	X																15	Lookouts on Bridge/Work on deck	9																					
07/06/17	Wed					X	X	X	X	X	X	X	X	X	X																										15	Gangway Watch/Work on deck	9	72																			
08/06/17	Thu																																									24		0	61																		
09/06/17	Fri												X	X	X	X	X	X	X																								16	Gangway Watch/Work on deck	8	61																	
10/06/17	Sat		X	X	X	X							X	X	X	X	X	X																										13	Gangway Watch/Work on deck	11	58																
11/06/17	Sun												X	X	X	X	X	X	X	X	X																								15	Work on deck	9	57															
12/06/17	Mon												X	X	X	X	X	X	X	X	X	X	X																							12	Work on deck	12	58														
13/06/17	Tue		X	X	X	X							X	X	X	X	X	X	X	X	X	X	X																								13	Gangway Watch/Work on deck	11	60													
14/06/17	Wed		X	X	X	X							X	X	X	X	X	X	X	X	X	X	X																									14	Gangway Watch/Work on deck	10	61												
15/06/17	Thu		X	X	X	X							X	X	X	X	X	X	X	X	X	X	X																										12	Gangway Watch	12	73											
16/06/17	Fri		X	X	X	X							X	X	X	X	X	X	X	X	X	X	X																											13	Gangway Watch/Work on deck	11	76										
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GROUNDING

Nights prior to the grounding

1. For completion an use in accordance with the procedures established by the competent authority in compliance with the relevant requirements of the Seafarers' Hours of Work and the Manning of Ships Convention, 1996 (Convention No.180) & MLC 2006
 2. Additional calculations or verifications may be necessary to ensure compliance with the relevant requirements of the Seafarers' Hours of Work and the Manning of Ships Convention, 1996 (Convention No.180) and the International Convention on Standards of Training, Certification and Watchkeeping, 1978, as amended (STCW Convention).

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Figure 4.1 / 1: Work and rest hours of the 0000-0400 Look Out AB on board St. Gregory. On this form it is obvious that the Look Out watch was not performed by the AB neither on the casualty night (07/06/2017) nor other nights prior to the casualty (04-05/06/2017).

The applied practice to relieve the AB from his look out duties during night time removed a highly important safety barrier and had notably weakened the effectiveness of the navigational bridge watch as it is deemed likely that the presence of the AB as a look-out on the bridge on the night of

the marine casualty would have prevented the 2/O from being inactive during his watch and he would have followed the passage plan and avoided the grounding.

The disregard to the above mentioned COLREGS and STCW principal provisions which led to the absence of the A/B forming part of the 2/O's navigational watch is considered to have contributed to the grounding of St. Gregory.

4.2 St Gregory's Deck Resources

St Gregory was operating under a crew complement in excess of the MSMD. More specifically St. Gregory's deck supernumerary crew comprised of one (01) Bosun and one (01) OS, who were mainly tasked to perform works on deck. Nonetheless, the A/Bs, forming parts of navigational watches were actually employed for works on deck. Therefore as stated in the previous paragraph they were relieved from their night watch in order to rest.

The same safety issue has been identified to similar accidents already investigated by HBMCI concerning the grounding of B/C Ince Inebolu (Inv. Rep. No.: 02/2014³) and C/V Yusuf Cepnioglu (Inv. Rep. No.: 08/2014⁴), as well as to another grounding to which the investigation is still ongoing. The aforementioned cases have highlighted that although the Bridge watch composition was manned in accordance with the provisions for posted lookouts, as mentioned in STCW 95 as amended, yet still failed to maintain a proper look out. Previous experience has shown that although ratings should be part of the navigational watch, they are rarely used for this duty during daylight. In a relevant Safety study⁵ carried out the Marine Accident Investigation Branch of the UK (MAIB), specifically concerning the failure to provide a proper lookout, one of the reasons claimed was that ratings are generally of little value on the bridge especially when the Master or other Officers are present and their employment on deck is considered more beneficial for the ship's operation. As a result ABs working during the daytime are usually relieved from their night bridge watch in order to rest. This practice is considered to have contributed to the examined marine casualty.

4.3 Drug and alcohol policy

Following the marine accident, the 2/O, was subjected to a breath alcohol test by the local Coast Guard Authority, using a portable alcoholmeter approximately 07 ½ hours after the grounding. The results indicated that the 2/O was found having alcohol in his breath with concentration 0.56 mg/l. In addition to the alcohol test, during the interview process, it was stated that the 2/O was found a few minutes after the casualty, by crew who reached the bridge, to have an alcohol smell in his breath. Although the specific time he had consumed alcohol could not be determined, having in mind that the grounding's main contributing factor was that the bridge had been left unattended, it is deduced that in case the 2/O had consumed alcohol prior to the casualty, his performance as an OOW could have been affected and this factor could be considered as contributing to the grounding of the vessel.

Any level of alcohol consumption by crew members has implications for the safety of the vessel, the crew and any passengers since, even small quantities of alcohol have shown to sufficiently impair judgment and increase the risk of accidents.

To this end and in order to control alcohol consumption on board St. Gregory, relevant SMS procedures were incorporated into the vessel's SMS, as following:

³ <http://hbmci.gov.gr/js/investigation%20report/final/02-2014%20INCE%20INEBOLU.pdf>

⁴ <http://hbmci.gov.gr/js/investigation%20report/final/08-2014%20YUSUF%20CEPNIOLU.pdf>

⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/377400/Bridge_watchkeeping_safety_study.pdf

- *“It is forbidden hard liquor and/or spirits to be stored or consumed on board, except a minimum quantity of sealed bottles which to be kept under Master's personal care in bonded store for Company's representation issues only.*
- *“Only ordinary or lesser strength beers and wine may be carried on board, safely stored in bonded store. Issuance of beers and wine is under the direct control and authority of the Master and is to be distributed and consumed in mess rooms only. It is strictly prohibited to be taken in crew cabins.”*
- *“It is forbidden to serve or consume any alcoholic beverages in any coastal and/ or confined waters as well as during 24 hours before port arrival and while the vessel is in port or in anchorage”*
- *“Alcoholic beverages are not to be served or consumed at sea during conditions of reduced visibility, heavy traffic, narrow waters or in any other hazardous conditions or at any time subject to Master's discretion”*
- *“All Officers and crew are subject to drug and alcohol testing before employment and during scheduled or unscheduled physical examinations”*

Additionally, Manila amendments introduces mandatory alcohol limits within STCW Regulation VIII/1 (Fitness for duty) of 0,05% for blood and 0,25mg/l for breath which had been incorporated in the vessel's relevant SMS procedures (SM-05).

To take effect of the above, the last alcohol test was carried out randomly among crew members, on 22nd of May 2017 with negative results. From the information collected during the interview process, it was emerged that during vessel's stay at the port of Chernomorsk, crewmembers brought from ashore with their personal effects, certain quantities of alcohol which were kept in their cabins. The above had not been brought under the attention of the Master and the C/O, who was acting as the Safety and Security Officer on board nor their baggages had been checked during the crew's embarkation at vessel's last port of call, as indicated in the relevant Ship's Security Plan (Instruction SECURITY 10-C).

The disregard of the above mentioned safety and security procedures is considered to have been a contributing factor leading to the marine casualty.

4.4 Main Navigational Aids

4.4.1 Navigational Charts

Paper charts were the primary means of navigation on board St. Gregory. The navigational Chart No. 1092 (Western Approaches to the Aegean Sea) was used during the night of the marine accident.

According to the voyage plan, the vessel's position had to be checked every hour, by plotting GPS positions on the chart. In case of navigating through a high risk critical zone, the vessel's position should be checked every half hour intervals and recorded on the chart.

Examination of ship's paper chart showed that positions were marked every hour, except from the time period from 00:20 to 04:13 (**Figure 4.4.1/1**) during which no positions were plotted until vessel's grounding. Taking into account that the ship's course was not altered until the vessel grounded and the fact that from the vessel's VDR no activity was recorded inside the bridge, it can be deduced that, the 2/0 was not monitoring the vessel's course for almost 4 hours according to the voyage plan as plotted on the respective chart.

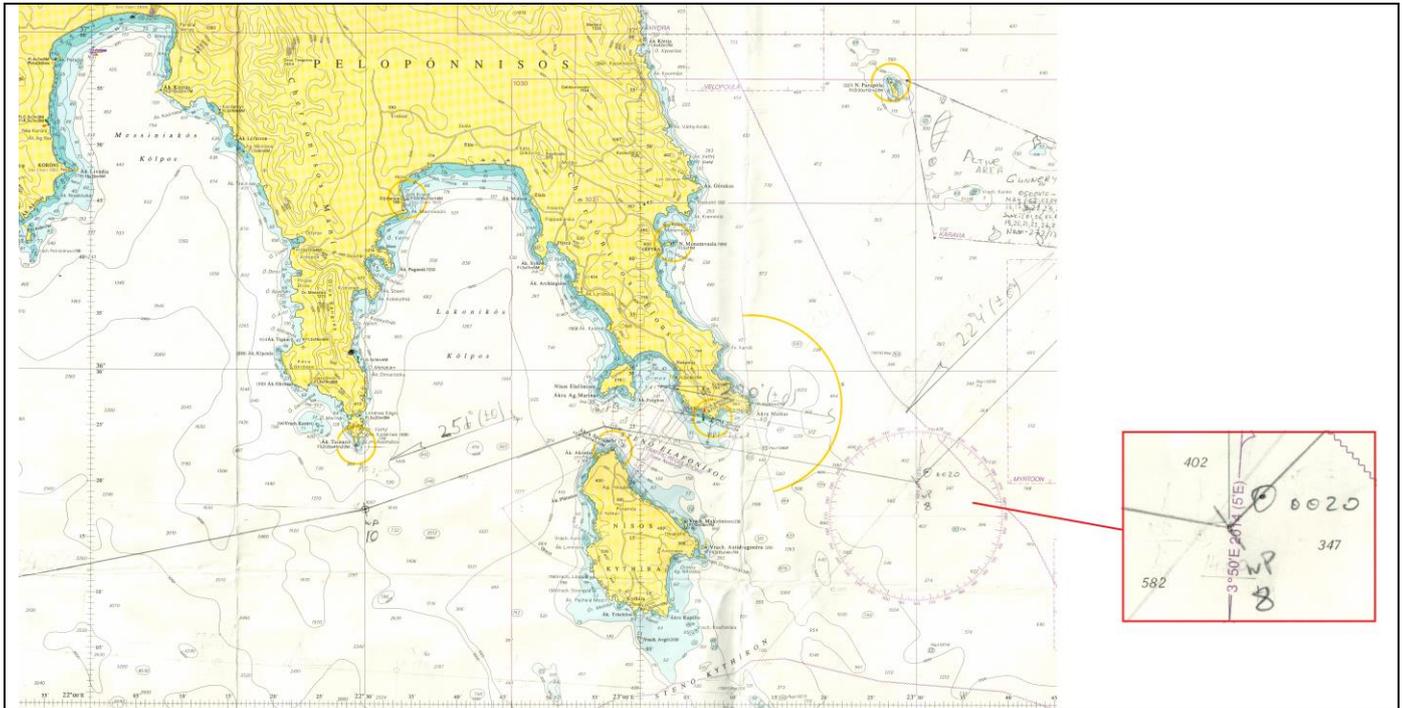


Figure 4.4.1. / 1: Abstract from the Nautical chart used on board St. Gregory during the passage from “Steno of Elafonisos”. The last plotted position (magnified part of the chart) was the one near WP 8 at 00:20 (Ship’s time)

4.4.2 Radars

As stated St. Gregory was equipped with two radar devices, one X-Band and one S-Band. The "X" band, providing a higher resolution and a clear image because of its higher (9 GHz) frequency, was mostly operating during day or night time under good weather conditions, usually at open sea and at 12nm range scale. The "S" band Radar, operating at 3 GHz, was mostly used during night time or under restricted visibility due to rain and fog and in coastal passages or congested waters. At the time of the navigational watch prior to the marine accident, the OOW was operating the X-Band Radar in 12nm range scale.

The installed radars on board St. Gregory were both featuring standard ARPA utilities including the “Guard Zones” function. Guard zones function offers the ability to the operator to customize zones acting as a shield to the vessel. If utilizing the function and the unit receives radar returns inside the guard zone or a target enters the guard zone, visual and audible alarm are activated to alert the OOW in order to take actions as appropriate. Yet, it is noted that guard zones should not in any way be construed as the sole means for detecting the risk of collision or grounding possibilities. Guard zones could be an additional safeguard for a vessel’s safe navigation to avoid the risk of collision or grounding. During the interview process it was emerged and also verified by the VDR analysis that, although all duty Officers were aware of the radar’s said utility, however they were not using it.

It is highly suggested that had the 2/O utilized the guard zone feature during his watch as an additional safety measure, that could have possibly prevented the casualty.

The omission of the 2/O to set the guard zone utility on the operating Radar is considered to have been a contributing factor in the marine accident.

4.4.3 GPS

The advantages offered in GPS navigation in the marine sector are extensive. GPS units enhance the operation performance of the Navigator, namely by providing vessel’s position accuracy as well as a wide range of utilities in several display modes such as plotting the planned route effectively and observing the location of the next way point. It can also automatically monitor the vessel’s track on plotted routes by setting customized audible “off course alarms” for desirable off course distances. Once the vessel is running off the preset boundaries, an audible alarm is activated and alerts the

Duty Officer to take immediate actions. Similar feature could be utilized for reaching arriving points or waypoints. In regard to the aforementioned, GPS “off course alarms” could be an additional safeguard for vessel’s safe navigation assisting the OOW by optimizing and facilitating the course monitoring duties.

During the interview process, it was stated that the voyage plan routes were plotted on the GPS however no “Off course alarm” was customized and set for the monitoring of vessels course and potential drift from the intended plotted route. The above was also verified by the VDR analysis.

It is considered highly possible that if the 2/O had set a GPS “off course alarm”, its activation when sailing off her intended course could have alerted him in order to readjust her course back on the plotted route.

The 2/O's disregard to utilize the GPS “off course alarms” is suggested to have been a contributing factor in the marine accident.

4.4.4 Bridge Navigational Watch & Alarm System (BNWAS)

A Bridge Navigational Watch & Alarm System (BNWAS) is required to be fitted on all new and existing ships, in accordance with the amendments to SOLAS Chapter V, Regulation 19, Res. MSC.282(86) (adopted on 5 June 2009) after 1st July 2012 for vessels of 3000 GT and above.

SOLAS regulation V/19.2.2.3 also requires that Bridge Navigational Watch Alarm System (BNWAS) shall be in operation whenever the ship is under way at sea.

4.4.4.1 BNWAS general operation

The BNWAS monitors bridge activity and detects OsOW disability or incapacitation which could lead to marine accidents. The system automatically alerts the Master or another qualified Deck Officer if for any reason the OOW becomes incapable of performing the watch keeping duties. This purpose is achieved by a series of indications, sensors and alarms to alert firstly the OOW. In case he is unable to reset the system during a preset timeout period (dormant period - set between 3min to 12min) the system is then programmed to alert the Master or another qualified Officer, by an alarm.

BNWAS units may also offer an automatic reset function through motion or action sensors fitted on the bridge. This function may relieve the Watchkeeping Officer from the burden of manually resetting the system before the timeout period is elapsed by detecting the motion or action of an individual on the bridge. Additionally, the BNWAS may provide the OOW with a means of calling for immediate assistance if required.

4.4.4.2 BNWAS performance standards

The performance standards for a BNWAS were outlined in IMO Res. MSC.128 (75) as well as by the technical standards as specified by the International Standards of IEC⁶ 62616:2010 (E). IMO performance standards amongst others, namely provides that the BNWAS should have three modes of operation:

- Automatic (Automatically brought into operation whenever the ships heading or track control system is activated and inhibited when this system is not activated) (*should not be used*⁷);
- Manual ON (In operation constantly whenever the ship is underway at sea. (SOLAS V/19.2.2.3);
- Manual OFF (Does not operate under any circumstances).

IMO Res. MSC.128 (75) also foresees that the means of selecting the Operational Mode and the duration of the Dormant Period should be security protected so that access to these controls should be restricted to the Master only. It is furthermore provided that all items of the equipment, forming

⁶ International Electro technical Commission - Maritime Navigation and Radio communication Equipment and Systems

⁷ See reference in MSC.1/Circ.1474/ 23 May 2014 "NOTE: The Automatic mode is not suitable for use on a ship conforming with regulation SOLAS V/19.2.2.3 which requires the BNWAS to be in operation whenever the ship is underway at sea".

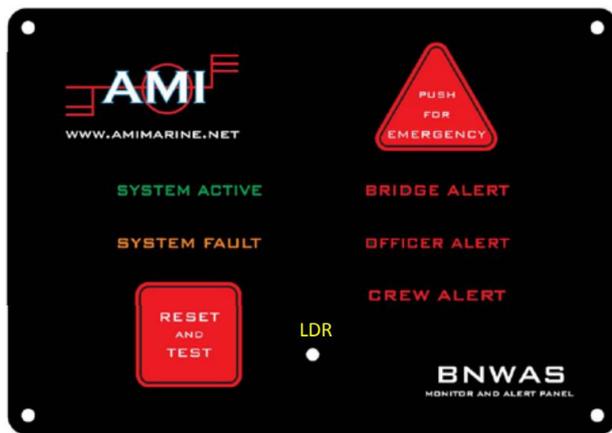
part of the BNWAS, should be tamper-proof so that no member of the crew may interfere with the system's operation.

Said technical requirements are incorporated in the IEC standards and access to BNWAS from unauthorized personnel is protected by a password or a key-lock.

Aforementioned specific technical specifications are considered a safeguard for the system's proper and continuous operation according to the respective legal framework in force, highlighting its contributing importance to the watchkeeping personnel for maintaining a proper and effective vigilance during bridge watch.

4.4.4.3 St. Gregory's BNWAS

St. Gregory was fitted with an AMI marine KW810 BNWAS, in compliance with the above mentioned technical specifications & standards (Figures 4.4.4.3 / 1, 2 & 3).



Figures 4.4.4.3/1 & 2: St. Gregory's BNWAS as presented in its Operational Manual and as fitted on board the vessel.



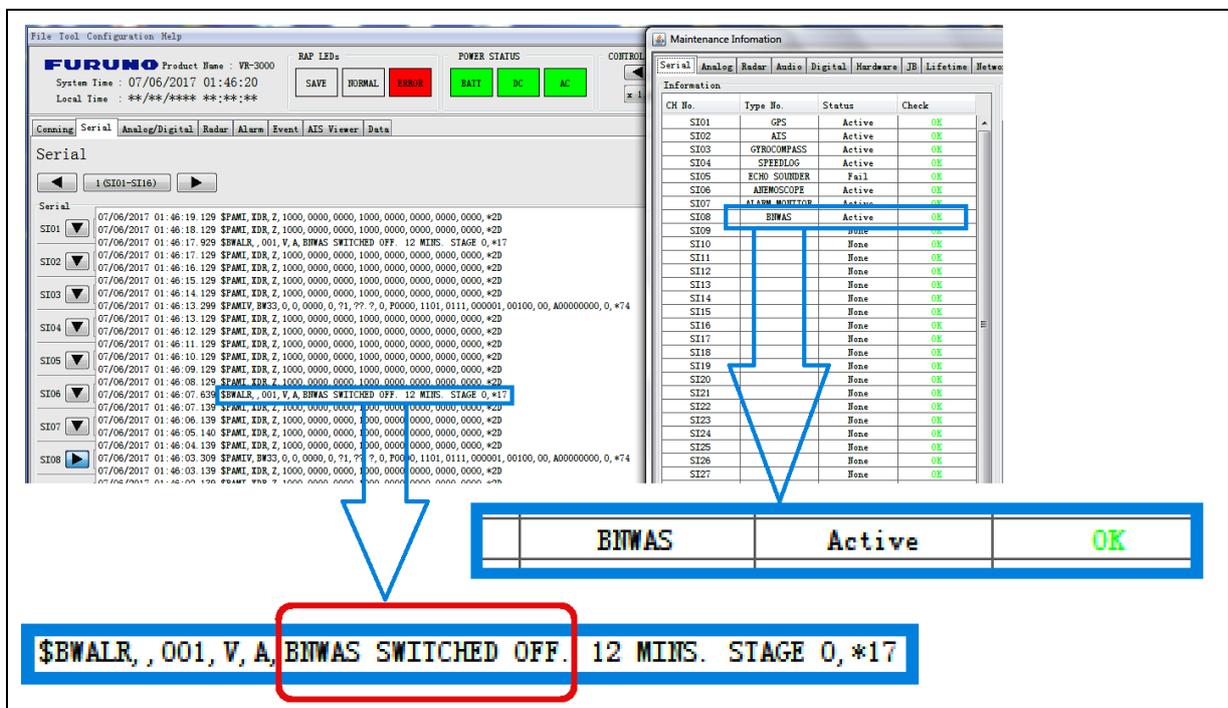
Figures 4.4.4.3/3: The Main Electronics Unit (MEU) of St. Gregory's BNWAS as found on the day the HBMCI Investigation Team boarded the vessel.

The unit had a key to secure the controls and prevent changes to settings. The unit was installed on the wheelhouse's aft bulkhead and included the main display, 2 motion detectors, alarm reset buttons, watch alert buttons and sounder beacon. Once the unit was activated, the BNWAS would remain dormant for a period of between 3 and 12 min (Td). At the end of this dormant period (Td), the BNWAS would initiate a visual indication only on the bridge i.e. the RESET and TEST pad and the BRIDGE ALERT indication would flash on and off for 15 seconds. If within this 15 second period (Td

+15 sec) the BNWAS was not acknowledged, the system would additionally sound the 1st stage audible alarm on the bridge only for a further 15 seconds. If the 1st stage alarm was not acknowledged (Td +30sec), the BNWAS would advance to the 2nd stage remote alarm condition (OFFICER ALERT/ WATCH ALERT) which was an audible and visual alarm in the designated Officer's and/ or Master's location. If the 2nd stage alarm was not acknowledged (Td +120/210 sec), the BNWAS would advance further and go into the 3rd stage remote alarm condition (CREW ALERT/ WATCH ALERT) which was an audible and visual alarm at locations where authorized crew members could be alerted to take corrective actions.

Following vessel's grounding and after HBMCI's request, the BNWAS working condition was inspected by its service providing Company and found in good working condition, at all stages (OFF, AUTO, MANUAL). According to the service report, in all positions the system would be automatically activated when the autopilot was activated, therefore the BNWAS could not be overridden.

However it was verified through the analysis of VDR recordings, that on the night of the marine casualty no audible alarm was sounded from BNWAS before the grounding. Additionally from the BNWAS data as recorded by the VDR it was revealed that the system was set to OFF mode, so the BNWAS was deactivated, despite the fact that the Autopilot was engaged. (see Figure 4.4.4.3/4). These information were verified after clarifications provided by the manufacture company of said BNWAS system, AMI MARINE (UK) LTD.



Figures 4.4.4.3/4: BNWAS data as extracted from VDR analysis, showing that the BNWAS was properly connected to the VDR (BNWAS "Active"), however it was set to "OFF" Mode (BNWAS "SWITCHED OFF").

Moreover it can be deduced that no specific procedure during navigational watch handover concerning the operation of BNWAS was provided and therefore it was not required for the OsOW to check the system when taking over the navigational watch.

Therefore, it is suggested that the functionality and the advantages of the system offered for the safety of navigation especially during night and without lookout watch posted on the bridge were not fully appreciated by the Master and the OsOW. Apart from the above, based on the collected information through the interview process, it derived that it was Master's full responsibility to operate the BNWAS system, since he was the only one holding the key. Considering that there was no specific instruction to the OsOW during the watch handover procedure concerning the operation

of the BNWAS, the Navigational officers could have refrained from bringing forward to Master's attention the necessity to check the operation of the BNWAS.

In light of the above it can be deduced that if BNWAS had been operative as intended, one of the following would most probably happen: either the OOW (2/O) would have been preserved in a state of awareness by his obligation to constantly reset the system, or in the unlikely event and for any reason, the 2/O would have become incapable to reset or respond to the system's alarm, the alarm would have sounded to the Master's cabin and would have enabled him to take corrective actions. The lack of any specific procedure concerning the operation of BNWAS during the changeover of the navigational watches is being considered as a contributing factor to the examined marine accident.

4.4.5 Master's Standing and Night Orders

Standing orders are a set of instructions usually taken from the vessel's SMS to ensure safe navigation and operations whether at sea or port. Master's standing orders issued on board included among others the following, concerning safe navigation:

- The OOW in no account may leave the Navigating Bridge when the vessel is under way unless properly relieved by the Master or another certified Deck Officer. Officers shall maintain a proper Watch when the vessel is at anchor.
- A close check at frequent intervals throughout the watch is to be made between the Standard MAGNETIC Compass and Gyro Compass Repeater. Any deviations between them, to be recorded as appropriate. The 'Off Course Alarm (if fitted) is to be in use when the vessel is underway.
- The OOW should not fail to take immediate action for changing course and speed, if in his judgment, it may be necessary to avoid casualty to the vessel and / or its personnel. The Master is to be notified as soon as possible of the circumstances and the action taken. The vessel is to return back to her original course and speed when the watch officer is convinced in all aspects that it is safe to do so.
- Steering shall be changed from AUTO to MANUAL:
 - In fog or other conditions of reduced visibility;
 - When navigating close to the shore, near shallow banks or in shallow waters;
 - In any emergency situation and at other times specified by the Master or deemed necessary by the Watch Officer;
 - The radar(s) must be switched on and remain in operation, prior to approaching areas of reduced visibility, traffic congestion, coastal areas and in any other cases when deemed necessary by the OOW.

The night orders are a supplement to the standing orders that come in force as the Master takes rest during the night. The standing orders are in force all times whereas night orders add specific points to the withstanding standing orders. By examining Master's standing orders it was deduced that these were too generic leaving many navigational issues up to the O(s)OW discretion and judgment, whereas night orders gave no specific instructions to the O(s)OW, except simply referring to Master's standing orders. Taking under consideration that posted look out was not assigned during the night watch, although as mentioned in contradiction to the established international STCW and COLREG regulations, no specific instructions were given to supplement the inadequate composition of the bridge night watch and highlight the alertness of the OOW. Typical examples could be frequent checking of the BNWAS operation, the setting of specific alarm or warning features of the GPS and radar equipment and more frequent monitoring of the passage plan under increased and specific time intervals as already discussed in **par. 4.3.1**. The absence of any specific instructions in relation to navigation in the night orders book and the generic Master's standing

orders allowed the OOW to remain inactive for a period of time and possibly increased the potential for him to leave the bridge unattended, therefore are considered as a contributing factor to the marine casualty.

4.5 Ship clocks

As stated before (**par. 3.3.1**) vessel's time was changed from the 3/O during his night watch (Fig. 4.4/1). The ship's clocks were adjusted to one (01) hour retard (from UTC +3 to UTC +2). However, this action was not properly communicated to the crew members forming part of the bridge night watch, in order for them to set their clocks to the ship's new time. As a result of the aforementioned procedure, the C/O, got confused and didn't set his personal watch to vessel's new time in order his wake up alarm to be also set accordingly.

The company's SMS (DM-11, paragraph 3) stated that:

- "The care and upkeep of all vessel clocks, except those in the Engine Room shall be the Second Officer's responsibility. The Second Officer is responsible for the winding and setting of the clocks. Prior to getting underway, as part of the Bridge Equipment Tests, clocks shall be compared and synchronized. Bridge and Engine room clocks shall also be synchronized daily at noon and prior to arrival. The engine room must be notified whenever necessary to ensure that engine room and Bridge clocks are synchronized. When it is necessary to advance or retard vessel clocks, all clocks shall be advanced or retarded at the same time i.e. the Bridge clock, chartroom clock and engine room clock shall always indicate the same time. Time zone changes and any time changes due to Daylight Savings Time shall be logged when made. All clocks shall reflect in real time"

Furthermore, in relation to the Officer who was responsible for ship's clocks Company's SMS (DM-04, paragraph 3) stated that:

- "The Second Officer's responsibilities shall include, but not be limited to:
 1. Navigation Equipment & Instruments Chronometers, vessel clocks (except Those in the engine room), time zone changes, meteorological instruments, depth sounders and the care of compasses, electronic navigation aids, and the radio direction finder; and (...)"

TO	Sfax	DATE	06 th of June 2017, Tuesday							
REMARKS										
1800 GPS = 37°38.7'N λ=024°39.0'E A/C 2/P										
2000 GPS = 37°20.6'N λ=024°12.6'E Status I. Vis good. Clear Sky. Fire/Security rounds carried out no remarks H.O.W. 703/0										
2000 TOW a/p BCL-06.12 Steering gear tested manually - OK										
2005 $\phi = 37^{\circ}19.3'N$ $\lambda = 024^{\circ}11.8'E$ a/c to 195°										
<u>2100/2000 $\phi = 37^{\circ}08.1'N$ $\lambda = 024^{\circ}08.0'E$ all ship's clocks were adjusted for retard: $\Sigma + 2$.</u>										
2100 $\phi = 36^{\circ}55.2'N$ $\lambda = 024^{\circ}03.4'E$ go to BAC #1037.										
2150 $\phi = 36^{\circ}45.3'N$ $\lambda = 024^{\circ}00.1'E$ a/c to 224°.										
2300 $\phi = 36^{\circ}34.2'N$ $\lambda = 025^{\circ}48.8'E$ go to BAC #1030.										
2400 GPS pos $\phi = 36^{\circ}24.4'N$ $\lambda = 028^{\circ}35.2'E$ Status I. Clear sky, vis good slight Fire/Security rounds clout - no remarks H.O.W. to 2/0										
ENGINE PERFORMANCE										
DISTANCE BY (ENGINE)	SPEED BY ENGINE	AVERAGE R. P. M.	AVERAGE SLIP (PERCENT)	FUEL OIL CONSUMED (BARRELS)	FUEL OIL ON HAND (BARRELS)	FRESH WATER CONSUMED (TONS)	FRESH WATER ON HAND (TONS)	NUMBER BOILERS IN USE	TOTAL AVIPEGE SLIP (PERCENT)	TOTAL DISTANCE ENGINE

Figure 4.5/1: St. Gregory's logbook abstract from the time the Ship's clock was changed

Usually the common practice concerning the advance or retard of vessels clocks is performed, when a vessel passes from one time zone to the next, by dividing equally the 1-hour change to three 20-minutes intervals so that the extra hour of work or the extra hour of rest to be respectively distributed to each one of the 3 watches. In this way a vessel can comply with the applied watch keeping pattern on board (4-on 8-off) and the work and rest hours records completed can practically reflect the situation on board. In the examined marine casualty when the vessel's clocks were set from 21:00 (vessel's time) to one hour retard (i.e. to 20:00 vessel's time), the 3/O was essentially assigned with one more hour of work in his watch (20:00-24:00) and respectively the 2/O with one more hour of rest before taking over his watch (00:00-04:00). Consequently when the C/O woke up at approximately 03:30 (according to his personal clock) to take over his navigational watch (04:00-08:00), he realized he had one more hour of rest, so he went back to sleep without readjusting his wake up alarm to the new time. Since the bridge was essentially unattended he never received a wake-up call on time in order to take over his watch.

4.5.1 Calling the relief

Calling the relieving Officer on the watch does not fall under any specific requirement to be incorporated in a documented procedure, although pertinent to the watch keeping operation and with the "taking over the watch" procedure that requires the relieving watch Officer to fully adjust his vision to the light conditions and carry out prior checks related to ship's navigation.

It is a customary practice on board ships that the OOW calls the relief on his cabin's telephone and wakes him up. The time of calling is normally communicated and prearranged between the watch keepers, usually 20 to 30 minutes before the watch change over. It is also a practice to send the rating of the look-out watch, if feasible, to the relief cabin to wake him up.

The prescribed practice is mostly based on the requirements of the respective parts in STCW, providing that the relieving Officer has to get used to night vision, be briefed for the navigational situation by the OOW for all the aspects concerning the safe operation and navigation of the vessel. The common practice on board St. Gregory was that every OOW would wake up by his own clock's alarms. Sometimes when the OOW wouldn't go on time to take duties as the next OOW, the previous OOW would send his Look Out A/B on watch to wake him up since no telephones were provided in the crew cabins.

As previously reported, St. Gregory ran aground, while the 2/O remained inactive from 02:30 until the time of the occurrence and the look-out watch had not been posted and practically said facts led to the failure of notifying and calling the relieving Officer.

Taking into account that St. Gregory grounded at approximately 04:13, that is 13 minutes post to watch change over, and as already stated (par. 3.3.3) if the C/O had been informed for the time change before he went to sleep, he would have probably set his wake up alarm to the vessel's new time, therefore he would probably have woken up, entered the bridge on time to take over his watch, possibly 10 – 20 minutes before 04:00, when he would have observed the navigational situation and the imminent danger of grounding. Consequently he would have taken appropriate actions in order to avoid the marine casualty. It is also noted that neither the 0400-0800 AB lookout watch entered the bridge on time to take over his watch. The lack of informing the relief watch officer about the new setting of time in conjunction with the lack of due care by the C/O to set his personal watch to the new vessel's time in order to wake up and take up his duties, are considered to have been contributing factors to the grounding of St. Gregory.

4.6 Emergency Response Actions by St Gregory

The dissemination of information about a marine casualty or incident is critical for the safety of the crew, the protection of the Marine Environment and the effectiveness of the response actions to an emergency, especially when shore assistance is required. For that reason it is thoroughly regulated by the International regulatory framework under the respective provisions of MARPOL 73/78 Convention/Protocol I/article I "Duty to report" as well as SOLAS/Chapter I/Regulation 11 (c). In addition to the above, the International Safety Management Code, as applied, in Chapter 8 "Emergency Preparedness" provides that:

"8.1 The Company should establish procedures to identify, describe and respond to potential emergency shipboard situations.

8.2 The Company should establish programmes for drills and exercises to prepare emergency actions.

8.3 The safety management system should provide for measures ensuring that the Company's organization can respond at any time to hazards, accidents and emergency situations involving its ships."

Under said provisions, St Gregory Safety Management System had incorporated "Contingency Procedures" to be followed in emergencies situations. According to the Company's "MANUAL OF EMERGENCY RESPONSE PLAN" the vessels' Masters were reminded of their legal obligation to report a casualty to the Flag, Port and Coastal State Authorities⁸.

Following the grounding, the Master, as already described in the Narrative section, was alerted and immediately proceeded with actions according to good seamanship and applicable on board procedures. Nonetheless, despite the fact that the Master had promptly informed the Company and was in constant communication with it, he did not report the incident to the Authorities, as the grounding was actually reported by the local Police Department, after a phone call by a civilian,

⁸ According to the Company's "MANUAL OF EMERGENCY RESPONSE PLAN" / Section 5 (Emergency Reporting) / 5.1 (Reporting Process) and 5.2 (Reporting Format).

approximately one hour post to its occurrence and it was the Coastal State's Authority that contacted St. Gregory and was finally informed about the grounding.

Master's obligation to report to the Authorities of the Coastal State the grounding of St Gregory, under the respective provisions of International Conventions and the vessel's SMS, was not satisfied.

4.7 Bridge Resource Management

Bridge resource management shields safe navigation by fully utilizing all the technical advantages of bridge navigational equipment, maintaining the situational awareness of the watch keeping Officers as well as appropriate communication and exchange of information at all levels of the bridge team. More specifically, under STCW Code/Part A/Chapter VIII/Part 3 "Watchkeeping Principles In general" the Bridge Resource Management principals have been introduced, while Chapter VIII/Part 4-1 have laid down a set of mandatory "principals to be observed in keeping a navigational watch". An abstract of these provisions are presented in the following table:

STCW Code Part A/Chapter VIII/Part 3
Watchkeeping Principles In general
<p>8. Watches shall be carried out <u>based on the following bridge and engine-room resource management principles:</u></p> <ul style="list-style-type: none"> .1 proper arrangements for watchkeeping personnel shall be ensured in accordance with the situations; .4 the master, chief engineer officer and officer in charge of watch duties shall maintain a proper watch, making the most effective use of the resources available, such as information, installations/equipment and other personnel; .5 watchkeeping personnel shall understand functions and operation of installations/equipment, and be familiar with handling them; .9 watchkeeping personnel shall notify the master/chief engineer officer/officer in charge of watch duties without any hesitation when in any doubt as to what action to take in the interest of safety.
STCW Code Part A/ Chapter VIII/Part 4-1
Watchkeeping at sea / Principles applying to watchkeeping generally
<p>9. Parties shall direct the attention of companies, masters, chief engineer officers and watchkeeping personnel to the following principles, which shall be observed to ensure that safe watches are maintained at all times.</p> <p>10. The master of every ship is bound to ensure that watchkeeping arrangements are adequate for maintaining a safe navigational or cargo watch. Under the master's general direction, the officers of the navigational watch are responsible for navigating the ship safely during their periods of duty, when they will be particularly concerned with avoiding collision and stranding.</p>
Look out
<p>14. A proper lookout shall be maintained at all times in compliance with rule 5 of the International Regulations for Preventing Collisions at Sea, 1972, as amended and shall serve the purpose of:</p> <ul style="list-style-type: none"> .1 maintaining a continuous state of vigilance by sight and hearing, as well as by all other available means, with regard to any significant change in the operating environment; .2 fully appraising the situation and the risk of collision, stranding and other dangers to navigation; and .3 detecting ships or aircraft in distress, shipwrecked persons, wrecks, debris and other hazards to safe navigation.

15. The lookout must be able to give full attention to the keeping of a proper lookout and no other duties shall be undertaken or assigned which could interfere with that task.
17. In determining that the composition of the navigational watch is adequate to ensure that a proper lookout can continuously be maintained, the master shall take into account all relevant factors, including those described in this section of the Code, as well as the following factors:

- .4 the additional workload caused by the nature of the ship's functions, immediate operating requirements and anticipated manoeuvres;
- .8 activities taking place on board the ship at any particular time, including radio communication activities, and the availability of assistance to be summoned immediately to the bridge when necessary;
- .9 the operational status of bridge instrumentation and controls, including alarm systems;

Watch arrangements

18. When deciding the composition of the watch on the bridge, which may include appropriately qualified ratings, the following factors, *inter alia*, shall be taken into account:

- .1 at no time shall the bridge be left unattended;
- .4 use and operational condition of navigational aids such as ECDIS, radar or electronic position indicating devices and any other equipment affecting the safe navigation of the ship;

Taking over the watch

22. Relieving officers shall personally satisfy themselves regarding the:

- .1 standing orders and other special instructions of the master relating to navigation of the ship;
- .5 navigational situation, including, but not limited to:
 - .5.1 the operational condition of all navigational and safety equipment being used or likely to be used during the watch;

Performing the navigational watch

24. The officer in charge of the navigational watch shall:

- .1 keep the watch on the bridge;
- .2 in no circumstances leave the bridge until properly relieved;

25. During the watch, the course steered, position and speed shall be checked at sufficiently frequent intervals, using any available navigational aids necessary, to ensure that the ship follows the planned course.
32. It is of special importance that at all times the officer in charge of the navigational watch ensures that a proper lookout is maintained. In a ship with a separate chartroom, the officer in charge of the navigational watch may visit the chartroom, when essential, for a short period for the necessary performance of navigational duties, but shall first ensure that it is safe to do so and that proper lookout is maintained.
36. Officers of the navigational watch shall be thoroughly familiar with the use of all electronic navigational aids carried, including their capabilities and limitations, and shall use each of these aids when appropriate and shall bear in mind that the echo-sounder is a valuable navigational aid.
42. The officer in charge of the navigational watch shall give watch keeping personnel all appropriate instructions and information which will ensure the keeping of a safe watch, including a proper lookout.

Watchkeeping under different conditions and in different areas In hours of darkness

46. The master and the officer in charge of the navigational watch, when arranging lookout duty, shall have due regard to the bridge equipment and navigational aids available for use, their limitations, procedures and safeguards implemented.

Coastal and congested waters

47. The largest scale chart on board, suitable for the area and corrected with the latest available information, shall be used. Fixes shall be taken at frequent intervals, and shall be carried out by more than one method whenever circumstances allow. When using ECDIS, appropriate usage code (scale) electronic navigational charts shall be used and the ship's position shall be checked by an independent means of position fixing at appropriate intervals.

Table 4.7 / 1: STCW applicable standards not followed or implemented on St. Gregory.

St Gregory's Master and navigational Officers, that is C/O and the 2/O taking over the night watch (00:00-04:00), had completed the relevant BRM training under the provisions of the revised STCW convention which was recorded accordingly in their CoC⁹.

In the examined case it was emerged that certain obligations, duties, tasks and functions, as foreseen and emanating through said STCW Code applicable standards, were disregarded by the Master and the watch keeping personnel. More specifically, as already mentioned in the previous paragraphs of the analysis section (par. 4.1/ Lookout watch - par. 4.3.2./ Radar - par. 4.3.3./ GPS - par. 4.3.4.3. /BNWAS – par. 4.3.4.4. / Standing orders –Night Orders) no dedicated look out watch was posted on the bridge whereas inappropriate procedures or instructions were found pertaining to the utilization of the features offered by the bridge equipment and the navigational aids available for use, by which safeguards could be set for assisting and ensuring safety of navigation.

If the lookout watch had been posted as required, and the bridge navigational equipment had been utilized effectively by the Master and the watch keeping Officers, it is highly possible that the 2/O would have been alerted and would have taken prompt actions to correct the ship's course and avoid the grounding. Based on the above, it can be concluded that the poor bridge resource management performance by the Master and the OOW before the grounding of St Gregory, despite the relevant training they had received, is considered a contributing factor to the examined marine casualty.

⁹ Bridge Resource Management (BRM) or Engine-room Resource Management (ERM) training is required to be completed after 1 January 2017 (STCW.7/Circ.17- 24 May 2011).

5. Actions Taken

5.1 Actions Taken by the Company of St. Gregory

Following the marine casualty on 7th of June 2017, the Company's DPA prepared the Analysis Report into the marine casualty (on 1st July 2017), according to internal procedures of Company's Safety Management System (*Hazardous Occurrences and Near Miss Procedure Form no: INCE 571-4*) under the «Guidelines for the operational implementation of the International Safety management Code ISM Code by Companies» MSC-MEPC.7/Circ.5. par. 4.2.3 & par. 6.

The root cause analysis conducted identified the following findings:

- *2/O on watch have been drunk and fall asleep (last way point entry 0020 am);*
- *no duty A/B on the bridge; (investigation show that Master never used to have duty AB on the bridge night time)*
- *BNWAS was found deactivated;*
- *C/O failed to change watch due to vessel's time set to destination time (TUNISIA) in advance bypassing Greek time;*
- *Various navigation system found with no proper settings;*
- *Various navigation system alarms for Radars, GPS, echo sounder found all DEACTIVATED not properly used;*
- *Course recorder found out of use and crew not familiar;*

Following the above findings, a Circular was sent to the Company vessels' Masters, reminding them of the following, among others:

- *Zero alcohol tolerance policy onboard;*
- *The Duty A/B to be always on the bridge from sunset until first daylight;*
- *The BNWAS must be switched ON at all times while underway and a function test to be made once per day by noon time OOW;*

5.2 Review of the Actions Taken by the Company of St. Gregory

5.2.1 Actions taken regarding the "Zero Alcohol Tolerance Policy"

As per the "Zero Alcohol Tolerance Policy" on board the Company's vessels, despite the fact that a Circular was sent by the Company on 01st July 2017 stating, among others "... alcohol possession and consumption is prohibited onboard ...", the same policy was not reflected by the Company's existing Procedures Manuals.

More specifically, as per the Company's Office Manual (last Revision: October 2017), the following provisions existed:

- Procedure OM-2 / DRUGS & ALCOHOL POLICY:
 - (Seafarers) ...Shall not perform or attempt to perform any scheduled duties within four (4) hours of consuming alcoholic beverages
 - It is forbidden hard liquor and/or spirits to be stored or consumed on board, except a minimum quantity of sealed bottles which to be kept under Master's personal care in bonded store for company's representation issues only.
 - Only ordinary or lesser strength beers and wine may be carried on board, safely stored in bonded store. Issuance of beers and wine is under the direct control and authority of the Master and is to be distributed and consumed in mess rooms only. It is strictly prohibited to be taken in crew cabins.
 - Alcoholic beverages are not to be served or consumed at sea during conditions of reduced visibility, heavy traffic, narrow waters or in any other hazardous conditions, or at any time subject to Master's discretion.

→ Procedure SM-05 / DRUGS & ALCOHOL:

2. (Basic Guidelines on Consumption of Alcohol)

- Officers and watch-keeping ratings shall not consume any alcoholic beverages 6 hours immediately preceding their watch standing-duty.

3. (Responsibilities)

- Seafarers shall not perform or attempt to perform any scheduled duties within four (4) hours of consuming alcoholic beverages
(...)
- It is forbidden hard liquor and/or spirits to be stored or consumed on board, except a minimum quantity of sealed bottles which to be kept under Master's personal care in bonded store for company's representation issues only.
- Only ordinary or lesser strength beers and wine may be carried on board, safely stored in bonded store. Issuance of beers and wine is under the direct control and authority of the Master and is to be distributed and consumed in mess rooms only. It is strictly prohibited to be taken in crew cabins.
- Alcoholic beverages are not to be served or consumed at sea during conditions of reduced visibility, heavy traffic, narrow waters or in any other hazardous conditions, or at any time subject to Master's discretion.

From the above mentioned abstracts of the Company's SMS, the "Zero Alcohol Tolerance Policy" on board the Company's vessels is not clearly indicated. Taking into account the effect of the alcohol consumption on board St. Gregory in relation to the casualty, as already described in par. 4.3, it is considered necessary that the "Zero Alcohol Tolerance Policy" is clearly reflected in the Company's procedures manuals.

5.2.2 Actions taken regarding the BNWAS function test

As per the BNWAS function test, the Circular sent by the Company on 01st July 2017 highlighted the provisions of the SMS procedure DM-07 (Bridge Team Management), according to which BNWAS was included in the routine equipment checks performed once a day by the noon time OOW.

Taking into account the fact that the BNWAS of St. Gregory was not operating as expected prior to the casualty, by not alarming the designated Officers, as already described in par. 4.4.4.3, it is considered necessary the BNWAS function test to be performed during the changing over of the night Watches and that test to be included in the relevant SMS form of the Company (DM-07 / Bridge Checklist BCL-12).

The following conclusions, safety measures and safety recommendations should not under any circumstances be taken as a presumption of blame or liability.

The juxtaposition of these should not be considered as an order of priority or importance.

6. Conclusions

- 6.1** The decision to relieve the A/B from his look out duties, disregarding the COLREGS and STCW principal provisions, removed a highly important safety barrier and weakened the navigational bridge effective watch. as The participation of an AB as a look-out on the navigational watch on the night of the marine casualty could have prevented the 2/O from being inactive during his watch. (par. 4.1)
- 6.2** The practice of relieving the A/Bs from their night bridge watch in order to rest from their employment on deck which is considered more beneficial for the ship's operation, is considered to have contributed to the examined marine casualty. (par. 4.2)
- 6.3** The disregard of the Company's safety and security procedures regarding the alcohol policy on board St. Gregory is considered to have been a contributing factor leading to the marine casualty. (par. 4.3 & par. 5.2.1)
- 6.4** The omission to set the guard zone utility on the operating Radar as well as to utilize the GPS "off course alarms" is suggested to have been a contributing factor in the marine casualty. (par. 4.4.2.1 & par. 4.4.3).
- 6.5** The lack of any specific procedure concerning the operation of BNWAS during the changeover of the navigational watches is being considered as a contributing factor to the examined marine casualty. (par. 4.4.4.3 & par. 5.2.2).
- 6.6** The absence of any specific instructions in relation to navigation in the night orders book and the generic Master's standing orders allowed the OOW to remain inactive for a period of time and possibly increased the potential for him to leave the bridge unattended, therefore are considered as a contributing factor to the marine casualty. (par. 4.4.5).
- 6.7** The setting of the vessel's clock, one hour in retard, was not reflecting the established navigational watch pattern of a 4-hour night watch which should be carried out on board. The C/O when he woke up at approximately 03:30 (according to his personal clock) to take over his watch (04:00-08:00), he realized that he had one more hour of rest, so he went back to sleep without readjusting his wake up alarm to the new time. Since the bridge was essentially unattended he never received a wake-up call on time in order to take over his watch. (par. 4.5).
- 6.8** The lack of informing the relief watch officer about the new setting of time in conjunction with the lack of due care by the C/O to set his personal watch to the new vessel's time in order to wake up and take up his duties, are considered to have been contributing factors to the grounding of St. Gregory (par. 4.5.1).
- 6.9** The poor bridge resource management performance of the crew before the grounding of St Gregory, despite the relevant training they had received, is considered a contributing factor to the examined marine casualty. (par. 4.7).
- 6.10** By reviewing the actions taken by the company after the grounding, it was deduced that the "Zero Alcohol Tolerance Policy" on board the Company's vessels is not clearly indicated in the Company's SMS (par.5.2.1).

7. Safety Recommendations

Taking into consideration the analysis and the conclusions derived from the safety investigation conducted in conjunction with the Actions taken by the ship's Company after the marine casualty, the following recommendations are issued:

7.1 The Managing Company of St. Gregory is recommended to:

- 01/2017:** Include the BNWAS function test in the relevant SMS form of the Company (DM-07 / Bridge Checklist BCL-12) in order such test to be performed during the changing over of the night Watches.
- 02/2017:** Review the relevant SMS procedures taking into account the "Zero Alcohol Tolerance Policy" as described in the issued Company circular dated 1st July 2017. Provide objective evidence with a scope of ensuring that the relevant SMS and security procedures are being applied on board.
- 03/2017.** Consider of specifying the way the vessel's clocks should be changed, when passing from one time zone to another, and the way the officers and ratings of the bridge and engine watch are informed taking into consideration the relevant paragraphs 4.5-4.5.1.

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Accident Investigation Report 01/2017

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