

# Investigation Report

221 - 2013



**“SAFMARINE LONGA”**

**December 24, 2013**

**Report nº:** 221/2013

**Title:** “Safmarine Longa”

**Ratification:** 18-11-2014

**Classification:** Very Serious

**Name of vessel:** SAFMARINE LONGA

**IMO nr:** 9500077

**Registry nr:** 1307

**State substantially interested:**

This report was prepared by the Maritime Accidents Prevention and Investigation Cabinet (GPIAM), which is the office of the central administration of the State that has the mission to investigate the sea accidents and events as accurate and as soon as possible, having in mind the identification of eventual causes and to disclose the related reports, to promote studies, recommendations in sea safety matters in order to minimize the sea disasters and to take part in commissions, organizations of national or foreign activities.

The current report was prepared under the norms of the International Marine Organization (IMO) and following the common procedure of the European Community.

The GPIAM investigations are independent from regulators entities, operators or other outsiders. It is not the object of an investigation to find out guilt or responsibility, therefore this report should not be used for legal actions neither can be used in court as evidence.

The safety recommendations that might result from this report cannot, under any circumstance, create a presupposition of responsibility or guilt.

The hours referred to in this report are UCT time and the coordinates are in datum WGS84.

## Index

Summary	1
Description	2
I. <i>Vessel</i>	4
II. <i>Weather Conditions</i>	4
III. <i>Journey</i>	5
IV. <i>Accident</i>	5
Analysis	6
Conclusions	9
Safety Recommendations	10
ATTACHMENT 1	11
ATTACHMENT 2	12
ATTACHMENT 3	13

## Summary

A (freak) abnormal wave struck the vessel "SAFMARINE LONGA" after departing Lisbon. The anchor team were on the forecastle at the time securing both anchors - five crewmen (all from Sri Lanka) were on the forecastle deck and one inside the boatswain's stores. Of the five on forecastle, one was swept overboard and the remaining four, all suffered injuries. The four injured men disembarked in Lisbon for hospitalization on the same day and the missing person was found dead.

## Description

On December 24, 2013 around 1540, the vessel M.V. SAFMARINE LONGA, in the white IMO list and with Sri Lanka first flag, with destination to Dakar Senegal, loaded with 3804 ton of general cargo and 3851 ton of containers, sailing at a speed of 8.9 knots (half force at fore, equivalent to 89.4 rpm of the machine) suffered an accident where one of the crew members lost his life when he fell in the water and another four crew members were injured when the vessel, some minutes after departing the port of Lisbon – Portugal, was struck by an exceptional high wave.

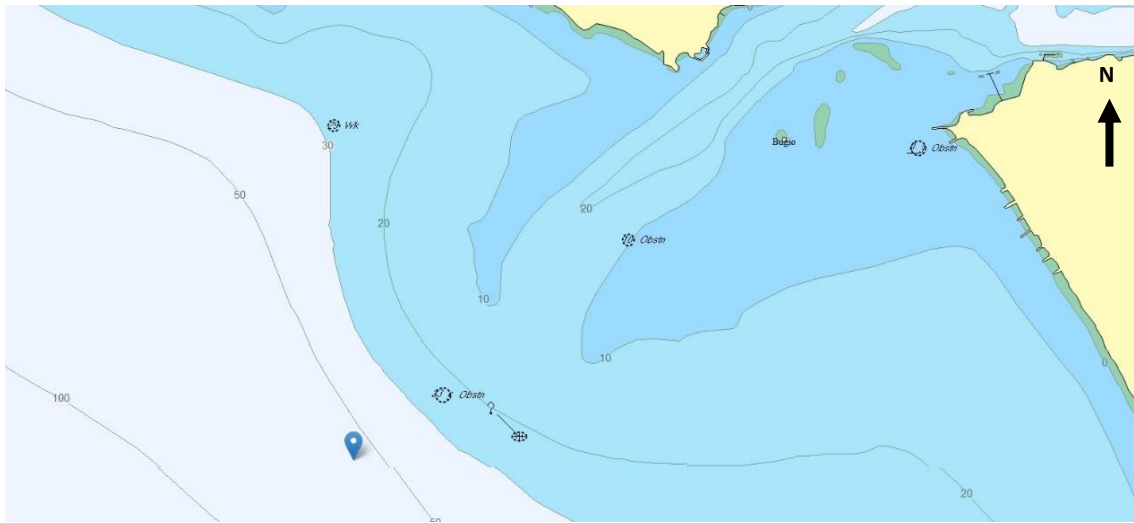


Fig 1 – Chart of the accident location, with the isobaths curves (bathimetric)

Around 1354 the steersman disembarked near the pilot station in Belém and after passing the harbor of Lisbon port, at 1516 changed the bow to 034°, due to the very bad wind and sea, aiming to place the vessel running with the weather and to protect the forecastle (the wind was blowing from SW) as well as the crew. At 1525, the captain ordered the crew to move to the stem to lash the anchors of both boards (three crewmen had already done the same job at stern on the sterncastle). At 1540 the vessel was struck at the PS bow by a very high wave (between 13 and 16 meters high) that caused four injured men (who were doing their job on the forecastle deck) and dragged overboard a fifth crewman, causing his death (his body was found and recovered on January 1<sup>st</sup>, 2014 around 1100, in Costa da Caparica area – Lisbon). Witnesses said that all the forecastle area was submersed and that all the men who were on the deck were affected with greater or lesser seriousness.

it was reported by the crew that moments before the main event (the shock wave that displaced the crewmen who were on the forecastle deck) the vessel was sometimes taking in water at the deck (due to pitching/balancing) and was “balancing in a uncontrolled way”.

The deceased, who was also lashing anchors at PS, but possibly at a more exposed position, after the water retreated from the deck, was never seen again by the remaining crewmen.

Under the very bad weather conditions that they were dealing with, none of the crewman was wearing safety devices that would keep them on deck. After the water draining , the portable radios were not working. Meanwhile the chief officer who arrived at the scene gave the alert to the bridge and helped his injured colleagues (with the help of another crew member who was previously in his room) guiding them to a sheltered place ( sheltered area of the afore basements). The general alarm was activated at around 1550. The search and rescue actions (including the Search and Rescue maneuvers in case of man overboard) started at around 1559).

While the search continued by helicopter (triggered by the alert received in MRCC – Lisbon), the captain received instructions from MRCC to sail the vessel to the Cascais Bay, thinking that it would be easier to transport the injured. However, the moving to Cascais was canceled due to the bad weather and the vessel was then authorized to return to the port of Lisbon so that the injured could be disembarked, which happened at around 2212. The vessel stayed at its anchorage, in the port area of the river Tejo, waiting for the crewmembers to be released from the different hospitals they were taken to in the Portuguese capital.

It should be noted that for some of the crewmembers who were working on the deck, this was their first embarking and that the vessel fulfilled the ISM code, certified by DNV-GL. All the crew was following the procedures established by the ISM code, which is verified in the internal audits on the management of the vessel safety system.

The captain of the vessel has a STCW Reg II/2 certificate (issued by the United Kingdom) and the deceased had a certificate STCW II/1 (issued by Sri Lanka).

After the departure from Lisbon it was requested support from SAMSA – *South African Safety Authority* which had a positive response.

It was not possible to retrieve data from the board VDR or ECDIS related to the day of the accident.

## DATA

### I. Vessel

<b>Name:</b>	"Safmarine Longa"
<b>Radio Call:</b>	4RBQ
<b>IMO nr:</b>	9500077
<b>Identification set:</b>	
<b>Flag:</b>	Sri Lanka
<b>Registry Port:</b>	Colombo
<b>Type:</b>	General cargo
<b>Sub-Type:</b>	
<b>Classification:</b>	Germanischer Lloyd
<b>Gross gauging:</b>	9772
<b>Net gauging:</b>	
<b>Displacement:</b>	17908 ton
<b>Gross capacity (tdw):</b>	12350 ton
<b>Length overall:</b>	139,99 m
<b>Length between perpendiculars:</b>	133 m
<b>Beam:</b>	21.5 m
<b>Draught (summer):</b>	8.2 m
<b>Year of Construction:</b>	2010
<b>Shipyard:</b>	Tongfang Jiangxin
<b>Construction site:</b>	China
<b>Hull material:</b>	Steel
<b>Type of hull:</b>	
<b>Main machine:</b>	MAN B&W 6s46MC-C; Hiundai B&W Korea
<b>Power installation:</b>	
<b>Nr of generators:</b>	3
<b>Owner:</b>	MS "SONJA FRIEDERICH", Schiffahrtsgesellschaft mbH & Co. Kg
<b>Ship owner/Operator:</b>	Mercmarine Group of Companies, Reederei Eugen Friederich GmbH & Co. KG
<b>Safety capacity/maxim:</b>	/19
<b>Authorized cargo:</b>	General Cargo

### II. Weather Conditions

<b>Sea Conditions :</b>	Very stormy
<b>Direction of surge:</b>	From WSW
<b>Height of surge:</b>	13 – 16 m
<b>Height of wave:</b>	4 m
<b>Wind speed:</b>	Strong (28-33 knots) (17-21) m/s

<b>Wind direction:</b>	SW
<b>Visibility:</b>	Good
<b>Natural Light:</b>	Daylight/Evening
<b>Tide:</b>	Flood tide
<b>Tide height:</b>	Approx. 1,25 m
<b>Current:</b>	
<b>Water temperature:</b>	
<b>Sounding lead:</b>	Approx. 60 m

### III. Journey

<b>Port of origin:</b>	Lisbon - Portugal
<b>Ports of call:</b>	
<b>Destination Port:</b>	Dakar - Senegal
<b>Type:</b>	International
<b>Segment:</b>	Departure
<b>Nr of days since departure:</b>	0
<b>Commercial journey:</b>	Transport of goods
<b>Number of crew:</b>	19
<b>Number of passengers:</b>	
<b>Official language on board:</b>	Sinhala
<b>Number of nationalities:</b>	1 (Cingalese)
<b>Cargo:</b>	General cargo and containers

### IV. Accident

<b>Type:</b>	Very serious
<b>Date:</b>	24DEC2013
<b>Time:</b>	1540
<b>Location:</b>	Port of Lisbon
<b>Latitude:</b>	38° 36.2' N
<b>Longitude:</b>	009°24.1'W
<b>Location on board:</b>	Forecastle
<b>Fatalities:</b>	1
<b>Serious injured:</b>	4



## Analysis:

According to what was determined and in spite of having been noted a slight improvement, the weather conditions remained the same since 1510 up until around 1900.

During the operations cargo in the port of Lisbon, (from the then available data) it was perceptible to the captain of the vessel the type of conditions outside the pier of this port, therefore he had the sufficient and relevant knowledge to make him realize the need of lashing the anchors before trying to leave the pier under those conditions. However, it should be noted that the captain says that at 1130 of the day of the accident the vessel was “ready to go to sea”, i.e. presumably all the systems, equipment and materials were lashed/secure in order to minimize the chances of being moved from their initial place. However, weather and sea conditions permitting, the anchors of a ship must be lashed outside the pier which was far from being possible on that day, once one would be under extraordinary atmosphere and sea conditions.

According to the same source, the anchors were hoisted at around 1312 and there was no other reference of the crew proceeding to the proper lashing of the anchors under those sea conditions of that day and before the vessel left the pier, i.e. in a safer area to perform that type of preventive work.

Outside the pier and after realizing the forces that the vessel was being subjected to, the captain sent six crewmembers to the fore to prevent damage on the vessel and/or loss of the anchors. However, the captain himself would have realized the risk someone on that area would be under, as the vessel “balanced and boarded enough water on the fore deck and on the bow area”.

The deceased had the task of lashing the anchor at PS and, moments before the impact of the wave, would be in an area far away from the SS rail where he was thrown over (see fig. 2). As there is no other data, it is assumed that the position of the crewmembers that were operating there were the right one to accomplish the requested tasks.

The direction of the water flow across the fore of the deck was changed due to the fact that this vessel has a great breakwater in all the bow area and this can create other flows on the bow castle. Therefore, it is not safe to claim with certainty that the wave came from PS, as this type of structure can change the direction of the water flow in 45° or more. However, the most probable cause in this case was the shock on the bow at PS.



Photo nr 1 – Photograph of the side and the bow area at SS where the breakwater can be seen.

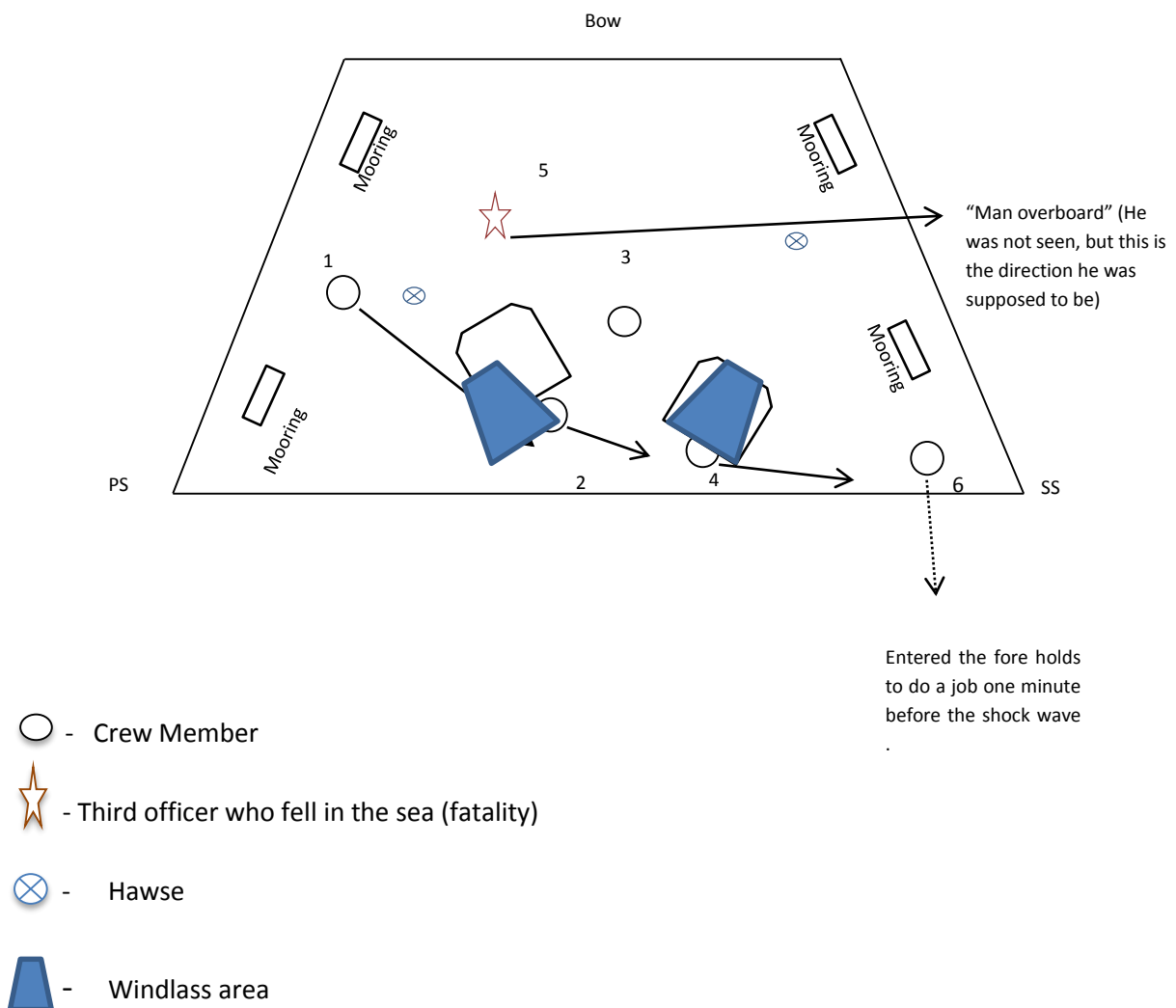


Fig. 2 - Simplified diagram of the positions and movements of the crew members (after the shock wave) on the bow castle area (according to what was described by the witnesses).

“Freak waves”, abnormal waves or extraordinary waves that normally occur in the needle current area but can also occur in other parts of the planet where there is what is called a “confused sea”, are waves that might occur under certain weather conditions, especially with strong wind; choppy seas; low pressure and the passage of a cold front (conditions that were verified in Lisbon on the day of the accident). These waves are characterized for being up to 21 m high, on a very short time, a steep top and a deep trough at lee.

The captain of “SAFMARINE LONGA” had the knowledge of the data that foresaw the possibility of extraordinary high waves, namely from continuous printing through EGC (*Enhanced Group Calling*) and Navtex (*Navigation Telex*) and still he ordered the crew to do tasks on the fore deck, precisely at the moment when the vessel was in an area where, the conditions were most favourable to the occurrence of such waves (even having the vessel “running with the weather”). It is relevant to notice that the tide was flooding and that, moments before the accident (at 034<sup>0</sup>) the vessel had already had her bow “under water” due to the strong waves that were hitting her.

However it is also a fact that, according to the graphics of the Lisbon weather station (attachment 3) there was a wind speed peak reaching 80 km/h fast as well as a change of direction from 200<sup>0</sup> to 270<sup>0</sup> (this change of direction was not as sudden as the one that happened with the wind speed just before 1540 of the day of the accident.) Probably these wind blasts caused higher waves that hit the vessel and, consequently made the captain to worry about losing the anchors which made him order his crew to lash them, first the stern ones (which with the bow changed to 034<sup>0</sup> exposed it to the wind and the sea) then the bow ones. But under those extraordinary weather conditions, it is supposed and necessary to compensate with extraordinary measures, wherein for that moment and considering that the captain had all the weather information, it would have been more zealous to lash the anchors before leaving the Lisbon port, in order to protect his crew from serious dangers.

There are situations when the experience of an individual who is on board of a ship can be a key factor. For instance, this individual can call the attention of his superior weather the safety of the crew while doing certain jobs in risky areas and under danger conditions is at jeopardy. On the other hand, there could also be a bit of neglect when using the PPE or fulfilling all the passive and active safety procedures on board, mainly under situations of bigger *stress* and the need of a fast decision, as it happened in this case.

## Conclusions

This vessel which is quite modern, as well as the others, are supposed to be built and prepared to endure the most adverse climate conditions (sea and atmosphere) but it is up to the captain to analyze the given data at every moment and decide when and what actions to take to improve the safety on board of equipment, materials and his own crew and subsequently the prevention or minimization of all or any type of accidents.

The ISM code sets up the safety norms and procedures to be implemented on board of this vessel. However, these standards of safety management on board, in spite of being a very useful device, do not focus on the everyday “good practices” of the crew members and, therefore, the ship-owner should provide the captain with a number of procedures, supported by instructions, their own documents drafts (forms) and, for some situations, with “checklists” that would make the crew’s tasks easier and always in a continuous improvement perspective.

Regarding the performed analysis and the recovered data and considering the weather conditions that were on at the time of the accident that caused the death of one of the crew members, some adding factors were found:

1 – Facing the weather conditions after leaving the pier, the anchors (namely the fore ones) were not lashed properly before leaving to the sea.

2 – There were no restraining systems (safety lines/life) for the crew (or they were not used), in slippery conditions, mainly for the ones doing high risk jobs in case of an accident.

It was not proved that the “inexperience” of this vessel’s crew was *per se* a contributory factor for the accident.

The direct cause of the accident was an extraordinary high wave that hit the bow of the vessel at PS and when flooding the deck caused (due to the amount of the water) the heeling of the vessel at SS and the crew members that were working there lashing the anchors were thrown also at SS (along with the water force), including the fatality who was the only one thrown overboard, falling in the sea.

## Safety Recommendations

As a result of the conclusions reached within this report, the GPIAM recommends the ship owner **Mercmarine Group of Companies, Reederei Eugen Friedrich GmbH & Co.KG** to:

**221-2013.1** - Install restraining system device on all the fleet ships for people who are doing their tasks on the deck , especially under bad weather conditions. These systems may include harnesses or similar devices and should be part of the components list of the PPE for each member on board. After this implementation, to assure a prompt control on board of every fleet ships , in what concerns the use each member's PPS who go to work on the deck (for instance, Verification lists) , ensuring that all operations are followed under a sequential form.

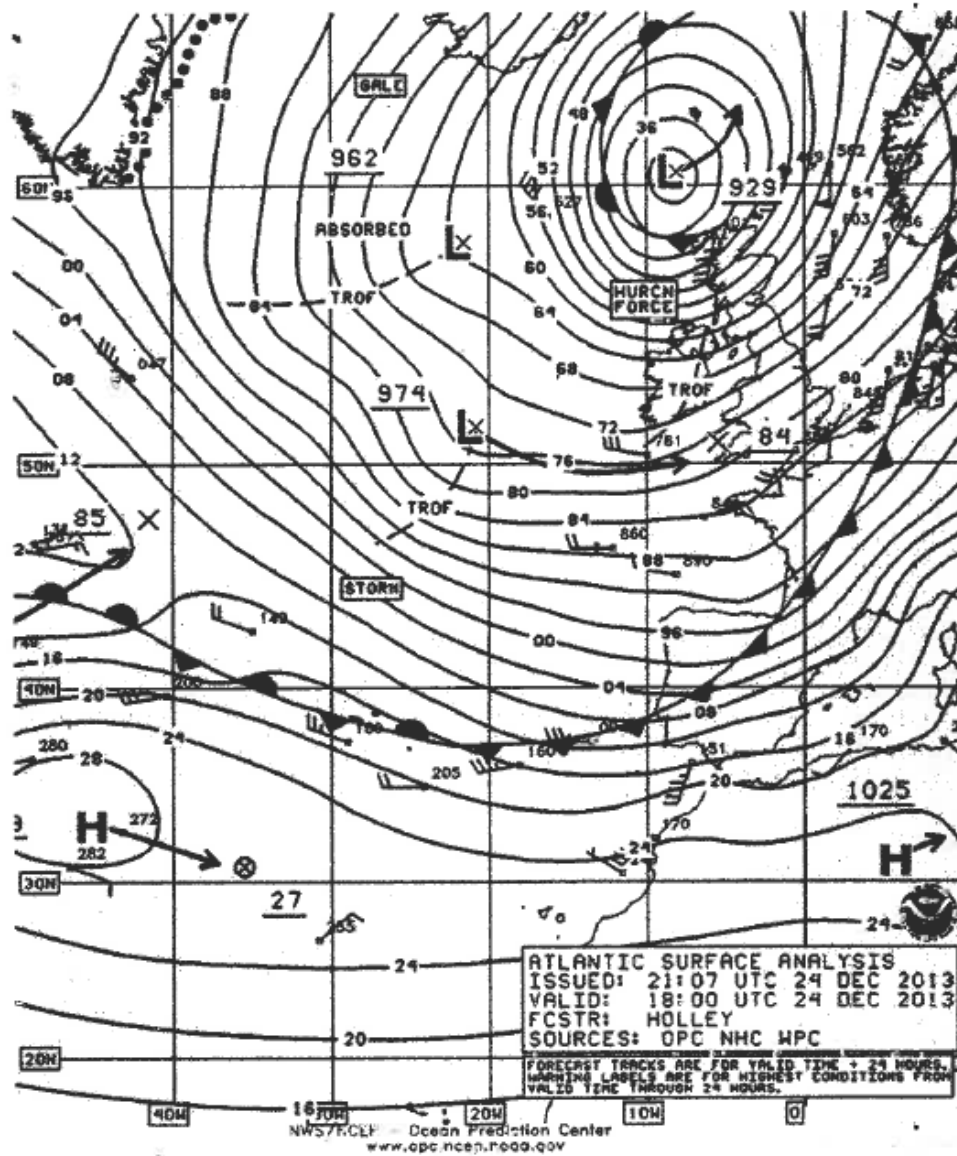
## ATACHMENT 1

### Abbreviations

**AMN** – Autoridade Marítima Nacional / **National Maritime Authority**  
**ACT** – Autoridade para as Condições do Trabalho / **Work Conditions Authority**  
**BB** – Bombordo / **Port side (PS)**  
**Cl.** – Classe / **Degree**  
**DGAM** – Direção-Geral da Autoridade Marítima / **Maritime Authority General Directorate**  
**DGRM** – Direção-Geral de Recursos Naturais, Segurança e Serviços Marítimos / **Natural Resources, Safety and Maritime Services General Directorate**  
**EB** – Estibordo / **Starboard side (SS)**  
**ECDIS** – **Electronic Chart Display and Information System**  
**EMSA** – Agência Europeia de Segurança Marítima / **European Maritime Safety Agency**  
**EPI** – Equipamento de Proteção Individual/ **(PPE) Personnel Protection Equipment**  
**IMO** – Organização Marítima Internacional / **International Maritime Organization**  
**INEM** – Instituto Nacional de Emergência Médica / **National Institute of Medical Emergency**  
**IPMA** – Instituto Português do Mar e da Atmosfera/ **Sea and Atmosphere Portuguese Institute**  
**IPTM** – Instituto Portuário e dos Transportes Marítimos/ **Port and Maritime Transport Institute**  
**ISN** – Instituto de Socorros a Náufragos / **Life-Saving Institute**  
**Km** – Quilómetro / **Kilometer**  
**kW** – Quilowatt / **Kilowatt**  
**Lff** – Comprimento fora-a-fora / **Length over all**  
**Lpp** – Comprimento entre perpendiculares / **Length between perpendiculars**  
**LT** – Hora local / **Local Time**  
**m** – metro / **meter**  
**mt** – toneladas métricas / **metric tons**  
**mi** – Milha náutica / **(nm) Nautical mile**  
**Kts** – Nós / **knots**  
**N/A** – Não aplicável / **Not applicable**  
**SHST** – Saúde, Higiene e Segurança no Trabalho / **OHS - Safety, Health and Welfare at Work**  
**STCW** – Convenção Internacional sobre Normas de Formação, de Certificação e de Serviço de Quartos para os Marítimos / **International Convention on Standards of Training, Certification and Watchkeeping for Seafarers**  
**STCW-F** - Convenção Internacional sobre Normas de Formação, de Certificação e de Serviço de Quartos para os Marítimos para Tripulantes de Embarcações de Pesca / **International convention on training and certification for fishing vessel personnel**  
**Vis** – Visibilidade / **Visibility**

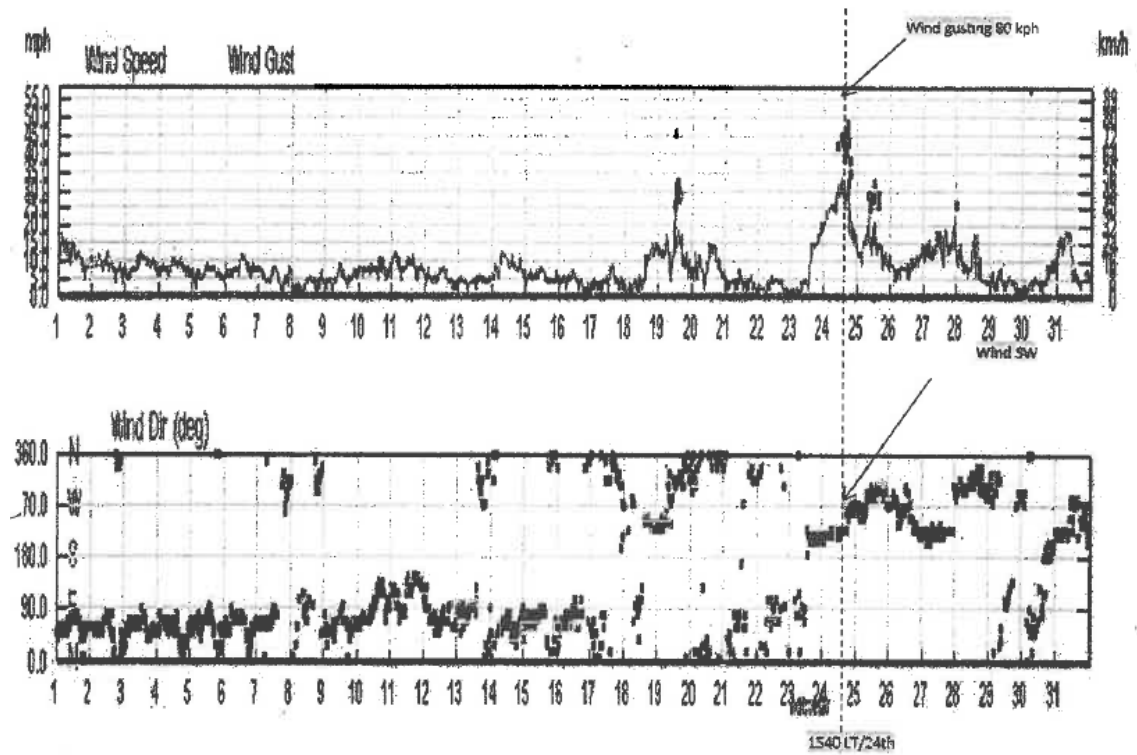
## ATTACHMENT 2

Surface analysis , issued around 2107 on the day of the accident



### ATTACHMENT 3

Speed and direction of the wind graphics on the day and time of the accident



Lisbon weather station graphs December 2013