



MCIB

Marine Casualty Investigation Board
Bord Imscrúdú Taisní Muirí

**REPORT OF INVESTIGATION
INTO AN INCIDENT
OFF THE NORTH COAST OF
SPAIN INVOLVING THE
IRISH REGISTERED YACHT
'LOA ZOUR'
ON THE 6th JUNE 2019**

**REPORT NO. MCIB/300
(No.10 OF 2020)**

The Marine Casualty Investigation Board (MCIB) examines and investigates all types of marine casualties to, or on board, Irish registered vessels worldwide and other vessels in Irish territorial waters and inland waterways.

The MCIB objective in investigating a marine casualty is to determine its circumstances and its causes with a view to making recommendations to the Minister of Transport - for the avoidance of similar marine casualties in the future, thereby improving the safety of life at sea and inland waterways.

The MCIB is a non-prosecutorial body. We do not enforce laws or carry out prosecutions. It is not the purpose of an investigation carried out by the MCIB to apportion blame or fault.

The legislative framework for the operation of the MCIB, the reporting and investigating of marine casualties and the powers of MCIB investigators is set out in the Merchant Shipping (Investigation of Marine Casualties) Act, 2000.

In carrying out its functions the MCIB complies with the provisions of the International Maritime Organisation's Casualty Investigation Code and EU Directive 2009/18/EC governing the investigation of accidents in the maritime transport sector.



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The Marine Casualty Investigation Board was established on the 25th March 2003 under the Merchant Shipping (Investigation of Marine Casualties) Act, 2000.

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Glossary of Abbreviations and Acronyms

AIS	Automatic Identification System
BBC	British Broadcasting Corporation
CGR	Coast Guard Radio
CoP	Code of Practice: The Safe Operation of Recreational Craft (2017)* ^{Note 1}
DSC	Digital Select Calling
EPIRB	Emergency Position Indicating Radio Beacon
ETA	Estimated Time of Arrival
GMDSS	Global Maritime Distress and Safety System
GPS	Global Positioning System
IMA	Irish Maritime Administration
IMO	International Maritime Organisation
IRCG	Irish Coast Guard
LOA	Length Overall
LUT	Local User Terminal* ^{Note 2}
Met	Meteorological
MMSI	Maritime Mobile Service Identity
MN	Marine Notice
MSO	Marine Survey Office
ROC	Restricted Operators Certificate
SART	Search and Rescue Radar Transponder
S.I.	Statutory Instrument
UK	United Kingdom
UTC	Co-ordinated Universal Time
VHF	Very High Frequency
WNWS	Worldwide Navigational Warning Service.

Kilometres	km
Kilowatts	kW
Litres	(lts)
Metres	m
Nautical miles	NM

*Note 1: Updates to the Code of Practice: The Safe Operation of Recreational Craft 2017 (Marine Notice No.51 refers) were published in November 2019. The updates can be downloaded in electronic format at: <https://www.gov.ie/en/publication/66ff7e-safe-operation-of-recreational-craft/>

*Note 2: COSPAS-SARSAT ground stations are called Local User Terminals (LUTs). These satellite receiving units are the ground stations that receive emergency beacon (EPIRB) distress alerts. Once a signal is received and processed at the LUT it is transmitted to the mission Control Centre (MCC) that operates that particular LUT. The LUTs are fully automated and completely unmanned at all times. NOAA manages and operates three-types of LUTs. Low Earth Orbit LUTs (LEOLUTs), Medium Earth Orbiting LUTs (MEOLUTs) and Geostationary Earth Orbit LUTs (GEOLUTs) all track, receive and process alerts. (courtesy of the National Oceanic and Atmospheric Administration (NOAA))

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1. SUMMARY

- 1.1 The yacht '*Loa Zour*' sailed with five crew onboard from Kinsale, Co Cork on the 3rd June 2019 with an intended destination of A Coruña, northern Spain. As the yacht approached the north coast of Spain on the 6th June the yacht's crew issued a Mayday broadcast and activated the vessel's Emergency Position Indicating Radio Beacon (EPIRB) as they experienced severe difficulties in storm force conditions from Storm Miguel. The crew were airlifted from the yacht by a Spanish Maritime Rescue helicopter (Salvamento Alvamento Marítimo) and taken ashore to A Coruña airport.
- 1.2 The yacht '*Loa Zour*' was located adrift two days later and boarded by the crew. The yacht was subsequently navigated into the port of A Coruña.

Note: Times from local reports assumed to be local time = UTC +2

2. FACTUAL INFORMATION

2.1 Vessel Details

Name:	<i>'Loa Zour'</i>
Type:	Bermudan sloop sailing vessel with auxiliary engine.
Category:	Category 'B' - Offshore. Under 13.7 metres (m) length. (reference: Code of Practice: The Safe Operation of Recreational Craft (2017)).
Overall Length:	13 m
Breadth:	3 m
Hull materials:	Glass Reinforced Plastic (GRP).
Registry:	Irish
Call Sign:	EIOM5
MMSI No:	250002926

(See Appendix 7.1 Photograph No.1 Yacht '*LOA ZOUR*').

2.2 Vessel Safety Equipment

The yacht '*Loa Zour*' is a recreational craft and comes within the legislative requirements, terms and recommendations contained within the Code of Practice: The Safe Operation of Recreational Craft (2017)¹ referred hereinafter as the 'Code of Practice' or 'CoP'. The yacht '*Loa Zour*' is 13 m overall length and considered a Code of Practice category 'B' vessel.

Vessels in category 'B' would generally be expected to be in excess of 7 m in length and be capable of undertaking offshore passages of between 50 and 500 miles and withstand seas up to 4 m in height and winds up to Beaufort Force 8 (Gale). The yacht '*Loa Zour*' was 13 m in length. The Code of Practice (CoP) recommendation for sailboats less than 13.7 m in length is that safety equipment carried onboard should reflect the boats function and sea area of operation. A voyage from Kinsale to A Coruña would transit offshore sea areas A1 and A2 and a vessel making this voyage is recommended to have onboard additional radiocommunications equipment as described in the CoP , Appendix 2, Guidance Notes on Radiocommunications.

1. Updates to the Code of Practice: The Safe Operation of Recreational Craft 2017 (Marine Notice No.51 refers) were published in November 2019. The updates can be downloaded in electronic format at: <https://www.gov.ie/en/publication/66ff7e-safe-operation-of-recreational-craft/>

The CoP also sets out the recommended type and quantity of equipment that should routinely be carried onboard yacht 'Loa Zour' as a category B vessel and as described in Chapter 2, Table E:

- Lifesaving and personal safety equipment, as per section 1, paragraphs 1.1 to 1.3 and 1.5 to 1.11.
- Flares as per section 2, paragraphs 2.1 through to 2.4.
- Radios and Communications as per section 3, paragraphs 3.1 through to 3.8.
- Fire Fighting equipment as per section 4, paragraphs 4.1 through to 4.3.
- Navigation Equipment as per section 5, paragraphs 5.1 through to 5.10 and 5.12 through to 5.14.
- Bilge Pumping equipment as per section 6 paragraphs 6.1 through to 6.6.
- Anchors and Warps as per section 7, paragraphs 7.1 through to 7.3.
- General Equipment as per section 8, paragraphs 8.1 through to 8.11.

(See Appendix 7.4 Fig. 10, Fig.11 and Fig.12 Code of Practice Table E sections 1 to 8).

The Skipper stated that he had prepared a year in advance for the voyage to Spain and had the required safety equipment. The liferaft was serviced in 2018 and was in date at the time of the incident. In addition the Skipper purchased a sea anchor suitable for a vessel the length of yacht 'Loa Zour'. A sea anchor is an underwater drogue or parachute device that is streamed from a boat in heavy weather to stabilise the vessel and to limit its drift through the water. It may be streamed from the bows or the stern and will tend to align the vessel to wind and waves.

(See Appendix 7.1 Photograph No.3 Deployment of a Sea Anchor).

The yacht had a suite of navigation aids including two sets of global positioning systems (GPS), a chart plotter and NAVTEX receiver (www.navionics.com). The yacht was also fitted with a vessel Automatic Identification System (AIS) transceiver with its unique Marine Mobile Service Identity (MMSI) number. AIS is an automatic tracking system that uses transceivers on ships and small craft and is used by Vessel Tracking Services (VTS).

2.3 Voyage particulars

The planned voyage of yacht 'Loa Zour' from Kinsale to A Coruña would transit the following UK Met Office designated sea areas south of Kinsale to north coast of Spain:

- The ‘Fastnet’ is the sea area immediately south of Ireland.
- ‘Sole’ is the sea area that includes the western approaches to the English Channel and the south west approach to the Irish Sea.
- ‘FitzRoy’ is the area of sea in the eastern side of the North Atlantic Ocean that includes the south western approaches to the Channel and lies west of the Bay of Biscay and the north coast of Spain.

(See Appendix 7.2 Fig.2 UK Met Office ‘Sea Areas’).

- The Bay of Biscay is a gulf off the Northeast Atlantic Ocean and located south of the Celtic Sea. It lies along the western coast of France from Point Penmarc’h, Finistère, to the Spanish border and the northern coast of Spain and west to Cape Ortegal and is known in weather forecasting as sea area ‘Biscay’. The Bay is known for its rough seas and violent storms due for the most part to its exposure to the Atlantic Ocean and the continental shelf which extends for some distance into the Bay resulting in relatively shallow waters in many areas.

(See Appendix 7.2 Fig.1 Bay of Biscay).

Voyage Plan: The Skipper of yacht ‘*Loa Zour*’ reported that his intention on the 3rd June 2019 was to sail from Kinsale in the afternoon of the 3rd June and make course for the port of A Coruña located on the north west coast of Spain. The Skipper’s voyage plan was to make a direct crossing of the sea areas west of the Bay of Biscay, a distance of approximately 485 nautical miles (NM) due south.

The voyage plan was discussed by the Skipper with the crew and the planned estimated time of arrival at A Coruña was calculated as being sometime on the 7th June 2019, i.e. the fifth day of the voyage.

Close relatives of the crew were aware of the details of the voyage and estimated day of arrival at the port of A Coruña. A Passage Plan was not made or submitted to a shore based authority.

2.4 Crew Details

Skipper/Owner of yacht ‘*Loa Zour*’ - Previous experience in the Merchant Navy. Extensive sailing experienced both coastal, offshore and some ocean passages. Holder of an Irish Sailing Association Yachtmaster Coastal Skippers Certificate of Competency qualification (not seen).

Crew member A - Extensive sailing experienced both inshore, offshore and some ocean passages, boat owner.

Crew member B - Extensive experience inshore sailing and boat owner.

Crew member C - Experienced yacht racer, no qualifications.

Crew member D - Some yachting experience, no qualifications.

2.5 Marine Incident Information

Incident Type: This incident involved the Irish registered yacht ‘*Loa Zour*’ which is normally located in Irish waters and under the control of a resident of the State, in international waters contiguous to Irish waters, with five crew persons onboard. The incident posed a threat of death or serious injury to the crew, the loss or serious damage to the vessel and risk to the rescuers.

This was a marine casualty as defined in Part 1, Section 2 of the Merchant Shipping (Investigation of Marine Casualties) Act, 2000.

2.6 Weather Information

The Skipper obtained weather forecasts from Met Éireann and two internet wind and swell forecasting services prior to departure from Kinsale on the 3rd June.

(See Appendix 7.2 Fig.8 Met Éireann Sea Area forecasts and Coastal Reports 3rd - 4th June).

The Skipper also made reference to Windy.com, a weather forecast visualisation tool which makes use of weather forecasting models in order to show wind speed and directions of weather systems worldwide. This tool also has a predictive feature. On the 3rd of June the Skipper used this tool to obtain a forecast of the weather and winds for the next five days.

The Skipper reported that the Met Éireann forecast was similar to the Windy.com forecast in that winds would increase in strength from Wednesday 5th June into Thursday 6th June indicating that a weather front was passing through their planned voyage route. The Skipper did not consider the forecast to be abnormal for June.

Yacht ‘*Loa Zour*’ also carried onboard a NAVTEX, (NAVigational TELeX) receiver which is an international information system for delivery of navigational and meteorological warnings and forecasts, as well as urgent maritime safety information to ships. NAVTEX weather warnings are (in an abbreviated form) similar to the shipping forecasts. The NAVTEX was working in screen readout only, the printer function being out of service. The Skipper was not monitoring the NAVTEX and was not aware of any of the crew in particular monitoring the NAVTEX readouts throughout the voyage.

2.7 Emergency Response Timeline

Times from local reports assumed to be local time = UTC +2.

On the evening of the 6th June 2019, yacht '*Loa Zour*', with five crew onboard, encountered Storm Miguel 85 NM off the north coast of Spain. The yacht was disabled by the storm conditions and at approximately 20:00 hours (hrs) local time the Skipper of yacht '*Loa Zour*' assessed that the crew were in grave danger and made the decision to broadcast a Mayday. The radio operator, crewmember 'A', made several Mayday VHF broadcasts over approximately thirty minutes which was answered by an oil tanker. The reception was very poor and transmissions broken and garbled. The Skipper was later informed by crewmember 'A' that he thought the Mayday was received but was unable to confirm with the tanker. There was no further contact with or from the tanker whose identity remains unknown at this time.

At approximately 20:30 hrs the Skipper activated the vessel's EPIRB which was detected by the International Satellite System for Search and Rescue (COSPAS-SARSAT) system and directed to the regions Local User Terminal (LUT)². The Skipper reported that he was contacted directly by VHF radio by an English speaking operator and assumed the operator was calling from the UK.

(See Appendix 7.3 Fig.9 COSPAS-SARSAT system overview).

The Spanish Maritime Rescue (SMR) agency received notification from the COSPAS-SARSAT LUT that the yacht '*Loa Zour*' was in distress off the north coast of Spain and was informed of the yachts EPIRB position and Maritime Mobile Service Identification (MMSI) number. At approximately 20:50 hrs the Skipper of the yacht reported that the Spanish Coast Guard, also known as Spanish Maritime Rescue (SMR), contacted the crew by VHF radio, shortly after they had activated the EPIRB, to inform them that a rescue helicopter was on its way to their location. The helicopter arrived shortly thereafter.

The Skipper reported that the rescue helicopter operator informed him that the yacht's unpredictable movements made an unsuitable platform for a rescue and therefore required the crew to enter the seas one at a time in order to be airlifted directly from the sea.

The crew closed down the yacht (engine stopped, battery switches to 'Off' and all hatches closed) before they abandoned the yacht as directed by the rescue helicopter crew and were airlifted to safety. The rescue helicopter proceeded to the airport at A Coruña. The crew of the yacht '*Loa Zour*' were uninjured. The yacht was afloat but abandoned and adrift off the north coast of Spain.

2. COSPAS-SARSAT ground stations are called Local User Terminals (LUTs). These satellite receiving units are the ground stations that receive emergency beacon (EPIRB) distress alerts. Once a signal is received and processed at the LUT it is transmitted to the mission Control Centre (MCC) that operates that particular LUT. The LUTs are fully automated and completely unmanned at all times.

3. NARRATIVE

3.1 Voyage Departure

On Monday the 3rd June at approximately 18:00 hrs yacht 'Loa Zour' sailed from its homeport of Kinsale, Co. Cork for a voyage to the port of A Coruña, on the north coast of Spain. The Skipper estimated a four to five day passage and had made all preparations that he thought necessary for a foreign going voyage across the Bay of Biscay and along the north coast of Spain.

3.1.1 The Skipper and crew had discussed a plan for the voyage which he stated took into account the basic contingencies such as route, distance and time, weather forecasts, safety equipment, contact information and safe place of refuge.

- Route. The voyage was planned to depart Kinsale and set course for A Coruña, a voyage distance of approximately 485 NM and expected to take approximately five days. Estimated day of arrival was the 7th June.
- Weather forecasts. The Skipper checked out the weather forecast obtained from a variety of services including Met Éireann and two internet weather forecasting tools, WINDY.com and another which he could not recall the name. Met Éireann forecast provided coastal weather radio forecast information for the first twenty four hours of the voyage. Met Éireann also provides an internet service Atlantic chart for air mass precipitation and pressure information forecast for the next seven days.

The two other internet weather forecast tools gave wind and swell forecast for the five days crossing. The Skipper's weather forecast predicted a weather front passing through the region from the North Atlantic but winds would reach Force 6 to 7 at most on Thursday the 6th June by which time the yacht was expected to be nearing the Spanish coast.

While it was apparent from these forecasts that a gale was due in from the Atlantic to cross the Bay of Biscay around Wednesday the 5th and Thursday the 6th June the Skipper stated that none of these forecasting tools gave him any indication that the gale would develop into a storm.

- Safety Equipment. The Skipper had a prepared checklist of safety equipment he considered necessary for a voyage of this nature.
- Charts and sailing directions and the vessels log book were onboard and in use and the crew were familiar with the boat and the operation of its equipment.
- Contact Information. Family members of the Skipper and crew were aware of the voyage plan, its estimated time of voyage and expected confirmation on the yachts arrival in A Coruña.

- Safe refuge in the event of bad weather. The course of action in the event of bad weather was to head west into the refuge of the North Atlantic Ocean until the bad weather subsided.

3.1.2 The Skipper stated he was unaware of the Government publication, Code of Practice: The Safe Operation of Recreational Craft and the CoP recommendation for passage planning. He was also unaware of Marine Notice 9 of 2003 'Application of SOLAS Chapter V to Recreational Craft. Both these publications are made freely available for download on the Irish Government's Department of Transport (DoT) website (www.gov.ie/transport). The CoP recommended passage planning template illustrated in Appendix 6 of the Code was therefore not used and no recorded Passage Plan was made or submitted to the relevant authority (Irish Coast Guard (IRCG)).

Marine Notice (MN) 9 of 2003 - Application of SOLAS Chapter V to Recreational Craft, highlights the SOLAS regulations applicable to small, privately owned recreational craft such as yacht '*Loa Zour*'.

(See Appendix 7.4 Fig.13 and Fig.14 MN 9 of 2003 Pages 1 and 2).

The first section of MN 9 of 2003 details the SOLAS Chapter V Regulation 34 'Safe Navigation and Avoidance of Dangerous Situations'. Regulation V/34 concerns prior-planning for a boating trip also known as voyage or passage planning and makes particular reference, amongst other requirements, to the following regarding passage planning:

- Weather: check the weather forecast and get regular updates if planning to be out for any length of time.
- Limitations of the vessel: consider whether the boat is up to the proposed trip.
- Crew: take into account the experience and physical ability of the crew.
- Contingency plan: always have a contingency plan should anything go wrong. Consider places where the boat can take refuge should conditions deteriorate.
- Information ashore: make sure someone ashore knows what to do should they become concerned for the crews wellbeing. The IRCG has a yacht and boat safety scheme and all vessels planning to sail offshore are encouraged to submit a sail plan before commencing the voyage.

3.1.3 The Skipper had considered the requirements for the voyage and made diligent preparations as he thought best. However, the Skipper was not aware of the requirements in detail for passage planning or the regulations for passage planning as listed above in paragraph 3.1.2. Passage planning as a subject, is included in the ISA Yachtmaster Coastal syllabus.

(See Appendix 7.4 Fig.15 ISA Yachtmaster Coastal Sea based Course (Sail) syllabus).

3.2 Safety Equipment

The CoP recommendation for category 'B' sailboats less than 13.7 m in length is that safety and radiocommunications equipment carried onboard should reflect the boats function and sea area of operation. Chapter 2, Sail and motor boats - Coastal Operation, recommends storm sails which can be quickly rigged, or a facility to deep reef sails on yachts (8.6). While the yacht had the facility to deep reef its sails the crew did not have sufficient time to rig storm sails of any description.

(See Appendix 7.4 Fig.12 CoP Table E Section 8).

Appendix 2 of the CoP sets out Guidance notes on Radiocommunications for category B craft - Offshore relating to Sea Area A1 and Sea Area A2. A direct crossing of the Bay of Biscay would transit Sea Area A1 (communications range approximately 30 NM from a coastal radio station) and Sea Area A2 (communications range approximately 150 NM from a coast radio station):

SEA AREA A1: The following equipment should be installed on category B craft when operating in Global Maritime Distress and Safety System (GMDSS) Sea Area A1:

- A fixed type-approved VHF installation capable of transmitting Digital Selective Calling (DSC) on channel 70 and radiotelephony on at least channels 16, 13 and 6.
- A VHF DSC watchkeeping receiver on channel 70.
- A type-approved satellite EPIRB.
- A hand-held type-approved waterproof VHF unit with an onboard charging facility or spare batteries.
- A type-approved Search and Rescue Transponder (SART).
- A Navigational Telex (NAVTEX) receiver.

SEA AREA A2: In addition to the equipment required for Sea Area A1 , the following equipment should also be fitted on the craft when operating in Sea Area A2:

- A position fixing system capable of providing continuously updated positional data to the DSC and Satcom equipment (e.g. GPS).
- A Medium Frequency (MF) radiotelephone installation capable of receiving and transmitting DSC on 2187.5 kHz and a MF watch keeping receiver capable of transmitting on DSC 2187.5 kilohertz (kHz).

Or alternatively, an INMARSAT ship earth station capable of SatCom C, SatCom M or Mini-M communications.

The Skipper was not aware of the additional equipment as recommended in the CoP Chapter 2, Table E (list of equipment) for operating in sea areas A1 and A2 and the yacht's radiocommunication equipment was deficient in respect of:

- A SART (Sea Area 1).
- An MF radiotelephone installation with watchkeeping function OR alternatively an INMARSAT ship shore radio telephone (Sea Area 2).

Although yacht '*Loa Zour*' was not equipped with a SART, the vessel's AIS system would have enabled search and rescue services identify and locate the yacht.

3.3 Weather Forecasting Services

3.3.1 Met Éireann's weather forecasting service reports coastal weather around the coast of Ireland between Latitudes 51° and 56° North and 5° and 11° West.

Met Éireann also offers a 7 day Atlantic air mass forecast chart which shows forecast pressure and precipitation every 6 hours for seven days across the sea areas in the western Atlantic. This is an internet service and unavailable to users once they are offshore any great distance. It was unavailable to the crew of yacht '*Loa Zour*' after leaving the coast of Ireland.

3.3.2 The internet weather application tool Windy.com shows wind directions and wind force in visual form for this area. Again these tools are unavailable once the user is any great distance off shore and was unavailable to the crew of yacht '*Loa Zour*' after leaving the coast of Ireland.

3.3.3 NAVTEX is an international automated direct printing service for delivery of navigational, meteorological and maritime safety information to ships fitted with a receiver. The receiver operates on the medium radio frequencies. Information is received aboard ships at sea within approximately 370 km or 200 NM range off shore. The receiver has a direct printing capability as well as a real-time screen readout function giving the latest weather forecast update. NAVTEX weather forecasts are presented in abbreviated format similar to the shipping forecasts and is a major element of the GMDSS and a component of the International Maritime Organisation's (IMO) Worldwide Navigational Warning Service, (WNWS). Yacht '*Loa Zour*' was fitted with NAVTEX. The automated direct printing function (which would have given the crew a printout of the latest weather forecast update and a historical perspective of the changing weather conditions up to that time), was not in service. The screen readout function was operating and would have displayed on screen the latest weather update but the crew were not pro-actively monitoring the NAVTEX screen readouts during the voyage.

3.3.4 **The UK meteorological service MetOffice** (metoffice.gov.uk/services) provides weather Shipping Forecasts covering the North Atlantic eastern seaboard. The forecasts are divided into a series of Sea Areas. The Shipping Forecast is broadcast three times daily by the British Broadcasting Corporation (BBC) Radio 4 service in FM, MW and LW (156.0 to 162.5 MHz and 1600 to 2300kHz) radio frequency ranges. This information could be heard and monitored on an AM/FM radio receiver and would appear in NAVTEX weather information transmissions. Both means of weather forecasting were onboard and available to the crew of yacht '*Loa Zour*' on the voyage.

(See Appendix 7.2 UK Met Office Shipping Sea Areas Chart).

The voyage plan was to transit through sea areas Fastnet, Sole and FitzRoy in that order.

A synopsis of the UK Met Office Shipping Forecasts for sea areas Fastnet, Sole, Biscay and FitzRoy from the yachts day of departure (3rd June) to the day of the crew's rescue (6th June) was as follows:

Monday 3rd June, the yacht '*Loa Zour*' day of departure.

At 11:30 UTC 03 June for the next 24 hours:

Lundy, Fastnet, Irish Sea: Southwesterly 4 to 6 becoming cyclonic 2 to 4, moderate or rough.

Sole: Southwesterly veering northwesterly 3 to 5, occasionally 6 in the east, moderate or rough.

FitzRoy: Southwesterly veering westerly 4 to 6, but variable 3 or less at first in south. Moderate or rough.

There were no gale warnings for these sea areas at this time.

Tuesday 4th June, yacht transiting sea areas Fastnet, Sole.

At 11:30 UTC 04 June for the next 24 hours:

Lundy, Fastnet: Cyclonic becoming Northwest, 5 or 6, moderate occasionally rough.

FitzRoy, Sole: Northwest 5 or 6, occasionally 7 at first, moderate or rough.

There were no gale warnings for these sea areas at this time.

Wednesday 5th June, yacht passing point of no return as it transits sea areas Sole to FitzRoy.

At 11:30 UTC 05 June for next 24 hours:

Sole, Lundy, Fastnet: West 3 or 4, occasionally 5 at first, becoming variable 3 or less, moderate or rough.

FitzRoy: West 4, becoming variable 3 or less in north, but cyclonic 5 to 7, occasionally gale 8 later in south, moderate or rough.

There was a gale warning at issued at 1001 UTC; FitzRoy gale force 8 expected later.

Thursday 6th June, yacht transiting sea area FitzRoy, approaching the north coast of Spain, Bay of Biscay to the East.

At 11:30 UTC 06 June for next 24 hours:

Biscay, FitzRoy: Cyclonic 7 to severe gale 9, increasing storm 10 at times, perhaps violent storm 11 later, rough or very rough, occasionally moderate at first, then becoming high at times.

There was a gale warning issued at 04.01 GMT; FitzRoy - Southwesterly gale force 8 increasing severe gale force 9 imminent then veering northwesterly and increasing storm force 10 later. Biscay - Westerly storm force 10 expected later

(See Appendix 7.2 Fig.3, Fig.4, Fig.5 and Fig.6 UK Met Office Shipping Forecasts 3rd - 6th June).

The weather forecast for Wednesday 5th June was the earliest indication of gale force conditions in sea Area FitzRoy available to the crew. Also on 5th June, AEMET, the Spanish Metrological Agency, named a rapidly developing low pressure system developing out in the Atlantic as 'Storm Miguel'. Over the next couple of days this extratropical cyclone developed in a rapid cyclogenesis process and produced a quick formation of a deep low-pressure centre in the Bay of Biscay. The cyclone (Storm Miguel) tracked across north west Spain and Portugal on the 6th June before sweeping north across the Bay of Biscay to the Atlantic coast of France on the 7th June. The storm conditions produced by Storm Miguel was attributed to the loss of a French fishing boat with the crew assumed dead and the capsizing of a French rescue lifeboat off the French coast with the loss of three lifeboat crewmembers on the 7th June.

(See Appendix 7.2 Fig.7 Storm Miguel - 0600 UTC 06th June. Satellite image (Meteosat-11)).

3.4 Weather and Sea Conditions Experienced by the Crew of Yacht 'Loa Zour'

The Skipper reported that for the first two days (3rd and 4th June), the weather was as per the 3rd June weather forecasted by Met Éireann and WINDY.com.

On the third day, 5th June, the wind was more than forecasted and the crew were required to reef in the main sail and furl the jib sail.

The fourth day, 6th June, started fine as the wind dissipated although the sea swell was rough between 3 to 4 m high. The crew unfurled the sails and dried

out their sailing gear. However, in the afternoon the wind increased quickly to an estimated Force 8 and the crew furled the sails again. The Skipper mistakenly thought this was the predicted weather front coming through. The wind abated but again rapidly increased in force and by the late afternoon was gusting to 60 knots and the Skipper estimated Beaufort Force 10 storm conditions. The Skipper did not expect the weather conditions to deteriorate so rapidly. The Skipper reported that the crew managed to reef the sails but the main sail was reduced to tatters, as was the jib sail shortly after. The cockpit spray hood was also destroyed. The crew deployed a sea anchor from the bows but had insufficient warps available to utilise the sea anchors full effect and the anchor was damaged beyond use. The engine was unable to maintain headway and the yacht was often beam on to the breaking seas which were very high with overhanging, breaking crest and heavy rolling. The crew sought refuge inside the yacht as the vessel was uncontrolled at this point and experiencing very heavy rolling and violent movements. The Skipper reported that the yacht was uncontrolled, beam on to the sea and on its beam ends on occasions. Water was entering the cabin and the crew were being thrown about and in close danger of serious injury. The weather and sea conditions experienced by the crew of yacht '*Loa Zour*' off the north coast of Spain on the 6th June was due to Storm Miguel.

(See Appendix 7.1 Photograph 2 Yacht '*Loa Zour*' in Storm Miguel seas (courtesy of Salvamento Marítimo)).

3.5 Crew Rescue

On the 6th June 2019, shortly before 20:30 hrs the Skipper of yacht '*Loa Zour*' assessed that the crew were in grave danger and took the decision, on advice from his crew, to broadcast a Mayday. Crewmember 'A' operated the VHF radio. The Skipper stated that after several Mayday transmissions over approximately thirty minutes they were answered by a crewmember of an oil tanker. The reception was very poor and transmissions broken and garbled. The Skipper was later informed by crewmember 'A' that he thought the Mayday was received but was unable to confirm. There was no further contact with or from the tanker whose identity remains unknown.

At approximately 20:30 hrs the Skipper activated the vessel's EPIRB which was detected by the COSPAS SARSAT system and directed to the regions Local User Terminal (LUT). The Skipper reported that he was contacted directly by VHF radio by an English speaking operator who may have been the LUT duty operator and assumed the operator was calling from the UK.

(See Appendix 7.3 Fig.9 COSPAS-SARSAT system overview).

The Spanish Maritime Rescue (SMR) agency received the notification from the COSPAS-SARSAT LUT that the yacht '*Loa Zour*' was in distress off the north coast

of Spain and gave the yacht's EPIRB position and unique MMSI number. At approximately 20:50 hrs the Skipper of the yacht reported that the Spanish Coast Guard, also known as Spanish Maritime Rescue (SMR), contacted the crew by VHF radio, shortly after they had activated the EPIRB, to inform them that a rescue helicopter was on its way to their location. The helicopter arrived shortly thereafter.

The Skipper reported that the rescue helicopter operator informed him that the yacht's unpredictable movements made an unsuitable platform for a rescue and therefore required the crew to enter the seas one at a time in order to be airlifted directly from the sea.

The crew closed down the yacht (engine stopped, battery switches to 'Off' and all hatches closed) before they abandoned the yacht as directed by the rescue helicopter crew and airlifted to safety. The rescue helicopter proceeded to the airport at A Coruña. The crew of the yacht '*Loa Zour*' were uninjured. The yacht was afloat but abandoned and adrift off the north coast of Spain.

3.6 Rescue Weather and Sea Conditions

According to Spanish reports and EUMETSAT data, winds experienced along this coast and attributed to Storm Miguel were between 60 and 80 knots, well in excess of Beaufort Force 10 (storm force). Spanish Salvamento Maritimo reported wave heights between four to six metres with multiple breaking crests and wind speeds of 60 knots. The Skipper estimated the waves as being in excess of 15 m (trough to peak) with breaking crests and breakers midway down the troughs. The Skipper recounted that steering was tied and the crew had retired into the yacht's accommodation spaces while the Skipper kept a look-out from the hatchway coaming. He saw the yacht's mast dipped into the seas twice with the severe rolling of the vessel and the crew were thrown around the yacht's interior before he made the assessment that the crew were in imminent danger of injury and instructed the radio operator, crewmember 'A', to broadcast a VHF radio Mayday distress broadcast. The Skipper states that several Mayday broadcasts were made before they received a response from an oil tanker but the reception was very poor and garbled and crewmember 'A' was not sure the call was understood. The crew received no other response to their Mayday voice transmissions and the Skipper decided to activate the vessel's EPIRB. He reported that shortly after activating the EPIRB they received a VHF transmission from the Local User Terminal (COSPAS-SARSAT), the location of this LUT has not been verified. The Skipper reported that after activating the EPIRB they received another VHF transmission from the Spanish Coast Guard informing the crew that a rescue helicopter was en-route to their location.

A report credited to Salvamento Maritimo states that "the seas were too rough to attempt a rescue (helicopter) direct from the boat which was (moving) dangerously". The crew were required to jump into the seas one by one in order to be rescued by the helicopter. Maritime Rescue said "winds of 60 knots and

waves from four to six metres made the task/rescue very complicated”. The Maritime Rescue helicopter landed the crew at A Coruña airport where the crew were checked over medically, completed formal immigration processes and found accommodation in a local hotel. There were no injuries to the crew.

3.7 Recovery of Yacht ‘Loa Zour’

The whereabouts of yacht ‘Loa Zour’ after the crew rescue was unknown for approximately two days. The yacht had been abandoned and adrift 85 NM north west of A Coruña. The Skipper recounts that two days after the rescue, on the 8th June, the Spanish Coast Guard informed him the yacht had been spotted 80 km (43NM) off the Spanish coast. By that time Storm Miguel had passed through the region and advanced northwards.

The Skipper chartered a local boat in order to locate and recover the yacht which was eventually found and boarded by the five crewmembers. The Skipper recounts that there was an amount of water in the cabin up to the bottom of the companionway steps. Contents of lockers including food, bedding, charts, log books, nautical publications and personal items were in the bilge water and beyond recovery. However, some key systems were working and the crew were able to pump out the water and start the engine. The crew navigated the yacht to the port of A Coruña.

4. ANALYSIS

4.1 As a category 'B' Offshore vessel being in excess of 7 metres in length, yacht 'Loa Zour' would generally be expected to be capable of undertaking an offshore passage assuming weather and sea conditions on passage did not exceed gale force, i.e. Beaufort Force 8, and seas over 4 m heights. Yacht 'Loa Zour' encountered storm force conditions in excess of Beaufort Force 10 and reported wave heights (4 to 6 m). These conditions were beyond the yachts design capacity as a category 'B' offshore vessel.

4.2 The five crewmembers were experienced yacht sailors, three having offshore sailing experience and the other two crewmembers were familiar with the boat and had some sailing experience. The three most experienced crewmembers were themselves boat owners. Collectively the crew were competent sailors and capable of an offshore voyage under normal circumstances. The Skipper stated that he had a Yachtmaster Coastal (sail) Certificate of Competency (CoC) and was in the process of logging qualifying sea time to enable his application for assessment for the Yachtmaster Offshore CoC. The Irish Sailing Associations training syllabi for both CoC qualifications include the following subject matter:

- Passage Planning.
- Preparations for Offshore passages.
- Heavy weather sailing and preparations

(See Appendix 7.4 Fig.15 ISA Yachtmaster Coastal sea-based course (Sail) syllabus).

The above subjects are mentioned in MN 9 of 2003 as part of SOLAS Chapter V/34 requirements for recreational craft. The Skipper did not heed the recommendations or requirements of SOLAS Chapter V/34 preparations for the offshore voyage in so far as:

- There was no Passage or Voyage Plan made or submitted to the relevant authority.
- The crew did not monitor the BBC weather forecasting services for weather updates provided by the UK Met Office shipping forecasts or NAVTEX weather information transmissions during the voyage and immediately prior to the onset of Storm Miguel when weather conditions quickly deteriorated.
- The yacht was operating in the margin of Offshore to Ocean conditions and therefore close to the limits of the yacht's radiocommunications equipment and design category 'B' capability and in that:

- the voyage from Kinsale to A Coruña would transit through Sea Areas A1 and A2 and be at the extreme communications range from any coastal radio stations, (approximately 30 NM for A1 and approximately 150 NM for A2) and skirted the eastern Atlantic Ocean at the voyages mid-point. The yacht's radio communications equipment was not to the scale as recommended for voyages in Sea Areas A1 and A2 and may have reduced the Skipper's options either in the event of medical emergency to the crew or a breakdown of the yacht.

The Bay of Biscay is notorious for its rough seas and violent storms due to its proximity to the North Atlantic Ocean. A strong gale (Beaufort Force 9) would have exposed the yacht to sea conditions beyond its category 'B' capability. Even though Storm Miguel was unexpected because it developed during the warm season the Skipper did not consider the limitations of the vessel in the event of bad weather.

- The contingency plan for a very bad weather event was to head westwards into the Atlantic Ocean. This plan was weak for two reasons:
 - (1) The plan assumed the crew would have sufficient weather forecasting notice to enable a course change in time to make sufficient distance to avoid deteriorating sea and weather conditions.
 - (2) The plan did not take into account the category 'B' offshore vessel capability limitations of the yacht, (recreational craft designed for a wind force up to and including Force 8, and significant wave height up to and including 4 m). A course change into the Atlantic Ocean would have likely exposed the vessel to conditions beyond its design capability.
- Yacht '*Loa Zour*' was operating beyond its design category 'B' capability and the crew of yacht '*Loa Zour*' did not have sufficient experience or training or the necessary competence to adequately prepare for the voyage and ultimately to withstand the extreme weather and sea conditions presented by Storm Miguel.

4.3 The UK Met Office Shipping Forecast for the 5th June, sea area FitzRoy included a gale warning Force 8. The Shipping Forecast was available to the crew as they made the mid-voyage crossing point that day by listening to the BBC Radio 4 AM radio transmissions and observing the NAVTEX readouts. Even if the crew had been aware of the gale warning, the capability of the yacht and competencies of the crew were just sufficient to withstand a gale and enable the voyage to continue to A Coruña.

The cyclone that rapidly formed into Storm Miguel developed from the 5th June in the North Atlantic. Storm Miguel was unusual because it developed during a warm season.

The cyclone rapidly worsened in the North Atlantic and made its approach towards the north coast of Spain. The UK Met Office Shipping Forecast at 11:30 hrs UTC 6th June for sea area FitzRoy was considerably worse than the previous day's forecast. The forecast predicted that the previously forecast gale force 8 of the 5th June would become cyclonic to severe gale force 9, increasing storm force 10 at times, perhaps violent storm force 11 later.

This forecast was critical information for the crew of the yacht who were now beyond the voyages half way or mid-point and, on the morning of the 6th June, the crew of the yacht remained unaware of, and therefore unprepared for, the extreme weather approaching from the Atlantic.

Storm Miguel landed on the north Spanish coast as the yacht was within a one days sailing distance from A Coruña in the late afternoon of the 6th June. Too late, the Skipper and crew realised their predicament when the yacht encountered the storm force conditions 85 NM from A Coruña. The crew were unprepared and the only course of action for the Skipper and crew was to weather the storm as best they could.

- 4.4 The radiocommunications equipment onboard the vessel was not to the CoP recommended requirements of an offshore voyage in Sea Areas A1 and A2 in that the vessel was deficient in the recommended radiocommunications equipment, reference paragraph 3.2 above.

The absence of the radiocommunications equipment would not have aided avoidance of the rapidly developing storm approaching the north coast of Spain from the Atlantic or expedited the location of the yacht and rescue of the crew by the Spanish Maritime Rescue helicopter.

- 4.5 The storm conditions experienced by the crew were exceptionally severe and beyond the capabilities of the yacht. The height of the waves, the multiple breaking wave crests and the extreme wind speeds put the yacht at considerable risk of overturning. The Skipper assessed that the crew were in imminent risk of injury or death as the boat continued its uncontrolled and violent rolling. The Skipper also realised that recovery of an injured crewmember from the deck of the yacht would be more difficult for the rescue services and would increase the risk of further injury. Chapter 11 of the CoP 'Emergency Procedures' describes the circumstances for a Mayday broadcast. The situation described by the Skipper and reported by the Spanish Coast Guard rescue helicopter validates the Skipper's decision to broadcast a Mayday at that time.

5. CONCLUSIONS

- 5.1 The cyclone that developed into Storm Miguel was an unusual and unexpected weather event due to its severity and formation in June, during a warm season. Cyclones usually form in the winter months. By the time Storm Miguel formed up in the North Atlantic and was identified as a storm on the 5th June, yacht '*Loa Zour*' had sailed beyond the point of returning to Ireland or turning west into the Atlantic Ocean to avoid the forecasted severe weather and sea conditions of the storm as it tracked along the north Spanish coast and into the Bay of Biscay. Due to the direct course south taken by the crew of yacht '*Loa Zour*' and the distances from any safe haven during the latter part of the voyage it was inevitable that yacht '*Loa Zour*' would be enveloped by Storm Miguel before it arrived to A Coruña.
- 5.2 The deficiencies in recommended radiocommunications equipment onboard the yacht had no influence on the situation of the yacht as the storm developed in the Atlantic and swept towards their position 85 NM from the port of A Coruña. NAVTEX weather texts and BBC Shipping Forecast broadcasts early on the 6th June predicting storm force conditions would not have been of any benefit to the decision making processes as the crew could not, at that time and in that position, take any avoiding actions.
- 5.3 When the yacht '*Loa Zour*' encountered Storm Miguel the situation onboard the yacht became critical. The Skipper believed there was grave and imminent danger to the crew and showed good judgement in his decision and actions in broadcasting a Mayday distress VHF transmission and activating the vessels EPIRB.
- 5.4 The Skipper had planned the voyage for some time previous but was unaware of the rules, regulations and recommendations contained in the publications '*Code of Practice: The Safe Operation of Recreational Craft (2017)*' or '*Marine Notice MN9 of 2003*'. Both publications advocate the production of a Passage Plan or Sail Plan as required by SOLAS Chapter V Recreational Craft, and furthermore, as recommended in the Code of Practice, a Passage Plan was not submitted to a shore based authority. If the basic tenets of the Passage Plan had been observed in detail with respect to updated weather forecasting during the voyage, observing the limitations of the boat design capability and staying within reach of a safe haven by taking a more circuitous route around the coastline of the Bay of Biscay then the crew of yacht '*Loa Zour*' may have been better prepared before encountering Storm Miguel 85 NM north of A Coruña.
- 5.5 The procedures and systems implemented by COSPAS-SARSAT communications and Spanish Maritime Rescue (Salvamento Marítimo) organisations resulted in the rescue of the crew of yacht '*Loa Zour*' during Storm Miguel before serious harm came to the crew.

6. SAFETY RECOMMENDATIONS

- 6.1 The Minister of Transport should highlight the importance of regular weather forecast checks during coastal, offshore and ocean voyages.
- 6.2 The Minister of Transport and the Irish Maritime Administration should highlight the requirement for a Passage Plan, as described in Marine Notice 9 of 2003, SOLAS Chapter V 'Recreational Craft', a Sail Plan or Passage Plan as recommended by the Irish Coast Guard in their Yacht and Boat Safety Scheme and also recommended in the CoP and illustrated in the template at Appendix 8 of the CoP, to be submitted to a shore based authority before undertaking any coastal, offshore or ocean voyages.
- 6.3 The Minister of Transport and the Irish Maritime Administration should include the use of sea anchors and provision of a set of storm sails as part of the recommended equipment described in CoP Chapter 2, Table E.8 'General Equipment' for category 'A' and category 'B' recreational craft, (sea anchors are included in equipment lists for SOLAS approved liferafts (reference: Life Saving Appliances (LSA) - Code of life-saving appliance (MSC. 48(66) Chapter IV 4.1.5.1 Equipment)).

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Appendix 7.1 Photographs

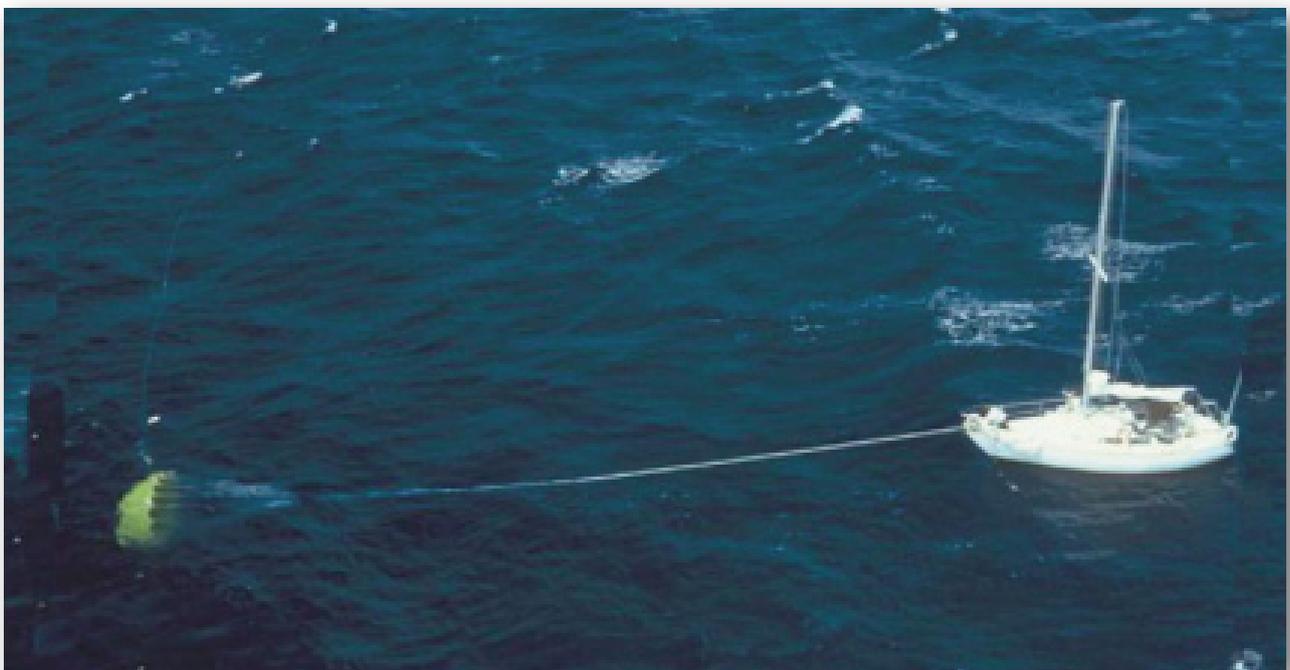


Photograph No.1 - Yacht 'Loa Zour'.

Appendix 7.1 Photographs



Photograph No. 2 - Yacht 'Loa Zour' in the seas of Storm Miguel.



Photograph No. 3 - General equipment (offshore) deployment of a Sea Anchor.

Appendix 7.2 Charts and Diagrams

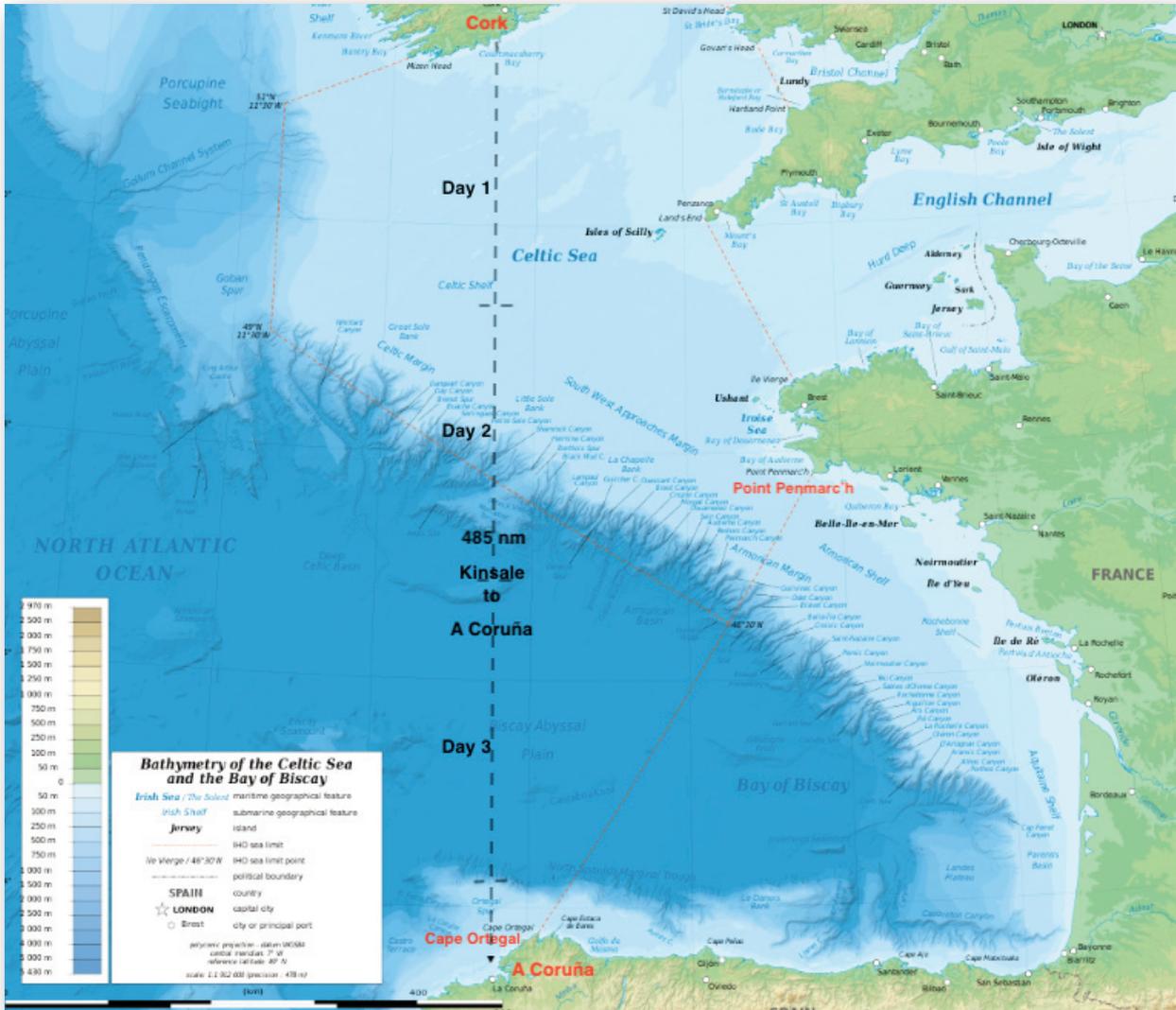
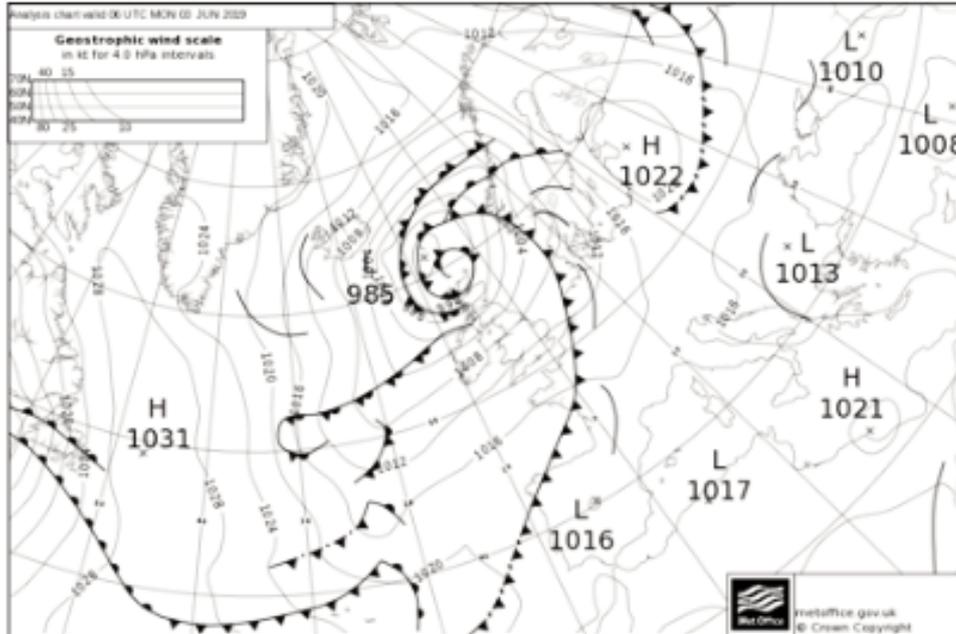


Fig.1. Bay of Biscay.

Appendix 7.2 Charts and Diagrams

Analysis Chart 03rd June:



Shipping Forecast:

--- THE SHIPPING FORECAST ISSUED BY THE MET OFFICE, ON BEHALF OF THE MARITIME AND COASTGUARD AGENCY, AT 1130 UTC ON MONDAY 03 JUNE 2019 FOR THE PERIOD 1200 UTC MONDAY 03 JUNE TO 1200 UTC TUESDAY 04 JUNE 2019

THERE ARE WARNINGS OF GALES IN HEBRIDES BAILEY FAIR ISLE FAEROES AND SOUTHEAST ICELAND

THE GENERAL SYNOPSIS AT 0600
LOW FAERDES 985, SLOW MOVING, FILLING 990 BY 0600 TOMORROW. NEW LOWS EXPECTED FASTNET 1001 AND FITZROY 1002 BY SAME TIME

THE AREA FORECASTS FOR THE NEXT 24 HOURS

BISCAY
VARIABLE 3 OR LESS, BECOMING SOUTHWEST 4 OR 5, OCCASIONALLY 6 LATER. MODERATE, OCCASIONALLY ROUGH AT FIRST. RAIN OR THUNDERY SHOWERS. GOOD, OCCASIONALLY POOR

FITZROY
SOUTHWESTERLY VEERING WESTERLY 4 TO 6, BUT VARIABLE 3 OR LESS AT FIRST IN SOUTH. MODERATE OR ROUGH. RAIN OR THUNDERY SHOWERS. GOOD, OCCASIONALLY POOR

SOLE
SOUTHWESTERLY VEERING NORTHWESTERLY 3 TO 5, OCCASIONALLY 6 IN EAST. MODERATE OR ROUGH. THUNDERY SHOWERS. GOOD, OCCASIONALLY POOR

LUNDY FASTNET IRISH SEA
SOUTHWEST 4 TO 6, BECOMING CYCLONIC 2 TO 4. MODERATE OR ROUGH, OCCASIONALLY SLIGHT IN IRISH SEA. RAIN LATER. GOOD, OCCASIONALLY POOR LATER

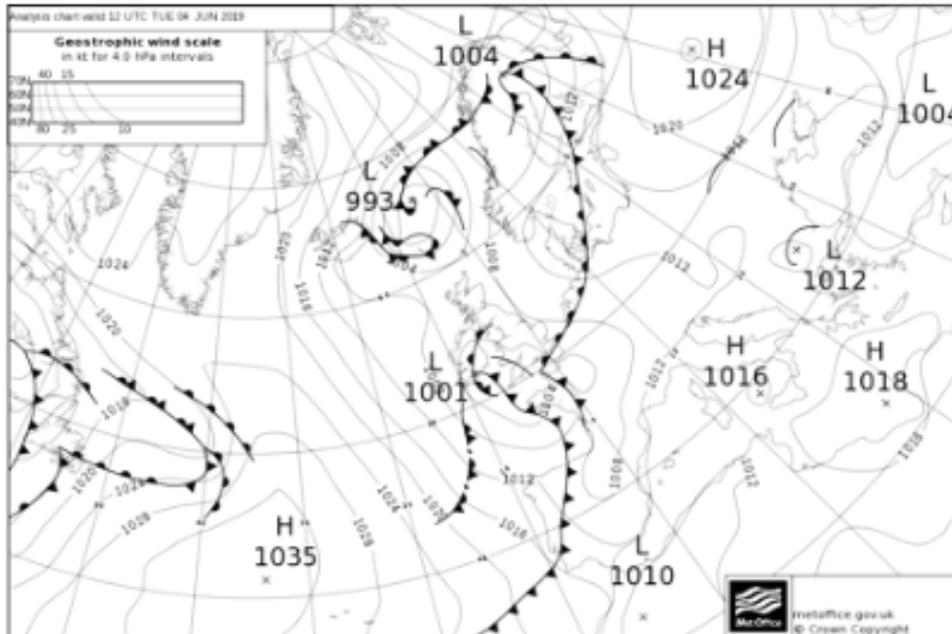
Gale Warnings:

WARNINGS ISSUED FROM 1800 GMT YESTERDAY TO 0630 GMT TODAY
MET OFFICE WARNING NO: 74(02/2144) 75(03/0340)
SUMMARY OF AREAS WITH GALE WARNINGS NOW IN OPERATION:
FORTIES CROMARTY HEBRIDES BAILEY FAIR ISLE FAEROES
SOUTHEAST ICELAND

Fig. 3. UK Met Office Shipping Forecast 3rd June.

Appendix 7.2 Charts and Diagrams

Analysis Chart 04th June:



Shipping Forecast:

... THE SHIPPING FORECAST ISSUED BY THE MET OFFICE, ON BEHALF OF THE MARITIME AND COASTGUARD AGENCY, AT 1130 UTC ON TUESDAY 04 JUNE 2019 FOR THE PERIOD 1200 UTC TUESDAY 04 JUNE TO 1200 UTC WEDNESDAY 05 JUNE 2019

THERE ARE WARNINGS OF GALES IN FISHER, GERMAN BIGHT, FAEROES AND SOUTHEAST ICELAND

THE GENERAL SYNOPSIS AT 0600

NEW LOW EXPECTED FORTIES 997 BY 0600 TOMORROW. LOW FASTNET 1002 EXPECTED SOUTHWEST SCOTLAND 997 BY SAME TIME. LOW JUST NORTH OF FAEROES 991, SLOW MOVING, FILLING 999 BY SAME TIME

THE AREA FORECASTS FOR THE NEXT 24 HOURS

BISCAY

SOUTHWEST VEERING WEST 5 TO 7. MODERATE, OCCASIONALLY ROUGH. SHOWERS. GOOD

FITZROY SOLE

NORTHWEST 5 OR 6, OCCASIONALLY 7 AT FIRST. MODERATE OR ROUGH. SHOWERS. GOOD

LUNDY FASTNET

CYCLONIC BECOMING NORTHWEST, 5 OR 6. MODERATE, OCCASIONALLY ROUGH. OCCASIONAL RAIN THEN SHOWERS. GOOD, OCCASIONALLY POOR AT FIRST

Gale Warnings:

GALE WARNING THURSDAY 06 JUNE 0401GMT 86

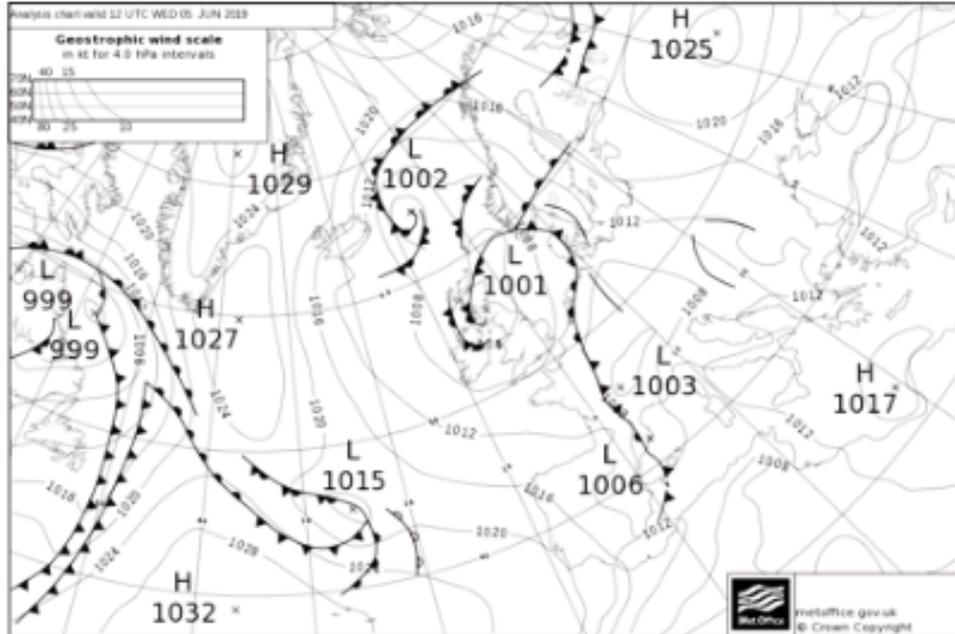
BISCAY: WESTERLY STORM FORCE 10 EXPECTED LATER

FITZROY: SOUTHWESTERLY GALE FORCE 8 INCREASING SEVERE GALE FORCE 9 IMMINENT THEN VEERING NORTHWESTERLY AND INCREASING STORM FORCE 10 LATER

Fig. 4 . UK Met Office Shipping Forecast 4th June.

Appendix 7.2 Charts and Diagrams

Analysis Chart 05th June



Shipping Forecast:

... THE SHIPPING FORECAST ISSUED BY THE MET OFFICE, ON BEHALF OF THE MARITIME AND COASTGUARD AGENCY, AT 1130 UTC ON WEDNESDAY 05 JUNE 2019 FOR THE PERIOD 1200 UTC WEDNESDAY 05 JUNE TO 1200 UTC THURSDAY 06 JUNE 2019.

THERE ARE WARNINGS OF GALES IN FITZROY AND SOUTHEAST ICELAND.

THE GENERAL SYNOPSIS AT 0600
LOW SCOTTISH BORDERS 999, EXPECTED DONEGAL 1003 BY 0600 TOMORROW. NEW LOMS EXPECTED FITZROY 1002 AND GERMAN BIGHT 1003 BY SAME TIME.

THE AREA FORECASTS FOR THE NEXT 24 HOURS.

BISCAY
WEST, BACKING SOUTHEAST 4 OR 5, DECREASING 3 FOR A TIME. MODERATE. THUNDERY SHOWERS. GOOD, OCCASIONALLY POOR.

FITZROY
WEST 4, BECOMING VARIABLE 3 OR LESS IN NORTH, BUT CYCLONIC 5 TO 7, OCCASIONALLY GALE 8 LATER IN SOUTH. MODERATE OR ROUGH. SHOWERS, THEN THUNDERY RAIN. GOOD, OCCASIONALLY POOR.

SOLE LUNDY FASTNET
WEST 3 OR 4, OCCASIONALLY 5 AT FIRST, BECOMING VARIABLE 3 OR LESS. MODERATE OR ROUGH, BECOMING SLIGHT IN LUNDY. SHOWERS. GOOD.

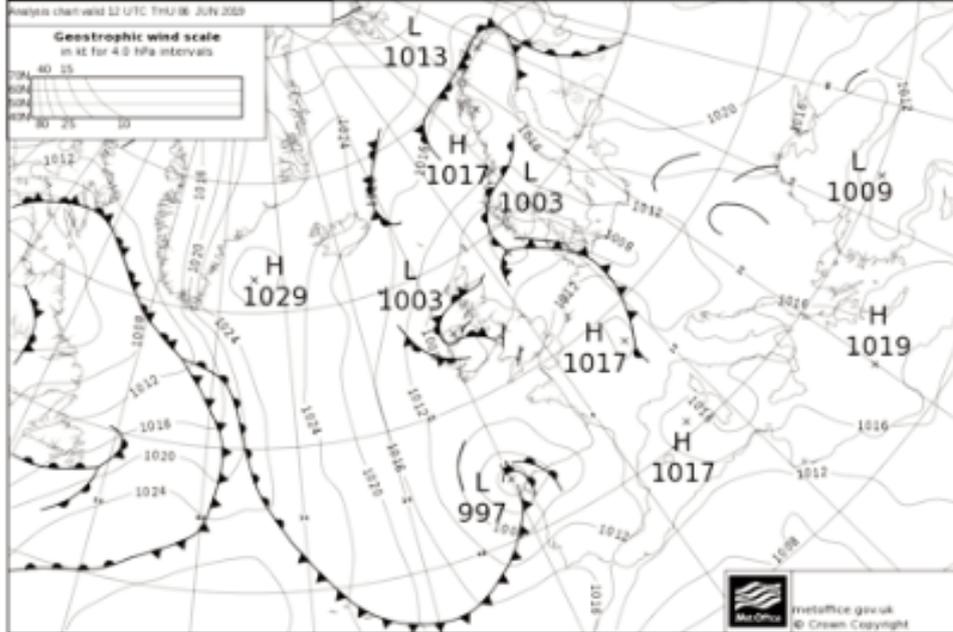
Gale Warnings:

GALE WARNING WEDNESDAY 05 JUNE 1000GMT 84
SOUTH UTSIRE FISHER, GALE NOW CEASED
FITZROY, SOUTHWESTERLY GALE FORCE 8 EXPECTED LATER

Fig. 5. UK Met Office Shipping Forecast 5th June.

Appendix 7.2 Charts and Diagrams

Analysis Chart 06th June:



Shipping Forecast:

AND NOW THE SHIPPING FORECAST ISSUED BY THE MET OFFICE, ON BEHALF OF THE MARITIME AND COASTGUARD AGENCY, AT 1130 UTC ON THURSDAY 06 JUNE 2019 FOR THE PERIOD 1200 UTC THURSDAY 06 JUNE TO 1200 UTC FRIDAY 07 JUNE 2019.

THERE ARE WARNINGS OF GALES IN BISCAY TRAFALGAR FITZROY AND SOUTHEAST ICELAND.

THE GENERAL SYNOPSIS AT 0600.

LOW SOUTH FITZROY 1001 EXPECTED BISCAY 991 BY 0600 TOMORROW. LOW GERMAN BIGHT 1002 EXPECTED JUST NORTH OF FAEROES 1002 BY SAME TIME. LOW MALIN 1003 LOSING ITS IDENTITY.

THE AREA FORECASTS FOR THE NEXT 24 HOURS.

BISCAY FITZROY

CYCLONIC 7 TO SEVERE GALE 9, INCREASING STORM 10 AT TIMES, PERHAPS VIOLENT STORM 11 LATER. ROUGH OR VERY ROUGH, OCCASIONALLY MODERATE AT FIRST, THEN BECOMING HIGH AT TIMES. RAIN OR THUNDERY SHOWERS. GOOD, OCCASIONALLY POOR.

SOLE

VARIABLE 3 OR 4, BECOMING CYCLONIC 5 TO 7, PERHAPS GALE 8 LATER IN EAST. MODERATE, OCCASIONALLY ROUGH LATER. SHOWERS. GOOD.

LUNDY FASTNET

VARIABLE 3 OR 4, BECOMING NORTH 5 TO 7 LATER. SLIGHT OR MODERATE. THUNDERY SHOWERS AT FIRST, RAIN LATER. GOOD, OCCASIONALLY POOR.

Gale Warnings:

GALE WARNING THURSDAY 06 JUNE 1549GMT 87.

WIGHT PORTLAND, EASTERLY GALE FORCE 8 EXPECTED LATER.

PLYMOUTH, NORTHERLY GALE FORCE 8 EXPECTED LATER.

BISCAY, SOUTHEASTERLY GALE FORCE 8 IMMINENT, VEERING WESTERLY VIOLENT STORM FORCE 11 SOON.

TRAFALGAR, GALE NOW CEASED.

FITZROY, NORTHWESTERLY STORM FORCE 10, INCREASING VIOLENT STORM FORCE 11 IMMINENT.

SOLE, NORTHWESTERLY GALE FORCE 8 EXPECTED LATER.

Fig. 6. UK Met Office Shipping Forecast 6th June.

Appendix 7.2 Charts and Diagrams

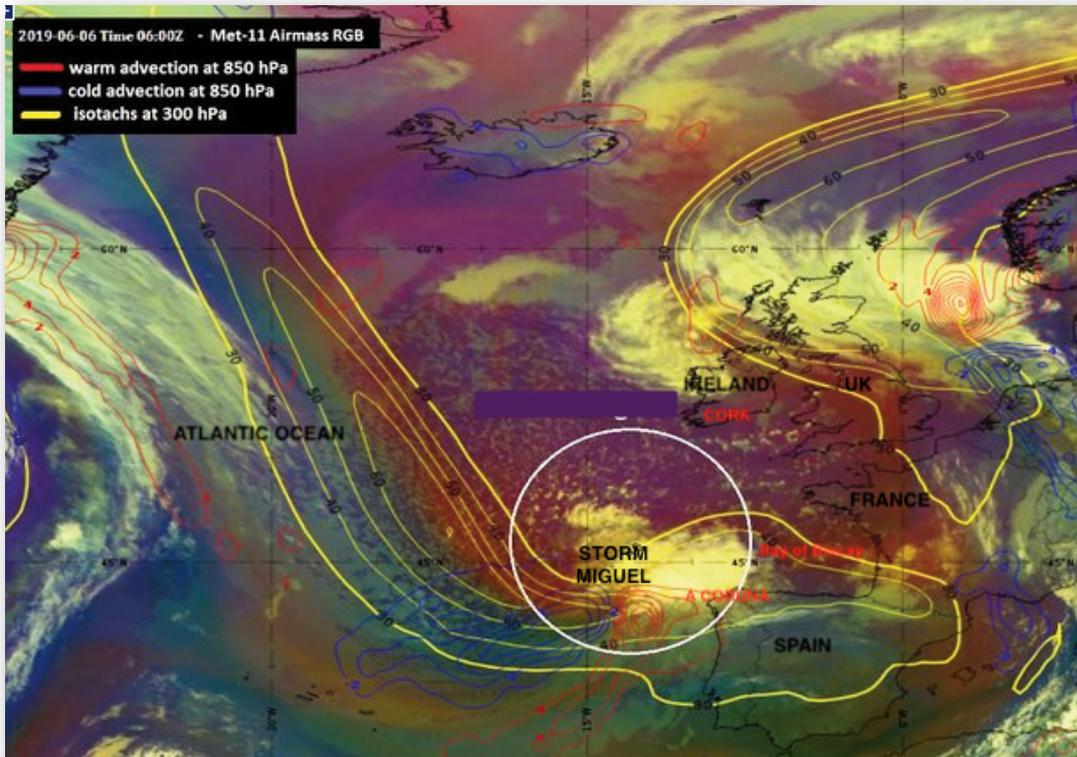


Fig.7. Storm Miguel 0600 UTC 6th June Satellite image (Meteosat-11).

Appendix 7.2 Charts and Diagrams

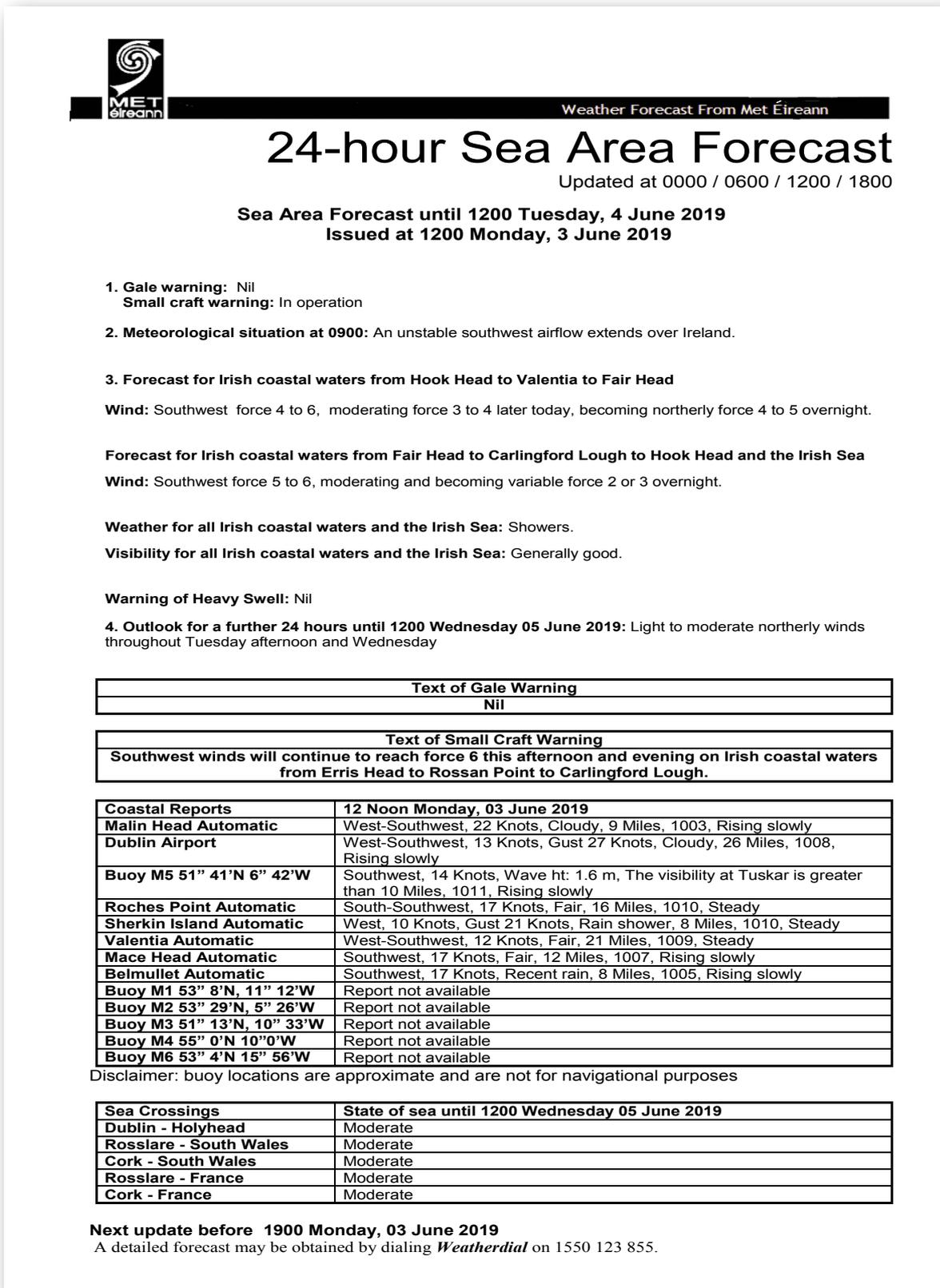


Fig. 8. Met Éireann Sea Area Forecast and Coastal Reports 3-4 June.

Appendix 7.3 Schematics

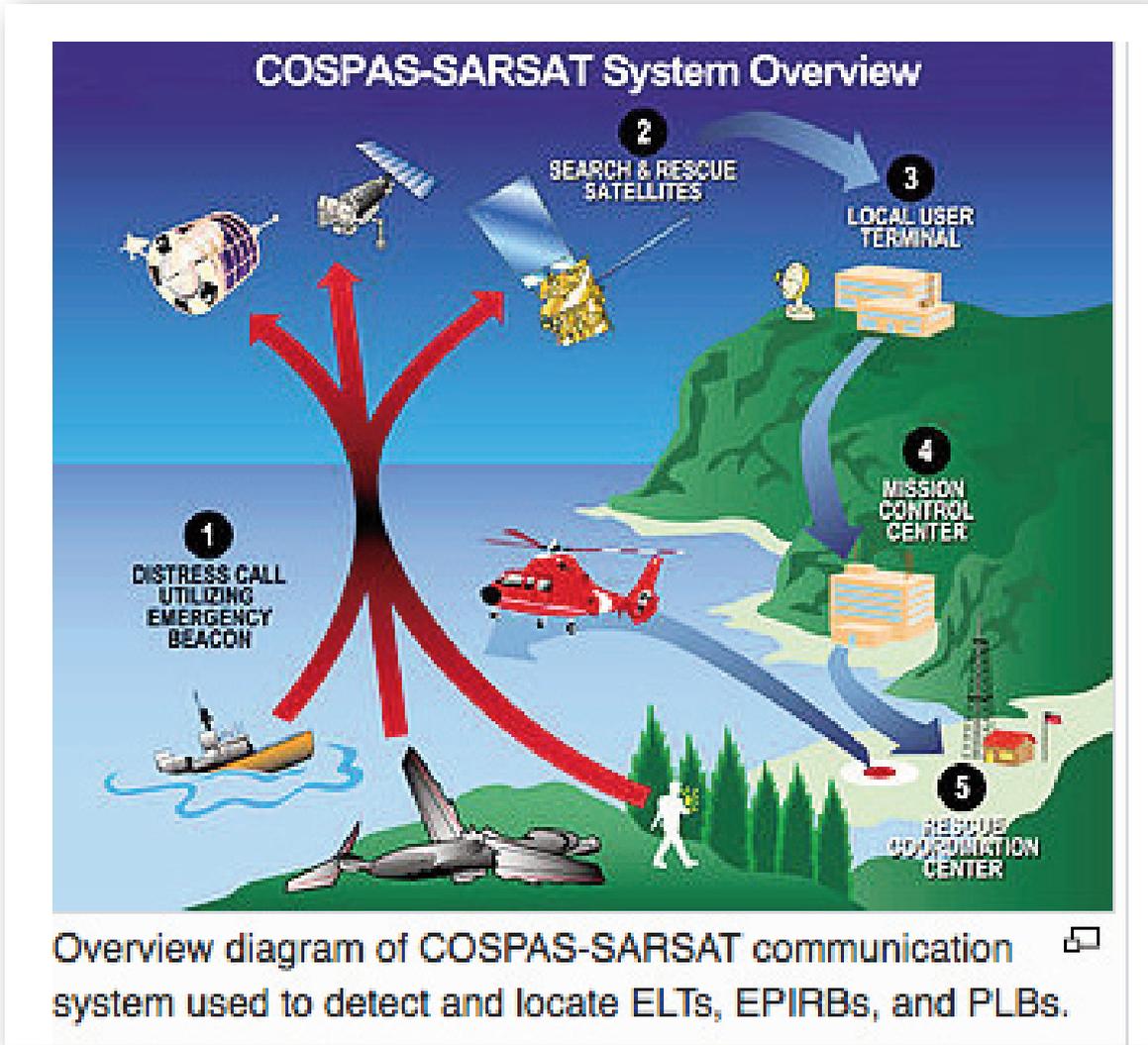


Fig 9. COSPAS-SARSAT system.

Appendix 7.4 Code of Practice Extracts

Sail boat and motorboat – Offshore/Coastal

- Category A Craft – Ocean
- Category B Craft – Offshore
- Category C Craft – Inshore
- Category D Craft – Sheltered waters

Table E: Sail and Motor Boats – Coastal

Type of Equipment	Vessel Category and Quantity of Equipment			
	A	B	C	D
1. Lifesaving and personal safety equipment				
1.1 A suitable PFD/lifejacket for each person on board of at least 150 Newtons (CE EN 396/I.S. EN ISO 12402-3:2006) (see Appendix 5).	✓	✓	✓	✓ (100N)
1.2 Crew safety harness/lifelines for all crew that may have to work on deck at any time.	✓	✓	✓	
1.3 Appropriate clothing.	✓	✓	✓	
1.4 An immersion suit for each crew member if operating in northern latitudes.	✓	✓		
1.5 Jack Lines capable of being rigged port and starboard and extending from the aft of the cockpit to the foredeck for use with crew lifelines.	✓	✓	✓	
1.6 Life raft of sufficient capacity to cater for all crew carried.*	✓	✓	✓	
1.7 Emergency Liferaft Grab Bag for abandoning ship.	✓	✓	✓	
1.8 A buoyant heaving line/throw bag.	✓	✓	✓	
1.9 Horseshoe type lifebelt with light. Danbuoy with flag fitted to one lifebelt.	✓	✓	✓	
1.10 Buoyancy sling with floating line – can be fitted in lieu of one horseshoe lifebelt.	✓	✓	✓	
1.11 Boarding Ladder.	✓	✓	✓	

*Category C craft engaged on overnight coastal passages.

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2. Flares (all to be within expiry date and manufacturer's instructions to be followed – see Chapter 11)	A	B	C	D
2.1 Hand held distress flares.	(6)	(4)	(4)	(2)
2.2 Hand held white flares.	(4)	(4)		
2.3 Parachute rocket red flares.	(12)	(4)	(4)	
2.4 Orange smoke signal canisters.	(2)	(2)	(2)	(2)

3. Radios and Communications (see Appendix 2 for additional requirements for Sea Area A1, A2)	A	B	C	D
3.1 A suitable fixed Marine Band VHF radio transmitter, with DSC facility (Operators licence required from MSO).	✓	✓	✓	
3.2 Marine Band MF/HF/SSB and/or global satellite communication system.	✓			
3.3 EPIRB – type 406 – registered in the name of the vessel.	✓	✓		
3.4 Radio Transponder unit – SART.	✓			
3.5 Waterproof hand held radio.	✓	✓	✓	✓
3.6 A radio receiver AM/FM, capable of receiving shipping forecasts, and national/local weather forecasts.	✓	✓	✓	✓
3.7 Mobile Phone (in waterproof holder).	✓	✓	✓	✓
3.8 NAVTEX.	✓	✓	✓	

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Fig. 10. CoP Table E, Sections 1 - 3.

Appendix 7.4 Code of Practice Extracts

4. Fire Fighting					
4.1	Fire blanket – CE marked.	✓	✓	✓	#
4.2	Fire extinguishers in addition to a suitable extinguisher to fight oil fires in engine spaces or fire bucket.*	(3)	(3)	(2)	
4.3	All cooker/heaters using Liquid Petroleum Gas (LPG) should be installed as outlined in Marine Notice No. 37 of 2017.	✓	✓	✓	✓

If carrying cooking equipment
* Do not deploy the bucket overboard while the boat is moving.

5. Navigation Equipment					
5.1	Echo Sounder.	✓	✓	✓	
5.2	Steering Compass.	✓	✓	✓	
5.3	Hand Bearing Compass.	✓	✓	✓	
5.4	Speed Log.	✓	✓	✓	
5.5	GPS.	✓	✓	✓	
5.6	Radar Reflector.	✓	✓	✓	
5.7	Foghorn, powered or aerosol type.	✓	✓	✓	✓
5.8	Barometer.	✓	✓	✓	
5.9	Clock.	✓	✓	✓	
5.10	Binoculars.	✓	✓	✓	
5.11	Sextant and tables.	✓			
5.12	Navigation drawing instruments, parallel ruler, dividers or plotting instrument.	✓	✓		
5.13	Full set of fixed navigation lights including anchor lights.	✓	✓	✓	
5.14	Suitable up to date charts, nautical publications and tide tables for areas of cruising.	✓	✓	✓	

6. Bilge Pumping					
6.1	Manual bilge pump capable of pumping from any hull watertight compartment and with all hatches closed.	(2)	(2)	✓	✓
6.2	At least one complete repair kit including spares should be carried.	✓	✓	✓	
6.3	An electric or engine driven pump can be substituted for a manual model.	✓	✓		
6.4	A bucket of capacity 8-12 litres, suitably fitted with a rope lanyard.*	✓	✓	✓	✓
6.5	Softwood tapered plugs, located adjacent to all through hull underwater fittings.	✓	✓	✓	
6.6	All through hull fittings to be fitted with isolation valves.	✓	✓	✓	

* Do not deploy the bucket overboard while the boat is moving.

7. Anchors and Warps					
7.1	Anchor with chain/warp, as appropriate for a vessels size and operating area ground holding conditions.	(2)	(2)	✓	✓
7.2	Boats should have a suitably reinforced deck cleat/Samson post on the foredeck, and means of closing over the bow roller or fairlead used when anchoring.	✓	✓	✓	✓
7.3	An adequate supply of warps and fenders. These should include suitable warps to allow the craft to be towed if necessary.	✓	✓	✓	✓

Fig. 11. CoP Table E, Sections 4 - 7.

Appendix 7.4 Code of Practice Extracts

Sail and Motor Boats – Coastal Operation

8. General Equipment	A	B	C	D
8.1 Emergency steering means, i.e. tiller for vessels fitted with wheel steering as their primary means of steering.	✓	✓	✓	✓
8.2 Waterproof torch, capable of also being used for signalling.	✓	✓	✓	✓
8.3 An appropriate tool kit and spare parts for the type of craft being used.	✓	✓	✓	✓
8.4 Suitable secondary means of engine starting including battery, hand start or suitable jump leads.	✓	✓	✓	
8.5 Suitable First Aid Kit including a First Aid Manual.	✓	✓	✓	✓
8.6 Storm sails which can be quickly rigged, or the facility to deep reef sails on yachts.	✓	✓	✓	
8.7 Emergency repair kit including sail repair kit, spare wash boards and window blanks.	✓	✓		
8.8 Emergency water supply.	✓	✓		
8.9 Bosun's Chair.	✓	✓		
8.10 Instruction manuals for vessel's essential equipment.	✓	✓	✓	
8.11 Rigid or inflatable tender.	✓	✓	✓	

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Fig.12. CoP Table E, Section 8.

Appendix 7.4 Code of Practice Extracts



**Department of Communications, Marine
And Natural Resources**

MARINE NOTICE No. 9 of 2003

**Notice to all Recreational Craft owners, Certifying Authorities,
Surveyors, Training Establishments, Masters and Crews of all
Recreational Craft.**

**APPLICATION OF SOLAS CHAPTER V TO
RECREATIONAL CRAFT.**

On 1 July 2002, some new regulations came into force, which directly affect recreational craft. These regulations are part of Chapter V of the International Convention for the Safety of Life at Sea, otherwise known as SOLAS V. Most of the SOLAS convention only applies to large commercial ships, but parts of Chapter V apply to small, privately owned recreational craft. The regulations described in this Marine Notice apply to recreational craft.

Voyage Planning

Regulation V/34 'Safe Navigation and avoidance of dangerous situations', is a new regulation. It concerns prior-planning for a boating trip, more commonly known as voyage or passage planning. Voyage planning is basically common sense. Recreational craft users should particularly take into account the following points when planning a boating trip:

- weather: before going boating, check the weather forecast and get regular updates if planning to be out for any length of time.
- tides: check the tidal predictions for the trip and ensure that they fit with the planned trip.
- limitations of the vessel: consider whether the boat is up to the proposed trip and that there is sufficient safety equipment and stores.
- crew: take into account the experience and physical ability of the crew. Crews suffering from cold, tiredness and seasickness won't be able to do their job properly and could even result in an overburdened skipper.
- navigational dangers: make sure the crew is familiar with any navigational dangers that may be encountered during the boating trip. This generally means checking an up to date chart and a current pilot book or almanac.
- contingency plan: always have a contingency plan should anything go wrong. Before departing, consider places where the boat can take

Fig.13. MN 9 of 2003 - Page 1.

Appendix 7.4 Code of Practice Extracts

refuge should conditions deteriorate or if the crew suffer an incident or injury. Bear in mind that the GPS set is vulnerable and could fail at the most inconvenient time. It is sensible and good practice to make sure that the crew are not over-reliant on the GPS set and that they can navigate to safety without it should it fail.

- information ashore: make sure that someone ashore knows the plans for the trip and knows what to do should they become concerned for the crews' well being. The Irish Coast Guard has a Yacht and Boat safety scheme and all vessels planning to sail off-shore are encouraged to submit a Sail Plan before commencing the voyage. In addition, the Irish Coast Guard reminds all vessels that they should pass TR messages via their nearest Coast Radio Station. There is no charge for this service. Please note, however, that overdue reporting remains the responsibility of the vessels shore contact. The Irish Coast Guard will not initiate overdue procedures on the basis of TR messages.

Radar Reflectors

Many large ships rely on radar for navigation and for spotting other vessels in their vicinity. So, whatever size the boat is, it's important to make sure that it can be seen by radar. Regulation V/19 requires all small craft to fit a radar reflector 'if practicable'. If the boat is more than 15m in length, it should be possible to fit a radar reflector that meets the IMO requirements of 10m². If the boat is less than 15m in length, it should be fitted with the largest radar reflector possible. Regardless of the size of boat, the radar reflector should be fitted according to the manufacturer's instructions and as high as possible to maximise its effectiveness.

Life Saving Signals

Regulation V/29 requires the boat to have access to an illustrated table of the recognised life saving signals, so that it can communicate with the search and rescue services or other boats if it gets into trouble. A table of life saving signals is produced in the Annex to this Marine Notice and it can also be found in various nautical publications. If the boat is not suitable for carrying a copy of the table on board (because it's small or very exposed), make sure the table has been studied before going boating. Larger boats should keep a copy on board.

Assistance to other Craft

Regulations V/31, V/32 and V/33 require a vessel:

- to let the Irish Coast Guard and any other vessels in the vicinity know if it encounters anything that could cause a serious hazard to navigation, if that hazard has not already been reported. This can be done by calling the Coast Guard on VHF, if on board, or by telephoning them at the earliest opportunity. The Coast Guard will then warn other vessels in the area.
- to respond to any distress signal that it sees or hears and help anyone or any boat in distress as best it can.

Appendix 7.4 Code of Practice Extracts

Irish Sailing Yachtmaster Coastal Sea-based Course (Sail)

Subject	Details to be covered
Passage planning	<ol style="list-style-type: none"> 1. <u>Consideration</u> of capability of yacht and crew 2. <u>Navigation</u> and strategy 3. <u>Provisioning</u> 4. <u>Sea</u> area and shipping forecasts 5. <u>Ports</u> of refuge 6. <u>Tidal</u> heights and streams 7. <u>Discussion</u> of 5 day overall plan and crew briefing 8. <u>Chart</u> and publications check
Preparation for sea	<ol style="list-style-type: none"> 1. <u>Check</u> all safety equipment 2. <u>Safety</u> briefing 3. <u>Watch</u> keeping schedules 4. <u>Secure</u> stowage 5. <u>Allocation</u> of responsibilities 6. <u>Engine</u>, fuel and equipment checks
Pilotage	<ol style="list-style-type: none"> 1. <u>Preparation</u> of effective pilotage plan 2. <u>Use</u> of transits, buoys, lights, clearing and danger bearings and soundings 3. <u>Use</u> of GPS, radar 4. <u>Preparation</u> of tidal height and stream information 6. <u>Port</u> or harbour regulations
Passage making and responsibility as skipper	<ol style="list-style-type: none"> 1. <u>Organisation</u> and running of navigation and domestic duties of a cruising yacht on passage 2. <u>Crew</u> welfare and management 3. <u>Radio</u> communications 4. <u>Effective</u> use of yacht's radio navigation aids and instrumentation 5. <u>Awareness</u> of changes in weather conditions
Yacht handling under power	<ol style="list-style-type: none"> 1. <u>Turning</u> in confined spaces 2. <u>All</u> berthing and unberthing situations with any combination of wind and tide
Yacht handling under sail	<ol style="list-style-type: none"> 1. <u>Sail</u> efficiently on all points of sailing 2. <u>Effective</u> sail control and trim 3. <u>Anchoring</u> and mooring with any combination of wind and tide 4. <u>Control</u> under sail in confined waters
Adverse weather conditions	<ol style="list-style-type: none"> 1. <u>Preparation</u> for heavy weather 2. <u>Yacht</u> handling in strong winds 3. <u>Conduct</u> in restricted visibility
Rules of the road	<ol style="list-style-type: none"> 1. <u>Full</u> working knowledge of International Regulations for Preventing Collisions at Sea
Emergency situations	<ol style="list-style-type: none"> 1. <u>Can</u> take correct action as helmsman for recovery of man overboard 2. <u>Full</u> understanding of correct use of flares, <u>liferaft</u>, radio, EPIRB 3. <u>Understanding</u> of action required when abandoning to <u>liferaft</u> and during helicopter and lifeboat rescue

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Fig.15. ISA Yachtmaster Coastal sea-based course (Sail) syllabus).

SECTION 36 PROCESS

Section 36 of the Merchant Shipping (Investigation of Marine Casualties) Act, 2000

It is a requirement under Section 36 that:

- (1) Before publishing a report, the Board shall send a draft of the report or sections of the draft report to any person who, in its opinion, is likely to be adversely affected by the publishing of the report or sections or, if that person be deceased, then such person as appears to the Board best to represent that person's interest.
- (2) A person to whom the Board sends a draft in accordance with subsection (1) may, within a period of 28 days commencing on the date on which the draft is sent to the person, or such further period not exceeding 28 days, as the Board in its absolute discretion thinks fit, submit to the Board in writing his or her observations on the draft.
- (3) A person to whom a draft has been sent in accordance with subsection (1) may apply to the Board for an extension, in accordance with subsection (2), of the period in which to submit his or her observations on the draft.
- (4) Observations submitted to the Board in accordance with subsection (2) shall be included in an appendix to the published report, unless the person submitting the observations requests in writing that the observations be not published.
- (5) Where observations are submitted to the Board in accordance with subsection (2), the Board may, at its discretion -
 - (a) alter the draft before publication or decide not to do so, or
 - (b) include in the published report such comments on the observations as it thinks fit.'

The Board reviews and considers all observations received whether published or not published in the final report. When the Board considers an observation requires amendments to the report that is stated beside the relevant observation. When the Board is satisfied that the report has adequately addressed the issue in the observation, then the observation is 'Noted' without comment or amendment. The Board may make further amendments or observations in light of the responses under Section 36. 'Noted' does not mean that the Board either agrees or disagrees with the observation.

Response(s) received following circulation of the draft report are included in the following section.

8. SECTION 36 - CORRESPONDENCE RECEIVED

No correspondence was received on the draft of this report.



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