MCIB
Marine Casualty Investigation Board
Bord Imscrúdú Taismí Muirí

REPORT OF AN INVESTIGATION INTO AN INCIDENT INVOLVING THE FISHING VESSEL AQUILA OFF THE CO. CORK COAST 7 NOVEMBER 2021

REPORT NO. MCIB/312
(No.1 OF 2024)

The Marine Casualty Investigation Board (MCIB) examines and investigates all types of marine casualties to, or onboard, 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.

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 transposed into Irish law by the European Communities (Merchant Shipping) (Investigation of Accidents) Regulations 2011.

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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

ATC	Air Traffic Control
BIM	Bord Iascaigh Mhara
C	Celsius
CGR	Coast Guard Radio
CFR	Common Fleet Register
CUH	Cork University Hospital
EU	European Union
FVSC	Fishing Vessel Safety Certificate
FV	Fishing Vessel
HSA	Health and Safety Authority
HSE	Health Service Executive
IMO	International Maritime Organisation
IRCG	Irish Coast Guard
LLC	Lorry Loader Crane
MCIB	Marine Casualty Investigation Board
MMSI	Maritime Mobile Service Identity
MRSC	Marine Rescue Sub Centre
MSO	Marine Survey Office
NEOC	National Emergency Operations Centre
S.I.	Statutory Instrument
SITREP	Situation Report
UTC	Co-ordinated Universal Time
VHF	Very High Frequency

Hour	hr
Knot	kt
Metre	m
Nautical mile	NM

Report MCIB/312 published by the Marine Casualty Investigation Board.
30th January 2024.

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1. SUMMARY

1.1 Fishing vessel (FV) Aquila with five crew onboard left the fishing port of Union Hall, Co. Cork at approximately 21.00 hours (hrs) on the evening of the 6 November 2021 to fish south of the Kinsale Gas Rigs. At approximately 12.00 hrs on the 7 November the fishing vessel was at the fishing grounds and the crew were hauling the second haul of the day using the vessel's net handling crane when the crane's hydraulic system experienced a sudden loss of hydraulic oil pressure causing the crane's jib and power head to uncontrollably lower inboard trapping a Crewmember between the power head and the underside of the deck supporting the net drum. The Crewmember suffered crush injuries.

1.2 The Skipper contacted the Cork Coast Guard Radio (CGR) by Very High Frequency (VHF) radio at 12.38 hrs advising them of the incident and requesting a medical evacuation of the injured Crewmember ashore.

At approximately 15.00 hrs Irish Coast Guard (IRCG) helicopter R115 airlifted the injured Crewmember ashore to Cork University Hospital (CUH) for medical attention.

The injured Crewmember was discharged from CUH on the 8 November as passed fit to fly home and returned to the Philippines to recover. He recuperated and has since returned to work as a fisher onboard an Irish registered fishing vessel.

See Appendix 7.1 - FV Aquila.

See Appendix 7.2 - General Arrangement Profile FV Aquila.

See Appendix 7.3 - General Arrangement Wheelhouse Deck.

See Appendix 7.4 - General Arrangement Main Working Deck.

Note: Times are local time = UTC + 1 (Co-ordinated Universal Time + 1 hour).

2. FACTUAL INFORMATION

2.1 Vessel Details

2.1.1	Name:	Aquila.
	Type:	Fishing Vessel 15 – 24 metres (m).
	Flag State:	Ireland.
	Port of Registry:	Skibbereen, Co. Cork.
	First Registered in Ireland:	10 May 2011.
	Registration:	S603.
	International Maritime Organisation (IMO) Number:	8783476[1].
	Maritime Mobile Service Identity (MMSI) Number:	250002299.
	Common Fleet Register (CFR) Number:	GBR000A24630.
	Radio Call Sign:	EIKS4.
2.1.2	Registered Length:	20.8 m.
	Length Overall:	21.99 m.
	Beam:	7 m.
	Tonnage:	163 Gross Tonnes.
2.1.3	Construction:	Wooden, twin trawler rigged for Danish seine net fishing.
	Date of Construction:	1 January 1988.
	Country of Origin:	Appledore, Devon, United Kingdom.

2.2 FV Aquila had modifications carried out in 2017 when the net handling crane position was moved slightly forward by approximately 0.5 m. The net drum was also moved slightly forward by 0.5 m. Both changes were to improve the working

1. https://webgate.ec.europa.eu/fleet-europa/vessel_details_en

space in the stern area. The net handing crane was replaced in October/November 2019 with a Thistle Marine BK7 marine crane with power block attachment.

See Appendix 7.5 - Stern Arrangement.

See Appendix 7.6 - Crane Operator's Station.

See Appendix 7.7 - Thistle Marine BK7 Marine Crane with Power Block Attachment.

2.3 Vessel Safety Information

2.3.1 Aquila had been the subject of a Marine Survey Office (MSO) Survey and Safety Inspection for a Fishing Vessel Safety Certificate (FVSC) (15-24 m), in accordance with the Merchant Shipping (Safety of Fishing Vessels) (15-24 m) Regulations 2007 Statutory Instruments (S.I.) No. 640 of 2007[2]. Aquila was issued with a Fishing Vessel Safety Certificate (FVSC) on the 17 December 2019 certifying that the vessel had been surveyed in accordance with S.I. No. 640 of 2007, Regulation 7(1)(b)(i) (periodical surveys at intervals of four years).

2.3.2 It is a requirement of the S.I. No. 640 of 2007 Regulations that "Lifting gear, winches, fish handling and processing equipment shall be so installed, protected and maintained so as not to constitute a danger to persons and the vessel" (Regulation 44. (1)(b)).

2.3.3 The certificate was valid up to 2 September 2023. The FVSC was valid at the time of the incident which occurred on the 7 November 2021. An Intermediate survey was due 2 September 2023, two years before the FVSC expiry. Regulation 7(1)(b) sub-paragraphs (ii) and (iii) and 7(7)(c) S.I. No. 640 of 2007 requires periodical surveys at intervals of two years based on the "anniversary date" which is the expiry date and normally in the range +/- three months. The MSO would normally contact the applicant to arrange a mutually agreeable date for the survey, but the MSO may agree a date outside the range to take account of any operational issues arising (e.g., vessel's location, MSO resources, vessel off service periods, Covid 19 issues etc.).

As the Intermediate was not carried out at the time of the incident, the FVSC was considered to be valid by the MSO as still in the survey window.

2.3.4 As indicated on page 1 of the issued FVSC, an Exemption Certificate was not issued with the 2019 FVSC, therefore the vessel complied with all provisions of the Regulations. The purpose of an Exemption Certificate is explained in the Merchant Shipping (Safety of Fishing Vessels) (15-24 m) Regulations 2007 S.I. No. 640 of 2007. These Regulations provide, inter alia, under Regulation 9 for a regime of FVSCs and provides for an exemption regime under Regulation 4.

2. https://www.irishstatutebook.ie/eli/2007/si/640/made/en/print

See Appendix 7.8 - Fishing Vessel Safety Certificate.

2.4 Crew Details

FV Aquila had five crew onboard at the time of the incident:

a. The Skipper is an experienced Fisher and part owner of the vessel. European Union (EU) Fisher. Irish national. Qualified with a full Certificate of Competency for Skipper of a fishing vessel.

b. Crewmember 'A' is an experienced Fisher and the mechanic onboard. Non-EU Fisher. Filipino national. Familiar with the vessel and its operations.

c. Crewmember 'B' (Casualty) is an experienced Fisher. Non-EU Fisher. Filipino national. Familiar with the vessel and its operations and employed since 2019. Holder of Bord Iascaigh Mhara (BIM) Basic Safety Training card issued 2021.

d. Crewmember 'C' is an experienced Fisher. Non-EU Fisher. Egyptian national.

e. Crewmember 'D' is an experienced Fisher. EU Fisher. Irish national.

2.5 Voyage Particulars

2.5.1 FV Aquila with five crew onboard left the fishing port of Union Hall at approximately 21.00 hrs on the 6 November 2021 to fish south of the Kinsale Gas Rigs, a distance of approximately 60 nautical miles (NM) from its home port. The Skipper stated that he normally carries out a passage at eight knots (kt). Watches are carried out between skippers and crew on passage out and then heave-to and rest for a few hours before commencing fishing. It is therefore deduced that this particular voyage took approximately seven and a half hours and the fishing vessel arrived at the fishing grounds at approximately 04.30 hrs.

2.5.2 The crew commenced seine fishing operations the next day at the fishing grounds when light permitted. Sunrise was approximately at 07.30 hrs. At approximately 12.00 hrs the crew were at the last stages of hauling the second haul of the day.

2.5.3 The Skipper was the net handling crane operator. When the net is being recovered and stowed into a net pound on the aft deck, a crewmember occasionally 'flicks' the net into layers as the net comes down from the power head roller. The Skipper stated that it was normal procedure for the crewmember to be standing by the starboard bulwark, outboard of the pound but on this occasion and at this initial stage of the recovery operation he was standing out of sight of the crane operator at the forward side of the pound. The Crewmember recounted that he was at the forward side of the pound as it was easier to reach the descending net. At this stage the net handling crane, operated by the Skipper, lost hydraulic power and the crane's jib and power head abruptly descended crushing and injuring the Crewmember who was at the net pound stowing the net. The Skipper

advised Cork Coast Guard Radio of the incident and that the Crewmember was injured. The Skipper requested the Crewmember be evacuated and brought ashore for medical attention. Emergency rescue services evacuated the Crewmember for medical attention at CUH.

See Appendix 7.9 - Chart Showing the Location of the Incident.

2.6 Seine Fishing Rig, Method and Operations

2.6.1 FV Aquila was rigged as a seiner fishing vessel using the Danish seine method for catching fish. A Danish seine is similar to a small trawl net, but the wire warps are much longer as are the net wings and there are no otter boards. This method of fishing uses a surrounding net, called the seine net, that hangs vertically in the water column with its bottom edge held down by weights and its top edge buoyed by floats. The seine net consists of a conical net with two long wings with a bag where the fish collect. Drag lines or warps extend from both wings back to the fishing vessel and are long so they can surround a wide area of sea. The method of fishing for a seiner (fishing vessel) is that the vessel drags the warps and the seine net in a circle around the fish. A comprehensive description of basic fishing methods is found at https://www.seafish.org/responsible-sourcing/fishing-gear-database/gear/ssc-scottish-seine/.

2.6.2 The method adopted by the crew of FV Aquila is as follows: one end of the seine net is attached by a warp to a dan (marker) buoy anchored to the sea bottom which provides a fixed point when deploying the net. The net is deployed from the fishing vessel. Firstly, the warp line connected to the marker buoy is paid out, followed by one wing of the seine net. As the seiner sweeps in a wide circle returning to the buoy, the deployment of the warp continues with the seine bag and the remaining wing, finishing with the remaining warp line. In this way a large area containing fish can be surrounded by the seine net. The motion of the warps herds the fish into the central net.

2.6.3 When the seiner completes its encircling manoeuvre by returning to the anchored dan buoy, operations to retrieve the net onboard are initiated firstly by retrieving aboard both warps which are wound in or ‘hauled’ using the vessel’s warp capstan winches. The vessel’s normal operation during net retrieval is that the vessel makes slow headway and turns slightly to port while the catch bag (approximately 40 m long) is wound aboard the vessel’s starboard side waist using the articulated net crane’s power head drum. As the warps are hauled aboard the wires are led to and stored on a hydraulically powered rope reels located on the Main (working) Deck.

Aquila stern view showing net drum, net handling crane and Gilson frame over the bag hatch for lifting in cod end.

Location: West Cork on 22 June 2013. Photo source: VesselFinder.

2.6.4 The articulated crane mounted on the vessel's starboard aft quarter is used to guide the seine net alongside during the hauling operation. The warps are hauled in evenly with the nets wings which are stowed aboard into pounds located at the stern or transom on the vessel's working deck. The warps are wound inboard by winch and coiled on their respective rope drums. The conical net's catch bag (cod end) is hauled in and secured alongside the vessel where it is manoeuvred using winches to the vessel's midships waist where it is hoisted by the vessel's Gilson arrangement and the 'cod end' brought inboard and emptied of its catch. Meanwhile the remainder of the catch bag is wound inboard at the stern of the vessel through the net crane's power head drum and flaked down on top of the net's wings already stowed in the net pound.

Photograph showing Gilson frame, starboard side, for lifting in the cod end and centre line deck crane for unloading catch.

2.6.5 The operation of the net hauling crane onboard FV Aquila is central to the net hauling operation. The articulated crane is hydraulically powered and comprises a short upright pedestal or post, with a boom made up of three articulated sections (main jib, jib and jib head power block attachment) attached at knuckles along the boom's length. A hydraulic power system extends and retracts hydraulic rams attached to the three articulated sections. Hydraulic power is also used to rotate the crane's power block mounted at the jib end. The power block or 'head' is a rotatable winch or drum mounted on an articulated spindle giving the power head a 'tilt and turn' capability for controlling and positioning the net during the hauling process or as the net is 'shot'. The power block is primarily used for paying out the long seine net and then winding in and guiding the seine net alongside and onboard during the hauling operation. The power block is basically a winch mounted on the end of the crane's jib. The winch drum surfaces and wings are heavy duty composite rubber to avoid damage to the net as it passes through the head of the power block.

2.6.6 The movement of the crane, boom sections and power block are controlled by an operator stationed at the guardrail at the starboard aft corner to the Wheelhouse Deck. The control station comprises a console panel at waist height with an assembly of levers which actuate hydraulic relays fitted on the console by the guard railing. This panel gives the operator control over the crane's articulating movement and the power block's position and attitude.

2.6.7 From this control station the crane/power head operator has a view over the starboard side and downwards into the after part of the stern section of the working deck, i.e., into the three net pounds. The Skipper recounted that it is important to have a clear view of the retrieval process, or when shooting the nets, as the crew must be able to see the marker buoy, the warps as they are hauled in or paid out, the wings of the seine net as they are deployed or drawn through the sea to the vessel's side and particularly during the retrieval operation (when the net is brought aboard while the cod end of the net is winched to the vessel's starboard waist for emptying into the vessel's fish catch 'chute'). Onboard FV Aquila, seine net fishing only occurs during daylight hours.

See Appendix 7.7 - Thistle Marine BK7 Marine Crane with Power Block Attachment.

2.6.8 In order to bring onboard the fish catch contained in the cod end of the catch net the normal procedure is as follows:

- Using the crane's power head, the operator reels in the catch net to the point that the neck of the catch bag's cod-end is 'pinched in' while the remainder of the main net, with its cod-end is streamed alongside.
- Once the cod-end is brought inboard (using a separate Gilson winch) and secured, the crane operator retrieves the remaining main part of the net.
- For this retrieval operation the operator must first lower the jib and its power head to allow the catch bag net to slide through the power block drum while simultaneously the jib is slewed aft by the operator. This moves the power head from pointing forward towards the vessel's midships to a position pointing aft with the power head adjacent to the vessel's stern. However, during this slewing movement aft, the jib is simultaneously raised over the level of the vessel's bulwarks, while the power head (with the net looped over its roller) is configured over the aft starboard quarter to enable the net to be power reeled inboard over the bulwarks and arranged by the crew into the net pound(s) located at the stern.
- The crew, positioned between the port or starboard bulwarks and around the outboard sides of the pound, arrange the net by 'flicking' it into its stowed position. In this scenario the crew, power head and net are in full view of the crane operator.
- Once the main net is stowed in the pound the vessel proceeds in readiness for the next net deployment or 'shot'.

See Appendix 7.3 - General Arrangement Wheelhouse Deck.

See Appendix 7.4 - General Arrangement Main Working Deck.

2.7 The Net Hauling Marine Crane

2.7.1 The fishing vessel's net hauling crane was replaced in October/November 2019 with an articulated BK7 marine crane manufactured by Thistle Marine (www.thistlegroup.co.uk). The vessel was surveyed by the MSO in December 2019. The BK7 crane was fitted by the crane's manufacturer with a 24-inch diameter power block head attachment on the crane's jib head. The crane was fitted at a local Baltimore boatyard and piped to the vessel's existing hydraulic systems by a West Cork marine engineering firm specialising in the installation, maintenance and repair of marine hydraulic systems.

See Appendix 7.10 - BK7 Crane General Assembly Drawing – PL2019-004-008.

See Appendix 7.11 - BK7 Hydraulic System Schematic Drawing – HY-00847.

See Appendix 7.12 - Typical Hydraulic Flexible Hoses Fitted to the Deck Crane.

The crane is hydraulically powered and comprises a short pedestal (post) with three articulated sections each with its own hydraulic ram and cylinder. The pedestal is high enough to prevent damage to the crane when swinging over the net drum.

A high-pressure hydraulic oil power system extends and retracts hydraulic rams housed within three hydraulic cylinders attached to the three articulated sections and named in the system schematic drawing as:

a. Main Lift (Main Jib).

b. Knuckle (2nd Jib).

c. Tilt.

Hydraulic power is also used to move the power head shown on the schematic drawing as the 'crane winch'.

See Appendix 7.11 - BK7 Hydraulic System Schematic Drawing – HY-00847.

2.7.2 The power head or 'block' is a rotatable pulley mounted on an articulated spindle giving the power head a 'tilt and turn' capability for controlling and positioning the net during the hauling process or as the net is 'shot'. The power block is primarily used for winding in and guiding the seine net alongside and onboard during the hauling operation.

2.7.3 The Marine Casualty Investigation Board (MCIB) learned from the manufacturer that the crane's hydraulic cylinder ports are fitted (using threaded steel connectors) with solid valve blocks containing over-centre valves (otherwise referred to as check valves) for load holding. All valve block ports are fitted to steel pipework specified to suit a working pressure of 210 Bar. Over-centre valves are designed to control load lowering. These valves also function as check valves

locking hydraulic pressure within the ram cylinders (if in the event of a flexible hose burst or hydraulic system pressure failure) to prevent unintentional movement or lowering of the crane's load due to slippage of the hydraulic rams within their respective cylinders.

2.7.4 Flexible hydraulic hosepipes are fitted to the cylinder valve block steel pipe connections at all knuckle and pivoting points. These flexible hosepipes connect the crane's working parts to the hydraulic circuit and control lines and due to their flexible nature are prone to kinking, perishing of surface materials and bulging. Regular inspections and service routines reduce the risk of hose failures.

See Appendix 7.12 - Typical Hydraulic Flexible Hoses Fitted to the Deck Crane.

2.7.5 The Skipper recounted that minor maintenance work consisting of routine inspections, changing out flexible hydraulic hoses and greasing moving parts of the crane is carried out by the fishing vessel's mechanic and other crewmembers. More complex maintenance and repairs to the vessel's hydraulic circuits are carried out when the vessel is in port by the marine engineering firm who had originally connected the crane's hydraulic system to the vessel in October/November 2019. Maintenance by this engineering firm included cleaning out the hydraulic oil header tank, replacing filters and changing out the systems hydraulic oil, and was carried out in the three-month period prior to the vessel's MSO Safety Survey in December 2019. The proprietor of the marine engineering firm recalled that at that time the hydraulic oil system was in good condition and that little or no contaminants were found in the filters or the hydraulic oil header tank.

2.7.6 Articulated deck cranes are in common use in the offshore industries. There are also land based versions particularly in the transport industry where they are commonly used as lorry loader cranes (LLCs). An LLC is a crane mounted on a vehicle for the purpose of loading and unloading that vehicle and is similar in construction and operation to the marine version.

2.7.7 The net handling crane is one of three items of work equipment used for lifting and as such comes directly under the Safety, Health and Welfare at Work (General Application) Regulations 2007 S.I. No. 299/2007[3]. An employer must comply with the duties, in particular those set out in Regulations 30 and 52 to 54 which address the following subjects:

- Regulation 30 Inspection of work equipment.
- Regulation 52 Examination and testing of lifting equipment.
- Regulation 53 Reports by competent person.

3. https://revisedacts.lawreform.ie/eli/2007/act/299/revised/en/pdf?annotations=true

- Regulation 54 Keeping of records and registers of lifting equipment.

In addition, Regulation 42 (a) require for Work equipment for lifting loads:

"An employer shall ensure that—

(a) all lifting operations are properly planned, appropriately supervised and carried out to protect the safety of employees,……..".

2.7.8 The Health and Safety Authority (HSA) published an information sheet in May 2018[4] "Safe Lorry Loader Operations Information Sheet" which describes training requirements and states, *"Training Requirements: LLCs must be operated by trained competent persons. A person is deemed to be competent if they are trained and experienced, and know how to safely carry out LLC operations, having regard to the nature of the hazards involved."*

2.7.9 Neither the MSO/Minister for Transport or the HSA have published any information specific to articulated hydraulic deck cranes onboard fishing vessels in the 15–24 m Irish fleet, advising owners and operators of this type of crane of a requirement for operator training or competency specific to the operation of marine articulated deck cranes onboard fishing vessels.

2.8 Environmental Conditions

2.8.1 Weather:

2.8.2 According to IRCG SitRep UIIN2700/21 Weather on Scene:

Wind: Beaufort Strength 3 Westerly.

Sea: Moderate.

Swell: Low Wave.

Temperatures: Air Temperature 11° Celsius (°C).

Water Temperature 13°C.

2.8.3 According to Met Éireann: Estimated weather and sea state conditions for the offshore area approximately 30 nm southeast of Old Head of Kinsale on Sunday 7 November 2021 between 06.00 hrs and 18.00 hrs.

Weather: Fair at first, increasing cloud cover by forenoon; patches of mist, drizzle and light rain in the late afternoon.

4. https://www.hsa.ie/eng/publications_and_forms/publications/information_sheets/safe_lorry_loader_crane_operations.pdf

Wind: Northwesterly winds at first were moderate to fresh Beaufort Force 4 or 5. In the afternoon winds decreased Force 3 for the remainder of the period. Wind direction backed gradually from northwesterly to westerly then southwesterly by the end of the period.

Visibility: Visibility was good during the morning and early afternoon (greater than 5 nautical miles). Around 16.00 hrs visibility was moderate or poor (0.5 – 4 nautical miles) in mist, drizzle or rain.

Sea State: Estimated sea state was moderate to rough with significant wave height of 2 m to 3.5 m.

Temperatures: Air temperature 12°C to 13°C.

Sea temperature 13°C or 14°C.

2.8.4 Sunrise/sunset 7 November 2021 at Kinsale:

Sunrise: 07.39 hrs.

Sunset: 16.56 hrs.

See Appendix 7.13 - Irish Coast Guard SITREP.

See Appendix 7.14 - Met Éireann Weather Report.

See Appendix 7.15 - Sunrise/Sunset Kinsale 7 November 2021 (tidetimes.co.uk).

2.9 Type of Casualty

2.9.1 The FV Aquila is 21.99 m in length and accordingly falls within the European Communities (Merchant Shipping) (Investigation of Accidents) Regulations 2011 S.I. No. 276/2011[5]. This type of casualty is as defined in the Regulations as a "casualty" which includes an event, or a sequence of events, that has resulted in the death of, or serious injury to, a person; which has occurred directly in connection with the operations of a ship.

2.9.2 The Crewmember suffered lower back pain and pain in his front groin area consistent with crush injuries. The Skipper reported that at all times the injured Crewmember was conscious but in severe pain in his lower back, so he called Cork CGR to arrange a helicopter medical evacuation (medevac). The injured Crewmember was airlifted to CUH for medical attention. The following day he was passed fit to fly home to the Philippines to recover and was discharged from CUH. He returned to the Philippines shortly thereafter to recover and recuperate. This Crewmember has since returned to Ireland and is currently working as deckhand onboard an Irish registered fishing vessel.

5. https://www.irishstatutebook.ie/eli/2011/si/276/made/en/print

2.9.3 This incident involved the marine emergency rescue services of the State.

2.10 Emergency Response

Note: All times are local time and stated in Co-ordinated Universal Time (UTC) i.e., ZULU (Z) time.

Emergency Response as per Irish Coast Guard (IRCG) Marine Rescue Sub Centre (MRSC) Valentia - Situation Report (SitRep) UIIN2700/21

07 November 2021.

12:38 Z Radio message from the Skipper onboard FV Aquila to Cork CGR advising they have an injured crewman onboard.

Cork CGR made contact with MEDICO Cork (MEDICO Cork is a national 24-hour Emergency Telemedical Support Unit provided by the Health Service Executive (HSE) and managed by CUH Emergency Department. End users include any person within Irish Territorial waters, the IRCG and a number of other national emergency response services).

12:57 Z MEDICO Cork advise injured crewman needs to be seen by a paramedic.

13:04 Z MRSC Valentia tasked rescue helicopter 'R115' (Shannon based) to respond.

MRSC advised Air Traffic Control (ATC) Cork Airport and the National Emergency Operations Centre (NEOC).

13:36 Z From MRSC Valentia to MRSC Valentia SitRep Group.

MRSC announce Search and Rescue (SAR) Injured Crewman Aquila.

Fishing Vessel position:	51° 12.94'N 007° 55.11'W. Search area 42 NM south east of EICK (Cork Airport).
Situation:	Crewman with crush injuries.
Number of Persons:	One.
Assistance Required:	Medevac to CUH (Medical evacuation to Cork University Hospital).
Description of Casualty:	Male, mature person (25-65) wearing life vest.

Weather on scene:	Wind: Beaufort strength 3 westerly.
	Sea: Moderate.
	Swell: Low waves.
	Air temp: 110°C.
	Water temp: 13°C.
Initial Actions taken:	Contact made with MEDICO Cork.
	Tasked Rescue helicopter R115 (Shannon based) for medevac of injured crewman to CUH.

13:52 Z: Rescue helicopter R115 airborne.

13:59 Z: MEDICO Cork Doctor provides medical oversight on TETRA (TETRA: a secure national communications network to Ireland's Emergency Services and Public Safety agencies).

14:25 Z: Rescue helicopter R115 on scene with casualty.

15:13 Z: Injured crewman onboard R115 en-route to Cork.

15:32 Z: Rescue helicopter R115 landed.

15:50 Z: Injured crewman in the care of the HSE to CUH.

16:56 Z: Rescue helicopter R115 was stood down to return to Shannon base and the incident was closed.

See Appendix 7.13 - Irish Coast Guard SITREP.

3. NARRATIVE

3.1 On the 7 November 2021 the crew of FV Aquila were seine fishing south of the Kinsale Gas Rigs. At approximately 12.00 hrs the crew were recovering the net of the second haul of the day using the vessel's articulated net handling crane. The Skipper was operating the crane while crewmembers were preparing to arrange the net into its pound.

3.2 For this part of the net recovery operation the crane operator initially lowers the power head to take the strain of the nets weight from the power head. The operator then slews the crane's jib from its forward pointing position to an aft pointing attitude while simultaneously raising the power head from its lowered position so as to align the power head (with its captured net) above but slightly inboard of the vessel's starboard aft bulwark. This enables the crane operator to recover the net inboard using the crane's power head drum and arrange it into the net pound.

See Appendix 7.5 - Stern Arrangement.

See Appendix 7.6 - Crane Operator's Station.

3.3 The power head is brought around into position and the net (in the power head drum) is aligned so that it can be reeled inboard through the power head drum and stowed into its 'pound'. At this time a crewmember is required to 'flick' or adjust the train of the net. 'Flicking' the seine net as it is brought aboard layers the net and ensures that there are no kinks or entanglements when the net is shot out from the boat when next it is deployed for the next fish haul. Before the net is wound onboard, a crewmember (designated to the layering task) normally stands outboard of the net pound at the bulwark ready for the task.

The crane operator, by manipulating the power head, and controlling its drum speed, winds the net into the net pound as the crewmember moves into position to guide and flick the net into its layered storage in the net pound. According to the Skipper this crewmember is normally standing by the starboard bulwark, outboard of the pound. However, on this occasion and at this stage the operator did not see the Crewmember (the Casualty) as he was standing out of view of the crane operator at the forward side of the pound.

3.4 The Skipper, who was operating the net handling crane, recounted that at the outset of the incident he was unaware that a Crewmember (the Casualty) was standing in harm's way at the forward rails of the net pound underneath the net drum deck. He further recounted that as he slewed the crane's jib from its forward pointing position to its aft pointing attitude while simultaneously raising the power head so as to position the power head above but slightly inboard of the vessel's starboard aft bulwark, he observed what appeared to be a hosepipe burst in the crane and that a large amount of hydraulic oil suddenly emitted from underneath the crane. Simultaneously the crane's complete (main and second) jib section lowered and the attached power head swung inboard and

over the net pound. The power head drum caught the Crewmember standing under the net drum deck lifting him up and pinning him between the power block and the underside of the vessel's net drum deck. The Crewmember was trapped and suffered crush injuries. He later recounted that the crane failure was abrupt and he had no time to avoid the descending power head drum. The injured Crewmember was extricated from his trapped position and received first aid. The Skipper assessed that the Crewmember required urgent medical attention and called the IRCG requesting a medical evacuation (medevac) of the Casualty. The Casualty was evacuated to CUH by rescue helicopter R115.

3.5 The crew carried out temporary repairs to the crane in order to recover the net which was still alongside the vessel. The fishing vessel proceeded to its home port of Union Hall.

3.6 On the vessel docking at the fishing port of Union Hall the crane and hydraulic system was examined by the proprietor of the marine engineering firm who had previously carried out maintenance to the vessel's hydraulic system. The proprietor recalled that when he arrived to the vessel, he found that the crew had plumbed in flexible hydraulic hoses to the main jib lift cylinder as a temporary repair to enable operation of the crane and recovery of the net. He surmised that in order to plumb in the flexible hydraulic hose the crew had removed and replaced the threaded connector between the main cylinder and its lift side valve block because the original part was sheared off flush to the cylinder's lower outside surface. There were signs of heavy mechanical contact to the main lifting cylinder barrel surface in the form of large scrapes to it.

See Appendix 7.16 - Main Lift Cylinder – After Repairs.

3.7 The proprietor carried out essential repairs to restore the crane to its design parameters by replacing the threaded connection between the main cylinder lower port and the steel pipe connecting the cylinder port to the over-centre valve block. When he completed the replacement of the connector and re-installed the valve block and steel pipe, he checked the crane's operation. The main lift cylinder and valve block and its over centre valves were found to be operating correctly. He carried out a system check and found all system components were functioning. The crane was operating correctly and in no need of further repair.

4. ANALYSIS

4.1 Crew Fatigue: The vessel departed at 21.00 hrs on the 6 November 2021 to steam approximately 60 NM to the fishing grounds and started fishing at daybreak, 07.40 hrs on the 7 November. Weather was moderate to fresh and clement for the time of year. Weather caused little or no discomfort to the crew and was not considered a factor causing fatigue in this incident.

See Appendix 7.13 - Irish Coast Guard SITREP.

See Appendix 7.14 - Met Éireann Weather Report.

See Appendix 7.15 - Sunrise/Sunset Kinsale 7 November 2021 (tidetimes.co.uk).

4.2 Hours of work and rest on fishing vessels are governed by S.I. No. 672 of 2019 European Union (International Labour Organisation Work in Fishing Convention) (Working Hours) Regulations 2019 and two subsequent sets of related Regulations that apply similar terms to other crew arrangements being the European Union (Workers on Board Seagoing Fishing Vessels) (Organisation of Working Time) (Share Fishermen) Regulations 2020 S.I. No. 585 of 2020[6] and the European Union (Workers on Board Seagoing Fishing Vessels) (Organisation of Working Time) Regulations 2020[7] S.I. No. 331 of 2020 which applies to a seagoing fishing vessel flying the flag of another Member State while in a port in the State. These Regulations create a similar regime in respect of working hours and rest (and require the recording of same). A maximum working day of 14 hours is allowed[8].

4.3 The Skipper reported that he and the crew rested off during passage to and after arrival at the fishing grounds and were reasonably refreshed by 07.00 hrs when preparations were made to commence fishing operations. The Skipper stated that he normally carries out a passage at eight kts. It is deduced that at eight kts this particular voyage took approximately seven and a half hours and the

6. These Regulations apply to a fisher who :
   (a) works in any capacity on board a fishing vessel manned by more than one person,
   (b) is not employed under a contract of services, and
   (c) is paid in whole or in part on the basis of a share of the profits or gross earnings of the catch of the fishing vessel.
   Most Irish fishers are share fishers.
7. Which revoked the previous S.I. No. 709 of 2003, European Communities (Workers on Board Sea-going Fishing Vessels) (Organisation of Working Time) Regulations.
8. Subject to the limit of an average of 48 hours of work a week over a reference period not exceeding 12 months, the limits on hours of work and rest in respect of a worker on board a sea-going fishing vessel are as follows:
   - maximum hours of work shall not exceed 14 hours in any 24 hour period, and 72 hours in any seven-day period; or
   - minimum hours of rest shall not be less than 10 hours in any 24-hour period and 77 hours in any seven-day period

   Hours of rest may be divided into no more than two periods, one of which shall be at least six hours in length and the interval between two consecutive periods of rest shall not exceed 14 hours.

fishing vessel arrived at the fishing grounds at approximately 04.30 hrs. The vessel heaved-to until fishing operations commenced at first light (sunrise at approximately 07.30 hrs). Therefore, the crew had a minimum of three hours rest before fishing operations commenced. The incident occurred at 12.00 hrs that day, approximately five hours after the crew started fishing operations[9]. It is deduced that crew fatigue was not a factor in this incident.

4.4 Condition of the Vessel: Changes to the position of the crane and net reel were made in 2017. The crane was renewed in October/September of 2019 and the crane's hydraulic system was completely overhauled in anticipation of the fishing vessel's safety survey in December 2019 when the vessel gained its full FVSC in December 2019. The fishing vessel was approved by the MSO to continue its fishing activities. There had been no major changes or modifications to the vessel in the intervening time up to the time of the incident. It would be reasonable to deduce that the vessel was materially fit for purpose, safe systems of work were in place and the vessel was in a stable condition immediately prior to the incident and the vessel's condition was not a factor in the incident.

4.5 Condition of the Crane: The vessel's crane and hydraulic systems were reportedly regularly maintained and serviced by the crew with major maintenance and repairs being carried out by the marine engineering firm who had originally connected the crane's hydraulic system to the vessel in October/November 2019. The proprietor of the marine engineering firm recounted that at that time the hydraulic oil system was in good condition. The crane's condition was not a factor in the incident.

4.6 Function of the Crane: The crane suffered abrupt loss of hydraulic system oil pressure. The MCIB learned from the crane manufacturer that all hydraulic cylinders are fitted with over-centre valves for load holding in the event of a loss of hydraulic system pressure.

See Appendix 7.11 - BK7 Hydraulic System Schematic Drawing – HY-008474.4.1.

4.6.1 Over-centre valves function as check valves locking hydraulic pressure within the ram cylinders in the event of a flexible hose burst or hydraulic system pressure failure and prevents unintentional movement or lowering of the crane's load due to slippage of the hydraulic rams within their respective cylinders when hydraulic pressure is lost.

4.6.2 The crane's hydraulic cylinder ports are fitted (using threaded steel connectors), with steel pipework connecting the hydraulic cylinder to the cylinder valve blocks containing the over-centre valves (otherwise referred to as check valves). All valve block ports are designed for a working pressure of 210 Bar.

9. https://www.irishstatutebook.ie/eli/2019/si/672/made/en/print

4.6.3 The MCIB learned from the manufacturer that if the steel pipework (including the threaded connectors) between the cylinder and valve block (containing the over centre valve) was intact, without leaks at the connections, and the hydraulic system was free of solid particle contaminants, then, in the event of an interruption in the crane's hydraulic pressure system (for instance a burst flexible hose, electrical failure or hydraulic pump failure), hydraulic oil under pressure was designed to be trapped within the three crane cylinders by their respective over-centre valve and the rams would not move or slip inside the cylinders and the crane's load would remain supported. The over-centre valves are a safety design feature to avoid the crane dropping or lowering its load if the hydraulic pressure system was interrupted.

4.6.4 However, if there were small parts of solid particle contamination (rubber, etc.) lodged in the valve or an oil leak or pipe break between the cylinder port and the valve block, then the function of the over-centre valve would be circumvented, and any loss of oil pressure would cause the ram to move or slip inside the cylinder and the crane lower its load. The system was inspected routinely by the crew and/or regularly serviced by a professional marine engineering firm. The oil system had no history of contamination. The likelihood of contamination within the hydraulic system was remote. Contamination of the hydraulic oil system was not considered to be a factor in the incident.

4.6.5 There were signs of scrapes and heavy contact to the surface of the main lift cylinder barrel adjacent to the valve block. It is therefore reasonable to deduce that the crane's main lift cylinder located beneath the jib had made hard contact at some time with some part of the vessel's structure which was more than likely to be a guard rail or bulwark.

See Appendix 7.16 - Main Lift Cylinder – After Repairs.

4.6.6 Given the exposed position of the lower lift ports valve block underneath the main lift cylinder, and that the valve's steel connection parts to the cylinder required replacement due to mechanical damage, it is deduced that the location of the main cylinder valve block underneath the main hydraulic cylinder exposes the valve block and its associated steel pipework to mechanical damage and is considered to be a possible causative factor to this incident.

4.6.7 The use of screw thread connections between the hydraulic cylinder and the valve block failing due to metal fatigue was also considered. Pipe failure during hydraulic test has been found to be due to the stress concentration factor being developed by some notch from improper thread machining which led to failure. Failure of the threaded screw connection is considered to be a possible causative factor to this incident.

4.6.8 Given the final position of the collapsed crane, the main jib must have been raised and the second jib lowered in order to swing under the shelter (see Appendix 7.10 - BK7 Crane General Assembly Drawing – PL2019-004-008). The

failure can be assumed to be a combination of the two possibilities above.

4.6.9 A sudden loss of oil pressure in the main lift cylinder would occur if the pipework or its connections were broken or sheared off as the cylinders oil vented to the atmosphere This would cause the crane's jib to lower abruptly and uncontrollably.

4.6.10 This scenario is consistent with the Skipper's evidence that he saw a hosepipe burst in the crane and an amount of oil spilling out as he was slewing the crane over the bulwark immediately prior to the crane jib lowering and injuring the Crewmember. This scenario also explains why the hydraulic system did not lock up when the Skipper thought the problem was that a flexible hydraulic hose had burst. The shearing of the valve block from the main cylinder circumvented the over-centre valve in the valve block from locking up the system's oil pressure within the main cylinder. The sudden and uncontrollable loss of hydraulic system pressure from the barrel of the hydraulic ram would also have the same visual effect of an amount of oil spewing out from the crane's jib. It is deduced that sudden mechanical damage sustained to the main cylinders lower valve block pipe connection was a causative factor to this incident.

4.7 Operation of the Net Handling Crane: Operation of the crane is carried out from the crane operator's position on the Wheelhouse Deck at the vessel's starboard side. There are three distinct parts to the fishing operation: -

- Shooting and hauling the nets
- emptying the cod end of its catch and
- recovering and stowing the nets into the vessel's net pounds.

The crane operator's position is elevated above the Main (working) Deck and has a clear view of the crane's parts in relation to the fishing vessel's starboard side during shooting and hauling evolutions of the seine net. The crane operator's position does not offer a clear view of the working area underneath the net drum deck when crew are stowing the net in the net pounds located at the stern. The Casualty was injured in the forward part of this working area which is sheltered overhead by deck supporting the net drum.

See Appendix 7.6 - Crane Operator's Station.

The obscured view presented to the crane operator of work activity in the work area around the net pound is a contributory factor in this incident.

4.8 The crane operator's elevated control position did not provide an optimum view of the crane's underneath surfaces in relation to the vessel's side when the power head is being slewed around from forward to stern in order to flake the net down into the net pound. The hydraulic main lift cylinder and ram is fitted underneath the jib boom and its valve block is fitted below that, at the main

cylinders lower end. Working from the elevated control position and controlling the crane's power block as it was slewed around, while simultaneously raising the power block over the starboard bulwark, presents some spatial challenges to the crane operator in relation to being aware of the proximity of the crane's lower parts to the vessel's bulwarks and guard rails. The evidence that an amount of oil abruptly discharged out of the crane's hydraulic cylinder (from what the Skipper thought was a hosepipe burst). The sheared connection between the main lift cylinder port and its valve block, and the evidence of mechanical contact on the main (jib) hydraulic cylinder barrel, supports the likelihood that contact occurred between the main cylinder valve block and the vessel's Main Deck starboard bulwark or guard rail during this slewing operation. By not having a clear view of the crane's underneath surfaces during the net recovery slewing operation, the crane operator was hindered from appreciating the proximity of the crane's main lift cylinder valve block to the vessel's bulwarks or guardrail adjacent to the net pound on the Main (working) Deck. This hinderance to the operator's clear view of the underneath of the crane during this slewing operation was a causative factor in the failure due to operator error in this incident.

4.9 Articulated deck cranes are in common use in the fishing industries, particularly onboard seine fishing vessels. As noted at paragraph 2.7.9 above there is no information published specific to articulated hydraulic deck onboard fishing vessels in the 15–24 m Irish fleet, to advise owners and operators of this type of crane of a requirement for operator training or competency specific to the operation of marine articulated deck cranes. The absence of a marine notice specific to operator training in the safe use of hydraulically powered articulated deck cranes was a contributory factor to this incident.

4.10 The Position of the Casualty Prior to the Incident

4.10.1 The Skipper recounted that the Crewmember (Casualty) had worked on the vessel for two years previously and said the Crewmember was familiar with the safe procedures and crew positions when recovering the net. The Crewmember had also been trained by BIM in Basic Safety but recounted that he was not trained in crane operating safety procedures.

4.10.2 The Skipper said it was normal practice for a crewmember or crewmembers to normally position themselves at the vessel's side to guide the net as the net was lowered into place in the net pound.

4.10.3 The Skipper recounted that, as far as he was concerned, it was not normal procedure for a crewmember to stand forward of the net pound when the net was being flaked down for two reasons. Firstly, the Crewmember was out of the view of the crane operator when in this position. Secondly, this position placed the Crewmember in line with the crane's pedestal and jib head if and when the jib and power block lowered uncontrollably.

4.10.4 However, this was not an unreasonable location for the Crewmember to wait, prior to the net being flaked down, as it takes him away from the side of the vessel and reduces the risk of going overboard. It also, being under the deck, gives protection during overhead lifting operations until he was required to move to the position to flake the net.

4.10.5 The crane operator did not halt crane operations when the operator did not see the Crewmember at what he recounted was the normal position at the vessel's side. The Crewmember (the Casualty) standing by the net pound, but being out of sight of the crane operator, indicates that an adequate risk assessment[10] was not made when the crane was installed.

4.10.6 By placing himself in this position (forward of the net pound) the Crewmember was in harm's way of the crane's jib and power block if the boom lowered suddenly when the main jib was raised and the second jib was lowered.

4.10.7 That the Casualty's position was a "danger zone", at risk from a sudden mechanical failure, indicates that an in-adequate risk assessment during the installation of the crane was a contributory factor in this incident.

4.10.8 By the Crewmember placing himself in this work position (forward of the net pound) during the net recovery operations, put him out of view of the crane operator and into harm's way if the crane jib was lowered. The Crewmember's position during this operation was a causative factor in this incident.

4.10.9 The procedure for recovering the net was changed without consultation as the Crewmember recounted in paragraph 2.5.3 that he was at the forward side of the pound as it was easier to reach the descending net.

10. Hazard identification and risk assessment. Section 19. Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005);

5. CONCLUSIONS

5.1 The incident occurred as a result of loss of fluid from the main jib hydraulic cylinder which occurred between the cylinder and the check valve.

5.2 The position of the main cylinder valve block underneath the main hydraulic cylinder exposes the valve block and its associated steel pipework to mechanical damage.

5.3 The use of threaded connections is a source of failure due to the creation of stress raisers and also has the potential for over-torquing of the threaded connector when installing the fitting.

5.4 The crane operator's elevated control position on the Wheelhouse Deck does not give the operator a clear view of the entire working area around the net pounds located on the vessel's Main (working) Deck.

5.5 An adequate risk assessment was not made when the crane was first installed as the crane operator's elevated control position did not have a clear view of the crane's underneath surfaces during the net recovery slewing operation and did not give a clear spatial appreciation of the crane's main lift cylinder relative to the vessel's bulwark or guard rail.

5.6 By placing himself underneath the net drum deck and at the forward side of the net pounds, the Crewmember put himself out of view of the crane operator but reduced his risk of going overboard. By doing so, the Crewmember put himself into harm's way of a descending crane jib in the event of crane failure. That he was at risk from a sudden failure and out of sight of the crane operator indicates a failure to recognise the risk by himself (the Crewmember) and by the crane operator.

5.7 Health and Safety training specific to the operation of articulated hydraulic deck cranes onboard fishing vessels in the 15–24 m Irish fleet is not available as neither the MSO or HSA have published any information advising owners and operators of this type of crane of a requirement for operator training or competency specific to the operation of marine articulated deck cranes onboard fishing vessels.

5.8 Following the incident, the successful medical evacuation of the injured Crewmember was as a result of the significant efforts by the crews of the FV Aquila, rescue helicopter R115 and MRSC Valencia.

6. SAFETY RECOMMENDATIONS

6.1 The manufacturers Thistle Group Limited trading as Thistle Marine should review the pipe connecting arrangements of the valve blocks onto the hydraulic cylinder ports on the BK7 model of marine cranes with a view to reducing the risk of mechanical damage causing oil leaks and sudden loss of hydraulic pressure in the operating hydraulic cylinders. Risk mitigation measures such as fitting valve block guards or relocation of the valve block safety mechanisms should be considered.

6.2 The manufacturers Thistle Group Limited trading as Thistle Marine should review the threaded pipe connecting arrangements and, as with hydraulic hoses, recommend an inspection and replacement regime with original equipment manufacturer approved parts.

6.3 The owners of fishing vessel Aquila should review the position of the crane operator at the crane's controls with a view to improving crane operator observation of the whole deck working space areas during all crane evolutions.

6.4 The Minister for Transport should issue a Marine Notice (similar to Safe Lorry Loader Crane Operations Information Sheet[11]) to employers of crewmembers and owners of fishing vessels:

- Setting out the hazards associated with the operation of articulated deck cranes in deck areas presenting restricted observation of working areas and/or risk of collision with structural obstacles within the crane's lifting area.

- Reminding them of the obligation whereby they must complete and document a thorough risk assessment of their operations taking into consideration the Guide to the Safety, Health and Welfare at Work (General application) Regulations 2007 S.I. No. 299 of 2007 Chapter 2 of Part 2: Use of work equipment appraising them of the statutory legal regime[12], in particular in respect of having a safe system of work and maintaining accurate and complete up to date maintenance and safety records.

6.5 The Minister for Transport should issue a Marine Notice to employers of crewmembers and owners of fishing vessels appraising them of the requirement for training for the operation of articulated deck cranes, that crews should be made aware of the hazards associated with lifting equipment and heavy loads

11. https://www.hsa.ie/eng/publications_and_forms/publications/information_sheets/safe_lorry_loader_crane_operations.pdf
12. including the Safety, Health and Welfare at Work Act 2005, the Safety, Health and Welfare at Work (General application) Regulations 2007 S.I. No 299 of 2007, the Safety, Health and Welfare at Work (Fishing Vessels) Regulations 1999 S.I. 325 of 1999 and the Merchant Shipping (Safety of Fishing Vessels) (15-25m) Regulations 2007 S.I. 640 of 2007.

operating overhead, reminding them that articulated deck cranes should be operated by trained and competent persons, reminding them that appropriate risk assessments are carried out prior to crane deck operations.

6.6 The Minister for Transport should give consideration to the introduction of regulations specific to the installation and operation of articulated hydraulic deck cranes to mitigate against the risk of harm and improve the safety of the fishing vessel and its crew.

7. APPENDICES

Appendix 7.1 FV Aquila

Appendix 7.2 General Arrangement Profile FV Aquila

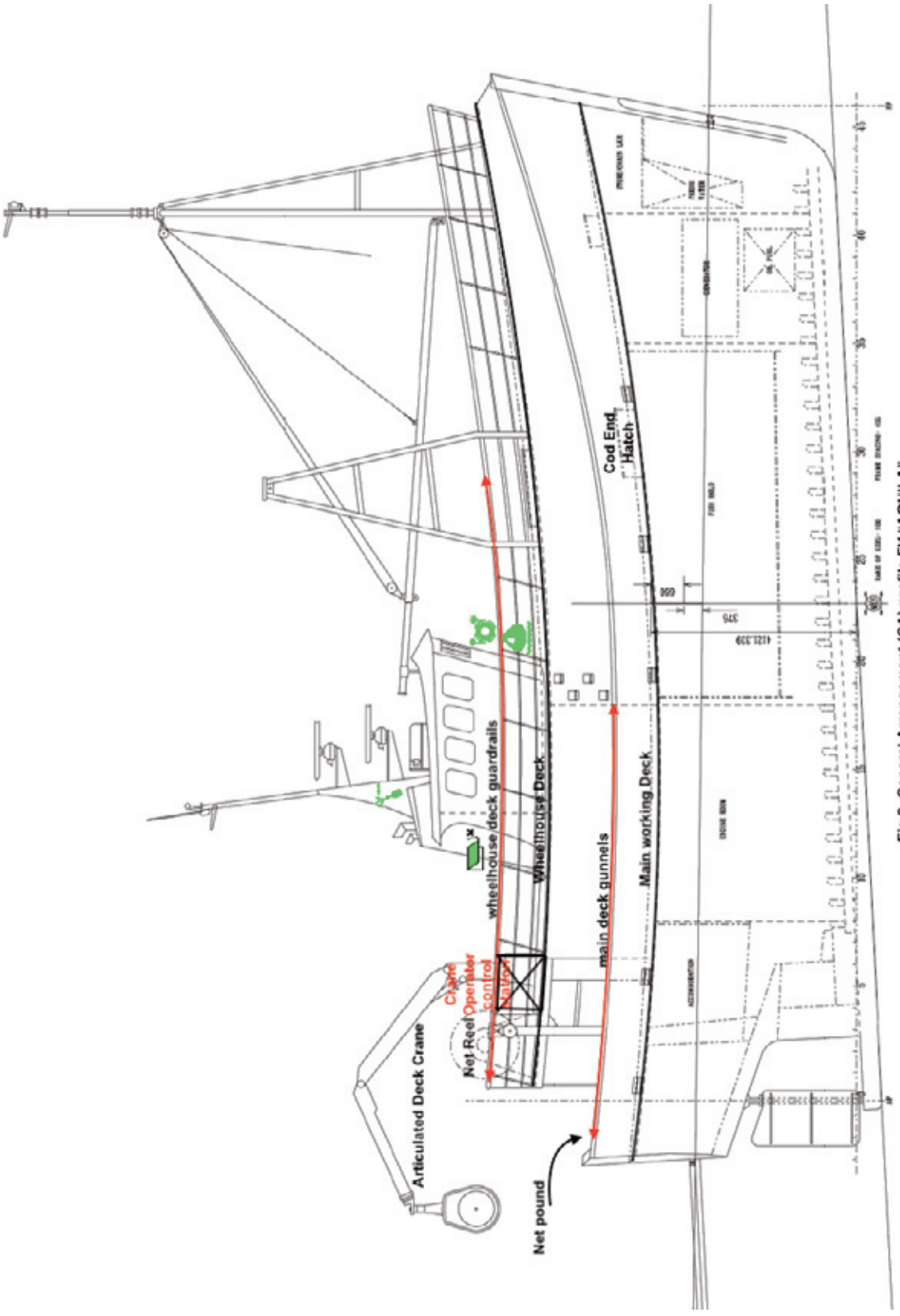


Fig.2 General Arrangement (GA) profile FV "AQUILA"

Appendix 7.3 General Arrangement Wheelhouse Deck

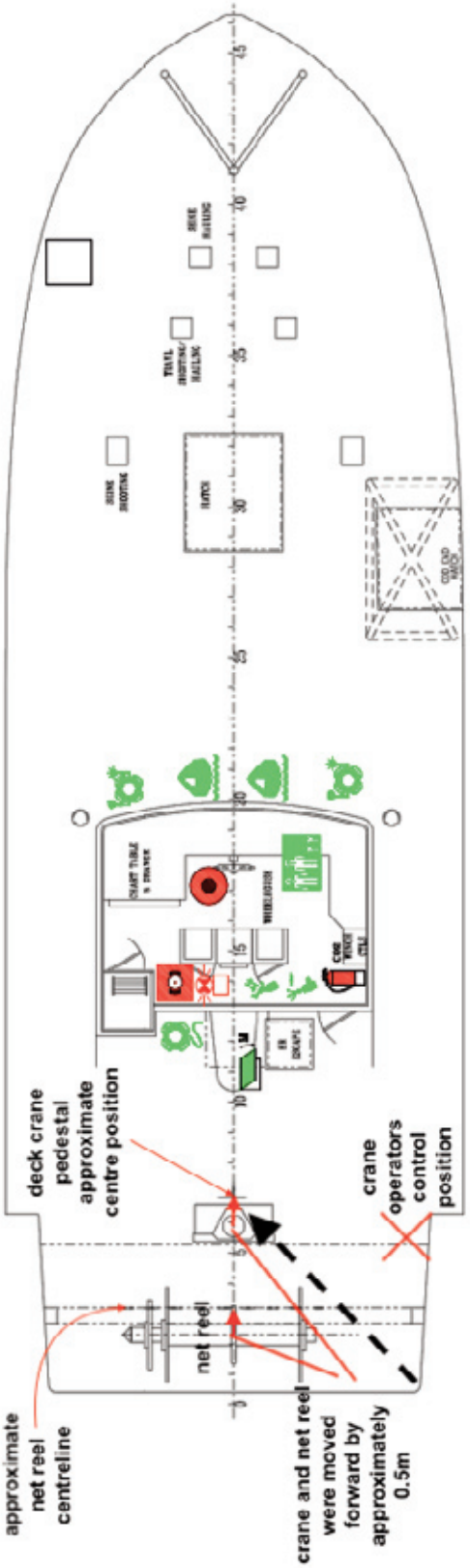


Fig.3 GA Wheelhouse Deck

Appendix 7.4 General Arrangement Main Working Deck

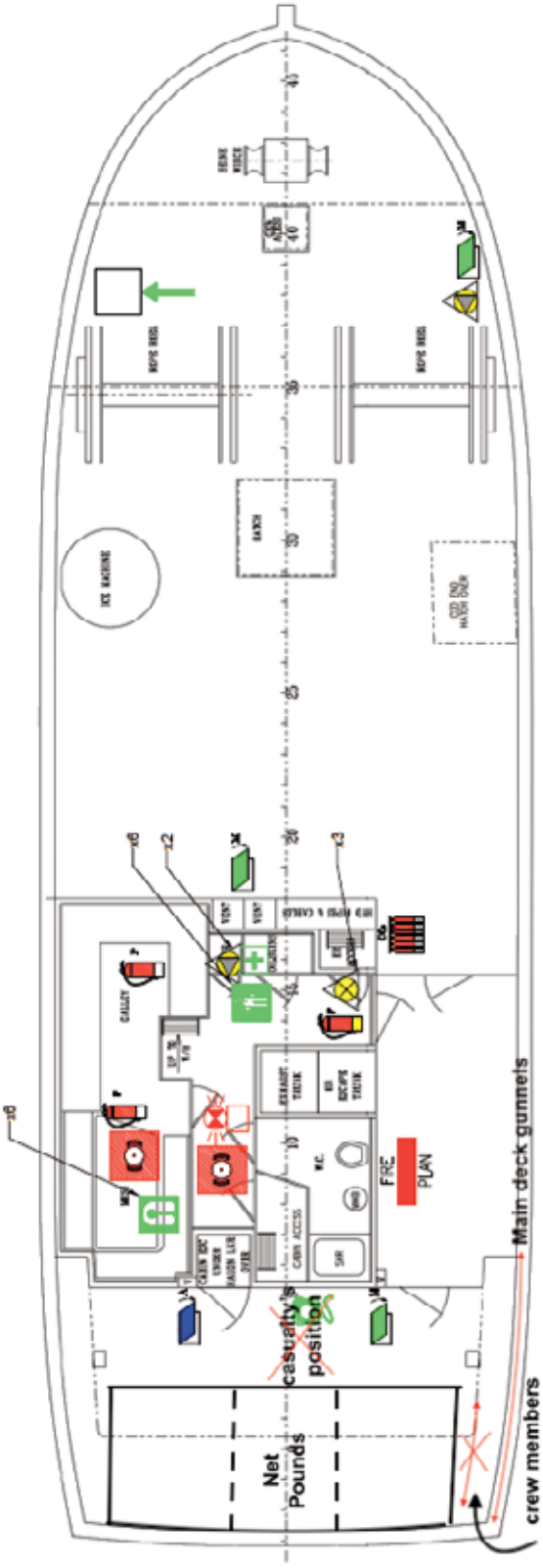
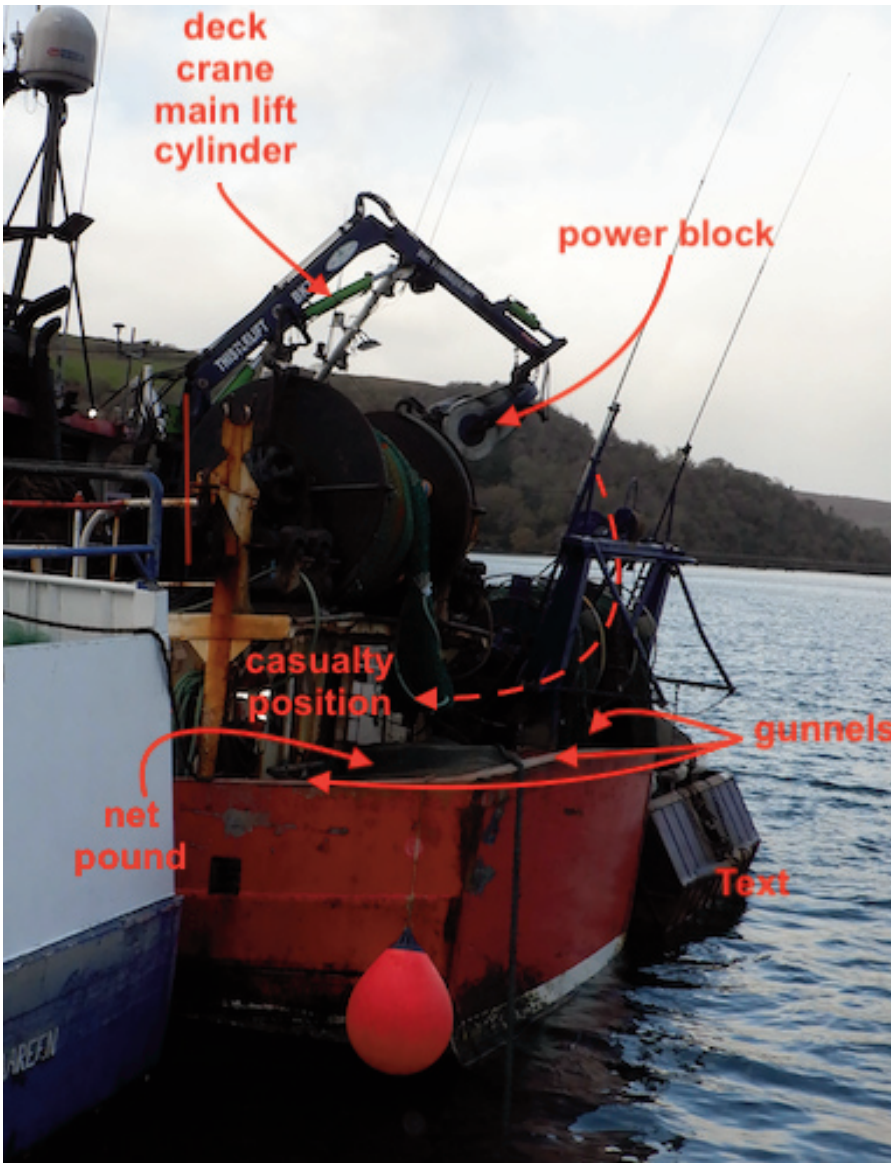


Fig.4 GA Main working Deck

Appendix 7.5 Stern Arrangement



Appendix 7.6 Crane Operator's Station

Appendix 7.7 Thistle Marine BK7 Marine Crane with Power Block Attachment

Fig.7 Thistle Marine BK7 Marine Crane with attached power block

Appendix 7.8 Fishing Vessel Safety Certificate

MSO 1006 Fishing Vessel Safety Certificate (15-24m) DECLARATION OF SURVEY (Rev 1.11)(12/15)

FISHING VESSEL

SAFETY CERTIFICATE

This certificate of compliance shall be supplemented by a record of equipment

Issued under the Merchant Shipping (Safety of Fishing Vessels) (15-24 Metres) Regulations 2007 (S.I. No. 640 of 2007)

under the authority of the Government of Ireland

Name of Ship	Fishing Letters & Numbers	Official & IMO Numbers	Port of Registry	Length (L)	Length Overall (Loa)	Sea areas in which ship is certified to operate
Aquila	S 603	EIKS4	Skibbereen	20.80	21.99	A1, A2

Date on which the keel was laid or ship was at a similar stage of construction [3] 01 January 1987

THIS IS TO CERTIFY.

1. that the ship has been surveyed in accordance with Regulation 7 of the Merchant Shipping (Safety of Fishing Vessels) Regulations 2007

2. that the survey showed that:
   1. the conditions of the hull, machinery and equipment, as defined in the above Regulations was in all respects satisfactory and that the vessel complied with the applicable requirements;
   2. the maximum permissible operating draught associated with each operating condition for the vessel is contained in the stability booklet dated 16/12/2016.
3. that an Exemption Certificate has not been issued.

This Certificate is valid until **02/09/2023** subject to surveys in accordance with Regulation 7(1)(b)(ii), (b)(iii) and (c).

Issued at Dublin (place of issue of Certificate) 17/12/19 (date of issue)

(signed)

An authorised officer.

(seal or stamp of issuing authority)

Name of Vessel	Aquila	Date of Issue:	17/12/19

Appendix 7.8 Fishing Vessel Safety Certificate

MSO 1006 Fishing Vessel Safety Certificate (15-24m) DECLARATION OF SURVEY (Rev 1.14)(12/15)

Endorsement to extend the validity of the certificate for a period of grace where Regulation 11 applies

This certificate shall, in accordance with Regulation 11, be accepted as valid until _____

Signed: _____
(An authorised officer.)

Place: _____

Date: _____

(seal or stamp of issuing authority)

Endorsement to extend the validity of the certificate until reaching the port of survey or for a period of grace where Regulation 11(2) or Regulation 11(4) applies

This certificate shall, in accordance with Regulation 11(2)/Regulation 11(4) [1], be accepted as valid until _____

Signed: _____
(An authorised officer.)

Place: _____

Date: _____

(seal or stamp of issuing authority)

Endorsement for periodical surveys

Equipment survey

THIS IS TO CERTIFY that, at a survey as required by Regulation 7(1)(b)(ii), the vessel was found to comply with the relevant requirements.

Signed:
(An authorised officer.)

Place: _____

Date: _____

(seal or stamp of issuing authority)

_____

Name of Vessel	Aquila	Date of Issue:	17/12/19

Appendix 7.8 Fishing Vessel Safety Certificate

MSO 1006 Fishing Vessel Safety Certificate (15-24m) DECLARATION OF SURVEY (Rev 1.14)(12/15)

Radio surveys

THIS IS TO CERTIFY that, at a survey as required by Regulation 7(1)(b)(iii), the vessel was found to comply with the relevant requirements.

First periodical radio survey:

Signed:
(An authorised officer.)

Place: _____

Date: _____

(seal or stamp of issuing authority)

Endorsement for intermediate survey

THIS IS TO CERTIFY that, at a survey as required by Regulation 7(3), the vessel was found to comply with the relevant requirements.

Signed:
(An authorised officer.)

Place: _____

Date: _____

(seal or stamp of issuing authority)

Name of Vessel	Aquila	Date of Issue:	17/12/19

Appendix 7.8 Fishing Vessel Safety Certificate

MSO 1006 Fishing Vessel Safety Certificate (15-24m) DECLARATION OF SURVEY (Rev 1.14)(12/15)

FISHING VESSEL SAFETY RECORD OF EQUIPMENT

for the Fishing Vessel Safety Certificate

This record shall be permanently attached to the certificate of compliance

Record of equipment for compliance with the Merchant Shipping (Safety of Fishing Vessels) (15-24 Metres) Regulations 2007 (S.I. No. 640 of 2007)

1. Particulars of the vessel:

Name of Ship	Fishing Letters & Numbers	Official & IMO Numbers	Port of Registry	Length (L)	Length Overall (Loa)	Sea areas in which ship is certified to operate
Aquila	S 603	EIKS4	Skibbereen	20.80	21.99	A1, A2

2. Details of life-saving appliances:

1.	Total number of persons for whom life-saving appliances are approved	6	
		Port	Starboard
2. 2.1	Total number of lifeboats Total number of persons accommodated by them	Nil	Nil
3 3.1	Number of rescue boats Total number of persons accommodated by them	Nil Nil	
4. 4.1 4.1.1 4.1.2 4.2 4.2.1 4.2.2	Liferafts: Those for which approved launching appliances are required Number of liferafts Number of persons accommodated by them Those for which approved launching appliances are not required Number of liferafts Number of persons accommodated by them	 Nil Nil 2 6x2	
5.	Number of lifebuoys	4	
6.	Number of lifejackets	6	
7. 7.1 7.2	Immersion suits: Total number Number of suits complying with the requirements for lifejackets	 6 Nil	
8. 8.1 8.2	Radio installations used in life-saving appliances: Number of radar transponders Number of two-way VHF radiotelephone apparatus	 2 2	

Name of Vessel	Aquila	Date of Issue:	17/12/19

Appendix 7.8 Fishing Vessel Safety Certificate

3. Details of radio facilities:

	Item	Actual provision
1.1	VHF radio installation:	
1.1.1	DSC encoder	Provided
1.1.2	DSC watch receiver	Provided
1.1.3	Radiotelephony	Provided
1.2	MF radio installation:	
1.2.1	DSC encoder	-
1.2.2	DSC watch receiver	-
1.2.3	Radiotelephony	-
1.3	MF/HF radio installation.	
1.3.1	DSC encoder	Provided
1.3.2	DSC watch receiver	Provided
1.3.3	Radiotelephony	Provided
1.3.4	Direct-printing radiotelegraphy	-
1.4	Inmarsat ship earth station	-
2.	Facilities for reception of maritime safety information:	
2.1	NAVTEX receiver	Provided
2.2	EGC receiver	
2.3	HF direct-printing radiotelegraph receiver	-
3.	Satellite EPIRB:	
3.1	COSPAS-SARSAT	Provided
4.	Vessel's radar transponder	Provided

4. Details of navigational equipment:

	Item	Actual provision
1	Standard magnetic compass	Provided
2.1	Nautical Charts/ECDIS[1]: {select}	Provided
2.2	Backup arrangements for ECDIS (if applicable)	
2.3	Nautical Publications	Provided
3.	9GHz Radar	Provided
4.	Echo sounding device	Provided
5.	Communication between wheelhouse and machinery space	Provided
6.	Rudder, Propeller, Thrust, Pitch and Operational Mode Indicator	Provided
7.	Daylight Signalling Lamp	Provided
8.	Radar Reflector	Provided
9.	International Code of Signals	Provided

THIS IS TO CERTIFY that this Record is correct in all respects

Issued at Dublin (place of issue of Certificate) 17/12/19 (date of issue)

(signed) _____
An authorised officer.

(seal or stamp of issuing authority)

[1] ECDIS - Electronic chart display and information system

Name of Vessel	Aquila	Date of Issue:	17/12/19

Appendix 7.8 Fishing Vessel Safety Certificate

MSO 1006 Fishing Vessel Safety Certificate (15-24m) DECLARATION OF SURVEY (Rev 1.14)(12/15)

CONDITIONS AND RESTRICTIONS

Stability

The skipper shall take precautionary measures necessary to maintain the stability of the vessel in accordance with the approved stability information book.

Crew members on watch shall fully observe instructions supplied in the approved stability information book.

Bulk loading of the catch is not permitted.

The vessel is not permitted to operate in regions where ice accretion is likely to occur refer to Schedule 3, Paragraph 17 of the *Merchant Shipping (Safety of Fishing Vessels)(15-24 metres) Regulations 2007.*

The maximum permitted operating draught is 3.00 metres. At no time shall the loading mark on the side of the vessel be submerged.

Any alterations made to the vessel affecting its stability, revised stability calculations shall be undertaken to the satisfaction of the Minister.

Catch on deck is not permitted to be stowed on deck.

Medical equipment

The vessel carries category B medical equipment.

Abandon ship training and drills

Abandon ship training and drills to be conducted in accordance with Part 8 of the *Merchant Shipping (Safety of Fishing Vessels)(15 24 metres) Regulations 2007.*

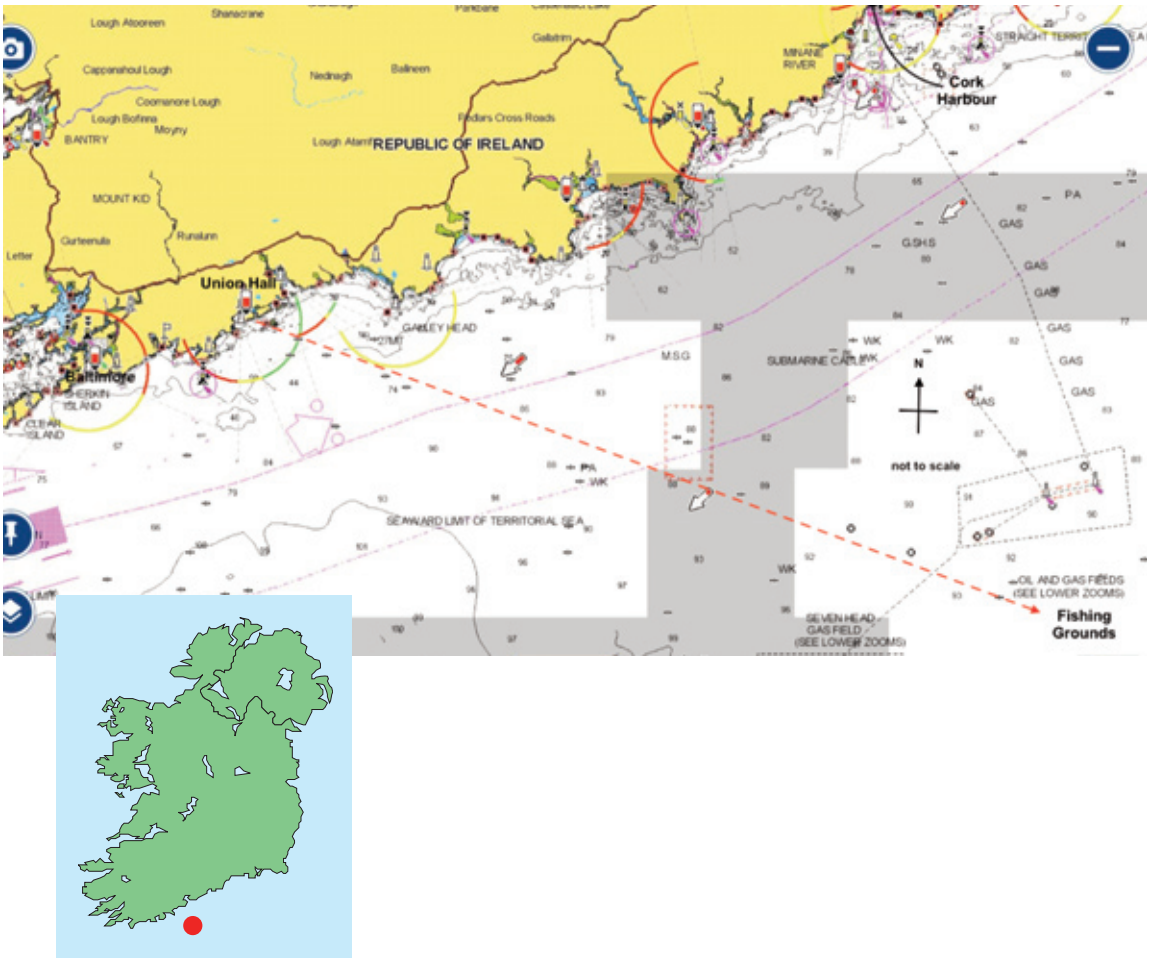
Surveys

Owner/skipper shall ensure surveys in accordance with Part 1, Regulation 7 of the *Merchant Shipping (Safety of Fishing Vessels)(15-24 metres) Regulations 2007* are carried out on the vessel.

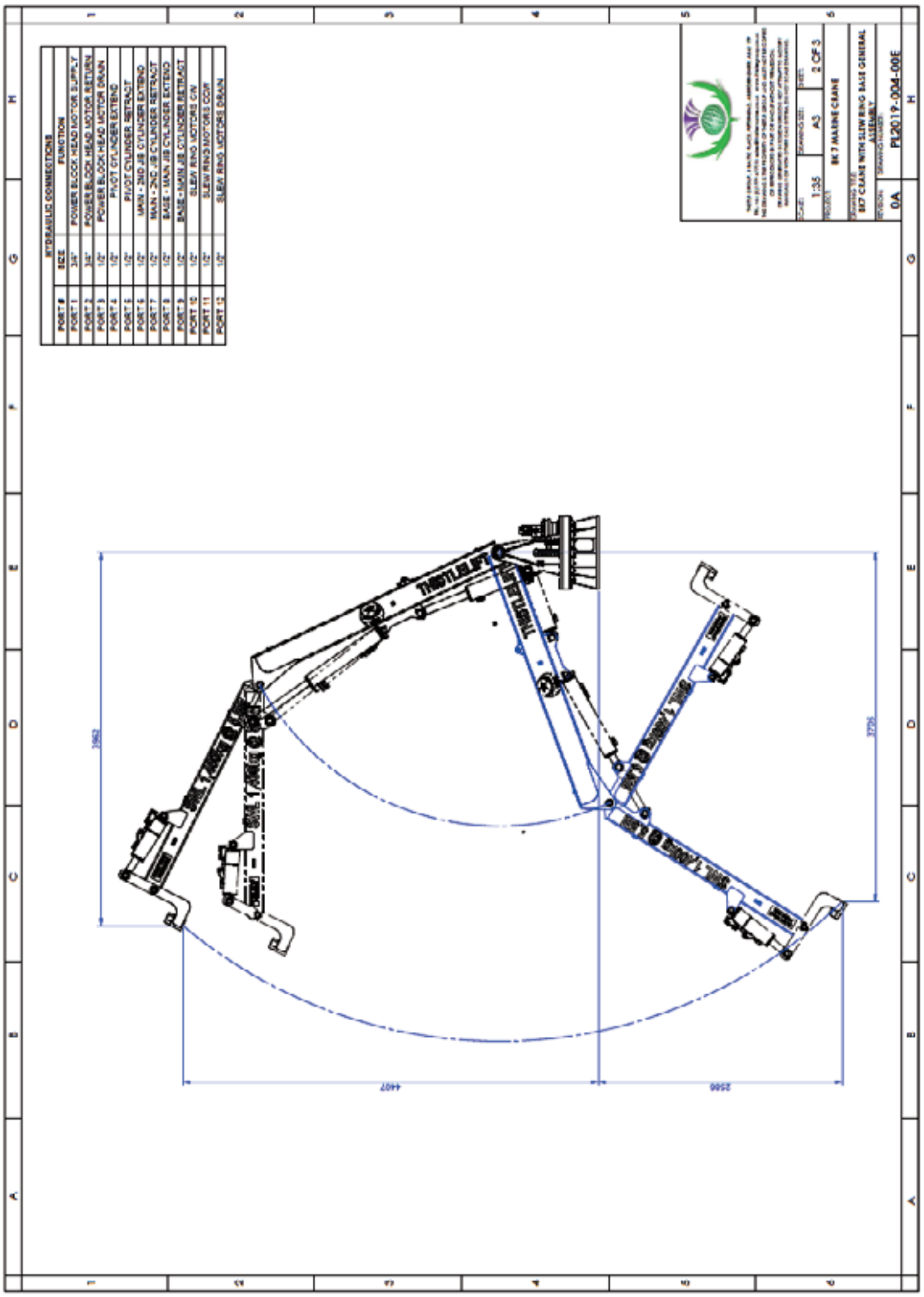
Additional Conditions and Restrictions

Name of Vessel	Aquila	Date of Issue:	17/12/19

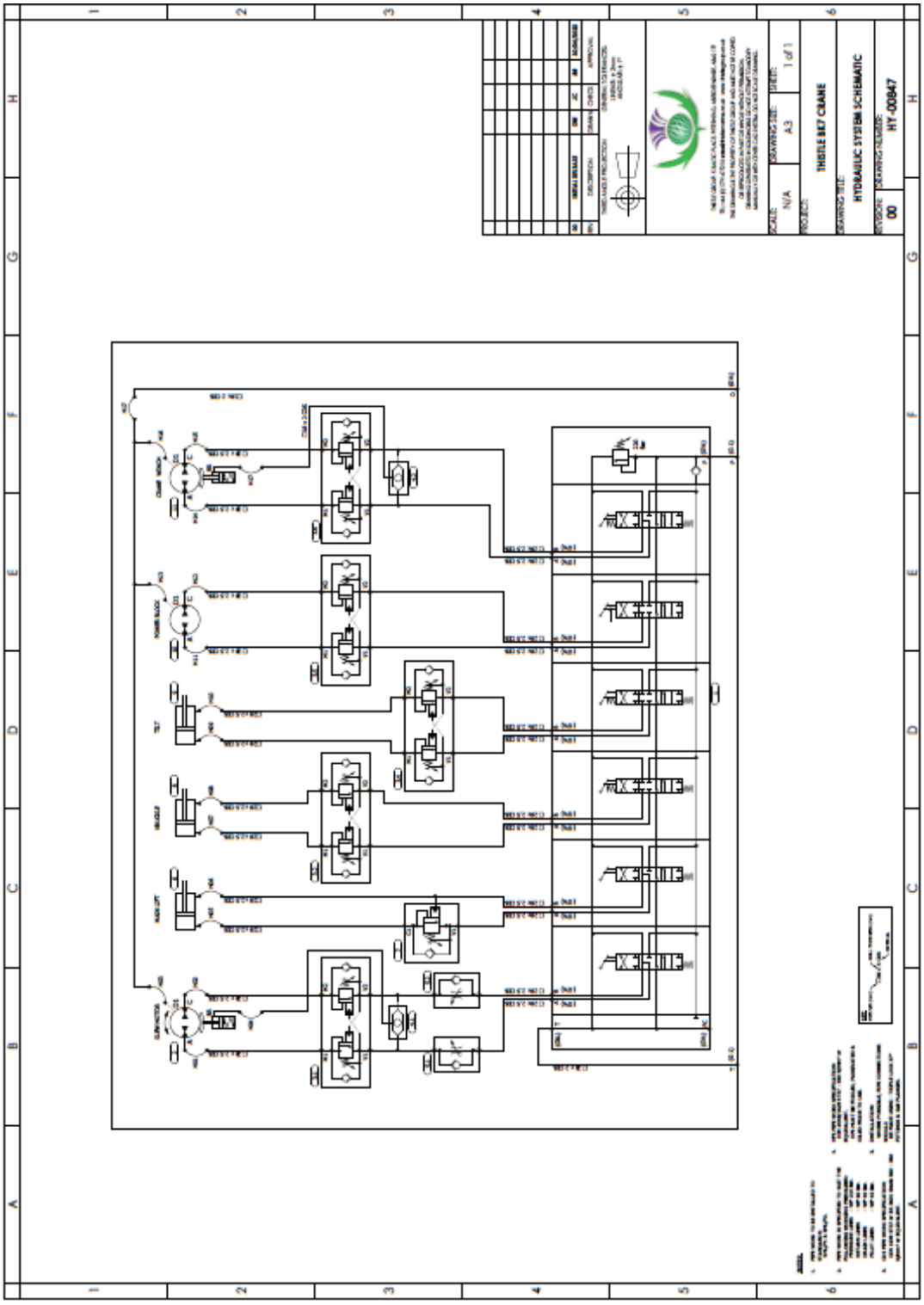
Appendix 7.9 Chart Showing the Location of the Incident



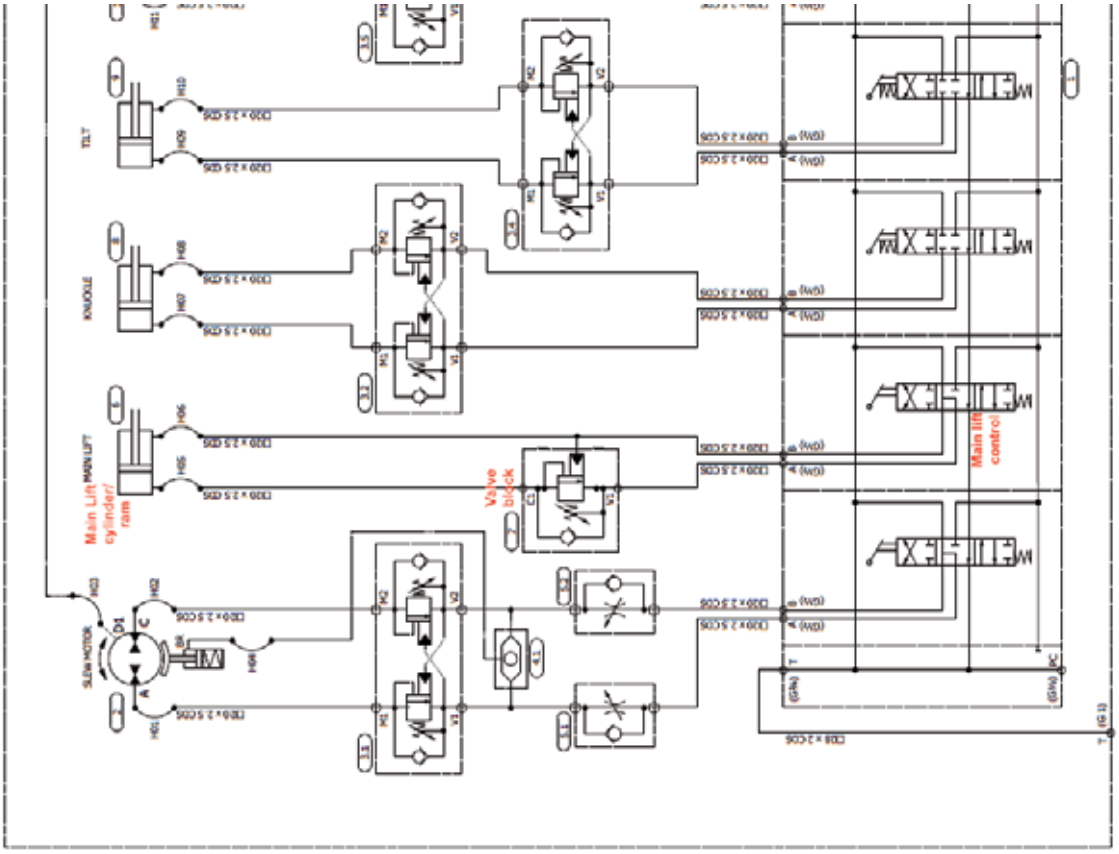
Appendix 7.10 BK7 Crane General Assembly Drawing – PL2019-004-008



Appendix 7.11 BK7 Hydraulic System Schematic Drawing – HY-00847



Appendix 7.11 BK7 Hydraulic System Schematic Drawing – HY-00847



Appendix 7.12 Typical Hydraulic Flexible Hoses Fitted to the Deck Crane

Appendix 7.13 Irish Coast Guard SITREP

07 1336Z NOV 21
FROM MRSC VALENTIA
TO MRSC VALENTIA SITREP GROUP

BT
INJURED CREWMAN F/V AQUILLA
UIIN2700/21
SAR SITREP ONE AND FINAL

A - IDENTITY OF CASUALTY:
AQUILA

B - POSITION
51°12.94'N 007°55.11'W

C - SITUATION
CREWMAN WITH CRUSH INJURIES

D - NUMBER OF PERSONS
1

E - ASSISTANCE REQUIRED
MEDEVAC TO CUH

F - COORDINATING RCC
MRSC VALENTIA

G - DESCRIPTION OF CASUALTY
FISHING VESSEL

MALE, MATURE PERSON (25-65), WEARING LIFE VEST

H - WEATHER ON SCENE
WIND: 3, W / SEA: MODERATE / SWELL: LOW WAVE / AIR TEMP: 11°C / WATER TEMP: 13 [*]

J - INITIAL ACTIONS TAKEN
CONTACT MADE WITH MEDICO CORK
ANNEX H COMPLETED
TASKED R115

K - SEARCH AREA
42 NM SE OF EICK

L - COORDINATING INSTRUCTIONS
MEDEVAC TO CUH

M - FUTURE PLANS
INCIDENT CLOSED

N - ADDITIONAL INFORMATION
1238 F/V Aquilla advise they have injured crewman, contact made with Medico Cork.

1257 Medico Cork advise casualty needs to be seen by paramedic.

1304 Tasked R115. (R117 Offline). Advised NEOC and ATC Cork.

1352 R115 Airborne.

1359 [redacted] providing medical oversight on Tetra.

1404 Crosshaven CGU tasked to prepare LZ.

1425 R115 Onscene with casualty.

1513 Casualty onboard R115, routing to Bishopstown GAA.

1532 R115 Landing on Bishopstown GAA.

1550 Casualty in the care of the HSE, R115 Routing to EICK for refuel.

1656 R115 refueled, stood down and RTB.

Incident Closed.

Appendix 7.14 Met Éireann Weather Report

Met Éireann
The Irish Meteorological Service
Climate Services
Glasnevin Hill
Dublin 9

Seirbhísí Aeráide
Cnoc Ghlas Naíon
Baile Átha Cliath 9

Tel: +353-1-8064260
Email: enq@met.ie
Email: legal@met.ie

Our Ref: WS1730/2203_23
Your Ref: MCIB/12/312

Estimated weather and sea state conditions for the offshore area approximately 30 nautical miles southeast of Old Head of Kinsale on Sunday 7th Ţovember 2021 between 06:00 hours and 18:00 hours.

7th Ţovember 2021 between 06:00 hours and 18:00 hours:

Meteorological Synopsis:	A moderate to fresh northwesterly airflow covered Ireland on the morning of 7-November-2021 in the wake of a depression to the north of the country which tracked away eastwards. A ridge of high pressure moved in from the southwest during the day and the airflow decreased and backed west-southwesterly. A weak and slow-moving frontal trough (warm front) embedded in the flow reached the area by late afternoon and introduced milder and humid conditions with mist and outbreaks of drizzle and light rain by the end of the period.
Weather:	Fair at first, increasing cloud cover by forenoon; patches of mist, drizzle and light rain in the late afternoon.
Wind:	Northwesterly winds at first were moderate to fresh Beaufort Force 4 or 5 (mean speed 11 to 17 knots) with gusts up to 22 knots. In the afternoon winds decreased Force 3 (mean wind speed 7 to 11 knots) for the remainder of the period. Wind direction gradually backed from northwesterly to westerly then southwesterly by the end of the period.
Visibility:	Visibility was good during the morning and early afternoon (greater than 5 nautical miles). After around 4pm visibility was moderate or poor (0.5 – 4 nautical miles) in mist, drizzle or rain.
Sea State:	Estimated sea state was moderate to rough with significant wave height of 2m to 3.5m. Swell direction was west-northwesterly.
Temperature:	Air temperature 12 or 13 degrees Celsius.

Sea temperature: *13 or 14 degrees Celsius.*

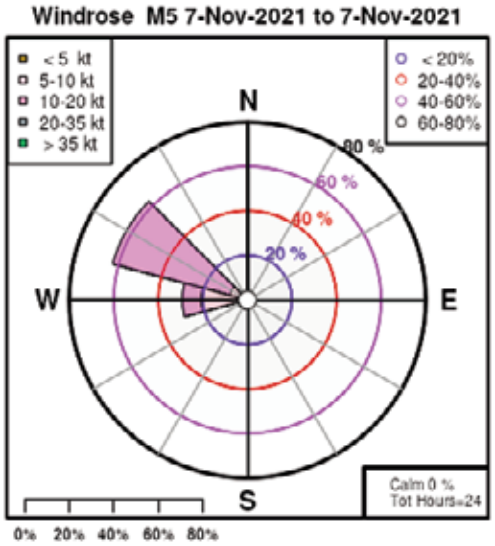
This report was issued on: 16 March 2022

Appendix 7.14 Met Éireann Weather Report

Met Éireann
The Irish Meteorological Service
Climate Services, Glasnevin Hill, Dublin 9
Seirbhísí Aeráide, Cnoc Ghlas Naíon, Baile Átha Cliath 9
Tel: +353-1-8064260
Email: enq@met.ie
Email: legal@met.ie

Appendix 1a Observations Buoy

Buoy M5 (station number (stno) = 62094) south of Hook Head



latitude	longitude	stno	date_time	wind_dir	mean_wind_speed_knots	max_wind_gust_knots	sig_wave_height	max_wave_height	wav_dir	sig_wave_period
52	-7	62094	07-Nov-2021 00:00:00	296	13	21	2	2	255	5
52	-7	62094	07-Nov-2021 01:00:00	299	15	23	1	2	263	5
52	-7	62094	07-Nov-2021 02:00:00	298	14	19	1	2	252	5
52	-7	62094	07-Nov-2021 03:00:00	295	15	22	1	2	252	5
52	-7	62094	07-Nov-2021 04:00:00	301	15	22	1	2	253	5
52	-7	62094	07-Nov-2021 05:00:00	292	16	22	1	2	256	5
52	-7	62094	07-Nov-2021 06:00:00	299	16	20	1	2	255	4
52	-7	62094	07-Nov-2021 07:00:00	295	16	20	1	2	262	4
52	-7	62094	07-Nov-2021 08:00:00	303	17	22	1	2	269	4
52	-7	62094	07-Nov-2021 09:00:00	292	12	16	1	2	270	4
52	-7	62094	07-Nov-2021 10:00:00	299	12	17	1	2	256	4
52	-7	62094	07-Nov-2021 11:00:00	308	12	17	1	2	257	5
52	-7	62094	07-Nov-2021 12:00:00	298	10	16	1	2	263	5
52	-7	62094	07-Nov-2021 13:00:00	294	8	12	1	2	252	5
52	-7	62094	07-Nov-2021 14:00:00	283	9	12	1	2	259	5
52	-7	62094	07-Nov-2021 15:00:00	279	9	11	1	1	239	5
52	-7	62094	07-Nov-2021 16:00:00	285	7	11	1	2	246	5
52	-7	62094	07-Nov-2021 17:00:00	264	9	13	1	2	250	5
52	-7	62094	07-Nov-2021 18:00:00	262	10	14	1	1	250	5
52	-7	62094	07-Nov-2021 19:00:00	249	9	12	1	2	248	5
52	-7	62094	07-Nov-2021 20:00:00	262	7	10	1	2	243	5
52	-7	62094	07-Nov-2021 21:00:00	256	11	15	1	1	242	5
52	-7	62094	07-Nov-2021 22:00:00	241	9	12	1	2	246	5
52	-7	62094	07-Nov-2021 23:00:00	225	9	13	1	1	250	5

Appendix 7.14 Met Éireann Weather Report

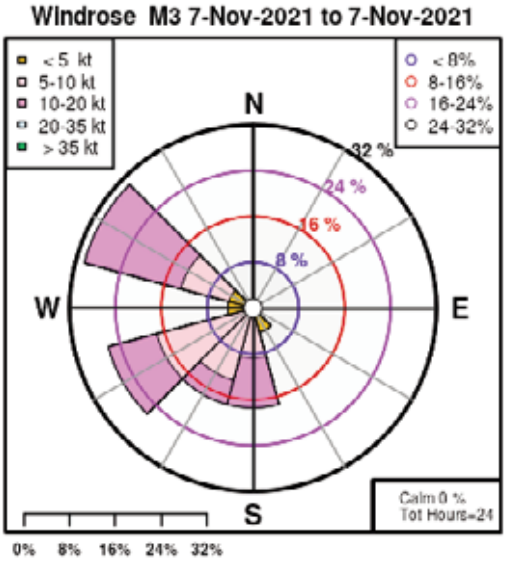
Met Éireann
The Irish Meteorological Service
Climate Services
Glasnevin Hill
Dublin 9

Seirbhísí Aeráide
Cnoc Ghlas Naíon
Baile Átha Cliath 9

Tel: +353-1-8064260
Email: enq@met.ie
Email: legal@met.ie

Appendix 1a Observations Buoy (continued)

Buoy M3 (station number (stno) = 62092) (southwest of Mizen Head)



latitude	longitude	stno	date_time	wind_dir	meanu_wind_speed_knots	max_wind_gust_knots	sig_wave_height	max_wave_height	wav_dir	sig_wave_period
51	-11	62092	07-Nov-2021 00:00:00	299	12	17	3	4	281	7
51	-11	62092	07-Nov-2021 01:00:00	301	13	17	3	4	288	7
51	-11	62092	07-Nov-2021 02:00:00	307	12	15	3	5	291	8
51	-11	62092	07-Nov-2021 03:00:00	304	10	14	3	5	294	7
51	-11	62092	07-Nov-2021 04:00:00	297	8	11	3	4	295	7
51	-11	62092	07-Nov-2021 05:00:00	287	7	10	2	4	301	7
51	-11	62092	07-Nov-2021 06:00:00	306	6	9	3	4	295	7
51	-11	62092	07-Nov-2021 07:00:00	296	5	8	3	4	300	7
51	-11	62092	07-Nov-2021 08:00:00	244	8	11	3	3	297	7
51	-11	62092	07-Nov-2021 09:00:00	258	5	7	2	3	298	7
51	-11	62092	07-Nov-2021 10:00:00	153	3	5	3	4	304	7
51	-11	62092	07-Nov-2021 11:00:00	179	8	10	3	3	291	8
51	-11	62092	07-Nov-2021 12:00:00	166	10	12	3	4	304	8
51	-11	62092	07-Nov-2021 13:00:00	180	13	17	3	5	304	9
51	-11	62092	07-Nov-2021 14:00:00	192	11	15	3	5	312	9
51	-11	62092	07-Nov-2021 15:00:00	220	8	11	4	5	318	9
51	-11	62092	07-Nov-2021 16:00:00	236	10	12	4	6	319	10
51	-11	62092	07-Nov-2021 17:00:00	211	6	9	4	6	325	9
51	-11	62092	07-Nov-2021 18:00:00	240	10	13	4	5	326	9
51	-11	62092	07-Nov-2021 19:00:00	232	10	12	4	6	323	9
51	-11	62092	07-Nov-2021 20:00:00	230	10	13	4	5	322	9
51	-11	62092	07-Nov-2021 21:00:00	206	8	11	3	5	322	9
51	-11	62092	07-Nov-2021 22:00:00	221	11	13	3	5	322	9
51	-11	62092	07-Nov-2021 23:00:00	231	14	17	3	4	319	9

Appendix 7.14 Met Éireann Weather Report

Met Éireann
The Irish Meteorological Service
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Glasnevin Hill
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Seirbhísí Aeráide
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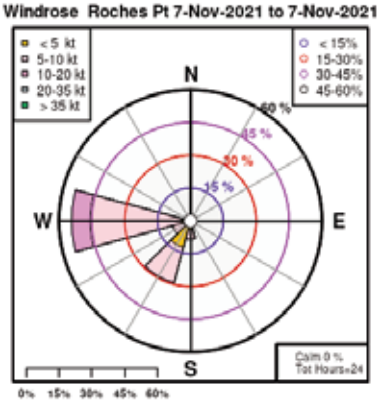
Tel: +353-1-8064260
Email: enq@met.ie
Email: legal@met.ie

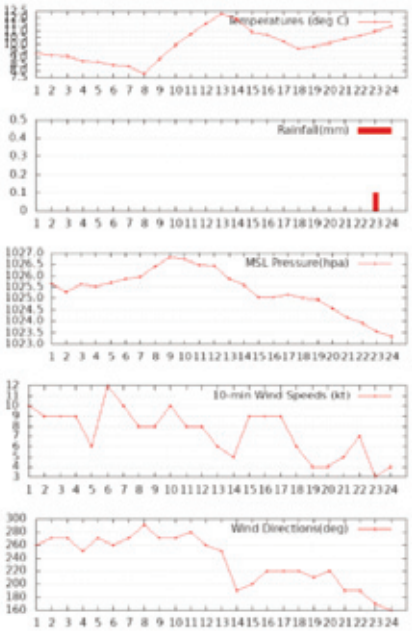
Appendix 1b Observations land-based Daily Station Report Roches Point



WEATHER STATION REPORTS FROM ROCHES POINT

Date	Rainfall (mm)	Max Temp (°C)	Min Temp (°C)	Grass Min Temp (°C)	Mean Wind Speed (knots)	Max Gust (>= 34 knots)
07/11/2021	0.1	12.5	7.6	4.2	7.5	

HOURLY VALUES (UTC) 07 Nov 2021 ROCHES POINT



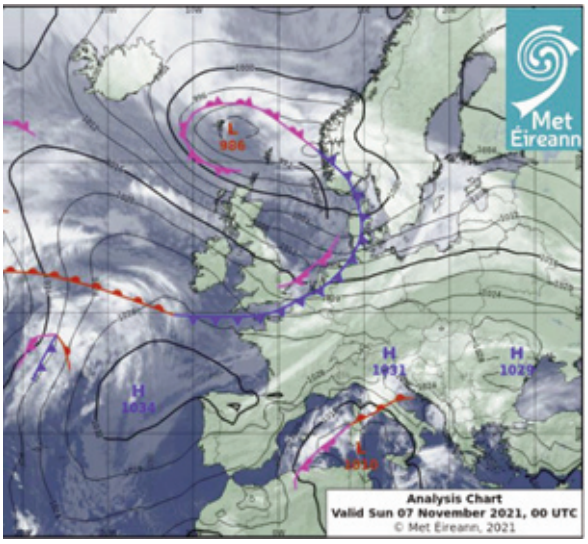
Appendix 7.14 Met Éireann Weather Report

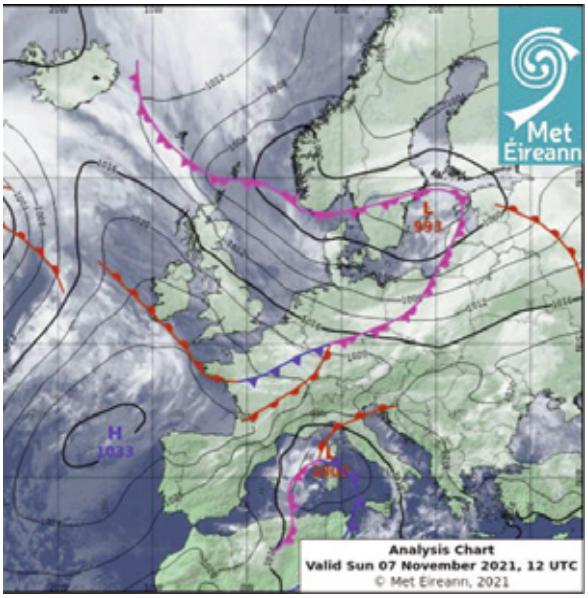
Met Éireann
The Irish Meteorological Service
Climate Services
Glasnevin Hill
Dublin 9

Seirbhísí Aeráide
Cnoc Ghlas Naíon
Baile Átha Cliath 9

Tel: +353-1-8064260
Email: enq@met.ie
Email: legal@met.ie

Appendix 1c Analysis Chart 00 and 12 hours 7-Iovember -2021





Appendix 7.14 Met Éireann Weather Report

Weather Forecast From Met Eireann

24-hour Sea Area Forecast

Updated at 0000 / 0600 / 1200 / 1800

Sea Area Forecast until 0600 Monday, 8 November 2021
Issued at 0600 Sunday, 7 November 2021

1. Gale warning: In operation
Small craft warning: In operation

2. Meteorological situation at 0300: A depression of 984 hPa situated between Iceland and Norway, tracks southeastwards and maintains a fresh to strong northwest airflow over Ireland

3. Forecast for Irish coastal waters from Erris Head to Belfast Lough to Wicklow Head and for the north Irish Sea

Wind: Northwest force 5 or 6 and reaching force 7 or gale force 8 for a time between Bloody Foreland and Belfast Lough and on the north Irish Sea, soon decreasing force 4 to 6, later decreasing west to northwest force 2 to 4 east of Malin Head and backing southerly west of Malin Head and increasing force 5 or 6

Weather: Scattered showers on Ulster coasts this morning, otherwise fair

Visibility: Moderate or poor in showers, otherwise good.

Forecast for Irish coastal waters from Wicklow Head to Mizen Head to Erris Head and for the south Irish Sea

Wind: Northwest force 4 or 5, soon backing west to northwest force 2 or 4, later backing southerly between Mizen Head and Erris Head and increasing force 5 or 6

Weather: Fair. Patchy rain or drizzle developing through this evening and early night, becoming more persistent overnight

Visibility: Good, decreasing moderate or poor in any rain or drizzle later on Sunday.

Warning of Heavy Swell: Nil

4. Outlook for a further 24 hours until 0600 Tuesday 09 November 2021: Fresh southerly winds, increasing strong on west and northwest coasts and occasionally strong also on the Irish Sea. Rain or drizzle at times.

Weather Forecast From Met Eireann

Text of Gale Warning

Northwest winds will reach gale force 8 for a time this morning (Sunday) on Irish coastal waters from Bloody Foreland to Malin Head to Belfast Lough and on the Irish Sea North of Anglesey.

Text of Small Craft Warning

1. Northwest winds will reach force 6 for a time this morning (Sunday) on coasts from Belfast Lough to Carlingford Lough to Wicklow Head and from Erris Head to Rossan Point to Bloody Foreland

2. Northwest winds will reach force 6 or higher later this morning and for a time this afternoon (Sunday) on Irish coasts from Bloody Foreland to Malin Head to Belfast Lough.

Coastal Reports	6 AM Sunday, 07 November 2021
Malin Head Automatic	West-Northwest, 28 Knots, Gust 40 Knots, Cloudy, 5 Miles, 1019, Rising slowly
Dublin Airport	West, 14 Knots, Fine, 10 Miles, 1022, Steady
Buoy M5 51° 41'N 6° 42'W	West-Northwest, 16 Knots, Wave ht. 1.4 m, The visibility at Tuskar is greater than 10 Miles, 1025, Steady
Roches Point Automatic	West, 12 Knots, Cloudy, 11 Miles, 1026, Steady
Sherkin Island Automatic	West-Northwest, 6 Knots, Cloudy, 7 Miles, 1026, Steady
Valentia Automatic	West, 5 Knots, Cloudy, 11 Miles, 1026, Steady
Mace Head Automatic	West-Northwest, 13 Knots, Cloudy, 7 Miles, 1024, Steady
Belmullet Automatic	West-Northwest, 8 Knots, Fair, 7 Miles, 1023, Rising slowly
Buoy M1 53° 8'N, 11° 12'W	Report not available
Buoy M2 53° 29'N, 8° 26'W	West, 20 Knots, Wave ht. 1.4 m, 1021, Rising slowly
Buoy M3 51° 13'N, 10° 33'W	Northwest, 6 Knots, Wave ht. 2.7 m, 1026, Steady
Buoy M4 55° 0'N 10° 0'W	West-Northwest, 19 Knots, Wave ht. 5.4 m, 1021, Steady
Buoy M8 53° 4'N 18° 58'W	South-Southeast, 11 Knots, Wave ht. 3.8 m, 1023, Falling slowly

Disclaimer: buoy locations are approximate and are not for navigational purposes

Sea Crossings	State of sea until 0600 Tuesday 09 November 2021
Dublin - Holyhead	Moderate. Decreasing slight on Sunday night and Monday.
Rosslare - South Wales	Moderate. Decreasing slight on Sunday night and Monday.
Cork - South Wales	Moderate. Decreasing slight to moderate on Sunday night and Monday.
Rosslare - France	Moderate. Decreasing moderate on Sunday night and Monday.
Cork - France	Moderate. Decreasing moderate on Sunday night and Monday.

Next update before 1300 Sunday, 07 November 2021
A detailed forecast may be obtained by dialing *WeatherMail* on 1550 123 855.

Appendix 7.14 Met Éireann Weather Report

Weather Forecast From Met Eireann

24-hour Sea Area Forecast

Updated at 0000 / 0600 / 1200 / 1800

Sea Area Forecast until 1200 Monday, 8 November 2021
Issued at 1200 Sunday, 7 November 2021

1. **Gale warning:** Nil
   Small craft warning: In operation

2. **Meteorological situation at 0900:** Ireland lies in a generally fresh northwest air-flow. The air-flow will back southwest tonight (Sunday night) as a ridge of high pressure declines and frontal troughs approach from the Atlantic. A fresh to strong southwest air-flow will become established over Ireland on Monday.

3. **Forecast for Irish coastal waters from Bloody Foreland to Malin Head to Belfast Lough and for the Irish Sea north of Anglesey**

Wind: Northwest force 6 or 7. Soon becoming west to northwest force 4 or 5. Later becoming south force 3 or 4 and increasing to force 5 or 6 on Monday morning.

Weather: Isolated showers today, otherwise fair weather. Rain, drizzle and mist developing later tonight.

Visibility: Mostly good today, decreasing moderate to poor later tonight and Monday.

Forecast for Irish coastal waters from Belfast Lough to Carnsore Point to Mizen Head and for the Irish Sea south of Anglesey

Wind: Northwest force 4 or 5. Soon becoming west to northwest force 3 or 4. Later becoming south to southwest force 3 or 4 and increasing to force 5 on Monday morning, occasionally force 6.

Weather: Isolated showers today, otherwise fair weather. Rain, drizzle and mist developing later tonight.

Visibility: Mostly good today, decreasing moderate to poor later tonight and Monday.

Forecast for Irish coastal waters from Mizen Head to Slyne Head to Bloody Foreland

Wind: West or southwest force 3 or 4. Soon becoming south to southwest force 4 or 5. Later increasing south to southwest force 6 or 7.

Weather: Fair or cloudy. Rain, drizzle and mist developing this evening and tonight.

Visibility: Mostly good today, decreasing moderate to poor this evening and tonight.

Warning of Heavy Swell: today on northern coasts.

4. **Outlook for a further 24 hours until 1200 Tuesday 09 November 2021:** Fresh to strong south to southwest winds, veering west to southwest during Tuesday. Outbreaks of rain with areas of drizzle and mist.

Weather Forecast From Met Eireann

Text of Gale Warning
Nil

Text of Small Craft Warning
1) Northwest winds will reach force 6 or higher for a time this afternoon (Sunday) on Irish coasts from Bloody Foreland to Malin Head to Belfast Lough. 2) On Monday, south to southwest winds will reach force 6 or higher on Irish coasts from Mizen Head to Rossan Point to Carlingford Lough.

Coastal Reports	11 AM Sunday, 07 November 2021
Malin Head Automatic	West-Northwest, 24 Knots, Cloudy, 6 Miles, 1021, Rising slowly
Dublin Airport	West, 13 Knots, Cloudy, 21 Miles, 1024, Rising slowly
Buoy M5 51° 41'N 6° 42'W	Northwest, 12 Knots, Wave ht. 1.3 m, The visibility at Tuskar is greater than 10 Miles, 1026, Rising slowly
Roches Point Automatic	West, 8 Knots, Fair, 11 Miles, 1026, Steady
Sherkin Island Automatic	Southeast, 2 Knots, Cloudy, 9 Miles, 1027, Steady
Valentia Automatic	Southwest, 1 Knot, Cloudy, 10 Miles, 1026, Steady
Mace Head Automatic	West, 11 Knots, Cloudy, 11 Miles, 1025, Steady
Belmullet Automatic	West-Northwest, 7 Knots, Cloudy, 10 Miles, 1024, Steady
Buoy M1 53° 8'N, 11° 12'W	Report not available
Buoy M2 53° 29'N, 5° 26'W	West-Northwest, 20 Knots, Wave ht. 1.4 m, 1022, Rising slowly
Buoy M3 51° 13'N, 10° 33'W	South, 8 Knots, Wave ht. 2.7 m, 1027, Steady
Buoy M4 55° 0'N 10° 0'W	West, 12 Knots, Wave ht. 5.5 m, 1023, Rising slowly
Buoy M8 53° 4'N 15° 56'W	South, 14 Knots, Wave ht. 2.7 m, 1021, Falling slowly

Disclaimer: buoy locations are approximate and are not for navigational purposes

Sea Crossings	State of sea until 1200 Tuesday 09 November 2021
Dublin - Holyhead	Moderate
Rosslare - South Wales	Moderate
Cork - South Wales	Moderate
Rosslare - France	Moderate, increasing rough Tuesday
Cork - France	Moderate, increasing rough Tuesday

Next update before 1900 Sunday, 07 November 2021
A detailed forecast may be obtained by dialing *Weatherline* on 1550 123 855.

Weather Forecast From Met Eireann

24-hour Sea Area Forecast

Updated at 0000 / 0600 / 1200 / 1800

Sea Area Forecast until 1800 Monday, 8 November 2021
Issued at 1800 Sunday, 7 November 2021

1. Gale warning: Nil
Small craft warning: In operation

2. Meteorological situation at 1500: A weak ridge of high pressure over Ireland is declining as frontal troughs approach from the Atlantic. A fresh to strong southwest air-flow will become established over Ireland tonight and on Monday.

3. Forecast for Irish coastal waters from Bloody Foreland to Malin Head to Belfast Lough and for the Irish Sea north of Anglesey

Wind: West to northwest force 4 or 5, occasionally force 6 in the Irish Sea. Soon becoming south force 3 or 4. Increasing south to southwest force 6 or 7 later.

Weather: Isolated showers this evening, otherwise fair weather. Rain, drizzle and mist developing later tonight.

Visibility: Mostly good at first, decreasing moderate to poor later tonight and Monday.

Forecast for Irish coastal waters from Belfast Lough to Carnsore Point to Mizen Head and for the Irish Sea south of Anglesey

Wind: Northwest force 4 or 5. Becoming west to northwest force 3 or 4 imminent. Soon becoming south to southwest force 3 or 4. Increasing south to southwest force 5 or 6 later.

Weather: Mostly fair this evening. Rain, drizzle and mist developing later tonight.

Visibility: Mostly good this evening, decreasing moderate to poor later tonight and Monday.

Forecast for Irish coastal waters from Mizen Head to Slyne Head to Bloody Foreland

Wind: Becoming south to southwest force 4 or 5 imminent. Soon increasing south to southwest force 6 or 7.

Weather: Rain, drizzle and mist developing this evening and tonight.

Visibility: Decreasing moderate to poor this evening and tonight.

Warning of Heavy Swell: today on northern coasts.

4. Outlook for a further 24 hours until 1800 Tuesday 09 November 2021: Fresh to strong south to southwest winds, veering west to southwest during Tuesday. Outbreaks of rain with areas of drizzle and mist, clearing to sunny spells and scattered showers on Tuesday afternoon.

Weather Forecast From Met Eireann

Text of Gale Warning
Nil

Text of Small Craft Warning
On Monday, south to southwest winds will reach force 6 or higher on Irish coasts from Mizen Head to Rossan Point to Carlingford Lough.

Coastal Reports	4 PM Sunday, 07 November 2021
Malin Head Automatic	West-Northwest, 14 Knots, Cloudy, 8 Miles, 1021, Steady
Dublin Airport	West, 7 Knots, Cloudy, 13 Miles, 1023, Steady
Buoy M5 51° 41'N 6° 42'W	West-Northwest, 7 Knots, Wave ht: 1 m, The visibility at Tuskar is greater than 10 Miles, 1025, Falling slowly
Roches Point Automatic	Southwest, 9 Knots, Cloudy, 11 Miles, 1025, Falling slowly
Sherkin Island Automatic	South-Southeast, 4 Knots, Mod drizzle, 1.5 Miles, 1025, Falling slowly
Valentia Automatic	Northeast, 2 Knots, Recent drizzle, 12 Miles, 1024, Falling slowly
Mace Head Automatic	South-Southwest, 9 Knots, Cloudy, 9 Miles, 1023, Falling slowly
Belmullet Automatic	South-Southwest, 8 Knots, Fair, 9 Miles, 1022, Falling slowly
Buoy M1 53° 8'N, 11° 12'W	Report not available
Buoy M2 53° 29'N, 5° 26'W	West-Northwest, 14 Knots, Wave ht: 1.1 m, 1023, Rising slowly
Buoy M3 51° 13'N, 10° 33'W	Southwest, 10 Knots, Wave ht: 4 m, 1024, Falling slowly
Buoy M4 55° 0'N 10° 0'W	Southwest, 10 Knots, Wave ht: 4.5 m, 1021, Falling slowly
Buoy M6 53° 4'N 15° 56'W	South, 20 Knots, Wave ht: 2.7 m, 1015, Falling rapidly

Disclaimer: buoy locations are approximate and are not for navigational purposes

Sea Crossings	State of sea until 1800 Tuesday 09 November 2021
Dublin - Holyhead	Moderate.
Rosslare - South Wales	Moderate.
Cork - South Wales	Moderate.
Rosslare - France	Moderate, increasing rough Tuesday.
Cork - France	Moderate, increasing rough Tuesday.

Next update before 0100 Monday, 08 November 2021
A detailed forecast may be obtained by dialing *Weatherdial* on 1550 123 855.

Appendix 7.14 Met Éireann Weather Report

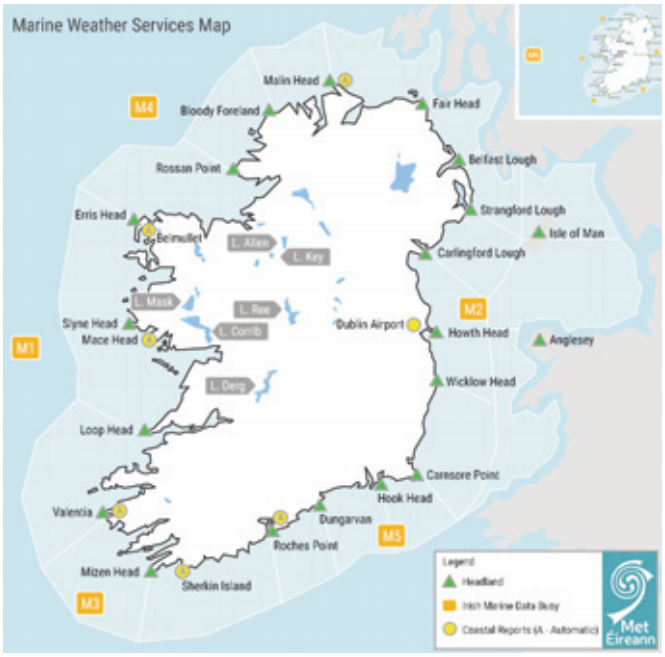
Met Éireann
The Irish Meteorological Service

Climate Services
Glasnevin Hill
Dublin 9

Seirbhísí Aeráide
Cnoc Ghlas Naíon
Baile Átha Cliath 9

Tel: +353-1-8064260
Email: legal@met.ie

Appendix 3a Terminology Sea Area Map & Beaufort Scale of Wind



Beaufort Scale of Wind

Force	Description	Speed* knots	Speed* km/hr	Specification -sea	Wave height** (metres)
0	Calm	<1	<1	Sea like mirror	
1	Light air	1-3	1-5	Ripples	0.1 (0.1)
2	Light breeze	4-6	6-11	Small wavelets	0.2 (0.3)
3	Gentle breeze	7-10	12-19	Large wavelets, crests begin to break	0.6 (1)
4	Moderate breeze	11-16	20-28	Small waves becoming longer, frequent white horses	1 (1.5)
5	Fresh breeze	17-21	29-38	Moderate waves, many white horses, chance of spray	2 (2.5)
6	Strong breeze	22-27	39-49	Large waves, white foam crests, probably some spray	3 (4)
7	Near gale	28-33	50-61	Sea heaps up, streaks of white foam	4 (5.5)
8	Gale	34-40	62-74	Moderately high waves of greater length	5.5 (7.5)
9	Strong gale	41-47	75-88	High waves, dense streaks of foam, spray may reduce visibility	7 (10)
10	Storm	48-55	89-102	Very high waves, long overhanging crests, visibility affected	9 (12.5)
11	Violent storm	56-63	103-117	Exceptionally high waves, long white foam patches cover sea	11.5 (16)
12	Hurricane	64+	117 & over	Air filled with foam and spray, sea completely white	14 (-)

*Speed = mean speed at a standard height of 10 metres.
**Wave height is only intended as a guide to what may be expected in the open sea.
Bracketed figures indicate the probable maximum wave height.

Appendix 7.14 Met Éireann Weather Report

Met Éireann
The Irish Meteorological Service
Climate Services
Glasnevin Hill
Dublin 9

Seirbhísí Aeráide
Cnoc Ghlas Naíon
Baile Átha Cliath 9

Tel: +353-1-8064260
Email: enq@met.ie
Email: legal@met.ie

Appendix 3b Terminology Sea State & Visibility

Wave Heights / State of Sea:
The wave height is the vertical distance between the crest and the preceding or following trough. The table below gives a description of the wave system associated with a range of significant wave heights.

The Significant wave height is defined as the average height of the highest one-third of the waves. (It is very close to the value of wave height given when making visual observations of wave height.)

Sea State (Descriptive)	Significant Wave height in meters
Calm	0 – 0.1
Smooth(Wavelets)	0.1 – 0.5
Slight	0.5 – 1.25
Moderate	1.25 – 2.5
Rough	2.5 – 4
Very rough	4 – 6
High	6 – 9
Very high	9 – 14
Phenomenal	Over 14

Individual waves in the wave train will have heights in excess of the significant height. **The highest wave of all will have a height about twice the significant height**.

Visibility Descriptions:

Visibility (Descriptive)	Visibility in nautical miles (kilometres)
Good	More than 5 nm (> 9 km)
Moderate	2 – 5 nm (4 – 9 km)
Poor	0.5 – 2 nm (1 – 4 km)
Fog	Less than 0.5 nm (< 1km)

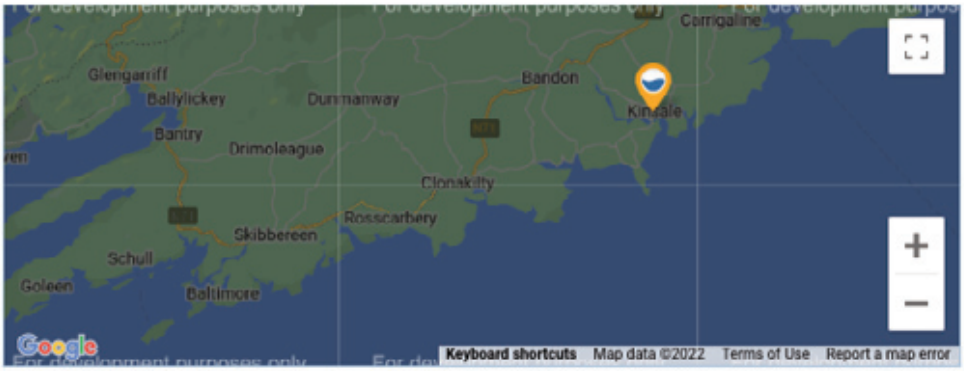
Please Iote:

If there are no measurements or observations available for an exact location, then the estimated conditions in this report are based on all available meteorological measurements and observations which have been correlated on the routine charts prepared by Met Éireann.

Appendix 7.15 Sunrise/Sunset Kinsale 7 November 2021 (tidetimes.co.uk)

Kinsale Tide Times

Kinsale tide times are listed below, including sunrise and sunset times, moon rise and moonset times, and the current moon phase. Simply use the tide calendar to view tide times up to 6 days in advance.



Sunday 7th November, 2021

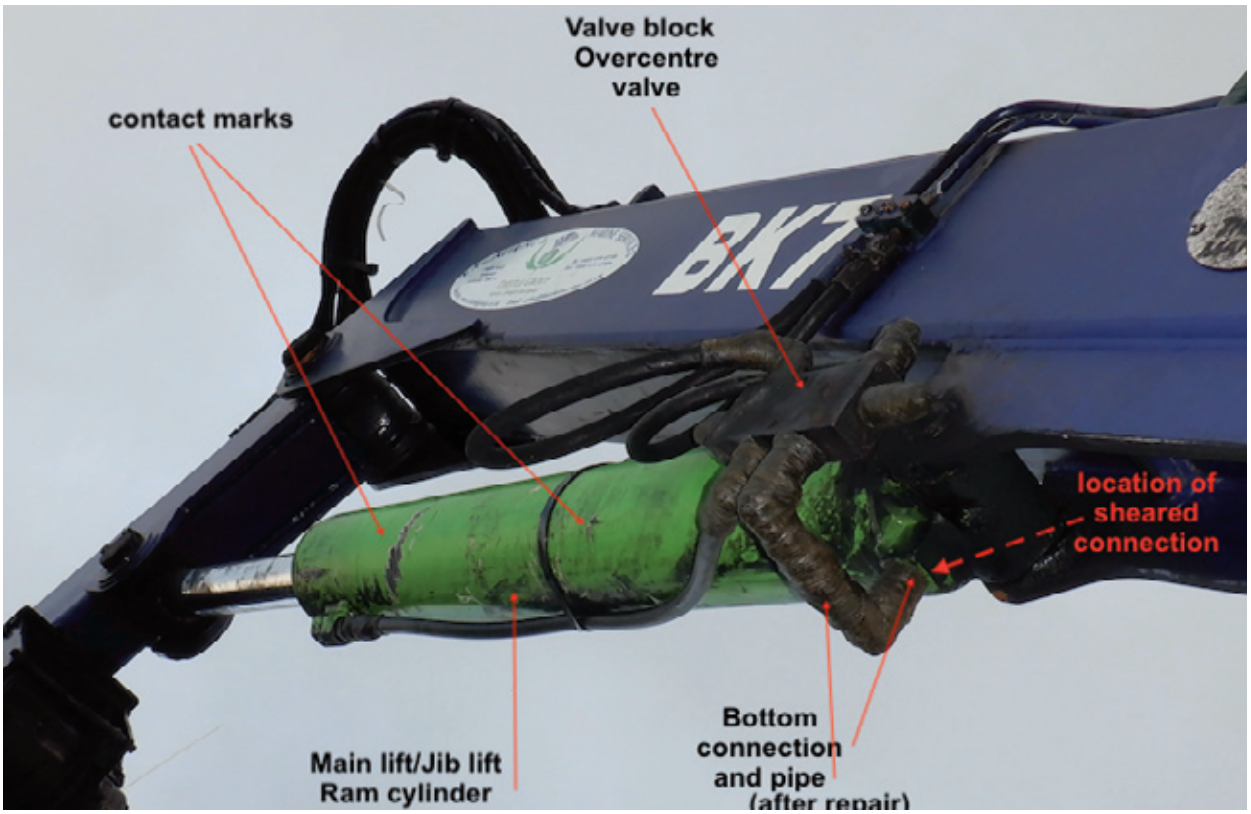
<<	November 2021					>>
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Crescent Moon

SUNRISE: 07:39 SUNSET: 16:56

MOONRISE: 12:14 MOONSET: 19:37

Appendix 7.16 Main Lift Cylinder – After Repairs



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, those amendments are made. When the Board is satisfied that the report has adequately addressed the issue in the observation, then no amendment is made to the report. The Board may also make comments on observations in the report.

Response(s) received following circulation of the draft report (excluding those where the Board has agreed to a request not to publish) are included in the following section.

The Board has noted the contents of all observations, and amendments have been made to the report where required.

8. MSA 2000 – SECTION 36 OBSERVATIONS RECEIVED

No correspondence was received on the draft of this report.

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