

MCIB

Marine Casualty Investigation Board
Bord Imscrúdú Taismí Muirí



**REPORT INTO AN INCIDENT
INVOLVING THE
'FV DILLON OWEN'
OFF ARDGLASS HARBOUR
23rd OCTOBER 2019**

**REPORT NO. MCIB/295
(No.5 OF 2020)**

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

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

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

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

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



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Glossary of Abbreviations and Acronyms

CGU	Coast Guard Unit
CJC filter	Combined pump and fuel/water filter separator
DCPSO	Duty Counter Pollution and Salvage Officer
GA	General Arrangement
LCF	Location of Centre of Flotation
MCA	Maritime and Coastguard Agency
MRCC	Marine Rescue Coordination Centre
RCC	Rescue Coordination Centre
NMOC	Network Manager Operations Centre
S.I.	Statutory Instrument
UK ARCC	United Kingdom Aeronautical Rescue Coordination Centre
UTC	Coordinated Universal Time
kn	knots
ltr	litres
m	metres
t	ton

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1. SUMMARY

- 1.1 On the morning of the 23rd October 2019, the *'FV Dillon Owen'*, whilst approaching Ardglass Harbour, Northern Ireland, lost power and drifted onto rocks at Phennick Point. The five crewmembers were airlifted to safety. Attempts by RNLI lifeboats to tow the vessel were unsuccessful and the fishing vessel remained on the rocks pending a salvage operation. The *'FV Dillon Owen'* sank over the following days. The wreck was recovered and sent for demolition.
- 1.2 There were no injuries to the crew or pollution of the environment connected with this incident.

2. FACTUAL INFORMATION

The ‘*FV Dillon Owen*’ was a pelagic trawler fishing in the North Irish Sea immediately prior to the incident. The vessel had a fish catch on-board comprising herring and sprat and was due to offload the catch and refuel in Ardglass Harbour, Northern Ireland on the 23rd October 2019.

2.1 Vessel Details

Name:	‘ <i>Dillon Owen</i> ’.
Official Number:	404216.
Type:	Fishing Vessel.
Registration:	S.24.
IMO Number:	9456654.
Port of Registry:	Skibbereen.
MMSI:	250000956.
Builder:	RIGA Shipyard, Riga, Latvia. Fitted out at VEST VAERFTET ApS. Hvide Sande, Nordhavnskej, Denmark, Yard No. 263.
Year Built:	2007.
Class:	Bureau Veritas.
Notation:	1+Hull fishing vessel, unrestricted navigation. Safety Equipment: complies with S.I. (2007) 640 Merchant Shipping (Safety of Fishing Vessels) (15-24 metres) Regulations 2007.
Length OA:	23.20 metres (m).
Registered length:	19.80 m (ITTC-69).
Tonnage:	272 tons (T).
Flag:	Ireland.

FVSA Certification:

Fishing Vessel Safety Certification - Declaration Survey.

Date of Issue: 27 September 2019.

Expiry Date (interim): 31 March 2020.

Date of Expiry (full): 01 November 2020.

2.1.1 Stability book information:

The Shelter Deck is the freeboard deck.

Scantling draft = 5.00 m above Baseline.

Loading Condition nr. C 11: Arrival in Port (pelagic) - full catch, 10% consumables:

- Draft at the Location of Centre of Flotation (LCF) 5.060 m.
- Draft to underside of keel 5.737 m.

Sailing State Condition 11: Arrival in Port (pelagic) - maximum catch:

- Draft forward 4.872 m.
- Draft aft 5.195 m.

2.1.2 Stability book information for Sailing Condition 11 is closely comparable with the draft of 'FV Dillon Owen' when the vessel approached Ardglass Harbour which was reported to be approximately:

- Draft forward 4.8 m.
- Draft aft 5.2 m.

(see Appendix 7.6 Stability Notes - 'FV Dillon Owen'. Fig.10 and Fig.11).

2.2 Crew Details

The 'FV Dillon Owen' was operating with a crew of five including the Skipper.

The Skipper is in possession of a valid second-hand Full Certificate of Competency issued in 2014.

All five of the 'FV Dillon Owen' crew were regular employees of the owner and were familiar with the fishing vessel and its operating systems.

The five crewmembers were airlifted off the casualty vessel and landed shortly thereafter at Ardglass. Crewmembers were uninjured and did not seek medical attention. The following day the crew were repatriated home.

2.3 Voyage Particulars

2.3.1 The *'FV Dillon Owen'* was due to dock in Ardglass Harbour on the 23rd October to land the fish catch and refuel.

2.3.2 While there is no precise quantity of fish catch on-board it was reported that the *'FV Dillon Owen'* approached Ardglass Harbour with the fish holds (port and starboard) containing approximately three quarters full of herring while the centre fish hold contained approximately less than half full of sprat. The fish catch was kept in a refrigerated state by direct cooling with chilled seawater in the holds, the level of which was over and above the level of the fish in the hold. Therefore, the fish holds contained a mix of fish and seawater. It was reasonably deduced that the vessel was in excess of three quarters fully loaded when it grounded.

2.3.3 The *'FV Dillon Owen'* also had on-board approximately 5000 litres (lts) of fuel oil and was due to refuel whilst alongside Ardglass Harbour.

2.3.4 The on-board electronic navigation equipment or data relating to the vessel's position leading up to and subsequent to its loss of propulsion was not recovered with the wreck of the *'FV Dillon Owen'*.

2.3.5 Information from the *'FV Dillon Owen'* Automatic Identification System (AIS) track on the 23rd October 2019 was used to determine the vessel's course and speed from the time of its approach to Ardglass Harbour to the time of its grounding on Phennick Point.

(see Appendix 7.3 Ardglass Harbour and Approaches Fig.5).

2.4 Details of Incident Area

2.4.1 Ardglass Harbour (54° 16'N, 05° 36'W) is a fishing port on the northeast coast of Ireland, three miles northeast of St. John's Point and six miles south of the entrance to Strangford Lough. The harbour is approached from the Irish Sea, south of Phennick Point.

2.4.2 The harbour consists of a rocky inlet with an entrance channel approximately 100 m wide which faces southeast between the pier head of the harbour's South Pier and foul, rocky ground extending west from Phennick Point.

(see Appendix 7.3 Ardglass Harbour and approaches. Fig.3 and Fig.4).

2.4.3 The entrance is approached from the southeast direction keeping about midway between:

- South Pier head, (FL R 3S 5M) elevation 10 m (red flashing light with a period of 3 seconds, range 5 miles).
- Ardtole Beacon (Ardtole, BN yellow special purpose beacon shape pile) which marks the extremity of rocks extending from Phennick Point.

At night, an isophase (sectored) light (ISO WRG 4S 10-8M) on the North Pier 2.5 cables (0.25 nautical mile) northwest of the pier head of the South Pier, with a period of 4 seconds and a range of 8 miles, leads through the entrance clear of the dangers on the northeast side. Harbour authorities reported that the isophase light was operating correctly at the time of the incident.

2.5 Marine Casualty

This was a very serious marine casualty resulting in the loss of a ship. There were no injuries to crew or damage to the environment caused by this marine casualty.

2.6 Emergency Response

Note: all times are stated in UTC.

2.6.1 MRCC DUBLIN SITREP:

Assist UKARCC F/V Dillon Owen (UII2189/19) - SITREP One.

04:41Z UKARCC request R116 (CG Helicopter) to assist with FV aground off Ardglass.

04:44Z (CG Helicopter) R116 tasked.

05:41Z Belfast CG have flight watch.

05:57Z (CG Helicopter) R116 on scene.

07:23Z Casualties (FV Dillon Owen crew) handed over to local CGU at Ardglass (R116) proceeding to Belfast City Airport to refuel.

08:59Z (CG Helicopter) R116 comms with MRCC Dublin re-established south of Kilkeel.

09:28Z (CG Helicopter) R116 back at Base closing down.

2.6.2 Coordinating instructions were issued from Rescue Co-ordination Centre (RCC NMOC) Dublin, assisted by UK Aeronautical Rescue Co-ordination Centre (UKARCC).

UK Coast Guard units in Bangor, Belfast and Kilkeel, Northern Ireland were involved in the airlift of crew.

RNLI lifeboats in Newcastle and Portaferry were tasked to assist.

2.7 Environmental Pollution

2.7.1 Ardglass Harbour Master reported that there was no oil pollution resulting from this incident.

2.7.2 The UK Maritime and Coastguard Agency (MCA), Duty Counter Pollution and the Salvage Officer (DCPSO) reported that the vessel had on-board approximately 38 T of fish, 4 - 5000 litres (ltr) of diesel and a quantity of fishing gear. The fishing gear was stowed in net rooms and deemed unlikely to become loose or a hazard to wildlife. Some fish oil had escaped from the vessel but did not pose a risk. Also, flotsam, comprising an amount of fish and debris (tables, chairs, life raft etc.) had washed up on the rocks at Phennick Point. The fish were consumed by gulls and the debris cleared by responder teams ashore.

2.7.3 The salvors reported that approximately 8,000 litres of oil/water mix had been recovered prior to the wreck's recovery from the sea bottom. The fishing gear was recovered with the wreck.

2.8 Weather and Tide

2.8.1 Weather information from UKARCC (UIIN2189/19-SITREP one):

Weather on scene:

Wind: 5, SW.

Sea: Moderate.

Swell: Low wave.

Cloud Cover: Overcast.

SITREP Weather time: 23 0441 Z Oct 19.

2.8.2 Weather information provided by the UK Met Office:

Time	Wind Direction and Speed	Wave Direction	Height	Wind Sea Direction
04.00 hrs.	205° /22 knots (kn)	183°	1.5 m.	185°
05.00 hrs.	205° /22 kn.	183°	1.6 m.	184°
06.00 hrs.	203° /21 kn.	183°	1.7 m.	185°
07.00 hrs.	200° /22 kn.	182°	1.7 m.	183°

2.8.3 Tide information for Wednesday 23rd October 2019 at Ardglass, County Down, Northern Ireland:

Source: www.tidetimes.co.uk/Ardglass 20191023.

LOW TIDE: 00.00 HRS HEIGHT: 1.60 m.

HIGH TIDE: 06.26 HRS HEIGHT: 4.40 m. Flood range 2.8 m.

LOW TIDE: 12.37 HRS HEIGHT: 1.90 m.

HIGH TIDE: 18.55 HRS HEIGHT: 4.60 m.

All times UTC. (Coordinated Universal Time).

2.9 Fishing Vessel Details

2.9.1 The investigation into this incident included an examination of the ‘*FV Ardent*’, a pelagic trawler that was constructed at the same time by the builder VEST VAERFTET ApS and at the same yard using the same drawings (Project No. 262) as ‘*FV Dillon Owen*’ (Yard No. 263).

(see Appendix 7.5 VEST VAERFTET ApS GA drawing title block - Project 262 Fig.8.)

Therefore, it would be reasonable to assume that the general arrangement and fuel system would be similar if not identical between the two sister vessels ‘*FV Ardent*’ and ‘*FV Dillon Owen*’. Details from ‘*FV Ardent*’ fuel system were used for comparative purposes.

(see Appendix 7.4 Fuel Supply System Fig.7 and Appendix 7.1 Photograph No.7).

2.9.2 Hull Damage

The hull plating along the vessel’s starboard bilge keel at the round of the bilge, extending from approximately frame 6 forward to frame 25, was significantly

damaged and the plating ruptured in way of fuel tank No.4 adjacent to the keel cooler box. The keel cooler box bottom grid was missing and the keel cooler box bottom aperture through the hull significantly deformed. No.4 fuel tank was open to the sea through the ruptured plating.

The vessel's hull on the port side was not visible before or after the wreck was salvaged as the wreck was reported by the salvors as lying on its port side prior to its sinking and also while on the sea bottom. Likewise, the wreck was lying on its port side when recovered to the salvage barge. Salvors reported that hull damage to the port side was consistent with the wreck's contact with the rocks as it was sinking, followed by contact with the sea bottom prior to salvage.

The wheelhouse was found by salvors to be demolished and all contents dispersed by wave action prior to the vessel's salvage.

The General Arrangement (GA) drawing 'Below Maindeck' shows the layout plan of the engine room and fish holds. The GA drawing indicates that the engine room has a fuel bunker tank on its starboard side (No.4 bunker tank). The fuel Day Tank (daily service tank) is constructed at the engine room aft bulkhead extending into the steering flat. There are three fish holds (port, centre and starboard) immediately forward of the engine room. Hull damage to the starboard side extended from approximately frame 6 in the engine room along the length of the starboard fish hold to approximately frame 25.

(see Appendix 7.2 Grounding Damage - Position and Extent. Fig.1 and Fig.2).

Photographic evidence shows significant damage in the vicinity of the bilge keel, keel cooler and No.4 fuel tank.

(see Appendix 7.1 Photographs No.3, 4 & 5).

2.9.3 Fuel Supply System

The fuel supply system to the generator sets and the main engine on-board the 'FV Dillon Owen' was as follows:

The fuel Day Tank (capacity 2,500 ltr) supplied both generators and the main engine with diesel fuel through a common pipeline. The fuel Day Tank was continually topped up from any of the vessel's six bunker tanks through a combined pump and fuel/water filter separator ('CJC filter'). The function of the CJC filter was to remove contamination particles and water from the bunker fuel (CJC filter throughout capacity 400 litres per hour) and was operating continuously. At the time of the incident the CJC filter was reported to be pumping from No.4 bunker tank. (see Appendix 7.4 Fuel Supply System. Fig.6 and Fig.7)

During normal operation the Day Tank fuel contents overflowed back to No.4 bunker tank through a dedicated overflow pipe. This constant fuel recirculation

ensured the Day Tank was at its maximum level at all times and also ensured that the generators and main engines were continuously supplied with clean uncontaminated fuel. The fuel suction from the Day Tank to the main engine and generators was connected through a dedicated valve at the bottom of the tank situated immediately adjacent to the Day Tank fuel sampling/drain valve.

(see Appendix 7.4 Fuel Supply System and Appendix 7.1 Photograph No.7).

Both No.4 fuel bunker tank and the Day Tank were situated at the 'Below Maindeck' level, within the engine room and below the waterline (on the occasions when the vessel was in the loaded condition). This was the situation as the 'FV Dillon Owen' approached Ardglass Harbour.

(see Appendix 7.2 Grounding damage - position and extent - Fig. 2).

2.10 Safety Equipment

2.10.1 Safety Certification

The 'FV Dillon Owen' completed an Initial Survey in accordance with Regulation 7 of the Merchant Shipping (Safety of Fishing Vessels) (15-24 metres) Regulation 2007 (S.I. 640 OF 2007). An exemption certificate was not issued at this time. The Initial Survey Certificate is dated the 27th September 2019 and its full term expiry date is the 1st November 2020.

2.10.2 The 'FV Dillon Owen' completed an Interim Fishing Vessel Safety Certificate survey in accordance with Regulation 7 of the Merchant Shipping (Safety of Fishing Vessels) (15-24 metres) Regulation 2007 (S.I. 640 OF 2007). The Certificate of Compliance was issued under the Merchant Shipping (Safety of Fishing Vessels (15-24 Metres) Regulations 2007 (S.I. 640 of 2007). The survey showed that the condition of the hull, machinery and equipment, as defined in the above regulations were in all respects satisfactory and that the vessel complied with the applicable requirements. The certificate was issued on the 27th September 2019 and was valid until the 31st March 2020. An Exemption Certificate had not been issued.

2.10.3 The Safety Certificate of Compliance was supplemented by a record of equipment including anchoring equipment. Anchoring equipment was included in the survey as prescribed in S.I. 640 of 2007, Regulation 27(2), which states the statutory requirements for anchor equipment as follows:

'Regulation 27. (1)(a) Each vessel shall be provided with anchor equipment designed for quick and safe operation which shall consist of an anchor, anchor chains or wire ropes, stoppers and a windlass or other arrangements for dropping and hoisting the anchor and for holding the vessel at anchor in all foreseeable service conditions.

Section 27 (2)(b) The rules of a recognised organisation or other such body

acceptable to the Minister may also be used.'

The Bureau Veritas Rules for the Classification of Steel Ships - Chapter 15 - Fishing Vessels - Part D - Section 3 Paragraph 5.2.4 states:

'When Chain Cables are replaced by trawl warps, the anchor is to be positioned on the forecastle deck so that it may be readily cast after it has been shackled to the trawl warp. Chocks or rollers are to be fitted at suitable locations, along the path of the trawl warps, between the winch and the mooring chocks.'

2.10.4 Anchoring equipment and arrangement

The '*FV Dillon Owen*' had on-board two stockless bower anchors reported to be of equal size, approximately 200 kg each. The main or primary anchor was stowed in a housing at the shelter deck guardrail, port side, forward of the wheelhouse. The primary anchor had a length of chain attached which was stowed in a purpose made bin clipped to adjacent guardrails. The anchor was secured from accidental release with a locking device. The primary anchor was rigged for quick release but required a line to be secured to the free end of the anchor chain before deployment as the anchor chains were not normally connected to the vessel with an anchor line or wire.

(see Appendix 7.1 Photographs No 1, No.2. & No.6).

The vessels second anchor was reported to have been stowed port side aft on the shelter deck, of similar size as the primary anchor with a length of chain attached, the chain being stowed in a bin adjacent to the anchor. Deployment of the second anchor required mechanical means to lift and release the anchor equipment. A line was required to be secured to the free end of the anchor chain before deployment. The '*FV Dillon Owen*' was not fitted out with an anchor hawse pipe or dedicated anchor windlass.

(see Appendix 7.1 '*FV Dillon Owen*' Photograph No.2).

2.10.5 Preparing and releasing the primary anchor required the following crew actions:

- A wire of suitable strength (either mooring, towing or trawl wire) to be secured to the free end of the anchor chain.
- The free end of the anchor wire would be led to a strong point at the bow of the vessel and secured.
- Unscrewing and releasing the anchor retaining clip (locking device).
- Allowing the anchor to fall away from its stowed position.

3. NARRATIVE

- 3.1 The 'FV Dillon Owen' was approaching Ardglass Harbour in the early hours of the 23rd October 2019. The Skipper was on watch at the helm in the wheelhouse while four crewmembers were resting in their cabins. Immediately prior to entering the harbour approaches the Skipper called two of the crew (Crewmember No.1 and Crewmember No.2), to make preparations for going alongside and landing the catch. The other two crewmembers remained resting in their cabins.

The vessel AIS track shows the fishing vessel's position and speed on its approach to Ardglass Harbour between 03.51 hrs (UTC) to its last position before the harbour entrance at 03.54 hrs (UTC) when its speed was 4.7 knots (kn).

(see Appendix 7.3. Fig.5 'FV Dillon Owen' - AIS track).

- 3.2 The Skipper stated that the radar and chart plotter were operating and in use. During the approach the Skipper was not conscious of or did not make reference to the leading sectored lights from the harbour's North Pier. The Skipper stated that the vessel was slightly to starboard of the safe channel but he was of the opinion there was enough depth of water to continue to make entrance of the harbour. No written or formal passage plan/pilotage plan was used during the approach.
- 3.3 Crewmember No.1 and Crewmember No.2 were below deck in the maindeck making preparations for discharging the fish catch. The Skipper and Crewmember No.1 and Crewmember No.2 felt the vessel hit an unknown object with a large 'bang' and some scraping movement. The point of impact on the vessel was not known to the crew but thought to be on the starboard side. The vessel's precise chart position or the exact time of impact was also not known. The vessel did not become fast, suggesting that the vessel hit an unknown object a glancing blow.
- 3.4 Crewmember No.1 immediately went up to the wheelhouse to join the Skipper and to ascertain the vessel's situation. Crewmember No.2 immediately went below decks to check the underwater spaces for floodwater commencing with the forward space, sonar compartment and the engine room in that order. No flooding was found in these compartments and everything appeared normal.
- 3.5 Immediately after the impact the Skipper instinctively, and possibly while in shock, turned the vessel about and was steering away from the harbour entrance into deeper water. The AIS track for the 'FV Dillon Owen' shows the vessel had turned about by 04.06 hrs (UTC) and was heading in a south easterly direction at 3.5 kn. The vessels AIS track south continued until approximately 04.09 hrs (UTC) when the AIS track shows the vessel turned to port and at 04.11 hrs (UTC) the vessel was heading north at 1.5 kn. Sometime between the time of impact and while the vessel was on a southerly course the vessel's on-line generator stopped and the crew experienced an electrical blackout.

- 3.6 When the vessel blacked out Crewmember No.1 immediately proceeded from the wheelhouse to the engine room to start the standby generator, where he met with Crewmember No.2. Starting the standby generator restored electrical power and light. However, shortly after the standby generator shut down, as did the vessel's main engine, resulting in loss of both electrical power and propulsion power on-board the vessel and the 'FV Dillon Owen' became adrift in a dead ship condition. The AIS track shows that on the 17th of May 2019 the vessel's speed reduced from 5.3 kn at 04.09 hrs (UTC) to 1.5 kn at 04.11 hrs (UTC) by which time the vessel's course had changed from south to a northerly direction.
- 3.7 The vessel's emergency light systems tripped in and Crewmember No.1 and Crewmember No.2 were able to make checks in the engine room of the fuel system supply to the main engine and generators. They found that opening the fuel Day Tank sampling valve produced copious amounts of water at an abnormally high pressure instead of diesel fuel oil as would be normal. Opening the drain valve on the inline CJC fuel filter/water separator also produced large amounts of water. Crewmember No.1 deduced that the fuel supply system was contaminated with water, which was the reason the generators and main engine had stopped.
- 3.8 The five members of the crew attempted to release the fish trawl doors to act as an anchor and arrest the vessel's drift. However, their attempts were thwarted by the lack of power to operate the winch required to lift and unshackle the heavy trawl doors in order to cast the doors overboard. It is not clear why the crew did not attempt to connect up and release the primary anchor. Crewmember No.2 stated there was no time to connect up and release the anchor overboard.
- 3.9 According to the AIS track the 'FV Dillon Owen' grounded on rocks under Phennick Point at approximately 04.36 hrs (UTC). A 'Mayday' was sent off by the Skipper. Belfast Coast Guard responded and requested Newcastle and Portaferry RNLI lifeboats to launch and assist. Irish Coast Guard rescue helicopter R116 was tasked as were Newcastle, Portaferry and Kilkeel Coast Guard units.

Portaferry RNLI lifeboat arrived on-scene at 06.03 hrs (UTC) and Newcastle RNLI lifeboat at 06.25 hrs (UTC). Both lifeboats attempted to tow the 'FV Dillon Owen' off the rocks. Weather conditions worsened and attempts by the two lifeboats were unsuccessful.

- 3.10 At this time Crewmember No.1 stated that he found water in the crew accommodation issuing from the floor scupper drains. Due to the worsening weather conditions and the danger of the fishing vessel sinking the five crew were airlifted by Coast Guard rescue helicopter R116 and landed at Ardglass at 07.23 hrs (UTC). Both RNLI lifeboats were stood down and returned to their stations. The 'FV Dillon Owen' remained in position aground but subsequently slipped into deeper water and sank over a period of the next eight days.

4. ANALYSIS

4.1 The first grounding event

The entrance to Ardglass Harbour is narrow with rocks and foul ground extending from Phennick Point westwards to the north side of the channel traversing around the harbour's South Pier. Ardtole Beacon (unlit) is located on top of rocks with a shelf of shallow water (0-2 m below chart datum) extending approximately 65 m to the south of Ardtole Beacon and ending at a steep decline to deeper water (4 m below chart datum).

- 4.2 The AIS track for the '*FV Dillon Owen*' between 03.51 hrs (UTC) and 03.54 hrs (UTC) shows the vessel approaching Ardglass Harbour and reducing speed from 6.1 kn to 4.7 kn at 03.54 hrs (UTC). The height of tide at 04.00 hrs (UTC) was approximately 3.5 m above chart datum. Keeping within the white arc light of the isophase (sectored) North Pier light would give a depth of water of 7 m in the approach channel around the South Pier. On the starboard side of this approach channel, south of Ardtole Beacon the depth of water shoals quickly up to 3.5 m - 5.5 m depth over the shallow water shelf extending south from the beacon.

(see Appendix 7.3. Fig.4 Ardglass Harbour and Approaches (chart) and Fig.5 '*FV Dillon Owen*' - AIS track.)

- 4.3 The draft of the '*FV Dillon Owen*' was approximately 4.8 m (Forward) to 5.2 m (Aft) in the loaded condition. If the vessel's draft was in this loaded condition it would have been safe practice to ensure the vessel's approach to Ardglass Harbour was close to the centre of the entrance channel while taking cognizance of the isophase (sectored) North Pier light. The AIS track at 03.54 hrs (UTC) shows the vessel's approach was from the south east at 4.7 kn. The Skipper stated that the vessel was to starboard of the entrance channel. He was not observing the sectored light from the North Pier and he was of the opinion the depth was sufficient to enter the harbour. If the '*FV Dillon Owen*' was indeed to starboard side of the entrance channel the vessel would be at risk of crossing the shallow water shelf south of Ardtole Beacon and grounding.
- 4.4 Hull damage from the first grounding event did not cause flooding into compartments immediately accessible by the crew. Checks by Crewmembers No.1 and No.2 found there was no flooding into the vessel's accommodation, forward compartments or engine room. However, the impact at the grounding was sufficiently severe to cause alarm for the crew and for the Skipper to turn the vessel away from the perceived danger of the, as yet unknown, object and back out in the direction from which the vessel came.
- 4.5 Photographs of the vessel's starboard side shows hull plating damage below the waterline in line with the bilge keel extending lengthways (approximately 12 m long) between frames 6 to frame 25. The damaged plating between frames 8 to

frame 14 are integral to No.4 fuel bunker tank and frames 14 to frame 25 are integral to the starboard fish hold. No.4 fuel tank opened to the sea when the tanks hull plating adjacent to the bilge cooler inlets was ruptured at frame 13 to frame 14.

(see Appendix 7.1. 'FV Dillon Owen' Photographs No.4 and No.5).

The evidence that no water was found in the ships spaces at this time indicates that seawater ingress from the first grounding event was contained to No.4 fuel bunker tank and starboard fish hold only.

(see Appendix 7.2 'Grounding damage - Position and Extent' Fig.1 and Fig. 2).

It would be reasonable to deduce that the first grounding event occurred very shortly after 03.54 hrs (UTC).

4.6 The loss of power event

- 4.6.1 After the first impact or grounding event shortly after 03.54 hrs (UTC) the Skipper and crew reported that the vessel turned about and headed away from the harbour. This is consistent with the AIS track which shows the vessel heading in a southerly direction between 04.06 hrs (UTC) and 04.09 hrs (UTC) and with its speed increasing from 3.5 kn to 5.3 kn. The AIS track is also consistent with the account given by the Skipper and Crewmembers No.1 and No.2 directly following the first grounding event.
- 4.6.2 The second electrical power failure and the subsequent loss of propulsion power event suggest that the seawater flooding into No.4 fuel bunker tank and the practice of continuous recirculation of fuel from No.4 fuel tank to the Day Tank quickly resulted with inundation of seawater into the fuel pipes supplying fuel to the diesel generators and main engine. This hypothesis is supported by Crewmember No.1 who reported that there appeared to be significantly more pressure than normal in the fuel Day Tank when he opened the sampling valve to test the tank contents and he saw an amount of water issuing out of the sample valve and from the CJC filter drain valve at that time. The hydrostatic pressure of the sea quickly filled and pressurised the ruptured No.4 fuel tank while the CJC filter pump continued to operate, pumping sea water into the Day Tank (until the time of the electrical blackout). The normal overflow of diesel from the Day Tank into No.4 tank would be stopped by the hydrostatic back pressure from No.4 fuel tank. The head of pressure within the Day Tank would thereby increase to a higher head of pressure than when normally overflowing into No.4 fuel tank. Seawater entering the Day Tank would displace the diesel fuel from the lower level of the tank bottom (diesel fuel having a lower specific gravity and therefore lighter than seawater).

- 4.6.3 At 400 litre/hour pumping rate the CJC filter would pass approximately 100 ltr of seawater from the flooded No.4 fuel bunker tank into the Day Tank in the 15 minutes between the initial grounding and the vessel's electrical failure and dead ship condition. Having regard to the proximity of the fuel suction pipe supplying the generator and main engine diesel engines to the lowest level of the Day Tank the water contamination of the fuel supply system would follow shortly after water entered the bunker tank. A small quantity of water into the Day Tank would be sufficient to significantly contaminate the fuel supply lines and quickly stop the generator and main engine.
- 4.6.4 The AIS track of the vessel shows an abrupt change of course south to north between 04.09 (UTC) and 04.11 hrs (UTC) coincident with a drop in speed from 5.3 kn to 1.5 kn. This course change and speed drop is consistent with the crews account of the electrical blackout and the loss of power and speed when the vessel became a 'dead ship' and started drifting.

4.7 The second grounding event

The crew of the *'FV Dillon Owen'* attempted to arrest the vessel's drift towards the shore by using the trawl doors as an anchor. However, this action required the trawl door to be lifted off its securing clips which could only be accomplished by using a powered hydraulic winch. The vessel was in a dead ship condition with no power available and this attempt was unsuccessful.

- 4.7.1 After the vessel grounded at Phennick Point and prior to being airlifted off the vessel Crewmember No.1 saw water flooding up into the crew accommodation from the accommodation scuppers. This would indicate the vessel was seriously holed from its grounding on Phennick Point and was effectively sinking at this point in time.

5. CONCLUSIONS

- 5.1 This incident was a sequence of three distinct events: the initial grounding; the loss of power; and finally the second grounding and sinking of the *'FV Dillon Owen'*.

The initial grounding at the entrance to Ardglass Harbour had a number of causative factors:

- Entering Ardglass Harbour two hours before high tide in a loaded condition.
- Entering Ardglass Harbour without a formal passage/pilotage plan.
- Failure to observe the harbour's navigation aids.
- The watchkeeper's loss of spatial awareness as to the position of the entrance channel with reference to the safe depth of water.

- 5.2 The magnitude of the vessel's impact (as reported by the crew) shortly after 03.54 hrs (UTC), the vessel's AIS track of speed and position and the photographic evidence of damage, indicates that the vessel struck the ground on its starboard side, at or on the shallow water shelf south of Ardtole Beacon, with sufficient force to rupture the hull plating of No.4 fuel tank and open the tank to the sea. There is no evidence to show that the impact of the first grounding event caused the vessel to be fatally damaged at this time.

- 5.3 The rupture of No.4 fuel tank immediately filled the tank with seawater and the practice of continually circulating fuel oil through the CJC filter in turn contaminated the daily service tank supplying fuel to the main engine and the generators, causing the vessel to lose electrical and propulsion power. If the transfer and recirculation of fuel from the bunker tank through the CJC unit into the Day Tank had been stopped as the vessel approached shallow waters and restricted navigation, or if a procedure was in place to stop this pump should a suspected grounding event occur, then the Day Tank fuel contents would not have been contaminated and the vessel would not have lost power after the first grounding.

- 5.4 The causal factor leading to the vessel's second grounding on Phennick Point was the failure of the crew to deploy the primary anchor as the prevailing wind sea direction drove the powerless vessel towards the north shoreline and Phennick Point. The depth of water here was shallow enough to drop an anchor in order to stop the vessel's drift. By first focusing on attempts to release the trawl doors the crew lost valuable time and indicates they did not understand the recommendation contained within S.I. No. 640 of 2007 Merchant Shipping (Safety of Fishing Vessels)(15 - 24 metres) Regulations 2007, Schedule 2 'Recommended Practice for Anchor and Mooring Equipment'. Paragraph 17, which states that 'the use of otter boards/trawl doors should only be used if the vessel has lost its anchors'. The *'FV Dillon Owen'* had not lost its anchors and timely release by the crew of the vessel's primary anchor at this time would likely have averted the vessel's second grounding at Phennick Point.

- 5.5 The grounding at Phennick Point caused fatal damage to the 'FV Dillon Owen'. The vessel settled onto the rocks at this time and due to worsening weather and sea conditions slipped and sank into deeper water.

6. SAFETY RECOMMENDATIONS

- 6.1 The Minister for Transport, Tourism & Sport should issue a Marine Notice to remind vessel owners and operators to ensure all navigation is planned in adequate detail and with contingency plans where appropriate.
- 6.2 The Minister for Transport, Tourism & Sport should issue a Marine Notice stating that fishing vessel owners and operators develop contingency plans and procedures and conduct emergency exercise drills to prepare for a grounding event or collision incident.
- 6.3 Where owners and operators of fishing vessels have an anchoring arrangement whereby chain cables are replaced by trawl warps, that crews ready anchors for deployment when entering or leaving port by connecting the trawl warp to the free end of the primary anchor chain.

7.	APPENDICES	PAGE
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7.6	Stability Notes - <i>'FV Dillon Owen'</i>	38

Appendix 7.1 Photographs



Photograph No.1 - 'FV Dillon Owen'.

Appendix 7.1 Photographs



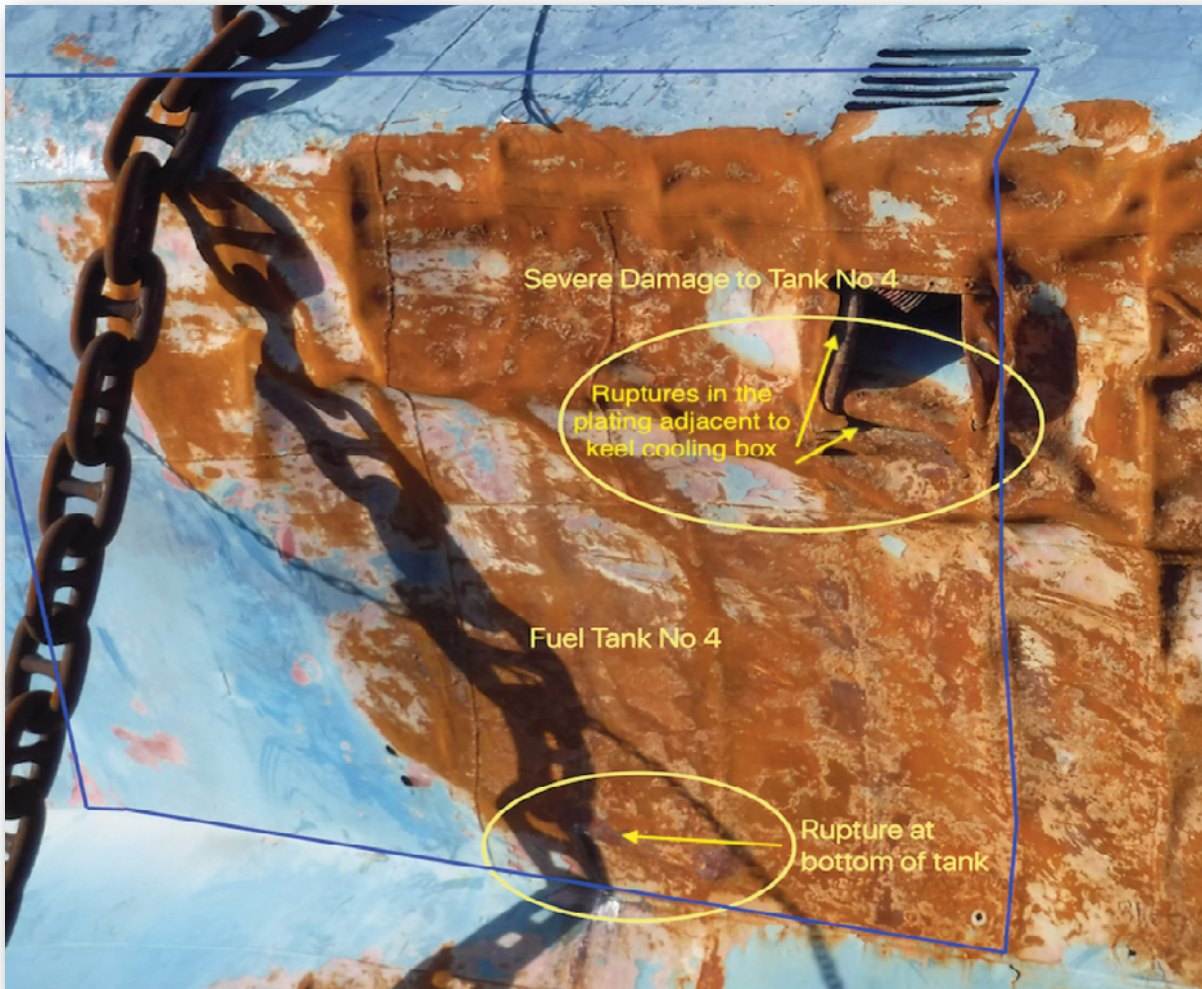
Photograph No.2 - 'FV Dillon Owen' wreck as lifted off the seabed.

Appendix 7.1 Photographs



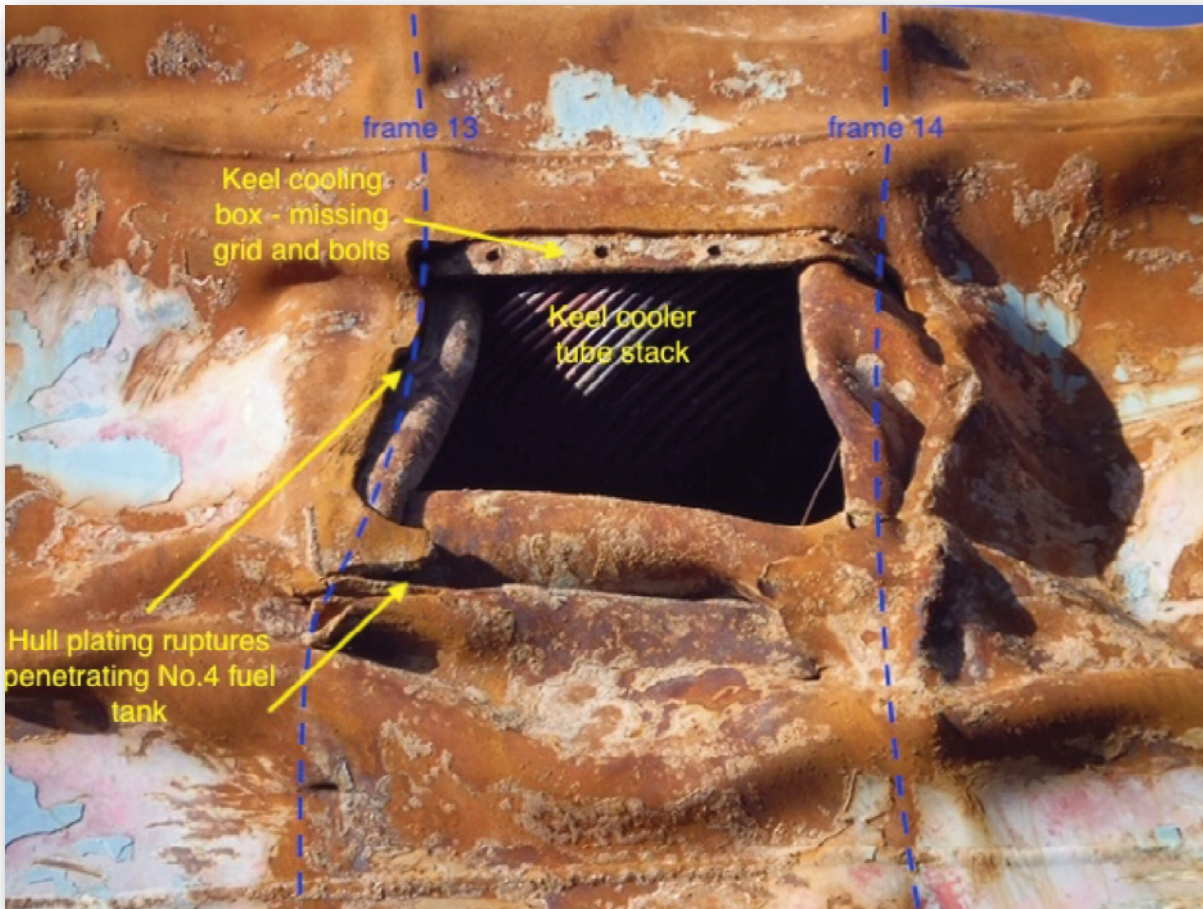
Photograph No.3 - Position of No.4 fuel bunker tank located between frames 6 to 14.

Appendix 7.1 Photographs



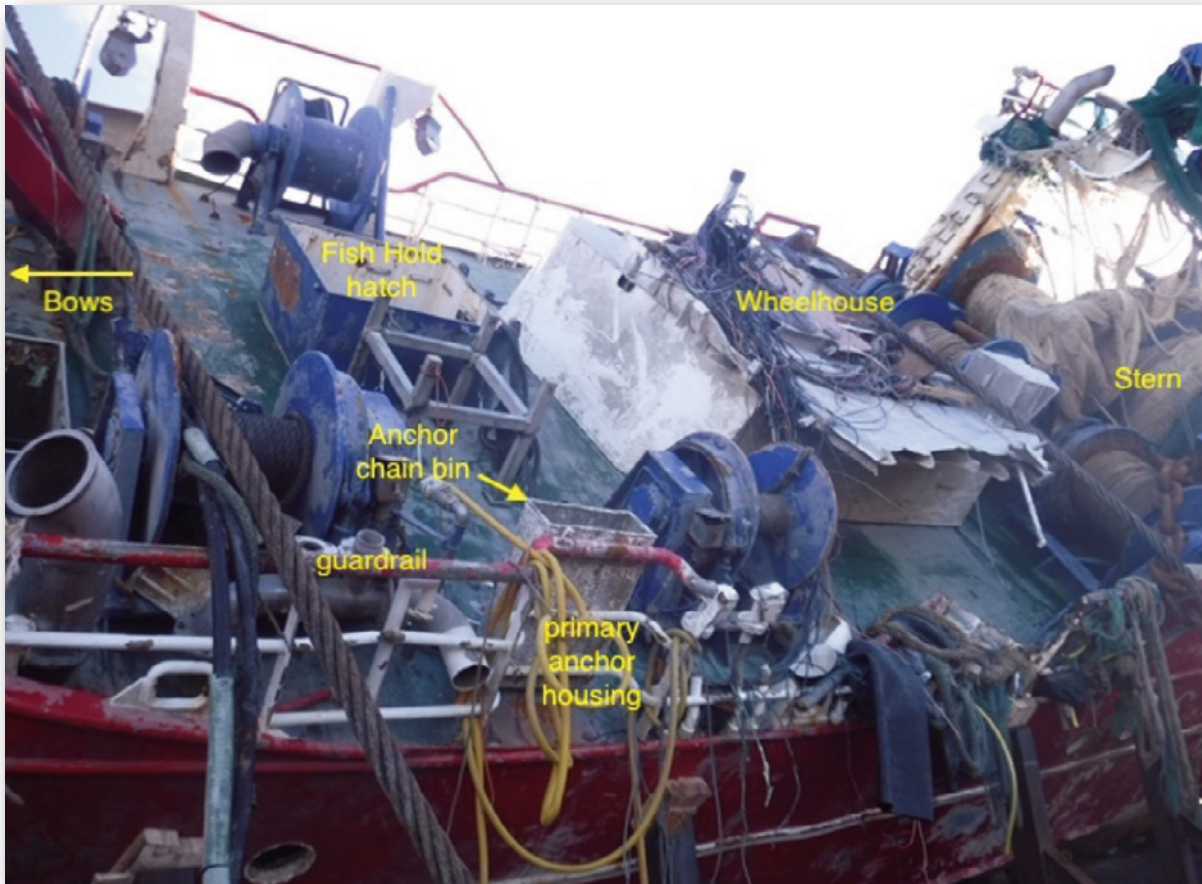
Photograph No.4 - Damage to No.4 fuel tank showing hull plating rupture adjacent to the keel cooler box and at the bottom of the fuel tank.

Appendix 7.1 Photographs



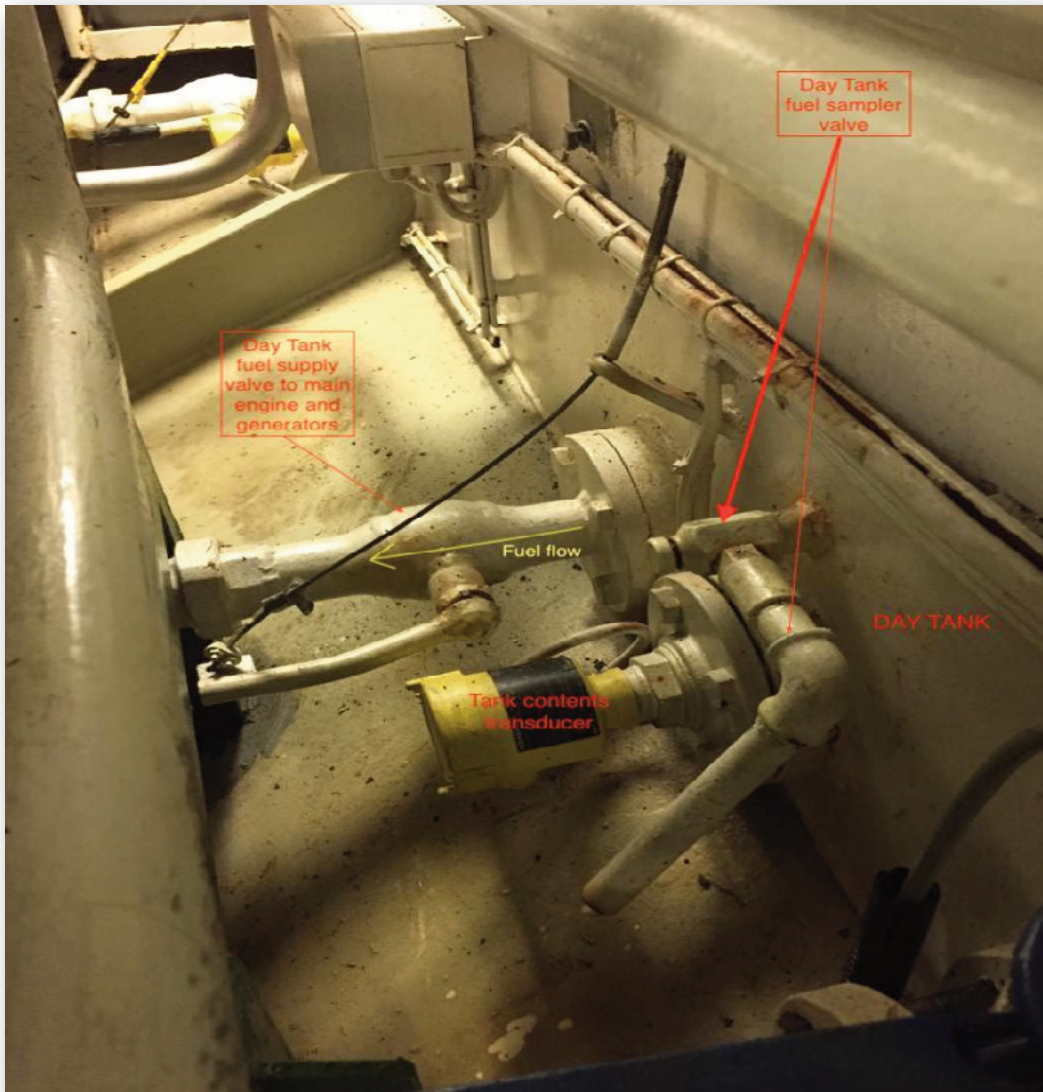
Photograph No.5 - Hull plating rupture in way of No.4 fuel tank adjacent to the Keel.

Appendix 7.1 Photographs



Photograph No.6 - Main (Primary) anchor arrangement.

Appendix 7.1 Photographs



Photograph No.7 - Fuel Day Tank bottom valves ('FV Ardent') Cooler Box.

APPENDIX 7.2

Appendix 7.2 Grounding Damage - Position and Extent

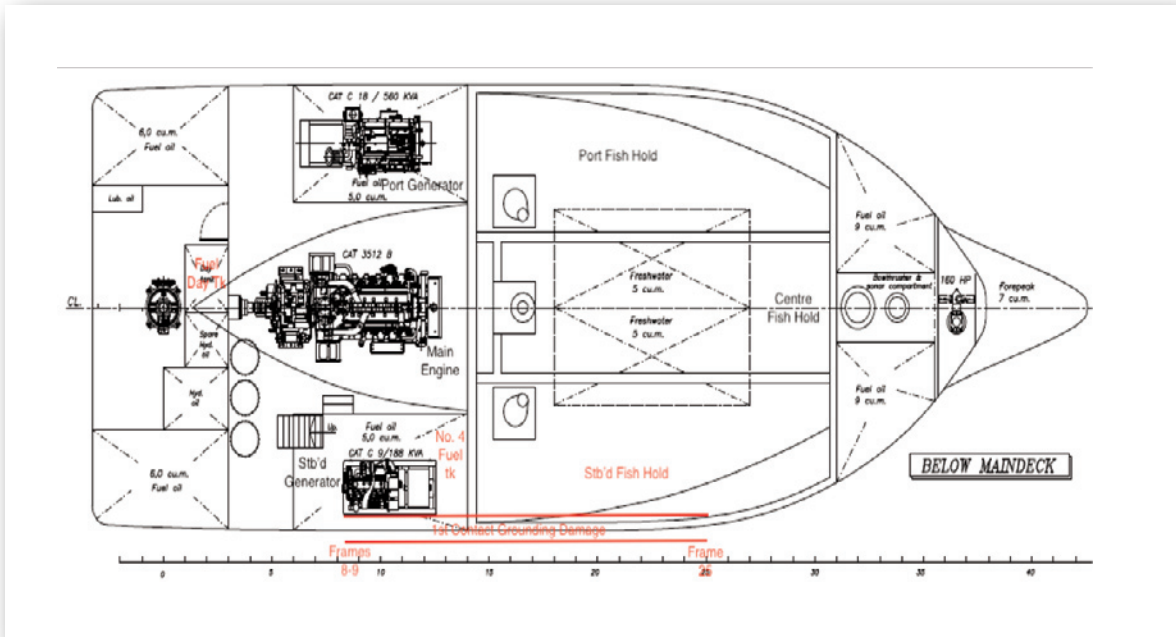


Fig.1. Orientation of hull damage to the vessels compartment(s) (Plan).

Appendix 7.2 Grounding Damage - Position and Extent

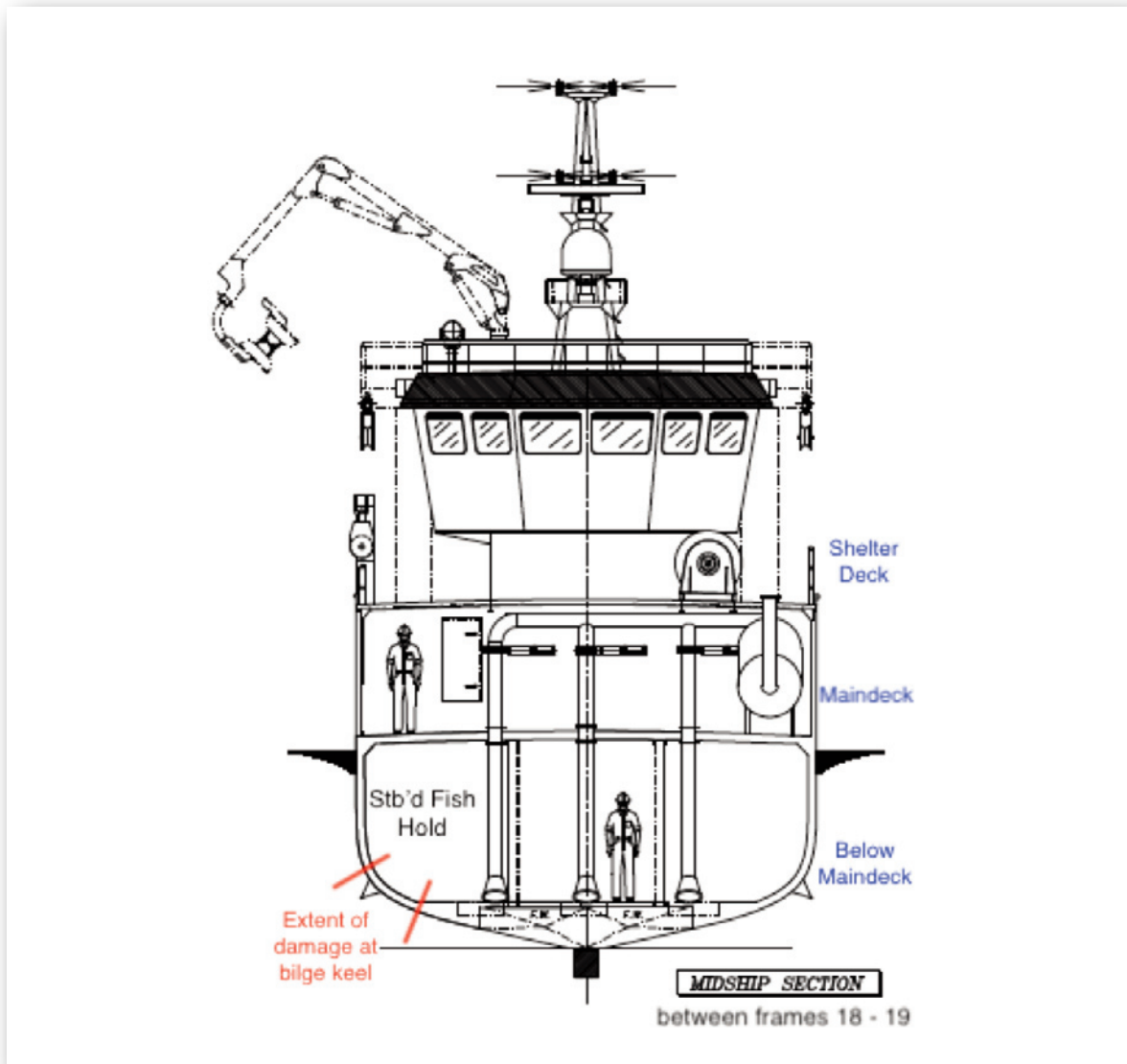


Fig.2. Orientation of hull damage to the vessels compartment(s) (Elevation).

Appendix 7.3 Ardglass Harbour and Approaches

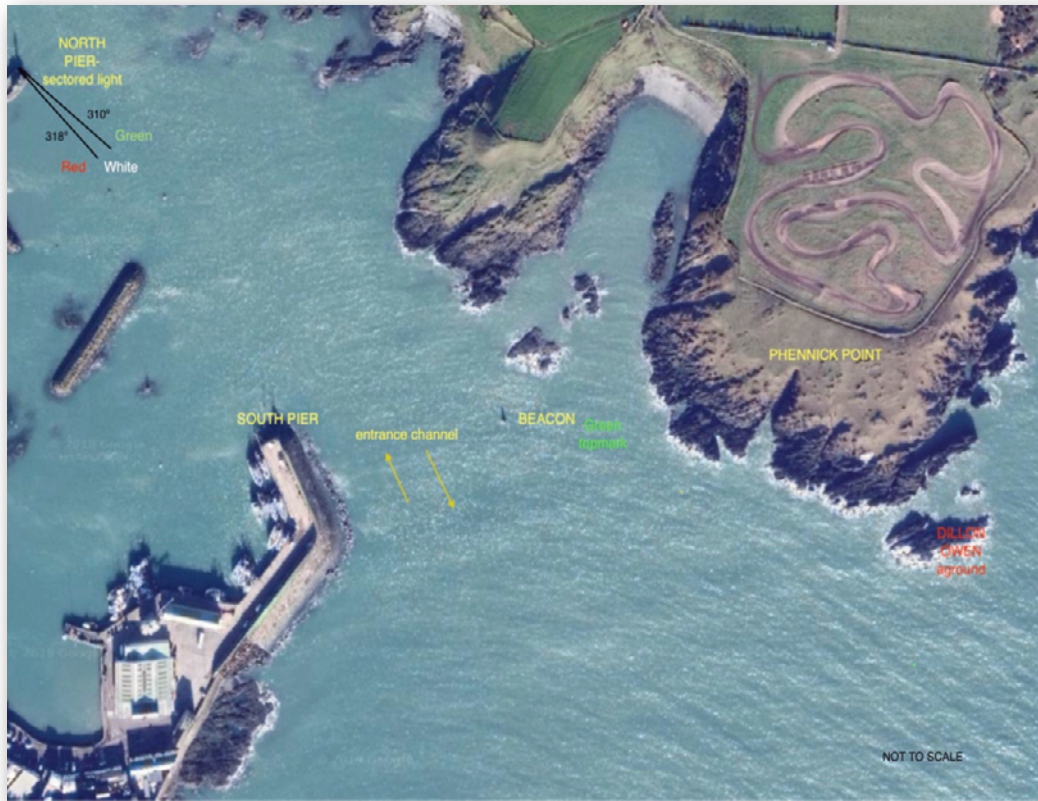
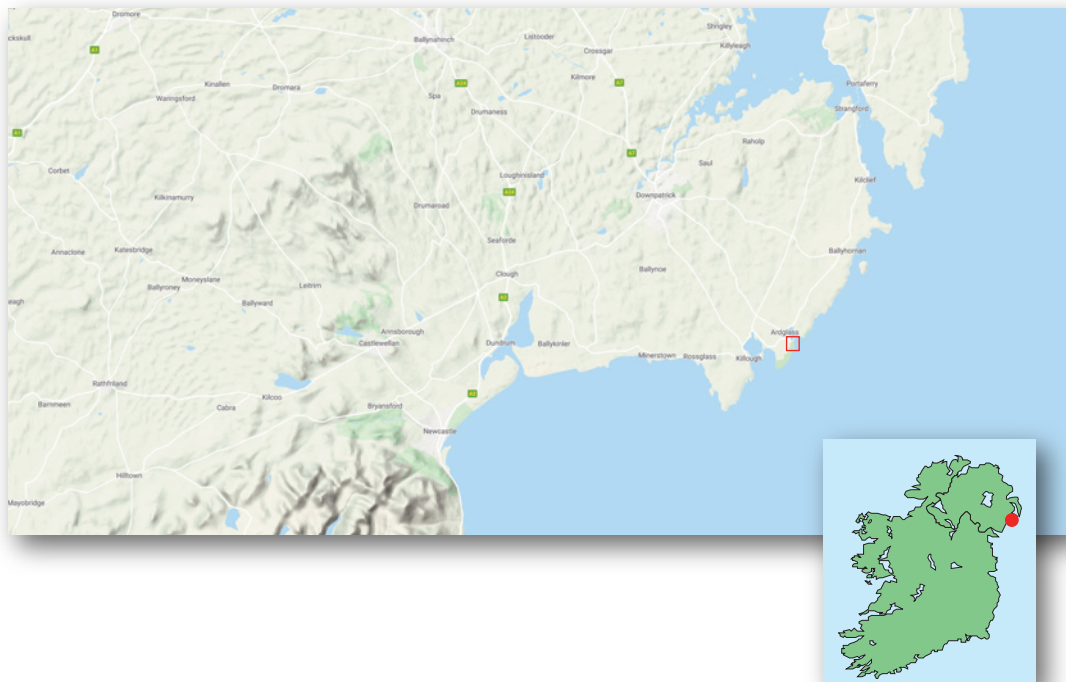


Fig.3. Ardglass Harbour and Approaches (satellite image).

Appendix 7.3 Ardglass Harbour and Approaches



Fig.4. Ardglass Harbour and Approaches (chart).



Appendix 7.3 Ardglass Harbour and Approaches

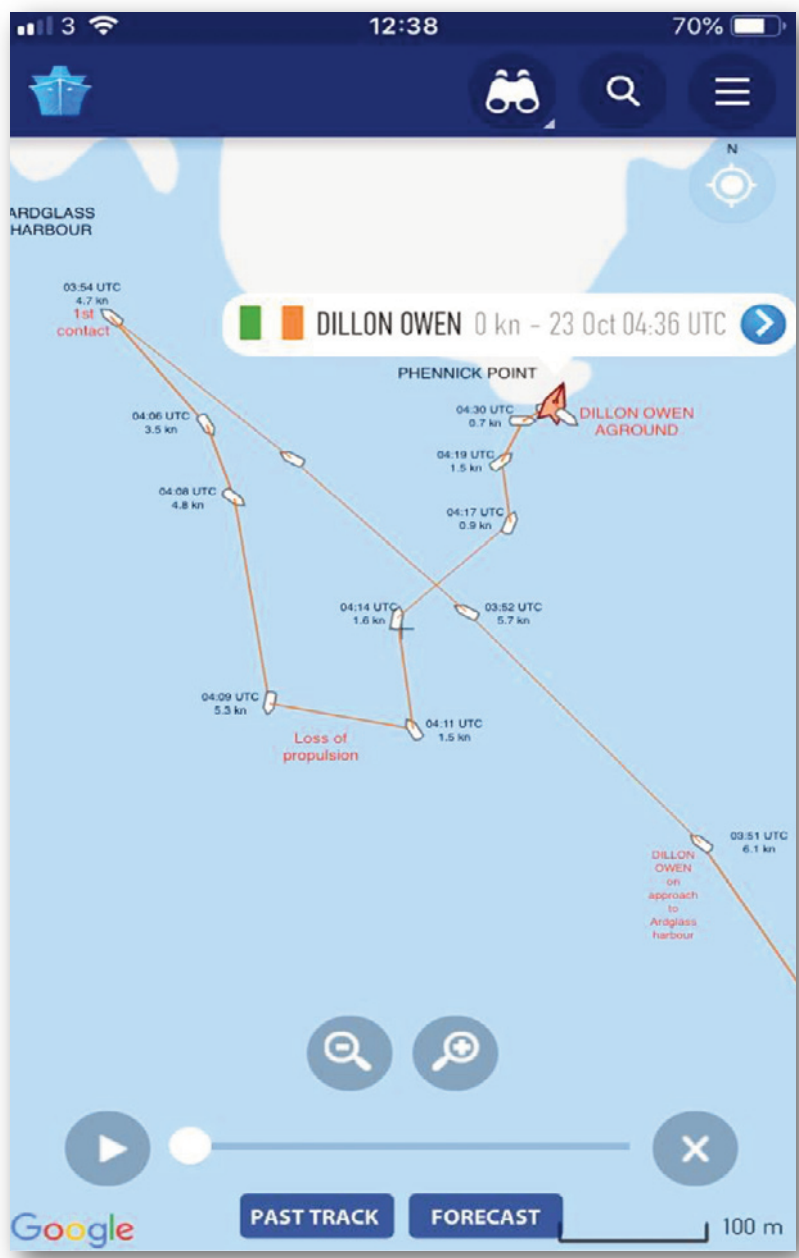


Fig.5. 'FV Dillon Owen' - AIS Track.

Appendix 7.4 Fuel Supply System

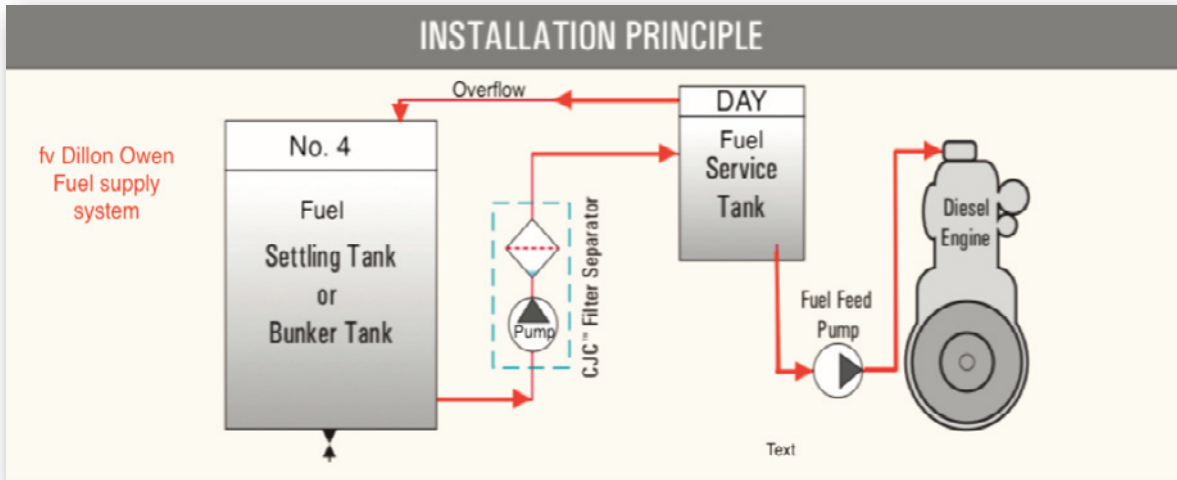


Fig.6. Fuel Supply and CJC Filter system.

Appendix 7.4 Fuel Supply System

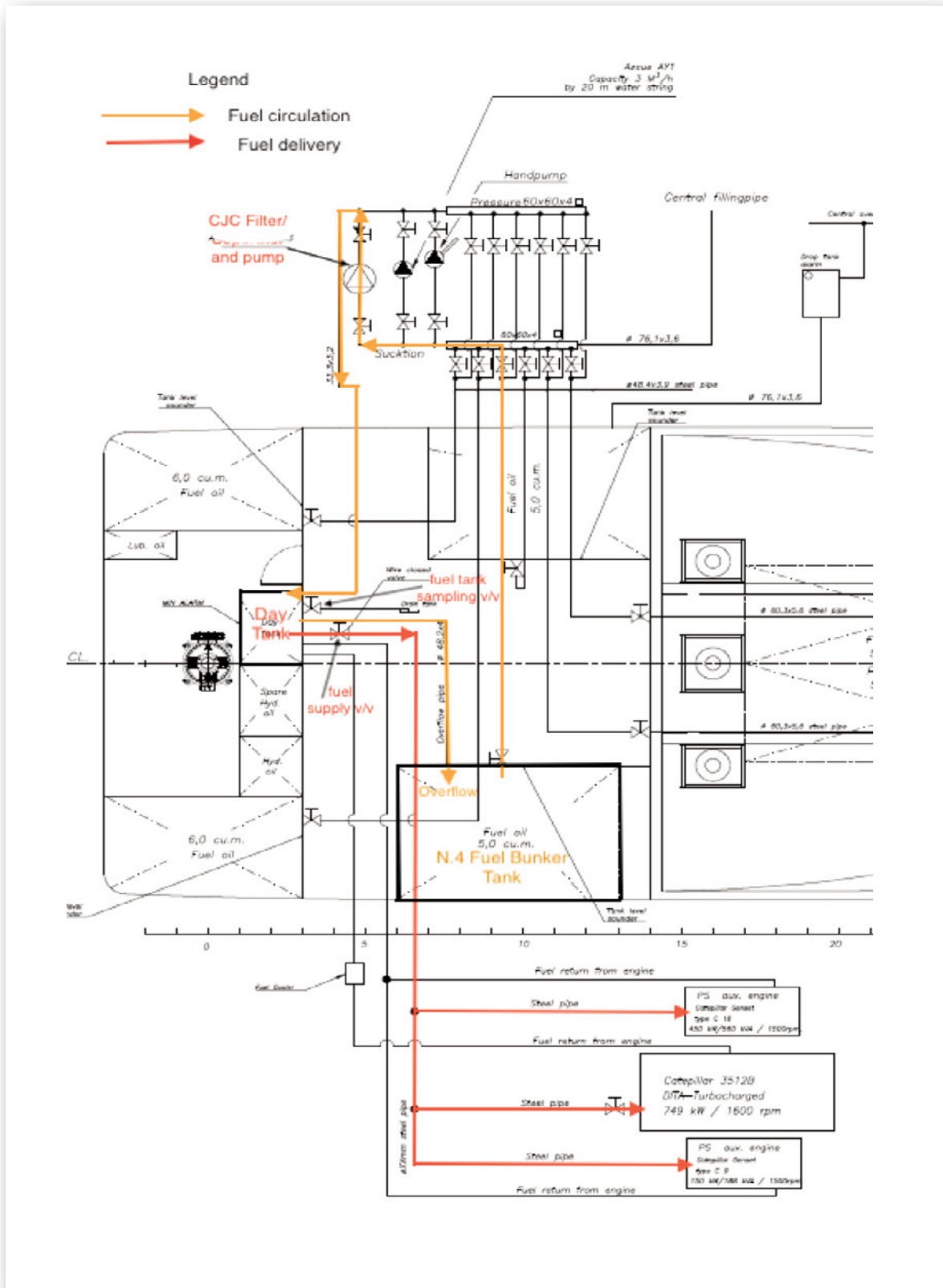


Fig.7. Fuel Circulation and Supply System (schematic).

Appendix 7.5 VEST VAERFTET ApS - General Arrangement (GA) drawing title block - Project 262

SIGN.				DATE				MODIFICATION			
VEST VÆRFTET ApS											
Nordhavnsvej 12, 6960 HVIDE SANDE Tlf. 97-313322 Fax. 97-313368											
DWG. TITEL						23,20 METER TRAWLER					
SIGN.		O.K.		PRJ. NR.		262		Scale		1:75	
DATE		06/08-2005		DWG. NR.		262-01					

MAIN DIMENSIONS

LENGTH OA..... 23,20 M
 LENGTH "L"..... 19,80 M (< 65 feet)
 BREADTH MLD..... 8,20 M
 DEPTH MLD. M.DECK 4,10 M
 DEPTH MLD. SH.DECK 6,45 M
 TONNAGE (1969) ~230 GT

CAPACITY

FISHHOLD..... ~143 M³
 FUELOIL 40 M³
 FRESHWATER..... 10 M³
 HYD.OIL 1,8 M³
 ACCOMMODATION..... 8 PERSONS

Class: Bureau Veritas
 Notation: I ⚙ Hull fishing vessel
 unrestricted navigation. • MACH
 Safety equipment: Irish Authority (DOCMNR)

Fig.8. Builders Drawing Title Block for Project 262
 'FV Ardent' (262) and 'FV Dillon Owen' (263)

Appendix 7.6 Stability Notes - 'FV Dillon Owen'

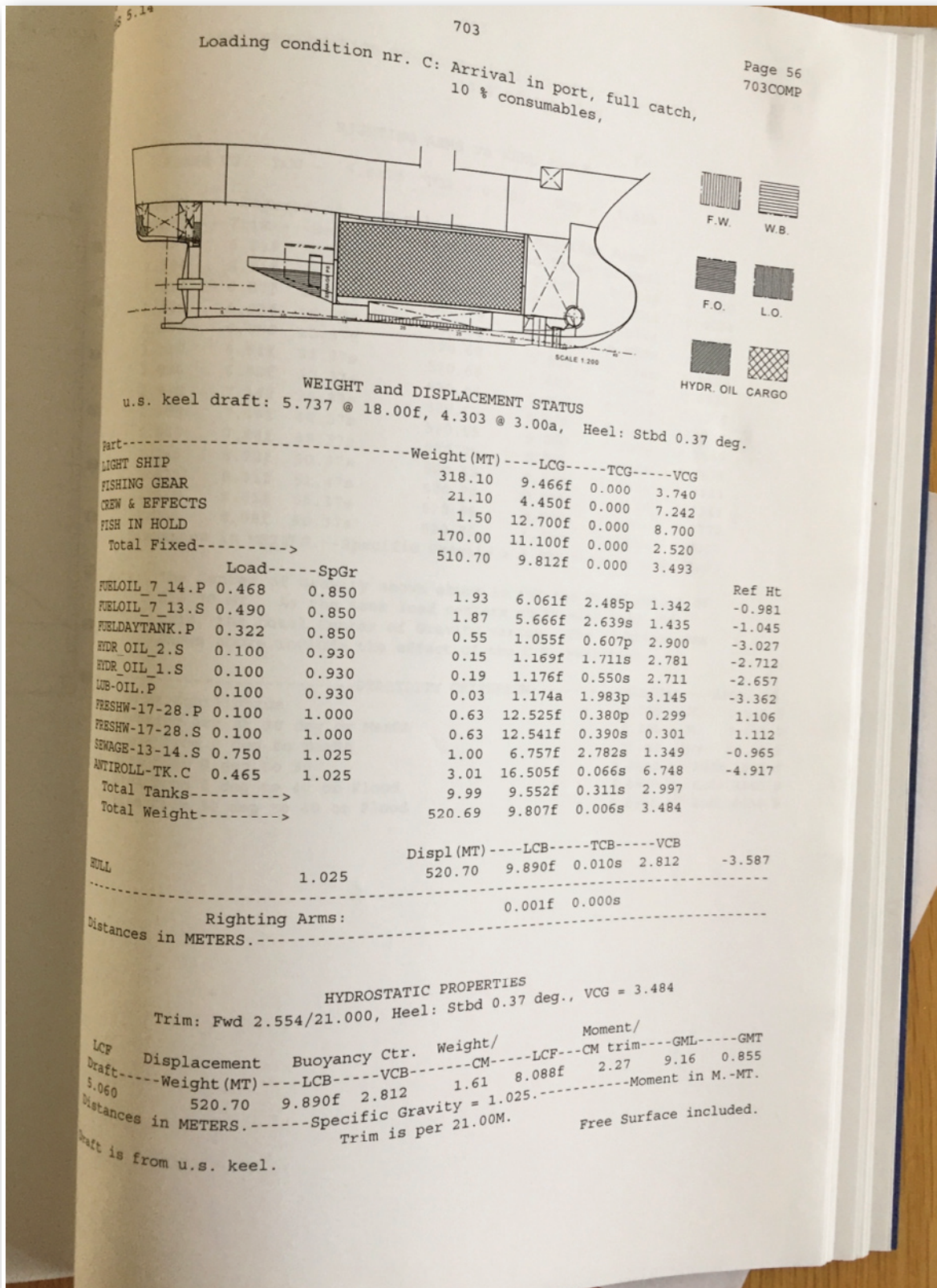


Fig. 10. Estimated stability condition at arrival Ardglass.

Appendix 7.6 Stability Notes - 'FV Dillon Owen'

SAILING STATE

Vessel.....: DILLON OWEN S.24
 Condition.: 11:ARRIVAL IN PORT (PELAGIC) - MAXIMUM CATCH
 State.....: INCLUDES THRUSTER TUNNEL & BOX COOLERS
 Water SG.: 1.025
 Compliance: Vessel passes requirements in this condition

DRAFT SUMMARY (DIMENSIONS IN METRES)		Maximum	Actual
Draft forward (about USK at FP)		7.220	4.872
Draft midships (about USK)		6.664	5.034
Draft aft (about USK at AP)		7.074	5.195

FREEBOARD SUMMARY (DIMENSIONS IN METRES)		Minimum	Actual
Freeboard forward to Upper Deck at FP		0.300	2.649
Freeboard midships to Upper Deck		0.300	1.932
Freeboard aft to Upper Deck at AP		0.300	2.182

STABILITY DATA

Heel angle degrees	Trim about Base Line metres on LBP	Draft at midships LBP about Base Line	KN metres	KGxSIN(Heel) metres	Righting moment tonne.metres	GZ fluid metres
0	0.491 by bow	4.509	-0.014	0.080	-7.262	-0.014
5	0.522 "	4.514	0.361	0.320	20.505	0.041
10	0.512 "	4.460	0.736	0.637	49.577	0.098
15	0.496 "	4.370	1.111	0.950	81.146	0.161
20	0.483 "	4.244	1.486	1.256	116.586	0.231
25	0.483 "	4.083	1.862	1.552	156.803	0.310
30	0.495 "	3.893	2.225	1.836	196.738	0.389
35	0.507 "	3.692	2.550	2.104	224.416	0.444
40	0.513 "	3.478	2.840	2.360	242.584	0.480
45	0.512 "	3.249	3.094	2.596	251.513	0.498
50	0.500 "	3.000	3.310	2.812	251.280	0.497
55	0.494 "	2.735	3.487	3.007	242.287	0.480
60	0.490 "	2.454	3.628	3.179	226.576	0.449
65	0.486 "	2.159	3.734	3.327	205.598	0.407
70	0.484 "	1.852	3.808	3.450	180.826	0.358
75	0.480 "	1.537	3.851	3.546	153.881	0.305
80	0.470 "	1.218	3.866	3.615	126.585	0.251
85	0.452 "	0.898	3.854	3.657	99.590	0.197
90	0.436 "	0.581	3.818	3.671	74.151	0.147

STABILITY SUMMARY

	Minimum	Actual
Angle of immersion of ENGINE ROOM VENTS (degrees)	-	54.206
Area under GZ curve between 1.32 and 31.32 degrees (metre.radians)	0.055	0.099
Area under GZ curve between 1.32 and 41.32 degrees (metre.radians)	0.090	0.178
Area under GZ curve between 31.32 and 41.32 degrees (metre.radians)	0.030	0.079
Maximum GZ (metres)	0.200	0.500
Angle of heel at which maximum GZ occurs (degrees)	25.000	47.373
Maximum GZ between 30 and 90 degrees (metres)	0.200	0.500
Positive GZ heel range (degrees)	-	54.206
GM solid (metres) (at angle of equilibrium)	-	0.658
Free Surface correction (metres)	-	0.032
GM fluid (metres) (at angle of equilibrium)	0.330	0.626

STABILITY SUMMARY (CONTINUED)

	Maximum	Actual
Angle of equilibrium (degrees)	7.000	1.317

49.

Fig.11. Stability Notes - Calculated 'Actual' drafts for 'FV Dillon Owen' for arrival in Port (Pelagic maximum catch).

MSA 2000 SECTION 36 PROCESS

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

It is a requirement under Section 36 that:

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

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

8. SECTION 36 - CORRESPONDENCE RECEIVED

No correspondence was received on the draft of this report.



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