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REPORT OF THE INVESTIGATION INTO THE SINKING OF THE IRISH FISHING VESSEL "PERE CHARLES" OFF THE SOUTH WEXFORD COAST ON 10th JANUARY 2007

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

REPORT No. MCIB/134

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1. SYNOPSIS

1.1 The Irish fishing vessel "Pere Charles" with a crew of five, departed from Dunmore East at about 10.00 hours on the 10th January 2007 and proceeded to fish for herrings south of Hook Head. The vessel engaged in pair trawling with the "Suzanna G". Three catches were taken with the first two landed on the "Pere Charles" and the final catch landed on the "Suzanna G".

Shortly after 18.00 hours on the same day as both vessels made their way back to Dunmore East, the "Suzanna G" received a call on the VHF from the Skipper of the "Pere Charles" stating "She has breached on me. Stand by". The "Pere Charles" was about one mile away and just ahead of the "Suzanna G". The Skipper of the "Suzanna G" replied "Yes Ok". That was the last known contact with the "Pere Charles" as the vessel disappeared from view.

The vessel was located on the seabed on 12th January 2007. Irish Naval Service divers carried out searches of the vessel on 16th January and also between 24th and 27th January 2007. No bodies were found.

During early November 2007, the "Pere Charles" was recovered from the seabed and brought by barge to Arklow. The vessel was searched but no bodies were found.

1.2 All times are given in GMT.

2. FACTUAL INFORMATION

2.1 Particulars of the fishing vessel "Pere Charles".

Registered Length:	17.75 metres.
Breadth:	6.50 metres.
Moulded Depth:	3.12 metres.
Moulded Draught:	2.34 metres.
Gross Tonnage:	100
Registered Owner:	Mr. Michael Walsh, New Ross, Co. Wexford.
Engine:	One Internal Combustion Mitsibishi engine of 336kw with one shaft and an estimated speed of 11 knots.
Description of vessel:	Steel constructed fishing vessel. Built in 1982 at Forges Caloin, Etaples, France.

2.2 Mr. Walsh purchased the vessel in 2005 from Mr. Noel Wilde of Skerries, Co. Dublin. Mr. Wilde had previously purchased the "Pere Charles" in 2001 from French owners.

2.3 After purchasing the vessel in 2001, Mr. Wilde had a number of alterations carried out to the "Pere Charles" to suit his fishing operations for prawns. Among the alterations made to the vessel were the following:

1. In the forward shelter deck, the three drum winches were removed and replaced by a single three-drum winch in the position of the original two-drum winch. Overall, it is estimated, that there was no change in weight resulting from these changes.

2. On the top deck aft, the twin drum winch was further split into four separate drums. One of the small single drum winches was removed. Overall, it is estimated, that there is less weight resulting from these changes.

3. In the shelter deck, a hatch coaming, 330mm in height above the deck covering, was fitted around the fish hold hatch. A cover with means of securing was fitted to the new coaming. It is estimated that there was no increase in overall weight because of these changes as the original hatch cover was of a much heavier and more substantial construction.

4. Towards the after end of the shelter deck at frame 11, the sliding door, which was of about 8mm thickness steel construction was removed together with a large amount of the continuation bulkhead on its starboard side. About 1.30 metres of the bulkhead from the starboard side of the vessel remained afterwards. A new bulkhead incorporating two weathertight doors was fitted aft in the shelter deck at a distance of 2.58 metres from the stern of the vessel. Aft of this new bulkhead, an aluminium fish bin was fitted and was bolted onto the bulkhead. The bin was about 1.50 metres high and 1.50 metres square at the top and sloping into 0.60 metres by 0.90 metres area at the bottom. From this bin an elevator was fitted to carry the fish from the bin through the newly

fitted bulkhead and onto newly fitted aluminium tables fitted at the forward side of the new bulkhead. The opening through the bulkhead where the elevator passed through was about 0.90 to 1.20 metres above the deck and was about 0.60 metres wide and about 0.50 metres in height. As most of the new structure was of aluminium construction and the removed door and bulkhead was of a more substantial construction, it is estimated that there was no additional weight added in the area due to these changes.

2.4 There were further alterations carried out to the "Pere Charles" prior to the first herring trip, which took place on the 6th December 2006. Among the alterations made at this time were the following:

- The conveyor belt and elevator were removed from the bin aft. An opening of about 1.50 metres high and 0.90 metres wide was made in the after bulkhead so as to allow the herring to pass from the bin onto the deck at the forward side of the bulkhead.

- Timber boards were fitted from forward of this bulkhead to the first filling hole to guide the flow of herrings. These boards were about 0.70 metres high and about 4 metres long. The boards created a channel about 0.90 metres wide. Some timbers were also fitted to direct the herrings to the forward filling hole.

- The steel sill, which was 220 mm high, in way of the original sliding door at frame 11, was cutaway over a length of 560 mm to allow the boards to be fitted close to the accommodation in order to direct the herrings forward.

2.5 Photographs and drawings of the vessel are given in Appendix 10.1 Annex 3.

2.6 The crew of the "Pere Charles" on 10th January 2007 were:

1. **Thomas Hennessy,** Dunmore East, Co. Waterford.
   Mr. Hennessy had a lot of fishing experience (at least 11 years) and was known as a careful and conscientious fisherman. He was skipper on board the "Pere Charles" since January 2006 and prior to this had been skipper on other vessels. There are no records to show that Mr. Hennessy holds any Deck Officer Fishing Vessel Certificate of Competency or Certificate of Service. Records do show that Mr. Hennessy had completed satisfactorily Elementary First Aid, Fire Prevention and Health and Safety Training and Personal Survival Techniques training with Bord Iascaigh Mhara.

2. **Patrick Hennessy,** Dunmore East, Co. Waterford.
   Mr. Hennessy had about 35 years fishing experience and had recently returned to the "Pere Charles". There are no records that Mr. Hennessy had undertaken any formal training.

3. **Patrick Cody,** Duncormick, Co. Wexford.
   Mr. Cody had a lot of fishing experience with different operators. He had spent about 4 years working ashore and it was his first day back working at sea on

board the "Pere Charles". There are no records that Mr. Cody had undertaken any formal training.

4. **William O'Connor,** Dunmore East, Co. Waterford.
   Mr. O'Connor had about 20 years fishing experience and had recently returned to the "Pere Charles". Records show that Mr. O'Connor had completed satisfactorily Elementary First Aid, Fire Prevention and Health and Safety training with Bord Iascaigh Mhara.

5. **Andrea Dyrin,** Waterford.
   Mr. Dyrin had been at sea in the Merchant Marine and had been on board the "Pere Charles" since September 2005. There are no records that Mr. Dyrin had undertaken any formal training.

2.7 Surveys and Radio Equipment

1. The initial tonnage survey for registration of the vessel was carried out in July 2001.

2. The "Pere Charles" last had an inspection of its lifesaving equipment for compliance with the M.S. (Life Saving Appliances) Rules 1967 (S.I. No. 100 of 1967), as amended, in November 2005. The application for inspection came from the owner to satisfy a requirement of the Sea Fishing Boat Licensing Section of the Department of Communications, Marine and Natural Resources that the Marine Survey Office (MSO) confirm compliance with statutory safety and pollution requirements before a Sea Fishing Boat License is issued by them. No specific deficiencies were raised in relation to Lifesaving Appliances and confirmation of compliance was confirmed, by the MSO, to Sea Fishing Boat Licensing on the 2nd December 2005.

3. At the same time the vessel was also inspected for compliance with the M.S (Fire Appliances) Rules 1967 (S.I. No. 101 of 1967) as amended, and no appreciable deficiencies were found.

4. The "Pere Charles" was surveyed for and issued with a Fishing Vessel Safety Radio Certificate in December 2005. However as there were deficiencies at the time of the survey with the MF/HF DSC equipment the vessel was only issued with a certificate for the A1 Area and for a 12-month duration. This covered the VHF equipment, which the vessel carried. The Safety Radio Certificate expired on the 14th December 2006.

3. EVENTS PRIOR TO THE INCIDENT

3.1 The "Pere Charles" equipped and manned as in Section 2 departed from Dunmore East at about 10.00 hours on the 10th January 2007 and proceeded to fish for herrings south of Hook Head. The vessel was engaged in pair trawling with the "Suzanna G" using the net belonging to the "Pere Charles". Three catches were taken with the first two landed on the "Pere Charles" and the final catch landed on the "Suzanna G".

3.2 It is a requirement that fishing vessels must inform (hail) the Fish Monitoring Centre (FMC) in the Naval Base of the quantity of fish on board. The quantity hailed must be within 8% of the final landed figure and there must be a 4-hour interval between the hail and the arrival in the port of landing.

3.3 The trip of 10th January 2007 was only the third time that the vessel had fished for herrings under the ownership of Michael Walsh. On each occasion the skipper was Tom Hennessy.

3.4 In December 2006, there were two herring trips. On the 6th December 2006, 30 tons were hailed to the FMC and 23.3 tons were landed. This herring trip lasted two days and the net was only shot once.

3.5 On the second trip, on 11th December 2006, 43 tons were hailed to the FMC and 34.0 tons were landed. Based on information received from a crewmember on this second trip, 21 pounds were used in the hold for stowage of the herrings and the net was shot on two occasions. With this load the freeing ports were still clear and the steel protrusion on the stern was just being covered. The fish hold bilge alarm was working OK. One person would be pumping all the time using the hand bilge pump.

3.6 Based on information received from crewmembers and others, there was no problem on the previous two trips after loading herrings. There would always be some water on deck. One freeing port on each side was being used for the prawn table only. The main hold hatch would be closed down and dogged. The two manholes (fish scuttles) would be bolted down. The ladder access would be open. About a half ton of fish at the most would be lying around the deck.

3.7 At about 13.30 hours on 10th January 2007, the skipper of the "Pere Charles" informed the FMC that he had 50 tons of herrings on board.

3.8 A number of people spoke to Tom Hennessy throughout the day both by mobile 'phone and VHF radio. There was no indication of any problems on board the "Pere Charles". After the final catch was landed on the "Suzanna G", both vessels proceeded back to Dunmore East.

3.9 At around 17.40 or 17.50 hours, the owner had a conversation with Tom Hennessy regarding the organisation of the trucks so as to unload the vessel after docking at Dunmore East. Based on this the lorries were organised for 18.45 hours.

4. THE INCIDENT

4.1 The skipper of the "Suzanna G" recalls that as both vessels made their way back to Dunmore East, he received a call on the VHF from the Skipper of the "Pere Charles" stating "She has breached on me. Stand by". The "Pere Charles" was about one mile away and just ahead of the "Suzanna G". The Skipper of the Suzanna G replied "Yes Ok".

4.2 At first they could see the port sidelight of the "Pere Charles". The "Suzanna G" altered to starboard and proceeded to the estimated position of the "Pere Charles". There was now no sign of the "Pere Charles" on the radar.

4.3 The "Suzanna G" stopped when they arrived at the estimated position of the "Pere Charles" and the skipper then called Rosslare radio and advised the Irish Coast Guard of the situation. There was no sign of the EPIRB. The Skipper of the "Suzanna G" recalls that there was a light breeze at this time with good visibility and no swell. He also recalls that the "Pere Charles" seemed level in the water prior to the incident.

4.4 The Met Eireann weather report is given at Appendix 10.2.

5. EVENTS FOLLOWING THE INCIDENT

5.1 At 18.02 hours on the 10th of January 2007, the Marine Rescue Co-ordination Centre (MRCC) in Dublin received an Electronic Position Indicator Radio Beacon (EPIRB) report through the UK MRCC regarding the fishing vessel "Pere Charles". The position of the EPIRP alert was 52 05.1 North 006 54.3 West. A chart extract showing the position of the sinking is given in Appendix 10.3.

5.2 At 18.07 hours the "Suzanna G" advised the Irish Coast Guard that it had lost visual and radar contact with the "Pere Charles". The Irish Coast Guard helicopter based at Waterford together with the Kilmore Quay and Dunmore East lifeboats were tasked to investigate. The "Suzanna G" and other local fishing vessels joined the search. The EPIRB was located by the Irish Coast Guard helicopter and picked up by Dunmore East lifeboat.

5.3 The weather conditions progressively deteriorated throughout the night reaching South Westerly Force 9 to storm Force 10 by the following morning.

5.4 At first light on 11th January 2007, Rosslare Lifeboat, Dunmore East Lifeboat, Kilmore Quay Lifeboat and the Irish Coast Guard Helicopter from Dublin resumed the search. Local fishing vessels also joined the search. Coastal searches were carried out by Carnsore, Kilmore Quay, Fethard and Dunmore East Coast Guard Units.

At 10.30 hours, a liferaft and lifebuoy belonging to the "Pere Charles" were recovered from the beach west of Kilmore Quay. The Naval Service and Garda Divers arrived at Dunmore East.

At 12.23 hours, the Rosslare lifeboat recovered the second liferaft belonging to the vessel north of Saltee Islands.

At 17.27 hours Coastal and Sea Search were suspended until first light on Friday 12th January.

5.5 Over the following days, during day light hours, coastal searches were carried out from South of Mine Head to Carnsore Point and along the coast by Irish Coast Guard units, relatives and members of the public. Local lifeboats, local fishing vessels and the naval service carried out sea searches. The Irish Coast Guard Helicopters and the Air Corps carried out air searches.

5.6 On 12th January 2007, the "Pere Charles" was located by sonar on the seabed close to the position of the EPIRB alert. On 14th January 2007, the Naval Service and Garda Divers attempted diving operations but aborted due to the weather conditions.

5.7 On 16th January 2007, the Naval Service divers aboard the ILV "Granuaile" carried out diving operations at slack water. The vessel was confirmed as the "Pere Charles" and was found lying on her starboard side. Diving conditions were difficult with nets and ropes around the vessel and the vessel was moving

in the ground swell. Visibility was 1.5 feet on the bottom. Damage sustained to the starboard side of the wheelhouse prevented access to the vessel's bridge. Divers located a hatch aft of the wheelhouse but could not gain access due to debris and ropes. Using torches, the divers were unable to locate the missing crewmen in the wheelhouse or through the hatch aft of the wheelhouse. The Garda Dive team remained on standby. Due to deterioration in the weather conditions the diving operation was called off.

5.8 Due to gale force weather conditions the next dive by the Naval Service did not take place until 24th January 2007. From 24th to 27th January 2007, the Naval Service divers carried out a number of searches of the different areas of the vessel. No bodies were found.

5.9 The coastal searches, which were carried out each day since the sinking, concluded on the 4th February 2007. No bodies were found.

5.10 During early November 2007, the “Pere Charles” was recovered from the seabed and brought by barge to Arklow. The Gardaí searched the vessel but no bodies were found. There was considerable damage to the vessel after its time on the seabed. The wheelhouse, top deck and associated rigging were missing and there was considerable damage to the starboard side of the vessel due to its position and movements on the seabed from January to November 2007. Attached in Appendix 10.4 are photographs of the vessel taken following its recovery.

5.11 On the 6th December 2007, at an inquest in Wexford, the coroner confirmed verdicts of accidental death for the five crewmen. To date the bodies of the five crewmen that were on board the “Pere Charles” have not been recovered.

6. EXAMINATION OF THE WRECK - "PERE CHARLES"

6.1 During the inspection of the recovered wreck by MCIB investigators in November 2007 the following were observed:

6.2 On the port side, an opening at deck level on the shelter deck of 270 mm by 270 mm at a distance of 430 mm forward of the newly fitted bulkhead was noted. It would appear that this opening might have been linked to the drain from the fish table, which was installed on the forward side of the new bulkhead, which was fitted in 2001. This is referred to as Freeing Port B in Appendix 10.1 Annex 3.

6.3 At a distance of 240 mm forward of this opening on the port side at deck level there was a hinged freeing port, which was found to move freely, measuring 580 mm wide by 420 mm in height. This is referred to as Freeing Port C in Appendix 10.1 Annex 3. Immediately forward of this hinged freeing port and just aft of the accommodation there was a small hole of about 50 mm diameter in the side shell at deck level.

6.4 The newly fitted bulkhead between frames 3 and 4 was found to be sitting on top of the timber deck. There were no connections to the steel deck underneath. The port side door fitted in this bulkhead measured 1400 mm high by 610 mm wide and the sill height of the door was 420 mm. There were three securing dogs fitted to the door. The door was found in an open position. The top securing dog was found to be seized. The other two were found to be free.

6.5 On the port side of the shelter deck at about frame 22 and at deck level there was a box measuring 460 mm in length and 360 mm in height and 300 mm off the shell at the top. This box, on the inboard side, had a hinged freeing port measuring 330 mm in length and 320 mm in height. This freeing port was found seized in a partly open position. On the outboard side of the box there was an opening measuring 200 mm in length and 100 mm in height. This is referred to as Freeing Port D in Appendix 10.1 Annex 3.

6.6 The fish hold, forward filling hole scuttle cover was not in place. The filling hole scuttle measured 360 mm in diameter.

6.7 The fish hold, after filling hole scuttle cover was found to be in place and secured.

6.8 Both the fish hold hatch cover and the fish hold access hatch cover were not in place. On both of these some hinges were damaged and also securing toggles were missing.

6.9 The various alterations carried out with regard to the original bulkhead at frame 11 and detailed in Section 2 above were verified as much as was possible.

6.10 Aft of the new bulkhead on the port side of the main deck at deck level there was a sliding operated freeing port measuring 420 mm in length and 400 mm high. This freeing port was found to be in a seized condition and 240 mm open. This is referred to as Freeing Port A in Appendix 10.1 Annex 3.

6.11 Immediately aft of the new bulkhead on the port side of the main deck at deck level there was an opening which measured 100 mm in diameter and had no means of closing. This is referred to as Freeing Port E in Appendix 10.1 Annex 3.

6.12 Aft of the new bulkhead on the starboard side there was evidence of what appeared to be a sliding freeing port of approximately similar dimensions to the one on the port side. This was the only information that could be obtained from the starboard side of the vessel due to the damaged condition of the hull.

6.13 There did not appear to be anything out of the ordinary in the engine room apart from damage to one of the sensor protrusions on the bottom of the hull on the port side. However it would appear that this damage was caused by one of the lifting strops while recovering the vessel from the seabed.

6.14 When bulk fishing there is potential for the fish to shift transversely in the hold, if not correctly stored, thereby creating a capsizing moment. The fish should be stored within small pounds to prevent shifting. In the fish hold a large quantity of pound boards were scattered around. Most of the pound board stanchions were in place. Some were detached from their positions but were present in the hold. The indications are that the hold was correctly pounded into small areas to prevent shifting of the bulk herring catch.

6.15 All other areas of the vessel were inspected but nothing unusual was observed.

7. OTHER MATTERS TO BE CONSIDERED

7.1 It is estimated that the vessel had about 12,000 to 15,000 litres of fuel on board when it sank and it would have been stored in the middle and forward tanks. The maximum fuel capacity of the vessel was about 25,000 litres.

7.2 100 new pound boards had been purchased prior to the incident and there were enough pound boards on the vessel to fit up to the deck head all around. They were a mixture of aluminium and timber and were each about 110 cms in length and 20 cms in height. All the pound boards were tight and secure. The stanchions were permanent fixtures in the hold. The hold was about 1.90 metres high and when loaded the fish at the forward and after ends would be about 1.90 metres in height and in the middle would be about 1.30 metres high.

7.3 It is known that the skipper was very conscious of fish lying around the deck and also of securing the hatches.

7.4 There were no known leaks on board the vessel prior to the sinking.

8. CONCLUSIONS/FINDINGS

8.1 From the statements of previous crewmembers of the "Pere Charles" it is known that the vessel was known as a "wet boat" and that at times the crew were working on deck "up to their knees in water". On this particular trip "Pere Charles" had a greater load than on any previous trip and was deeper in the water, which would have increased the likelihood of water entering the shelter deck.

8.2 As the vessel increased speed on its way back to port from the fishing grounds its bow wave would probably have partially immersed any open freeing ports, which would have allowed water to enter the shelter space through the now open bulkhead at frame 11.

In the estimated loaded condition on 10th January 2007, the vessel had a trim by the head and any water entering the shelter would have collected at its forward end. As the shelter had only two very limited means of clearing any water from the shelter and there were no freeing ports in the forward starboard part of the shelter, the water would have been trapped causing a "free surface effect", which greatly reduces the stability of the vessel and its ability to right itself. The vessel would have then started to heel to starboard due to an accumulation of water in the shelter.

This would have allowed further progressive flooding into the shelter and from the shelter to the hold, engine room and crew accommodation leading to the eventual heeling and sinking of the vessel. A full and detailed analysis of the stability of the "Pere Charles" is given in Appendix 10.1.

8.3 The only known stability book pertaining to the "Pere Charles" at the time of the sinking was the original book, which was in the French language. No reassessment of the stability of the vessel had been carried out as a result of the various changes made to the vessel in both 2001 and 2006.

8.4 At the time of the sinking there was no statutory provision to assess modifications made to fishing vessels in the 15 to 24 metres range, or to assess their stability profiles or to approve a maximum draught. The registered length of the "Pere Charles" is 17.75 metres.

However, over recent years a number of Marine Notices dealing with fishing vessel safety have been issued. These include:-

No. 15 of 2003	Guidance on the Modifications of Vessels
No. 26 of 2002	Modifications to Fishing Vessels
No. 8 of 1999	Fishing Vessel Stability
No. 9 of 1999	Effect of Water on Deck
No. 7 of 1996	Fishing Vessel Safety (Stability and Bilge Pump arrangement)

These Marine Notices deal specifically with the factors that lead to the loss of the "Pere Charles" and advised owners and skippers of the dangers of modifying fishing vessels without obtaining adequate professional approval.

8.5 At the time of the sinking, the vessel was not manned in compliance with the Fishing Vessels (Certification of Deck Officers and Engineer Officers) Regulations, 1988 (S.I. No. 289 of 1988), as amended.

8.6 The vessel's Safety Radio Certificate expired on the 14th December 2006. Therefore at the time of the sinking, the vessel was not in compliance with the Fishing Vessel (Radio Installations Survey) Regulations, 1999.

8.7 At the time of the sinking there was nobody with any radio operator qualification on board the vessel. The minimum required under the Fishing Vessel (Radio Installations) Regulations, 1998, as amended, is a Long Range Certificate.

8.8 There are no records to show that Basic Safety Training, in compliance with S.I. No. 587 of 2001, Fishing Vessel (Basic Safety Training) Regulations, 2001, had been carried out by Mr. Cody and Mr. Dyrin.

9. RECOMMENDATIONS

9.1 It is recognised that since this sinking, new *Merchant Shipping (Safety of Fishing Vessels) (15-24 metres) Regulations, 2007, (S.I. No. 640 of 2007)* came into force on 1st October 2007. These new regulations include a survey regime for fishing vessels within this length range and are outlined in Marine Notice No. 32 of 2007, which is given in Appendix 10.5.

This survey regime introduced by the Minister of Transport fundamentally addresses the contributory issues raised in this report. It requires that the stability of a vessel is assessed and approved by the Minister and that all modifications to a vessel will have to be submitted and approved by the Minister.

It is recommended that -

Marine Notice No. 15 of 2003 - Guidance on the Modifications of Vessels and Marine Notice No. 26 of 2002 - Modifications to Fishing Vessels, are reviewed and reissued to incorporate the latest legislation changes.

9.2 It is recommended that the Department of Transport (DOT), in conjunction with Bord Iascaigh Mhara (BIM), give serious consideration to establish the best means of getting the safety culture message across to the fishing community. This may involve establishing port training courses in each of the major fishing ports to cover all areas of required legislation and also stability training including the dangers associated with carrying out different structural modifications to fishing vessels. BIM is the agency responsible for the training of personnel in the fishing industry.

9.3 There has to be an onus on the fishing industry including the representative organisations, vessel owners, skippers and crews amongst others to take responsibility for the safety of the industry and they should work to improve the safety culture within the fishing industry.

9.4 Following the introduction of S.I. No. 640 of 2007, which came into force on 1st October 2007, all lengths of fishing vessels are now incorporated into three different survey regimes. It is recommended that the DOT carry out a full reassessment of the survey requirements with regard to personnel, to ensure that there are not just sufficient personnel to carry out surveys but also to enforce the regulations. Enforcement of the regulations should lead to a reduction in the number of lives lost in the Irish fishing industry.

9.5 It is a requirement that all fishing vessels are manned in compliance with the regulations. Fishing vessels of 500 gross tons or more are required to have on board a Safe Manning Document issued by the Administration and are required to comply with the requirements therein. Fishing vessels of

less than 500 gross tons must be manned as required by the Fishing Vessels (Certification of Deck Officers and Engineer Officers) Regulations, 1988 (S.I. No. 289 of 1988), as amended. A Marine Notice should be issued stating that all fishing vessels must be manned as required by the regulations as outlined above.

10. LIST OF APPENDICES

10.1 Stability Analysis

Annex 1 Bureau Veritas Report of Examination of the file of Intact Stability.

Annex 2 French Loading Conditions.

Annex 3 Drawings and Photographs.

Annex 4 Casualty Loading Conditions.

Annex 5 Sequence of Events when the Shelter begins to flood.

10.2 Met Eireann weather report.

10.3 Chart extract showing the position of the sinking of the “Pere Charles”.

10.4 Photographs of the recovered vessel.

10.5 Marine Notice No. 32 of 2007.

APPENDIX 10.1

Appendix 10.1: Stability Analysis

"Pere Charles" was built in 1982 by Forges Caloin, Etaples Sur Mer, France and was purchased by Mr. Noel Wilde of Skerries, Co. Dublin in 2001. Mr. Wilde subsequently sold the vessel in 2005 to Mr. Michael Walsh of Arthurstown, New Ross, Co. Wexford.

When Mr. Wilde bought the vessel it had a stability book in the French language, which had been verified by Bureau Veritas on 13 July 1982. This stability book was based on an inclining experiment carried out on 11 May 1982. A translation of the Bureau Veritas Report of Examination of the File of Intact Stability is attached at Annex 1. Paragraph 2.2 of the report states "for the stability calculations, account was taken of a closed superstructure from frame C11 to the forward extremity".

The B.V. "verified" book had analyses of the following loading conditions:

1A Departure for fishing
2A On the fishing grounds - 80% hold + 40% deck + 30% consumables
3A Departure from fishing grounds - Hold full + 30% consumables
4A Arrival in port - Hold full + 10% consumables
5A Arrival in port - 20% Hold + 10% consumables
6A Maximum Load - Departure for fishing + Hold full

In order to assess the stability of the vessel at the time of the casualty a computer model of the vessel was produced using the original Lines Plan, General Arrangement and Lightship that were used to produce the B.V. "verified" Stability Book. Although a number of modifications had subsequently been made to the vessel and its winch arrangements, it is considered that they did not have a significant adverse effect on the vessel's lightship characteristics. These various modifications are described in Part 2 "Factual Information".

The output from the "Tribon M3 Calc" stability analysis program was checked against the stability criteria of the loading conditions in the "verified" book and good correlation was obtained. The "Tribon M3 Calc" program output is given at Annex 2.

Using information obtained from Mr. Walsh and previous crewmembers, the load condition at the time of the casualty was estimated and several computer analysis carried out to determine the possible cause of the loss of the vessel. It is assumed that the hold of the vessel was fully pounded and the nomenclature used to define each pound in the loading summaries is shown in Annex 3.

1. The first analysis (Annex 4; "1 Departure Grounds - shelter intact") assumes the layout of the vessel is the same as when it arrived from France, i.e. the shelter is "closed" from frame 11 to the forward end.

    - Although at the time of the casualty the vessel's estimated catch was some 50% greater than that given in the French loading conditions, it can be seen from pages 5 and 6 of the analysis that the vessel in this condition has sufficient stability to meet the stability criteria requirements of the Torremolinos Protocol.

During the course of the investigation it was established that a number of modifications were made to the shelter. These modifications, described in Part 2 of the report, would not in themselves have had a detrimental effect on the weather-tightness or the stability of the vessel provided any freeing ports in the side were fully effective in preventing water from entering the shelter. However, it was found during inspection of the vessel, after recovery, that the freeing ports, on the port side at least, would not have been effective in preventing water shipping into the shelter. When the vessel was recovered the starboard side of the vessel was so badly damaged that it was impossible to ascertain the condition of the freeing ports on that side but photographs 1 and 1a at Annex 3 show that the freeing ports on the starboard side were likely to have been as ineffective as those on the port side.

2. The second analysis “2 Departure Grounds - shelter open at frame 11” Annex 4) was carried out with the model modified to reflect the following:

   i. freeing ports between frames 4 and 11 (P and S) were not fully effective in preventing water from entering the new shelter deck area.

   ii. bulkhead on frame 11 had been removed thus allowing any water shipped through the ineffective freeing ports to enter the “closed superstructure”.

   iii. “Down-flooding” into the “closed” shelter occurs through freeing port 'A' on the starboard side at approx frame 9 and thence through openings created when bulkhead frame 11 was removed.

   - Pages 11 and 12 of this second analysis show that the stability has been greatly reduced and three of the criteria fail to meet the Torremolinos criteria, even although the GM is more than twice the minimum required.

3. The examination of the vessel after it was recovered showed that the hinged closer of the freeing port 'D' in the port side of the shelter was seized (photographs 8 and 9, Annex 3) and it is probable that it was also seized at the time of the casualty. Photographs 1 and 1a (Annex 3) show that there was a similar type 'D' freeing port on the starboard side just forward of frame 11. A third analysis (“2a Departure Grounds - shelter open at frame 11-12” Annex 4) was therefore carried out with these freeing ports defined as “down-flooding”points into the “closed” shelter.

   - Pages 17 and 18 of this third analysis show that the stability has similarly reduced, except that the reduction occurs at lesser angle of heel (8°). The same three criteria fail to meet the Torremolinos criteria, and the GM is unchanged at more than twice the minimum required.

4. While it can be demonstrated that the modifications made to the vessel and the non-effectiveness of the freeing ports to exclude water from the shelter would have significantly reduced the stability of the vessel, these would not necessarily have been the sole cause of the casualty. Although the shelter can no longer be considered completely weather-tight, it could still have had some positive effect on the stability of the vessel.

Just before the vessel disappeared the skipper of the "Suzanna G" received a VHF call from the skipper of the "Pere Charles" stating, "She has "breached" on me. Stand by." It is possible that he meant that the "Pere Charles" had broached[1] but such a phenomenon is normally associated with heavy weather conditions and following seas; however the skipper of the "Suzanna G"' recalls that at the time of the casualty there was a light breeze with good visibility and no swell. It is unlikely, therefore, that the "Pere Charles" was subjected to broaching. A more likely scenario was that the vessel had started to heel to starboard due to an accumulation of water in the shelter.

From statements of previous crewmembers of the "Pere Charles" it is known that the vessel was known as a "wet boat" and that at times the crew were working on deck "up to their knees in water". On this particular trip the "Pere Charles" had a greater load than on any previous trip and was deeper in the water, which would have increased the likelihood of water entering the shelter.

As the vessel made its way back to port from the fishing grounds it would probably have increased speed. As can be seen from the photographs of a "sister" vessel and the "Pere Charles" (photographs 11 and 12, Annex 3) a significant bow wave is created which travels the length of the vessel. This wave would have partially immersed any open freeing ports, particularly the type 'A' freeing port on the starboard side, which would have allowed water to enter the shelter space through the now open bulkhead at frame 11.

From our examination of the freeing port 'D' in the shelter at frame 20 port it was noted that the inboard hinged cover was seized in such a position to greatly reduce the opening available to release water from within the shelter (photographs 8 and 9, Annex 3). Additionally, the outboard opening of this freeing port had at some time been reduced in size by welding a plate into the opening (photograph 7, Annex 3). Photographs 1 and 1a (Annex 3) show a similar type freeing port on the starboard side of the vessel, just forward of frame 11. These are the only two freeing ports in the original "closed" shelter.

In the estimated loading condition the vessel had a trim by the head and any water entering the shelter would have collected at its forward end. As the shelter had only two very limited means of clearing any water and there were no freeing ports in the forward part of the shelter, the water would have been trapped causing a "free surface effect", which greatly reduces the stability of the vessel and its ability to right itself.

5. This is demonstrated in the three loading conditions 3, 3a and 3b, (Annex 4) where only 150 mm of water is assumed to have collected in the shelter. The three conditions assume the full "free surface effect" of the loose water.

   3. With the shelter considered intact the stability is greatly reduced and the vessel's ability to right itself is reduced to about 20% of what it was without water in the shelter.

   3a. With the shelter down-flooding through freeing port 'A', frame 9 starboard and bulkhead at frame 11 the vessel has almost no righting ability and will capsize at approximately 18°, the angle at which the openings in "bulkhead 11" become immersed.

3b. With the shelter down-flooding through freeing ports 'D' the vessel has even less righting ability and capsizes at approximately 14°.

6. To demonstrate the effect of progressive flooding of the shelter, loading condition 4 (pages 38 - 42 of Annex 4) assumes that the shelter was intact and the amount of water in the shelter increased to 350 mm. Instead of assuming the full “free surface effect” of the loose water the effect of the water shifting to one side was assumed.

Pages 40 to 42 show that with this amount of water in the shelter the vessel will heel to just over $7^{1}/_{2}$° and the freeing ports 'A' and 'D' on the starboard side will be immersed and allow progressive flooding of the shelter to occur.

Based on discussions with the naval service divers it is very likely that the hold access hatch, the mess room door and the engine room door were all open. Additionally, from our inspection of the vessel after recovery the forward fish hold scuttle was missing and the securing toggles were missing from the hold loading hatch. This would have allowed further progressive flooding from the shelter to the hold, engine room and crew accommodation.

Annex 5 shows the sequence of events when the shelter begins to progressively flood with the vessel eventually capsizing when it reaches an angle of approximately 42°. The times given in this sequence do not necessarily reflect the actual time taken to capsize, as the flow rate through the openings could not be accurately modelled.

[1]Broaching means

- To turn broadside to the wind and weather in a heavy sea exposing the ship to capsize.
- To veer or cause to veer broadside to the wind and waves.
- To turn the ship broadside to heavy seas, or lose control of steering in following seas so that the ship is turned broadside to the waves. An extremely dangerous situation in steep seas since the ship may trip on the keel and be rolled over into a capsize.

Appendix 10.1: Annex 1 - Bureau Veritas Report of Examination of the File of Intact Stability.

Annex 1

AT 990 Paris, le 13 juillet 1982

Au/nc No. 82/2654

BUREAU VERITAS

REPORT OF EXAMINATION OF THE FILE OF STABILITY IN AN INTACT STATE

REFERENCE	:	French decree of August 10, 1972
SHIP	:	PERE CHARLES No. 30 (trawler)
FLAG	:	French
REGISTER	:	non quoted
BUILDER	:	Forges CALOIN – ETAPLES SUR MER

1. - DOCUMENTS CONSIDERED

File of stability including
. Overall plan No. CH 19-02 (A)
. Hydrostatic curves No. CH 19-16
. Capacity plan No. CH 19-21 (A)
. Loading cases (6 cases)
. Inclining experiment report No. CH 19-32 (A)

2. - OBSERVATIONS

2-1 - the characteristics of the lightship used are those deduced from the inclining experiment of the 11.05.82, namely:
D = 105.24 t XG = 8.05 m KG = 2.81 m

2-2 - for the stability calculations, account was taken of a closed superstructure from frame C11 to the forward extremity.

2-3 - the hydrostatic curves and the righting lever curves have been carried out with the aid of computer program approved No 73/01.

2-4 - in the case of loading to 10% and 30% of provisioning, the positions of the centre of gravity of the capacities partially filled could not be checked.

2-5 - the maximum midship load draught is 2.788 m and the trim is -0.004 m.

2-6 - subject to the observations above, the examination of the righting lever curves shows that all the stability criteria of the referenced decree are satisfied.

3 - CONCLUSION

'*It belongs to the responsible Committee to rule on this file and to possibly ask all complements of calculations and/or information which she would consider necessary*'

The competent authority as stamped on this file retains the right to request all components of calculations and/or information which it would consider necessary.

Appendix 10.1: Annex 2-1 - French Loading Conditions.

Annex 2

M.F.V. "Pere Charles"

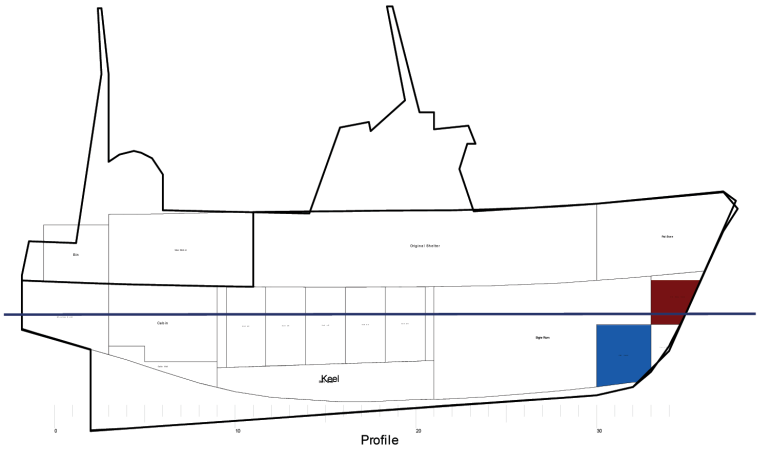
French Loading Conditions

Produced using 'Tribon M3 Calc'

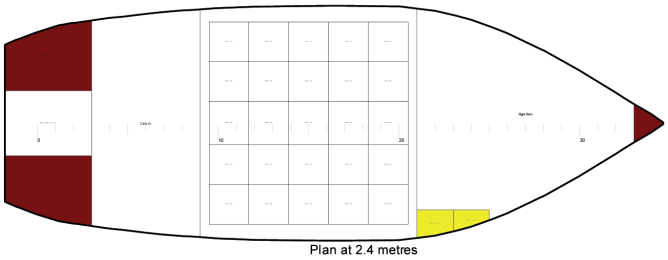
Appendix 10.1: Annex 2-2

1A - Departure for fishing

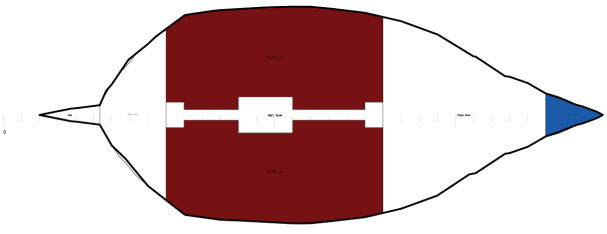
Intact State



Profile



Plan at 2.4 metres



Plan at 1.0 metres

Key	Name	Density (t/m3)
	FW	1.0000
	FO	0.8500
	LO	0.9000
	HO	0.9500

Appendix 10.1: Annex 2-3

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Departure Port										
FO Aft (S)	-2-3	FO	98.0	0.850	5.2	0.41	1.80	2.60	0.7	
FO Aft (P)	-2-3	FO	98.0	0.850	5.2	0.41	-1.80	2.60	0.7	
FO D.B. (S)	9-21	FO	98.0	0.850	7.3	7.83	1.30	0.77	3.0	
FO D.B. (P)	9-21	FO	98.0	0.850	7.3	7.83	-1.30	0.77	3.0	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
FW Tank	30-33	FW	98.0	1.000	2.6	15.59	0.00	1.61	1.2	
Total Departure Port					**29.6**	**6.35**	**0.08**	**1.60**	**9.1**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Departure Port										
Ice					5.0	9.60	0.00	2.20	0.0	
Total Departure Port					**5.0**	**9.60**	**0.00**	**2.20**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	
Deadweight					**48.5**	**7.37**	**0.05**	**2.02**	**9.1**	
Total Displacement					**153.7**	**7.84**	**0.02**	**2.56**	**9.1**	
Buoyancy					**153.7**	**7.84**	**0.03**	**1.60**	**288.4**	
Total Buoyancy					**153.7**	**7.84**	**0.03**	**1.60**	**288.4**	

Appendix 10.1: Annex 2-4

Intact State

Drafts at equilibrium angle

Draft at LCF	2.481	metres
Draft aft at marks	2.475	metres
Draft fwd at marks	2.491	metres
Draft at AP	2.475	metres
Draft at FP	2.490	metres
Mean draft at midships	2.482	metres

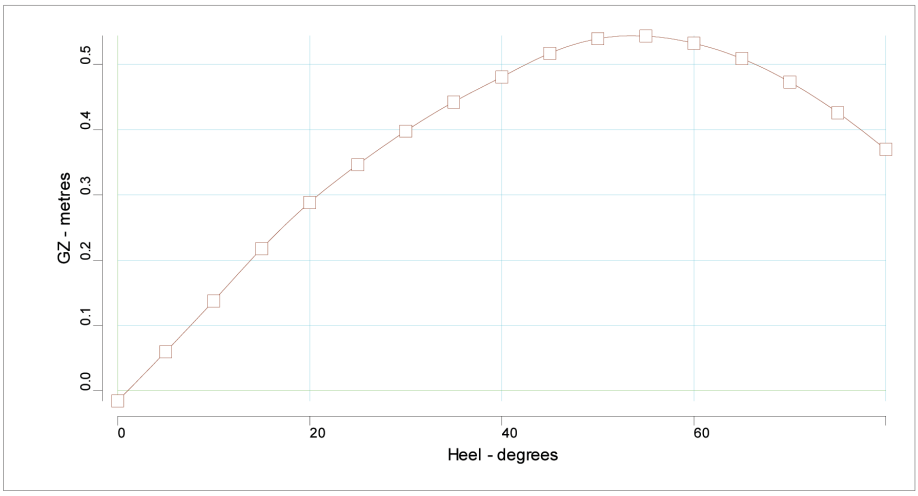
Hydrostatics at equilibrium angle

Density of water	1.0250	tonnes/cu.m
Heel to starboard	1.05	degrees
Trim by the bow	0.016	metres
KG	2.562	metres
FSC	0.059	metres
KGf	2.621	metres
GMt	0.860	metres
BMt	1.876	metres
BMl	13.864	metres
Waterplane area	97.54	sq.metres
LCG	7.836	metres
LCB	7.837	metres
TCB	0.034	metres
LCF	7.260	metres
TCF	0.050	metres
TPC	1.000	tonnes/cm
MTC	1.229	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 2-5

Intact State

1A - Departure for fishing: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)
0.00	-0.0156	0.8486	0.016	2.483	0.64[8]
5.00	0.0599	0.8638	0.015	2.472	0.35[8]
10.00	0.1379	0.9040	0.015	2.440	0.07[8]
15.00	0.2180	0.8695	0.019	2.387	-0.21[8]
20.00	0.2886	0.7257	0.003	2.316	-0.50[8]
25.00	0.3465	0.6250	-0.050	2.225	-0.77[8]
30.00	0.3979	0.5975	-0.133	2.112	-1.04[6]
35.00	0.4426	0.5175	-0.237	1.973	-1.30[6]
40.00	0.4808	0.4865	-0.363	1.808	-1.54[6]
45.00	0.5171	0.4567	-0.509	1.618	-1.77[6]
50.00	0.5393	0.2584	-0.672	1.410	-1.97[6]
55.00	0.5435	0.0699	-0.846	1.192	-2.17[6]
60.00	0.5325	-0.0887	-1.027	0.968	-2.35[6]
65.00	0.5090	-0.2192	-1.210	0.739	-2.55[2]
70.00	0.4731	-0.3432	-1.401	0.505	-2.77[2]
75.00	0.4260	-0.4536	-1.609	0.267	-2.98[2]
80.00	0.3700	-0.5331	-1.828	0.027	-3.18[0]

Appendix 10.1: Annex 2-6

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf
1	Area under GZ curve up to 30 degrees > 0.055	0.109	0.055	3.023	0.447
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.077	0.030	3.092	0.378
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.186	0.090	3.031	0.439
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	0.398	0.200	3.017	0.453
5	Maximum GZ to be at an angle > 25 degrees	55.436	25.000	3.311	0.159
6	Initial GM to be at least 0.35 metres	0.860	0.350	3.141	0.329
	Critical			**3.017**	**0.453**
	Actual			**2.621**	**0.849**

Condition complies with the regulations

Appendix 10.1: Annex 2-7

Intact State

Immersion Particulars

State of Openings = X-ray: Normal condition

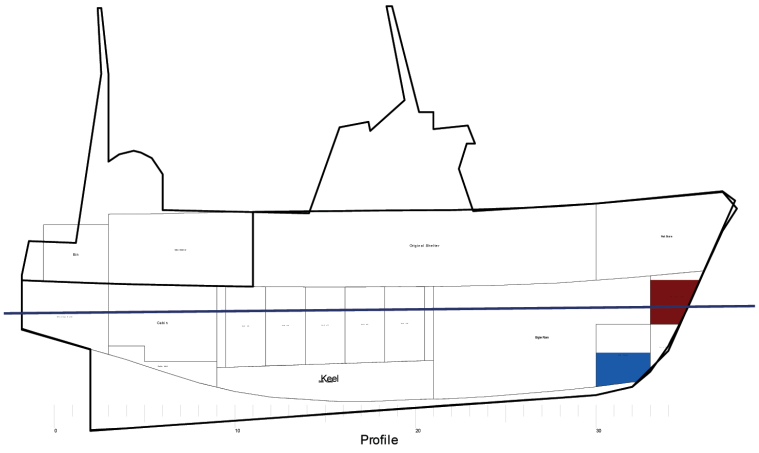
Deck Edge

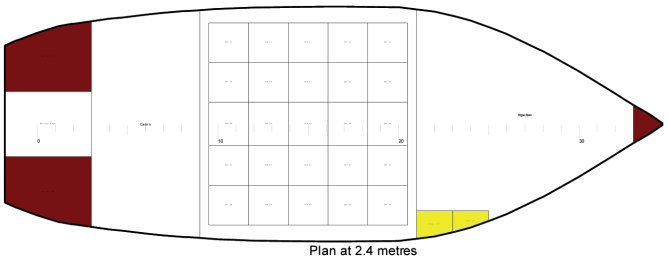
Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.777	16.833
1	-0.900	-2.780	3.300	0.879	Not immersed
2	0.000	2.860	3.270	0.745	15.811
3	0.000	-2.860	3.270	0.849	Not immersed
4	3.000	2.980	3.170	0.640	13.308
5	3.000	-2.980	3.170	0.749	Not immersed
6	6.000	3.220	3.120	0.583	11.392
7	6.000	-3.220	3.120	0.700	Not immersed
8	8.000	3.250	3.120	0.580	11.250
9	8.000	-3.250	3.120	0.699	Not immersed
10	10.000	3.250	3.130	0.589	11.392
11	10.000	-3.250	3.130	0.707	Not immersed
12	12.000	3.020	3.155	0.616	12.688
13	12.000	-3.020	3.155	0.726	Not immersed
14	14.000	2.450	3.235	0.705	17.358
15	14.000	-2.450	3.235	0.794	Not immersed
16	16.000	1.525	3.390	0.875	37.285
17	16.000	-1.525	3.390	0.930	Not immersed
18	17.500	0.540	3.525	1.026	Not immersed
19	17.500	-0.540	3.525	1.046	Not immersed
20	17.950	0.000	3.565	1.076	Not immersed

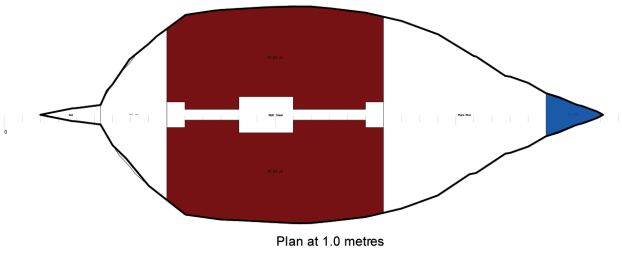
Appendix 10.1: Annex 2-8

2A - On Fishing Grounds - 80% Hold + 40% Deck + 30% consumables

Intact State







Key	Name	Density (t/m3)
	FW	1.0000
	FO	0.8500
	LO	0.9000
	HO	0.9500

Appendix 10.1: Annex 2-9

Pere Charles ***2A - On Fishing Grounds*** *French Loading Conditions*

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Departure Grounds										
FO Aft (S)	-2-3	FO	18.9	0.850	1.0	0.74	1.67	1.97	0.8	
FO Aft (P)	-2-3	FO	18.9	0.850	1.0	0.74	-1.67	1.97	0.8	
FO D.B. (S)	9-21	FO	28.7	0.850	2.2	7.93	0.88	0.48	2.7	
FO D.B. (P)	9-21	FO	28.7	0.850	2.2	7.93	-0.87	0.48	2.7	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
FW Tank	30-33	FW	30.0	1.000	0.8	15.55	-0.00	1.12	0.3	
Total Departure Grounds					**9.1**	**8.43**	**0.26**	**1.30**	**7.9**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Departure Grounds with fish on deck										
Fish in Hold					24.0	6.80	0.00	2.05	0.0	
Fish on Deck					12.0	7.50	0.00	4.24	0.0	
Total Departure Grounds with fish on deck					**36.0**	**7.03**	**0.00**	**2.78**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	
Deadweight					**58.9**	**7.65**	**0.04**	**2.57**	**7.9**	
Total Displacement					**164.2**	**7.91**	**0.01**	**2.73**	**7.9**	
Buoyancy					**164.2**	**7.92**	**0.04**	**1.66**	**291.7**	
Total Buoyancy					**164.2**	**7.92**	**0.04**	**1.66**	**291.7**	

Appendix 10.1: Annex 2-10

Intact State

Drafts at equilibrium angle

Draft at LCF	2.585	metres
Draft aft at marks	2.514	metres
Draft fwd at marks	2.684	metres
Draft at AP	2.514	metres
Draft at FP	2.683	metres
Mean draft at midships	2.599	metres

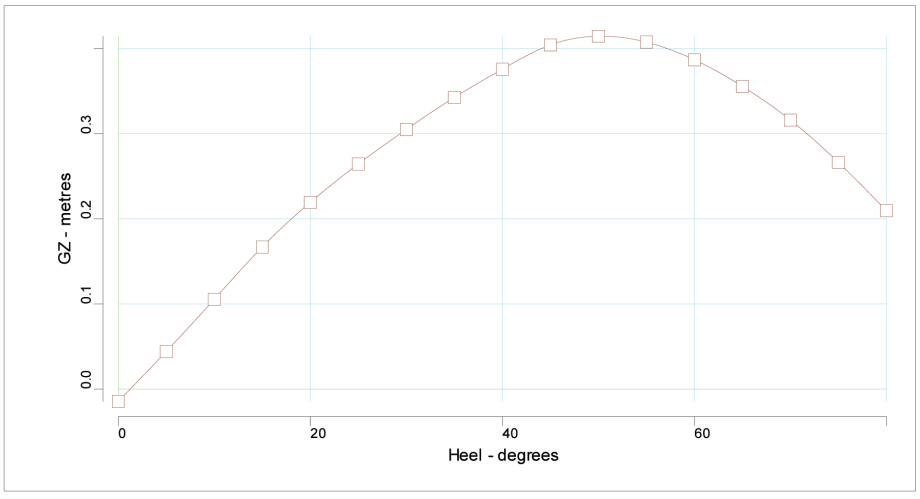
Hydrostatics at equilibrium angle

Density of water	1.0250	tonnes/cu.m
Heel to starboard	1.26	degrees
Trim by the bow	0.168	metres
KG	2.726	metres
FSC	0.048	metres
KGf	2.773	metres
GMt	0.670	metres
BMt	1.777	metres
BMl	13.346	metres
Waterplane area	98.49	sq.metres
LCG	7.907	metres
LCB	7.918	metres
TCB	0.039	metres
LCF	7.348	metres
TCF	0.063	metres
TPC	1.010	tonnes/cm
MTC	1.263	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 2-11

Intact State

2A - On Fishing Grounds: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)
0.00	-0.0146	0.6575	0.168	2.598	0.52[10]
5.00	0.0441	0.6731	0.166	2.587	0.23[10]
10.00	0.1054	0.7174	0.164	2.554	-0.05[10]
15.00	0.1670	0.6500	0.157	2.500	-0.33[10]
20.00	0.2195	0.5634	0.118	2.429	-0.61[10]
25.00	0.2646	0.5111	0.041	2.339	-0.88[8]
30.00	0.3052	0.5039	-0.067	2.226	-1.15[8]
35.00	0.3429	0.4812	-0.199	2.089	-1.41[6]
40.00	0.3761	0.4561	-0.350	1.925	-1.66[6]
45.00	0.4047	0.3488	-0.518	1.736	-1.89[6]
50.00	0.4149	0.1403	-0.703	1.533	-2.10[6]
55.00	0.4079	-0.0366	-0.894	1.321	-2.31[6]
60.00	0.3872	-0.1791	-1.086	1.101	-2.49[6]
65.00	0.3559	-0.2934	-1.278	0.875	-2.72[2]
70.00	0.3162	-0.3896	-1.471	0.646	-2.94[2]
75.00	0.2664	-0.4813	-1.672	0.411	-3.15[0]
80.00	0.2096	-0.5473	-1.883	0.174	-3.36[0]

Appendix 10.1: Annex 2-12

Pere Charles ***2A - On Fishing Grounds*** *French Loading Conditions*

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf
1	Area under GZ curve up to 30 degrees > 0.055	0.083	0.055	2.982	0.449
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.060	0.030	3.070	0.361
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.142	0.090	2.998	0.433
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	0.305	0.200	2.984	0.447
5	Maximum GZ to be at an angle > 25 degrees	50.839	25.000	3.324	0.107
6	Initial GM to be at least 0.35 metres	0.670	0.350	3.100	0.331
	Critical			**2.982**	**0.449**
	Actual			**2.773**	**0.658**

Condition complies with the regulations

Appendix 10.1: Annex 2-13

Intact State

Immersion Particulars

State of Openings = X-ray: Normal condition

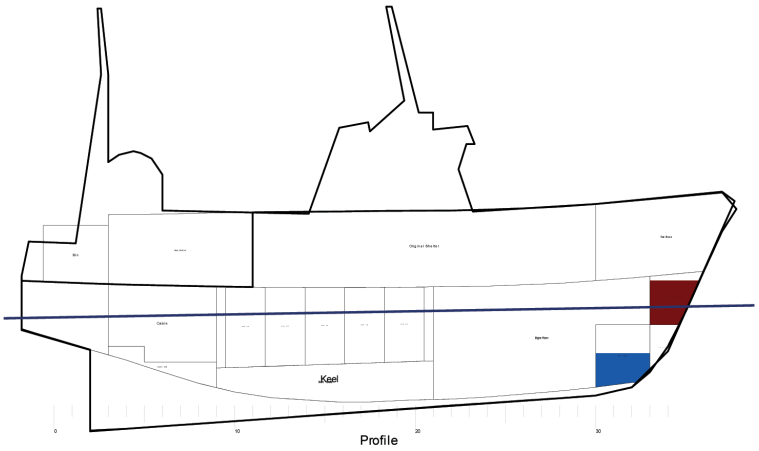
Deck Edge

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.735	16.045
1	-0.900	-2.780	3.300	0.857	Not immersed
2	0.000	2.860	3.270	0.694	14.941
3	0.000	-2.860	3.270	0.820	Not immersed
4	3.000	2.980	3.170	0.563	12.021
5	3.000	-2.980	3.170	0.694	Not immersed
6	6.000	3.220	3.120	0.478	9.731
7	6.000	-3.220	3.120	0.620	Not immersed
8	8.000	3.250	3.120	0.458	9.321
9	8.000	-3.250	3.120	0.601	Not immersed
10	10.000	3.250	3.130	0.449	9.165
11	10.000	-3.250	3.130	0.592	Not immersed
12	12.000	3.020	3.155	0.460	9.946
13	12.000	-3.020	3.155	0.593	Not immersed
14	14.000	2.450	3.235	0.533	13.696
15	14.000	-2.450	3.235	0.641	Not immersed
16	16.000	1.525	3.390	0.689	28.809
17	16.000	-1.525	3.390	0.756	Not immersed
18	17.500	0.540	3.525	0.831	Not immersed
19	17.500	-0.540	3.525	0.855	Not immersed
20	17.950	0.000	3.565	0.879	Not immersed

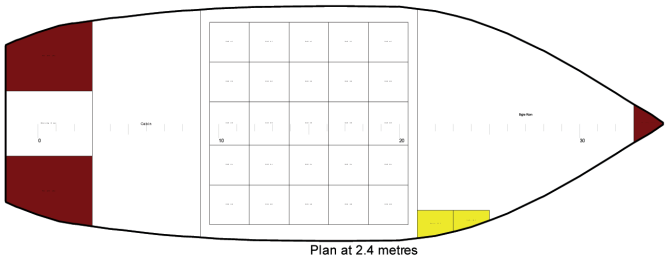
Appendix 10.1: Annex 2-14

3A - Departure from Grounds - Hold full + 30% consumables

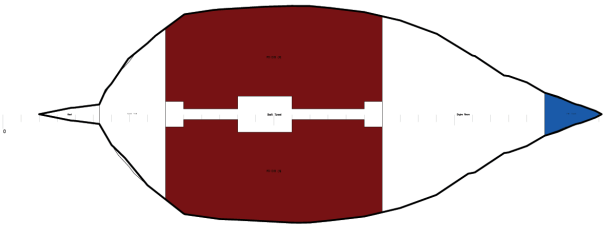
Intact State



Profile



Plan at 2.4 metres



Plan at 1.0 metres

Key	Name	Density (t/m3)
	FW	1.0000
	FO	0.8500
	LO	0.9000
	HO	0.9500

Appendix 10.1: Annex 2-15

Pere Charles ***3A - Departure from Grounds*** *French Loading Conditions*

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Departure Grounds										
FO Aft (S)	-2-3	FO	18.9	0.850	1.0	0.74	1.67	1.97	0.8	
FO Aft (P)	-2-3	FO	18.9	0.850	1.0	0.74	-1.67	1.97	0.8	
FO D.B. (S)	9-21	FO	28.7	0.850	2.2	7.93	0.88	0.48	2.7	
FO D.B. (P)	9-21	FO	28.7	0.850	2.2	7.93	-0.87	0.48	2.7	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
FW Tank	30-33	FW	30.0	1.000	0.8	15.55	-0.00	1.12	0.3	
Total Departure Grounds					**9.1**	**8.43**	**0.26**	**1.30**	**7.9**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Departure Grounds										
Fish in Hold					30.0	7.50	0.00	2.05	0.0	
Total Departure Grounds					**30.0**	**7.50**	**0.00**	**2.05**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	
Deadweight					**52.9**	**7.99**	**0.05**	**2.14**	**7.9**	
Total Displacement					**158.2**	**8.03**	**0.02**	**2.59**	**7.9**	
Buoyancy					**158.2**	**8.05**	**0.03**	**1.62**	**290.2**	
Total Buoyancy					**158.2**	**8.05**	**0.03**	**1.62**	**290.2**	

Appendix 10.1: Annex 2-16

Intact State

Drafts at equilibrium angle

Draft at LCF	2.526	metres
Draft aft at marks	2.399	metres
Draft fwd at marks	2.702	metres
Draft at AP	2.399	metres
Draft at FP	2.699	metres
Mean draft at midships	2.549	metres

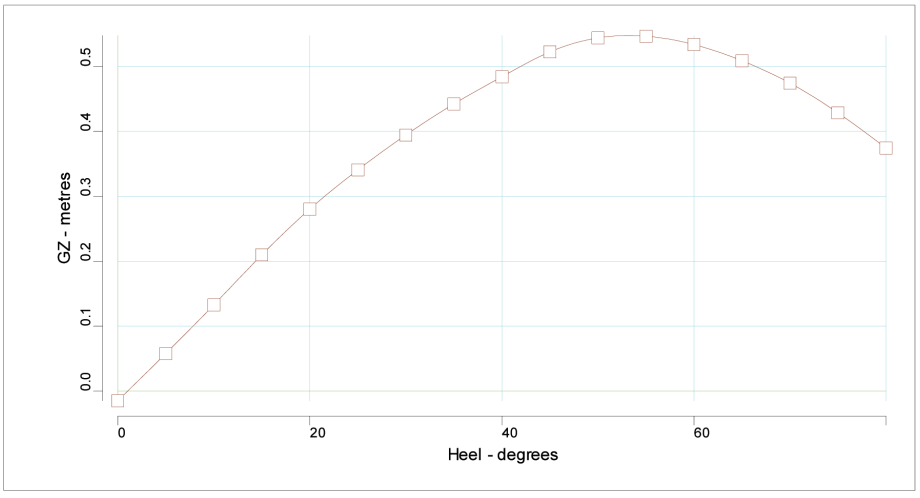
Hydrostatics at equilibrium angle

Density of water	1.0250	tonnes/cu.m
Heel to starboard	1.05	degrees
Trim by the bow	0.300	metres
KG	2.585	metres
FSC	0.050	metres
KGf	2.635	metres
GMt	0.832	metres
BMt	1.834	metres
BMl	13.808	metres
Waterplane area	98.31	sq.metres
LCG	8.029	metres
LCB	8.046	metres
TCB	0.034	metres
LCF	7.380	metres
TCF	0.052	metres
TPC	1.008	tonnes/cm
MTC	1.259	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 2-17

Intact State

3A - Departure Grounds: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)
0.00	-0.0152	0.8219	0.300	2.549	0.55[12]
5.00	0.0577	0.8326	0.299	2.538	0.27[10]
10.00	0.1326	0.8663	0.298	2.505	-0.01[10]
15.00	0.2097	0.8494	0.301	2.450	-0.29[10]
20.00	0.2804	0.7467	0.290	2.376	-0.57[10]
25.00	0.3407	0.6495	0.244	2.282	-0.84[10]
30.00	0.3944	0.6197	0.166	2.166	-1.09[10]
35.00	0.4423	0.5623	0.063	2.024	-1.33[8]
40.00	0.4842	0.5260	-0.063	1.856	-1.56[8]
45.00	0.5225	0.4669	-0.209	1.663	-1.77[6]
50.00	0.5440	0.2419	-0.372	1.454	-1.97[6]
55.00	0.5466	0.0480	-0.544	1.237	-2.17[6]
60.00	0.5338	-0.1101	-0.720	1.013	-2.35[6]
65.00	0.5088	-0.2385	-0.897	0.784	-2.52[6]
70.00	0.4743	-0.3456	-1.075	0.552	-2.67[6]
75.00	0.4285	-0.4524	-1.264	0.316	-2.86[2]
80.00	0.3745	-0.5275	-1.466	0.077	-3.05[2]

Appendix 10.1: Annex 2-18

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf
1	Area under GZ curve up to 30 degrees > 0.055	0.106	0.055	3.016	0.441
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.077	0.030	3.105	0.352
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.183	0.090	3.032	0.424
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	0.394	0.200	3.024	0.433
5	Maximum GZ to be at an angle > 25 degrees	51.967	25.000	3.351	0.105
6	Initial GM to be at least 0.35 metres	0.832	0.350	3.125	0.332
	Critical			**3.016**	**0.441**
	Actual			**2.635**	**0.822**

Condition complies with the regulations

Appendix 10.1: Annex 2-19

Intact State

Immersion Particulars

State of Openings = X-ray: Normal condition

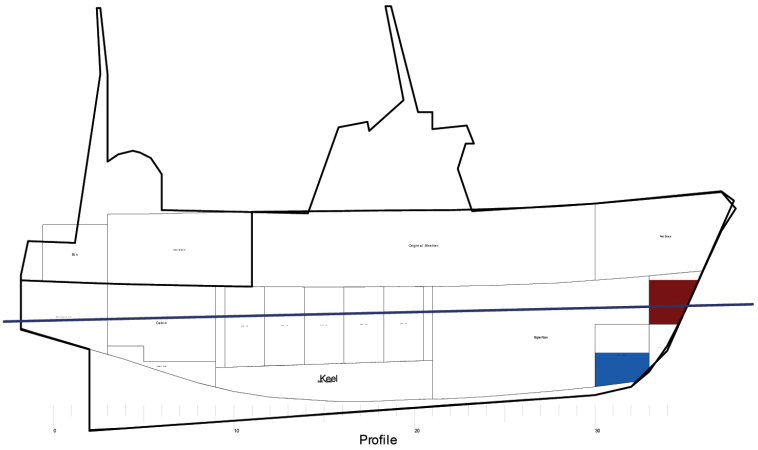
Deck Edge

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.867	18.708
1	-0.900	-2.780	3.300	0.969	Not immersed
2	0.000	2.860	3.270	0.820	17.363
3	0.000	-2.860	3.270	0.925	Not immersed
4	3.000	2.980	3.170	0.666	13.843
5	3.000	-2.980	3.170	0.775	Not immersed
6	6.000	3.220	3.120	0.559	10.996
7	6.000	-3.220	3.120	0.678	Not immersed
8	8.000	3.250	3.120	0.524	10.264
9	8.000	-3.250	3.120	0.644	Not immersed
10	10.000	3.250	3.130	0.500	9.827
11	10.000	-3.250	3.130	0.619	Not immersed
12	12.000	3.020	3.155	0.494	10.396
13	12.000	-3.020	3.155	0.605	Not immersed
14	14.000	2.450	3.235	0.550	13.833
15	14.000	-2.450	3.235	0.640	Not immersed
16	16.000	1.525	3.390	0.688	27.119
17	16.000	-1.525	3.390	0.744	Not immersed
18	17.500	0.540	3.525	0.815	Not immersed
19	17.500	-0.540	3.525	0.835	Not immersed
20	17.950	0.000	3.565	0.857	Not immersed

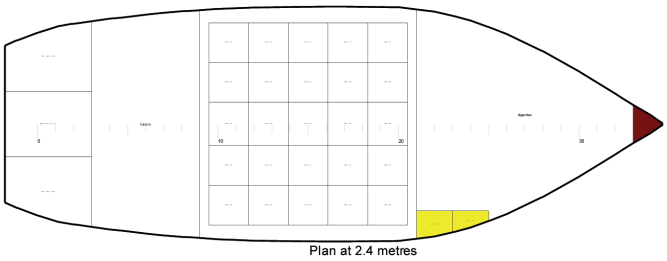
Appendix 10.1: Annex 2-20

4A - Arrival in port – Hold full + 10% consumables

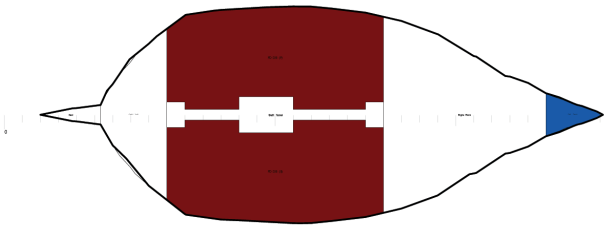
Intact State



Profile



Plan at 2.4 metres



Plan at 1.0 metres

Key	Name	Density (t/m3)
	FW	1.0000
	FO	0.8500
	LO	0.9000
	HO	0.9500

Appendix 10.1: Annex 2-21

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Arrival Port										
FO D.B. (S)	9-21	FO	7.7	0.850	0.6	8.21	0.58	0.31	0.5	
FO D.B. (P)	9-21	FO	7.7	0.850	0.6	8.21	-0.58	0.31	0.5	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
FW Tank	30-33	FW	30.0	1.000	0.8	15.55	-0.00	1.12	0.3	
Total Arrival Port					**3.9**	**12.83**	**0.61**	**1.58**	**1.6**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Departure Grounds										
Fish in Hold					30.0	7.50	0.00	2.05	0.0	
Total Departure Grounds					**30.0**	**7.50**	**0.00**	**2.05**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	
Deadweight					**47.8**	**8.30**	**0.05**	**2.25**	**1.6**	
Total Displacement					**153.0**	**8.13**	**0.02**	**2.64**	**1.6**	
Buoyancy					**153.0**	**8.15**	**0.04**	**1.59**	**288.4**	
Total Buoyancy					**153.0**	**8.15**	**0.04**	**1.59**	**288.4**	

Appendix 10.1: Annex 2-22

Intact State

Drafts at equilibrium angle

Draft at LCF	2.475	metres
Draft aft at marks	2.306	metres
Draft fwd at marks	2.709	metres
Draft at AP	2.306	metres
Draft at FP	2.706	metres
Mean draft at midships	2.506	metres

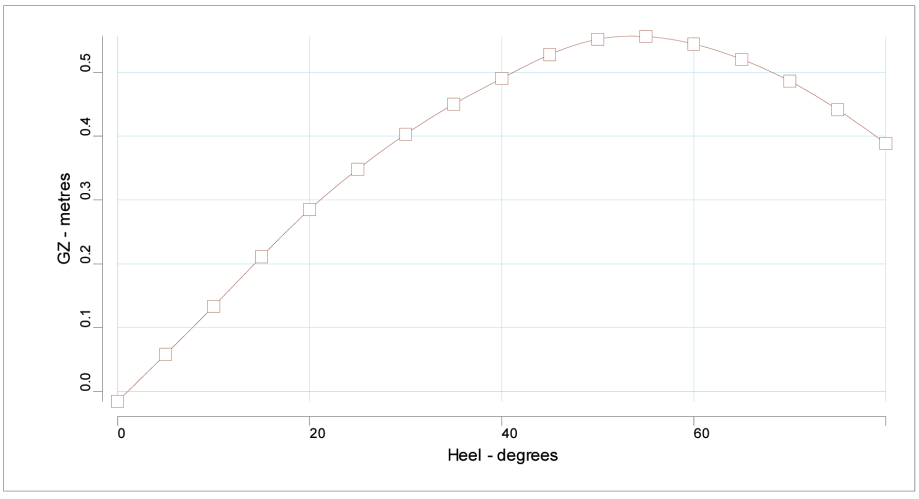
Hydrostatics at equilibrium angle

Density of water	1.0250	tonnes/cu.m
Heel to starboard	1.07	degrees
Trim by the bow	0.400	metres
KG	2.635	metres
FSC	0.011	metres
KGf	2.646	metres
GMt	0.844	metres
BMt	1.884	metres
BMl	14.187	metres
Waterplane area	98.06	sq.metres
LCG	8.129	metres
LCB	8.153	metres
TCB	0.035	metres
LCF	7.408	metres
TCF	0.053	metres
TPC	1.005	tonnes/cm
MTC	1.251	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 2-23

Intact State

4A - Arrival in port – 100% catch: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)
0.00	-0.0157	0.8324	0.400	2.505	0.57[12]
5.00	0.0581	0.8391	0.400	2.494	0.31[12]
10.00	0.1333	0.8658	0.403	2.462	0.03[10]
15.00	0.2111	0.8781	0.412	2.406	-0.26[10]
20.00	0.2850	0.7814	0.419	2.330	-0.53[10]
25.00	0.3479	0.6580	0.398	2.233	-0.80[10]
30.00	0.4028	0.6159	0.344	2.113	-1.05[10]
35.00	0.4499	0.5313	0.262	1.968	-1.29[10]
40.00	0.4902	0.4920	0.154	1.796	-1.50[10]
45.00	0.5276	0.4821	0.025	1.601	-1.69[8]
50.00	0.5516	0.2526	-0.123	1.387	-1.88[8]
55.00	0.5558	0.0531	-0.281	1.166	-2.06[6]
60.00	0.5442	-0.1094	-0.444	0.938	-2.24[6]
65.00	0.5201	-0.2401	-0.610	0.707	-2.40[6]
70.00	0.4860	-0.3458	-0.776	0.472	-2.55[6]
75.00	0.4412	-0.4541	-0.953	0.235	-2.68[6]
80.00	0.3885	-0.4986	-1.153	-0.002	-2.82[2]

Appendix 10.1: Annex 2-24

Pere Charles ***4A - Arrival in port – 100% catch*** *French Loading Conditions*

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf
1	Area under GZ curve up to 30 degrees > 0.055	0.108	0.055	3.039	0.439
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.078	0.030	3.129	0.349
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.186	0.090	3.056	0.422
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	0.403	0.200	3.052	0.427
5	Maximum GZ to be at an angle > 25 degrees	55.354	25.000	3.372	0.106
6	Initial GM to be at least 0.35 metres	0.844	0.350	3.147	0.331
	Critical			**3.039**	**0.439**
	Actual			**2.646**	**0.832**

Condition complies with the regulations

Appendix 10.1: Annex 2-25

Pere Charles ***4A - Arrival in port – 100% catch*** *French Loading Conditions*

Intact State

Immersion Particulars

State of Openings = X-ray: Normal condition

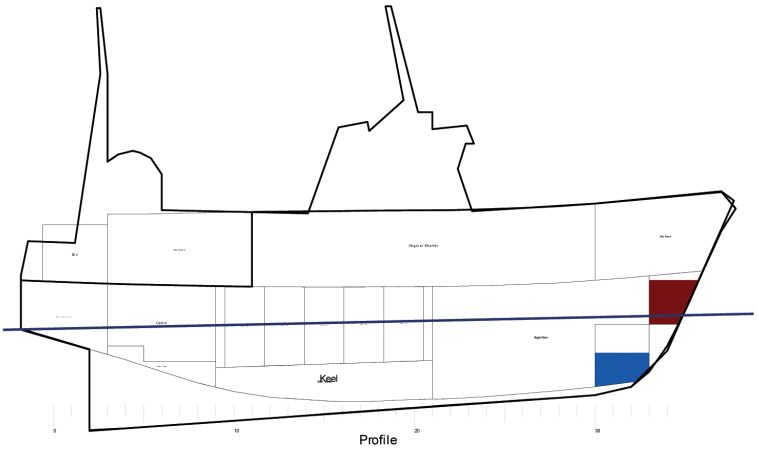
Deck Edge

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.964	21.045
1	-0.900	-2.780	3.300	1.068	Not immersed
2	0.000	2.860	3.270	0.912	19.468
3	0.000	-2.860	3.270	1.019	Not immersed
4	3.000	2.980	3.170	0.741	15.383
5	3.000	-2.980	3.170	0.852	Not immersed
6	6.000	3.220	3.120	0.617	12.090
7	6.000	-3.220	3.120	0.738	Not immersed
8	8.000	3.250	3.120	0.570	11.130
9	8.000	-3.250	3.120	0.692	Not immersed
10	10.000	3.250	3.130	0.534	10.459
11	10.000	-3.250	3.130	0.656	Not immersed
12	12.000	3.020	3.155	0.518	10.845
13	12.000	-3.020	3.155	0.630	Not immersed
14	14.000	2.450	3.235	0.562	14.053
15	14.000	-2.450	3.235	0.654	Not immersed
16	16.000	1.525	3.390	0.688	26.240
17	16.000	-1.525	3.390	0.745	Not immersed
18	17.500	0.540	3.525	0.807	Not immersed
19	17.500	-0.540	3.525	0.827	Not immersed
20	17.950	0.000	3.565	0.847	Not immersed

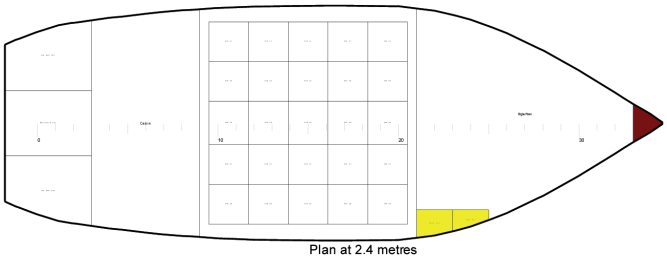
Appendix 10.1: Annex 2-26

5A - Arrival in port – 20% Hold+ 10% consumables

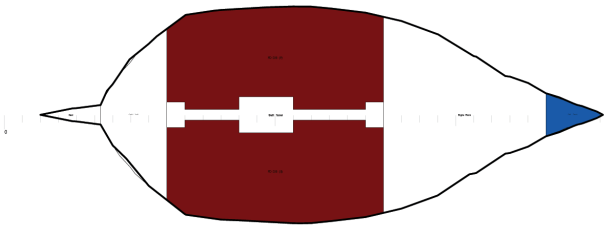
Intact State



Profile



Plan at 2.4 metres



Plan at 1.0 metres

Key	Name	Density (t/m3)
	FW	1.0000
	FO	0.8500
	LO	0.9000
	HO	0.9500

Appendix 10.1: Annex 2-27

Pere Charles ***5A - Arrival in port – 20% catch*** *French Loading Conditions*

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Arrival Port										
FO D.B. (S)	9-21	FO	7.7	0.850	0.6	8.21	0.58	0.31	0.5	
FO D.B. (P)	9-21	FO	7.7	0.850	0.6	8.21	-0.58	0.31	0.5	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
FW Tank	30-33	FW	30.0	1.000	0.8	15.55	-0.00	1.12	0.3	
Total Arrival Port					**3.9**	**12.83**	**0.61**	**1.58**	**1.6**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Departure Grounds 20% catch										
Fish in Hold					6.0	7.50	0.00	2.05	0.0	
Total Departure Grounds 20% catch					**6.0**	**7.50**	**0.00**	**2.05**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	
Deadweight					**23.8**	**9.11**	**0.10**	**2.45**	**1.6**	
Total Displacement					**129.0**	**8.25**	**0.02**	**2.74**	**1.6**	
Buoyancy					**129.0**	**8.27**	**0.05**	**1.45**	**275.5**	
Total Buoyancy					**129.0**	**8.27**	**0.05**	**1.45**	**275.5**	

Appendix 10.1: Annex 2-28

Intact State

Drafts at equilibrium angle

Draft at LCF	2.235	metres
Draft aft at marks	2.077	metres
Draft fwd at marks	2.449	metres
Draft at AP	2.077	metres
Draft at FP	2.446	metres
Mean draft at midships	2.262	metres

Hydrostatics at equilibrium angle

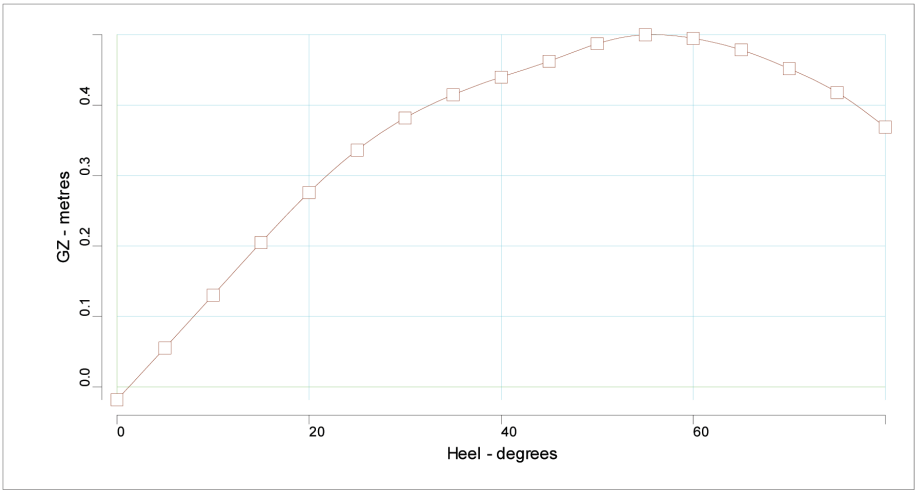
Density of water	1.0250	tonnes/cu.m
Heel to starboard	1.27	degrees
Trim by the bow	0.369	metres
KG	2.744	metres
FSC	0.013	metres
KGf	2.757	metres
GMt	0.846	metres
BMt	2.135	metres
BMl	15.210	metres
Waterplane area	94.66	sq.metres
LCG	8.245	metres
LCB	8.273	metres
TCB	0.048	metres
LCF	7.463	metres
TCF	0.065	metres
TPC	0.970	tonnes/cm
MTC	1.131	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 2-29

Pere Charles ***5A - Arrival in port – 20% catch*** *French Loading Conditions*

Intact State

5A - Arrival in port – 20% catch: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)
0.00	-0.0186	0.8287	0.368	2.261	0.82[12]
5.00	0.0553	0.8400	0.377	2.251	0.55[10]
10.00	0.1300	0.8491	0.401	2.219	0.27[10]
15.00	0.2050	0.8516	0.436	2.165	-0.02[10]
20.00	0.2762	0.7599	0.484	2.087	-0.30[10]
25.00	0.3361	0.6129	0.529	1.984	-0.56[10]
30.00	0.3819	0.4328	0.554	1.856	-0.81[10]
35.00	0.4149	0.3247	0.548	1.702	-1.04[10]
40.00	0.4400	0.2760	0.507	1.523	-1.25[10]
45.00	0.4626	0.2867	0.436	1.321	-1.44[10]
50.00	0.4874	0.3121	0.340	1.099	-1.60[10]
55.00	0.5002	0.1118	0.227	0.864	-1.75[10]
60.00	0.4950	-0.0447	0.098	0.624	-1.88[10]
65.00	0.4786	-0.1538	-0.046	0.385	-2.01[8]
70.00	0.4520	-0.1922	-0.210	0.146	-2.14[8]
75.00	0.4180	-0.1864	-0.424	-0.088	-2.28[6]
80.00	0.3689	-0.3998	-0.681	-0.323	-2.41[6]

Appendix 10.1: Annex 2-30

Pere Charles ***5A - Arrival in port – 20% catch*** *French Loading Conditions*

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf
1	Area under GZ curve up to 30 degrees > 0.055	0.104	0.055	3.122	0.463
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.072	0.030	3.179	0.407
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.176	0.090	3.125	0.461
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	0.382	0.200	3.121	0.465
5	Maximum GZ to be at an angle > 25 degrees	55.920	25.000	3.433	0.153
6	Initial GM to be at least 0.35 metres	0.846	0.350	3.261	0.324
	Critical			**3.121**	**0.465**
	Actual			**2.757**	**0.829**

Condition complies with the regulations

Appendix 10.1: Annex 2-31

Intact State

Immersion Particulars

State of Openings = X-ray: Normal condition

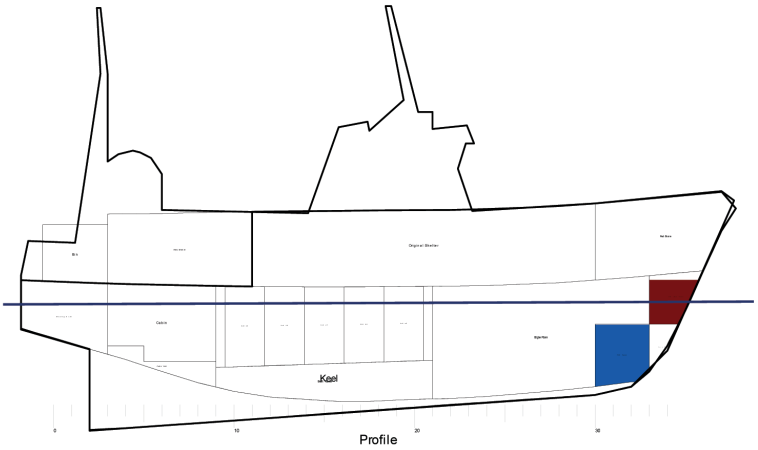
Deck Edge

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	1.183	28.013
1	-0.900	-2.780	3.300	1.306	Not immersed
2	0.000	2.860	3.270	1.132	25.830
3	0.000	-2.860	3.270	1.259	Not immersed
4	3.000	2.980	3.170	0.965	20.674
5	3.000	-2.980	3.170	1.097	Not immersed
6	6.000	3.220	3.120	0.846	16.572
7	6.000	-3.220	3.120	0.989	Not immersed
8	8.000	3.250	3.120	0.802	15.442
9	8.000	-3.250	3.120	0.947	Not immersed
10	10.000	3.250	3.130	0.770	14.707
11	10.000	-3.250	3.130	0.914	Not immersed
12	12.000	3.020	3.155	0.757	15.313
13	12.000	-3.020	3.155	0.891	Not immersed
14	14.000	2.450	3.235	0.807	19.258
15	14.000	-2.450	3.235	0.916	Not immersed
16	16.000	1.525	3.390	0.940	33.662
17	16.000	-1.525	3.390	1.007	Not immersed
18	17.500	0.540	3.525	1.064	Not immersed
19	17.500	-0.540	3.525	1.088	Not immersed
20	17.950	0.000	3.565	1.107	Not immersed

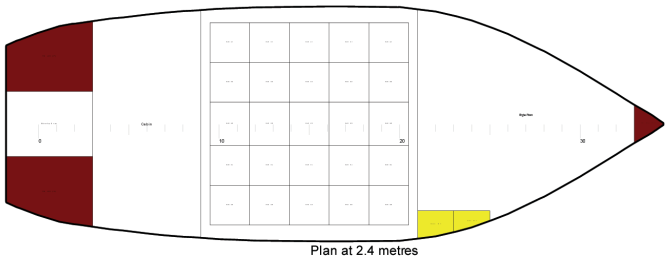
Appendix 10.1: Annex 2-32

6A - Maximum Load - Departure for fishing + Hold full

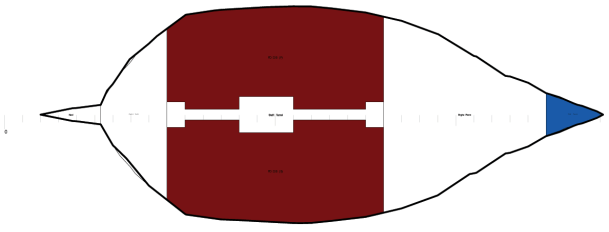
Intact State



Profile



Plan at 2.4 metres



Plan at 1.0 metres

Key	Name	Density (t/m3)
	FW	1.0000
	FO	0.8500
	LO	0.9000
	HO	0.9500

Appendix 10.1: Annex 2-33

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Departure Port										
FO Aft (S)	-2-3	FO	98.0	0.850	5.2	0.41	1.80	2.60	0.7	
FO Aft (P)	-2-3	FO	98.0	0.850	5.2	0.41	-1.80	2.60	0.7	
FO D.B. (S)	9-21	FO	98.0	0.850	7.3	7.83	1.30	0.77	3.0	
FO D.B. (P)	9-21	FO	98.0	0.850	7.3	7.83	-1.30	0.77	3.0	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
FW Tank	30-33	FW	98.0	1.000	2.6	15.59	0.00	1.61	1.2	
Total Departure Port					**29.6**	**6.35**	**0.08**	**1.60**	**9.1**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Departure Port										
Ice					5.0	9.60	0.00	2.20	0.0	
Total Departure Port					**5.0**	**9.60**	**0.00**	**2.20**	**0.0**	
Departure Grounds										
Fish in Hold					30.0	7.50	0.00	2.05	0.0	
Total Departure Grounds					**30.0**	**7.50**	**0.00**	**2.05**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	
Deadweight					**78.5**	**7.42**	**0.03**	**2.03**	**9.1**	
Total Displacement					**183.7**	**7.78**	**0.01**	**2.48**	**9.1**	
Buoyancy					**183.7**	**7.78**	**0.02**	**1.76**	**296.8**	
Total Buoyancy					**183.7**	**7.78**	**0.02**	**1.76**	**296.8**	

Appendix 10.1: Annex 2-34

Intact State

Drafts at equilibrium angle

Draft at LCF	2.778	metres
Draft aft at marks	2.751	metres
Draft fwd at marks	2.816	metres
Draft at AP	2.751	metres
Draft at FP	2.816	metres
Mean draft at midships	2.783	metres

Hydrostatics at equilibrium angle

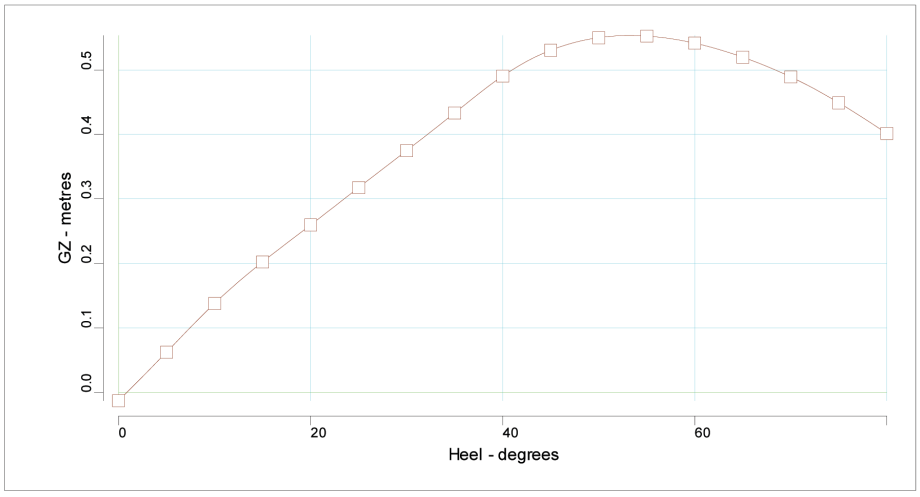
Density of water	1.0250	tonnes/cu.m
Heel to starboard	0.88	degrees
Trim by the bow	0.065	metres
KG	2.479	metres
FSC	0.049	metres
KGf	2.528	metres
GMt	0.859	metres
BMt	1.615	metres
BMl	12.254	metres
Waterplane area	99.54	sq.metres
LCG	7.781	metres
LCB	7.784	metres
TCB	0.025	metres
LCF	7.370	metres
TCF	0.046	metres
TPC	1.020	tonnes/cm
MTC	1.298	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 2-35

Pere Charles ***6A - Maximum Load*** *French Loading Conditions*

Intact State

6A - Maximum Load: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)
0.00	-0.0131	0.8513	0.065	2.783	0.34[8]
5.00	0.0624	0.8669	0.063	2.771	0.06[8]
10.00	0.1379	0.8073	0.055	2.737	-0.23[8]
15.00	0.2022	0.7025	0.001	2.687	-0.51[8]
20.00	0.2595	0.7135	-0.106	2.622	-0.81[6]
25.00	0.3174	0.7622	-0.251	2.537	-1.11[6]
30.00	0.3749	0.7777	-0.424	2.431	-1.40[6]
35.00	0.4332	0.8224	-0.617	2.300	-1.69[6]
40.00	0.4905	0.7441	-0.823	2.143	-1.95[6]
45.00	0.5305	0.5109	-1.046	1.967	-2.20[2]
50.00	0.5500	0.2931	-1.278	1.778	-2.50[2]
55.00	0.5524	0.1114	-1.512	1.578	-2.80[2]
60.00	0.5414	-0.0384	-1.743	1.370	-3.08[0]
65.00	0.5196	-0.1622	-1.969	1.154	-3.35[0]
70.00	0.4891	-0.2694	-2.191	0.932	-3.60[0]
75.00	0.4490	-0.3674	-2.415	0.704	-3.84[0]
80.00	0.4015	-0.4515	-2.641	0.471	-4.05[0]

Appendix 10.1: Annex 2-36

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf
1	Area under GZ curve up to 30 degrees > 0.055	0.101	0.055	2.875	0.504
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.076	0.030	2.984	0.395
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.177	0.090	2.900	0.479
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	0.375	0.200	2.878	0.502
5	Maximum GZ to be at an angle > 25 degrees	51.675	25.000	3.275	0.104
6	Initial GM to be at least 0.35 metres	0.859	0.350	3.045	0.335
	Critical			**2.875**	**0.504**
	Actual			**2.528**	**0.851**

Condition complies with the regulations

Appendix 10.1: Annex 2-37

Intact State

Immersion Particulars

State of Openings = X-ray: Normal condition

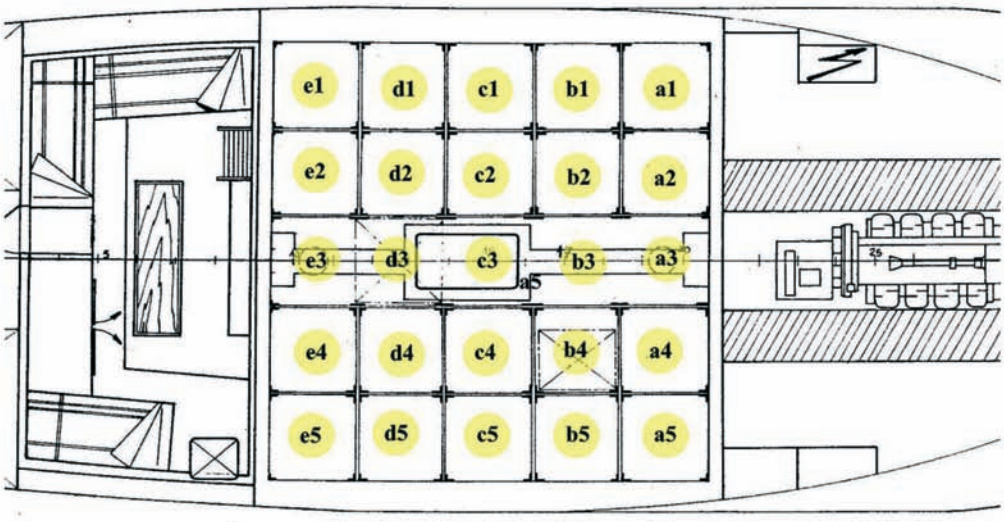
Deck Edge

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.512	11.111
1	-0.900	-2.780	3.300	0.597	Not immersed
2	0.000	2.860	3.270	0.477	10.254
3	0.000	-2.860	3.270	0.564	Not immersed
4	3.000	2.980	3.170	0.364	7.859
5	3.000	-2.980	3.170	0.455	Not immersed
6	6.000	3.220	3.120	0.299	6.204
7	6.000	-3.220	3.120	0.398	Not immersed
8	8.000	3.250	3.120	0.291	6.016
9	8.000	-3.250	3.120	0.391	Not immersed
10	10.000	3.250	3.130	0.294	6.069
11	10.000	-3.250	3.130	0.393	Not immersed
12	12.000	3.020	3.155	0.315	6.887
13	12.000	-3.020	3.155	0.407	Not immersed
14	14.000	2.450	3.235	0.396	10.161
15	14.000	-2.450	3.235	0.471	Not immersed
16	16.000	1.525	3.390	0.558	24.814
17	16.000	-1.525	3.390	0.605	Not immersed
18	17.500	0.540	3.525	0.702	Not immersed
19	17.500	-0.540	3.525	0.719	Not immersed
20	17.950	0.000	3.565	0.749	Not immersed

Appendix 10.1: Annex 3-1 - Drawings and Photographs.

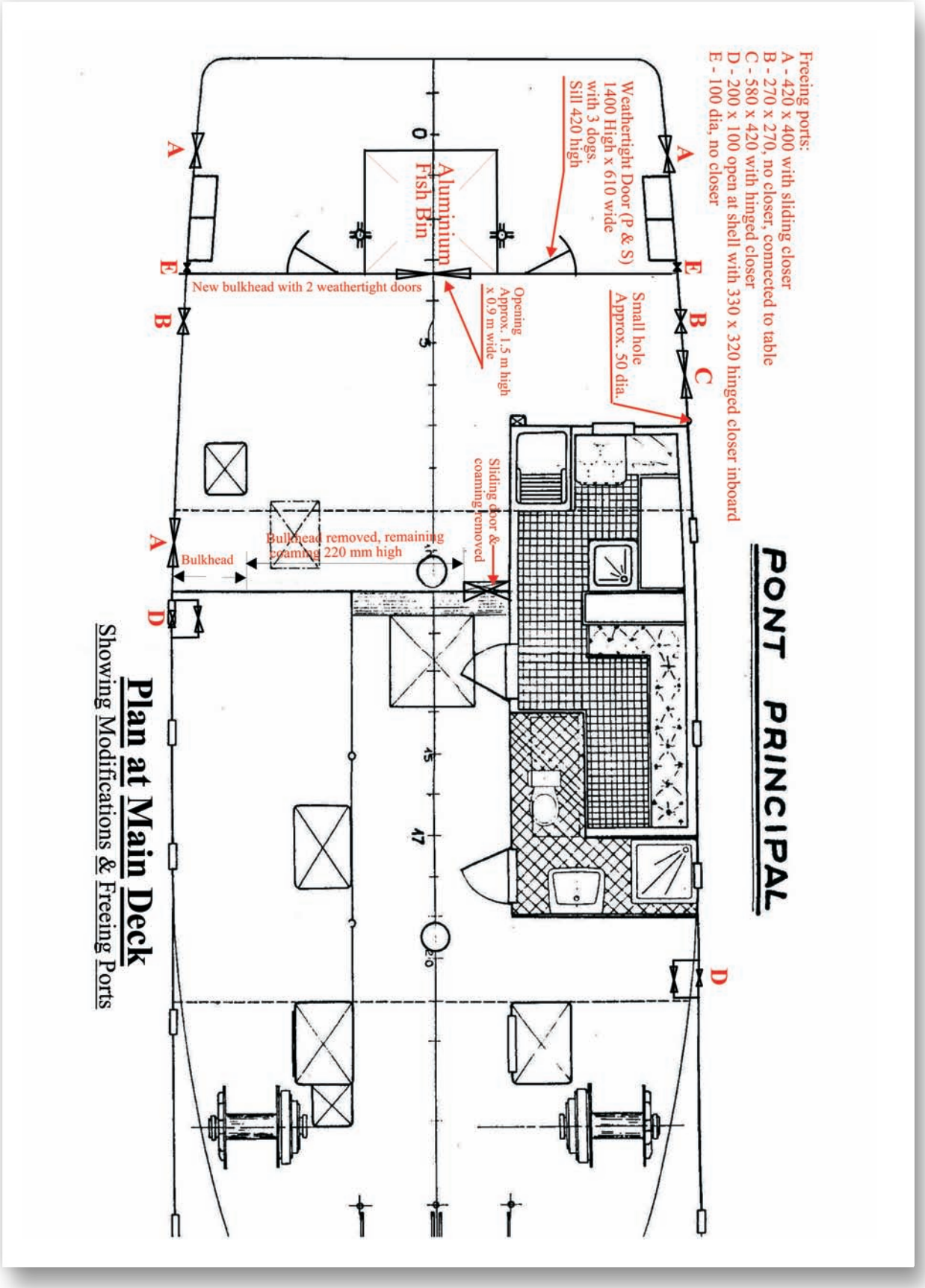
Annex 3

COUPE SOUS PONT PRINCIPAL

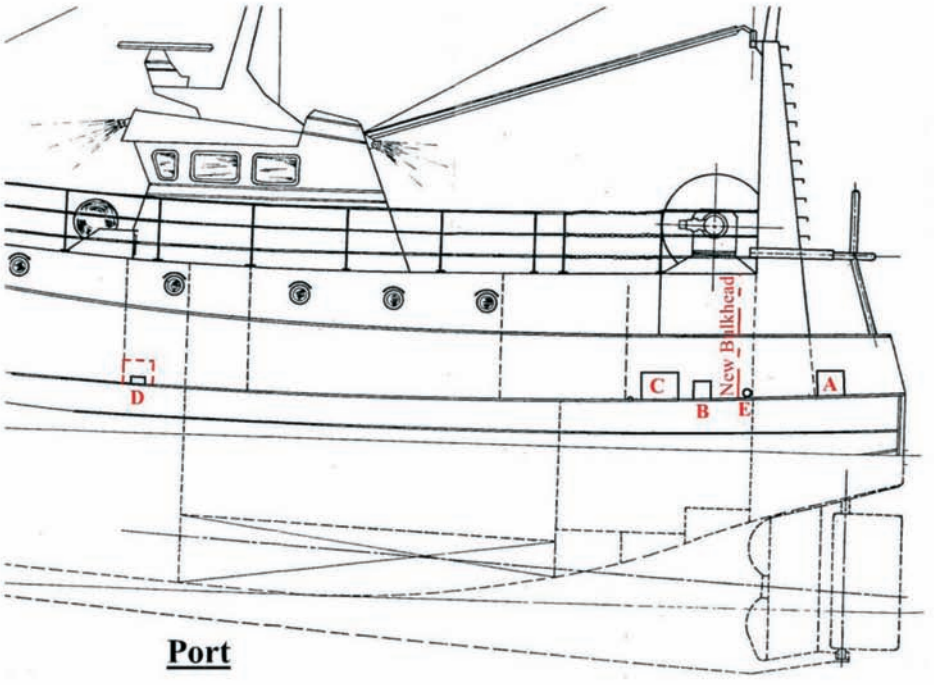


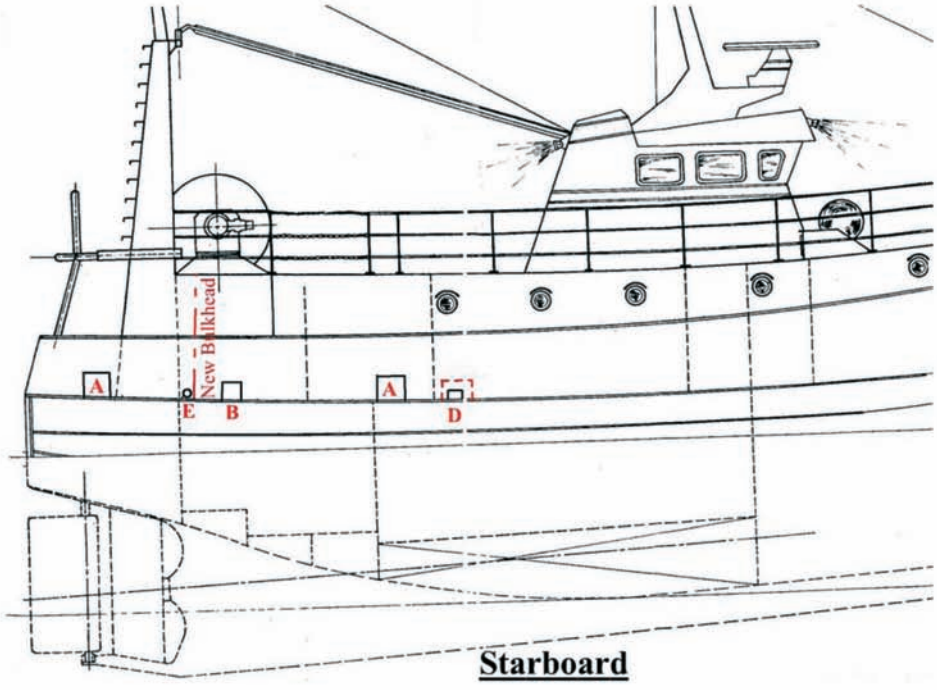
Nomenclature used in the loading summaries

Appendix 10.1: Annex 3-2



Appendix 10.1: Annex 3-3





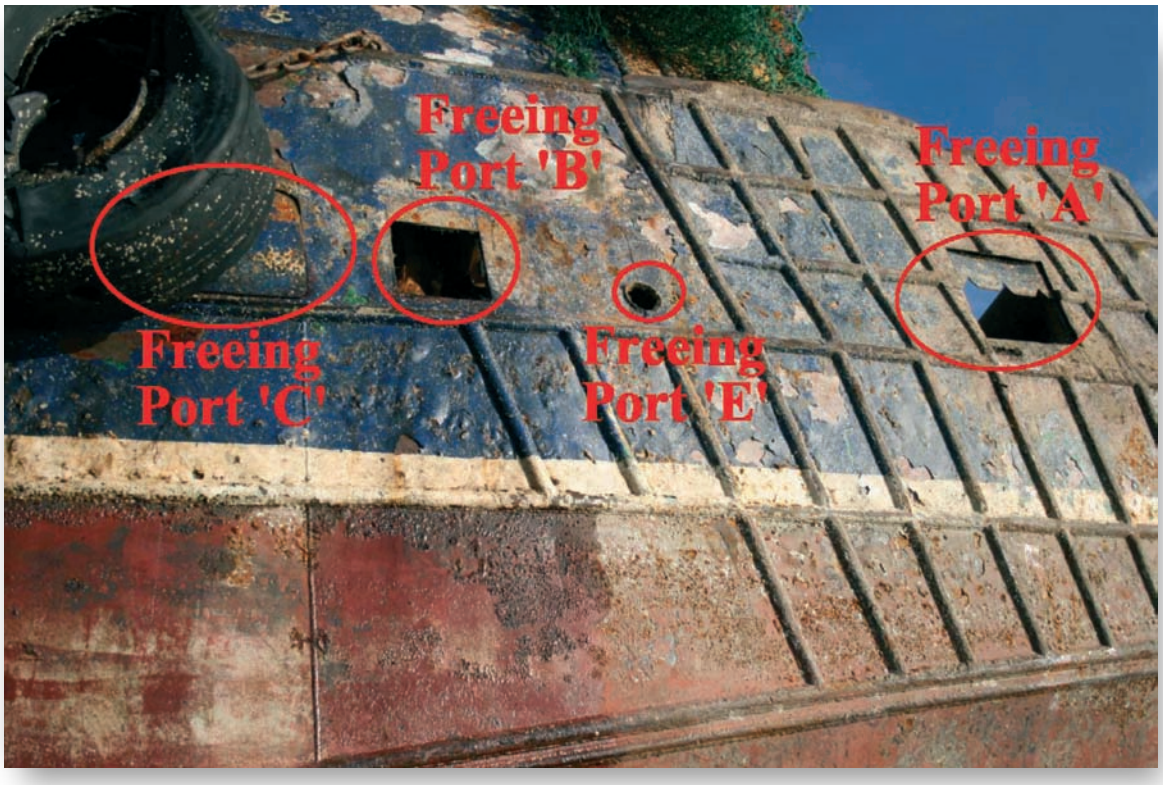
Profiles showing Freeing Ports

Appendix 10.1: Annex 3-4

Photograph 1 - Freeing Ports on Starboard Side.

Photograph 1a - Enhanced Photograph 1 - Freeing Ports on Starboard Side.

Appendix 10.1: Annex 3-5



Photograph 2 - Freeing Ports A, E, B and C on Port Side.

Photograph 3 - Freeing Port A (Port) viewed from inside.

Appendix 10.1: Annex 3-6

Photograph 4 - Freeing Ports B and C (Port) viewed from inside.

Photograph 5 - Freeing Port C (Port) viewed from inside
(note 'small hole' just forward of freeing port.

Appendix 10.1: Annex 3-7

Photograph 6 - Freeing Port C (Port) and ‘small hole’ viewed from inside.

Photograph 7 - Freeing Port D (Port) viewed from outside.

Appendix 10.1: Annex 3-8

Photograph 8 - Freeing Port D (Port) viewed from inside (showing siezed hinged cover).

Photograph 9 - Freeing Port D (Port) viewed from inside (showing siezed hinged cover).

Appendix 10.1: Annex 3-9

Photograph 10 - Freeing Port E (Port) viewed from inside.

Appendix 10.1: Annex 3-10

Photograph 11 - Pere Charles 'sister vessel' - showing bow wave. Note freeing ports just aft of name are almost submerged.

Photograph 12 - Pere Charles at sea - note freeing ports at after fender are submerged.

Appendix 10.1: Annex 4-1 - Casualty Loading Conditions.

Annex 4

M.F.V. "Pere Charles"

Casualty Loading Conditions

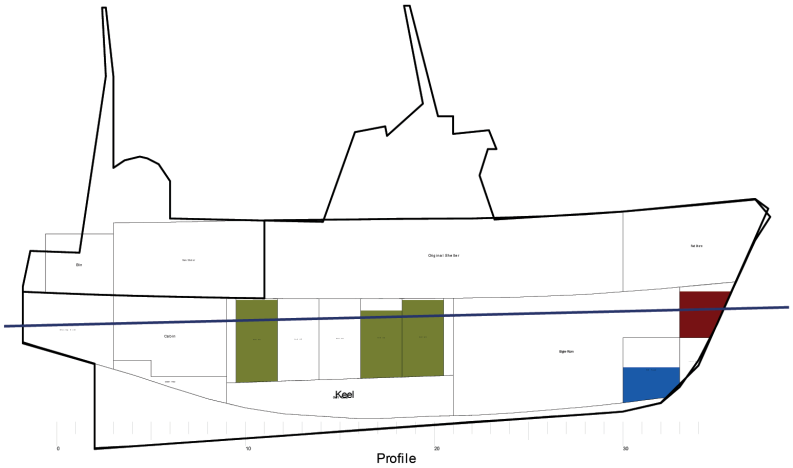
Produced using 'Tribon M3 Calc'

Key	Name	Density (t/m3)
	FW	1.0000
	HERRING	0.9320
	FO	0.8500
	LO	0.9000
	HO	0.9500

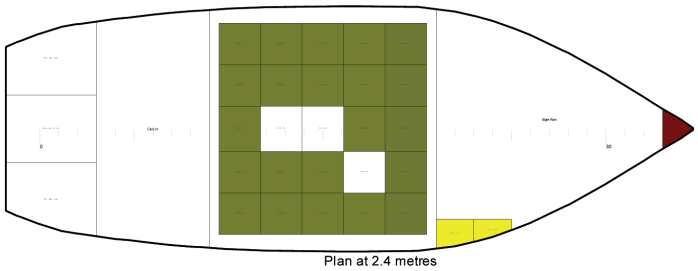
Appendix 10.1: Annex 4-2

1 Departure Grounds shelter intact

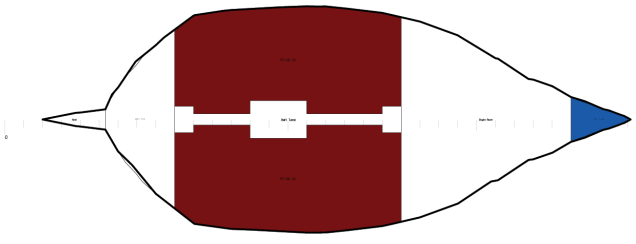
Intact State



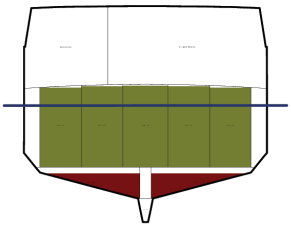
Profile



Plan at 2.4 metres



Plan at 1.0 metres



Section at Fr. 11.5

Appendix 10.1: Annex 4-3

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Fresh Water										
FW Tank	30-33	FW	30.0	1.000	0.8	15.55	-0.00	1.12	0.3	
Total Fresh Water					**0.8**	**15.55**	**-0.00**	**1.12**	**0.3**	
Fish										
Hold a1	18-20	HERRING	98.0	0.932	2.2	9.70	-2.25	2.16	0.1	
Hold a2	18-20	HERRING	98.0	0.932	2.3	9.70	-1.15	2.18	0.1	
Hold a3	18-20	HERRING	98.0	0.932	2.5	9.70	0.00	2.18	0.1	
Hold a4	18-20	HERRING	98.0	0.932	2.3	9.70	1.15	2.18	0.1	
Hold a5	18-20	HERRING	98.0	0.932	2.2	9.70	2.25	2.16	0.1	
Hold b1	16-18	HERRING	85.0	0.932	2.0	8.60	-2.25	2.00	0.1	
Hold b2	16-18	HERRING	85.0	0.932	2.0	8.60	-1.15	2.02	0.1	
Hold b3	16-18	HERRING	85.0	0.932	2.2	8.60	0.00	2.03	0.1	
Hold b5	16-18	HERRING	85.0	0.932	2.0	8.60	2.25	2.00	0.1	
Hold c1	14-16	HERRING	65.0	0.932	1.5	7.50	-2.25	1.78	0.1	
Hold c2	14-16	HERRING	65.0	0.932	1.6	7.50	-1.15	1.79	0.1	
Hold c4	14-16	HERRING	65.0	0.932	1.6	7.50	1.15	1.79	0.1	
Hold c5	14-16	HERRING	65.0	0.932	1.5	7.50	2.25	1.78	0.1	
Hold d1	12-14	HERRING	85.0	0.932	2.0	6.40	-2.25	1.96	0.1	
Hold d2	12-14	HERRING	85.0	0.932	2.1	6.40	-1.15	1.98	0.1	
Hold d4	12-14	HERRING	85.0	0.932	2.1	6.40	1.15	1.98	0.1	
Hold d5	12-14	HERRING	85.0	0.932	2.0	6.40	2.25	1.96	0.1	
Hold e1	9-12	HERRING	98.0	0.932	2.4	5.30	-2.25	2.09	0.1	
Hold e2	9-12	HERRING	98.0	0.932	2.4	5.30	-1.15	2.11	0.1	
Hold e3	9-12	HERRING	98.0	0.932	2.7	5.30	0.00	2.11	0.1	
Hold e4	9-12	HERRING	98.0	0.932	2.4	5.30	1.15	2.11	0.1	
Hold e5	9-12	HERRING	98.0	0.932	2.4	5.30	2.25	2.09	0.1	
Total Fish					**46.4**	**7.46**	**-0.05**	**2.04**	**2.2**	
Fuel Oil										
FO D.B. (S)	9-21	FO	60.7	0.850	4.5	7.79	1.14	0.63	6.5	
FO D.B. (P)	9-21	FO	60.7	0.850	4.5	7.79	-1.14	0.63	6.5	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Total Fuel Oil					**10.1**	**8.78**	**-0.00**	**0.88**	**13.4**	
Lub & Hydr. Oil										
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
Total Lub & Hydr. Oil					**0.9**	**11.32**	**2.68**	**1.93**	**0.0**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	

Appendix 10.1: Annex 4-4

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Deadweight					**72.0**	**8.03**	**0.00**	**2.02**	**16.4**	
Total Displacement					**177.2**	**8.04**	**0.00**	**2.49**	**16.4**	
Buoyancy					**177.2**	**8.06**	**0.00**	**1.73**	**295.7**	
Total Buoyancy					**177.2**	**8.06**	**0.00**	**1.73**	**295.7**	

Intact State

Drafts at equilibrium angle

Draft at LCF	2.715	metres
Draft aft at marks	2.535	metres
Draft fwd at marks	2.960	metres
Draft at AP	2.535	metres
Draft at FP	2.956	metres
Mean draft at midships	2.746	metres

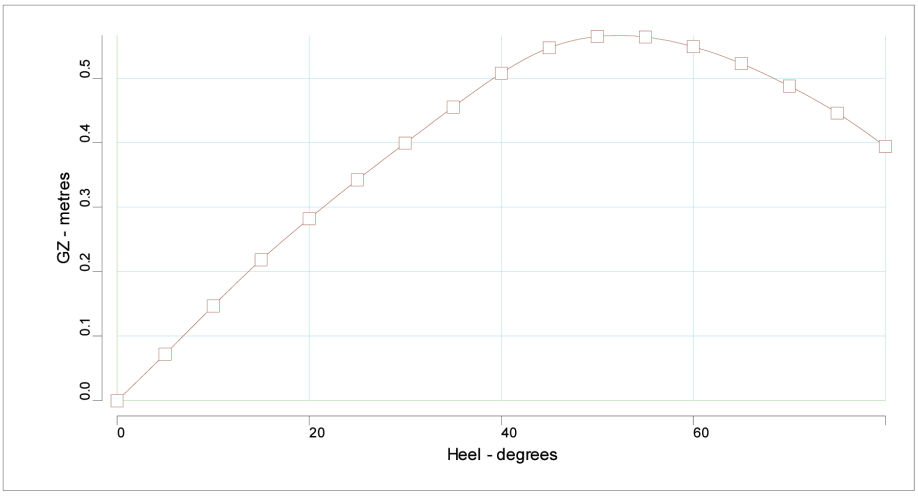
Hydrostatics at equilibrium angle

Density of water	1.0250	tonnes/cu.m
Heel to starboard	0.03	degrees
Trim by the bow	0.421	metres
KG	2.491	metres
FSC	0.092	metres
KGf	2.583	metres
GMt	0.818	metres
BMt	1.669	metres
BMl	12.834	metres
Waterplane area	99.76	sq.metres
LCG	8.041	metres
LCB	8.062	metres
TCB	0.001	metres
LCF	7.484	metres
TCF	0.001	metres
TPC	1.023	tonnes/cm
MTC	1.311	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 4-5

Intact State

1 Departure Grounds shelter intact: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)
0.00	-0.0006	0.8178	0.421	2.745	0.33[12]
5.00	0.0719	0.8317	0.418	2.733	0.07[12]
10.00	0.1465	0.8518	0.412	2.698	-0.21[10]
15.00	0.2181	0.7743	0.391	2.643	-0.49[10]
20.00	0.2820	0.7224	0.331	2.571	-0.77[10]
25.00	0.3421	0.7263	0.232	2.480	-1.03[10]
30.00	0.3993	0.7194	0.101	2.366	-1.29[10]
35.00	0.4552	0.7375	-0.055	2.229	-1.54[8]
40.00	0.5078	0.6981	-0.227	2.065	-1.78[6]
45.00	0.5471	0.4617	-0.416	1.880	-2.01[6]
50.00	0.5646	0.2325	-0.616	1.683	-2.24[6]
55.00	0.5638	0.0441	-0.819	1.476	-2.45[6]
60.00	0.5488	-0.1095	-1.022	1.261	-2.64[6]
65.00	0.5226	-0.2336	-1.222	1.040	-2.86[2]
70.00	0.4878	-0.3336	-1.417	0.814	-3.08[2]
75.00	0.4458	-0.4224	-1.611	0.585	-3.29[2]
80.00	0.3942	-0.5061	-1.811	0.350	-3.50[0]

Appendix 10.1: Annex 4-6

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf
1	Area under GZ curve up to 30 degrees > 0.055	0.110	0.055	2.994	0.407
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.079	0.030	3.076	0.324
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.189	0.090	3.008	0.393
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	0.399	0.200	2.982	0.419
5	Maximum GZ to be at an angle > 25 degrees	51.413	25.000	3.336	0.065
6	Initial GM to be at least 0.35 metres	0.818	0.350	3.051	0.350
	Critical			**2.982**	**0.419**
	Actual			**2.583**	**0.818**

Condition complies with the regulations

Intact State

Immersion Particulars

Deck Edge

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.786	15.735
1	-0.900	-2.780	3.300	0.786	Not immersed
2	0.000	2.860	3.270	0.734	14.438
3	0.000	-2.860	3.270	0.734	Not immersed
4	3.000	2.980	3.170	0.562	10.774
5	3.000	-2.980	3.170	0.562	Not immersed
6	6.000	3.220	3.120	0.439	7.861
7	6.000	-3.220	3.120	0.439	Not immersed
8	8.000	3.250	3.120	0.390	6.938
9	8.000	-3.250	3.120	0.390	Not immersed
10	10.000	3.250	3.130	0.352	6.255
11	10.000	-3.250	3.130	0.352	Not immersed
12	12.000	3.020	3.155	0.328	6.292
13	12.000	-3.020	3.155	0.328	Not immersed
14	14.000	2.450	3.235	0.360	8.516
15	14.000	-2.450	3.235	0.360	Not immersed
16	16.000	1.525	3.390	0.466	18.105
17	16.000	-1.525	3.390	0.466	Not immersed
18	17.500	0.540	3.525	0.565	Not immersed
19	17.500	-0.540	3.525	0.565	Not immersed
20	17.950	0.000	3.565	0.594	Not immersed

Appendix 10.1: Annex 4-7

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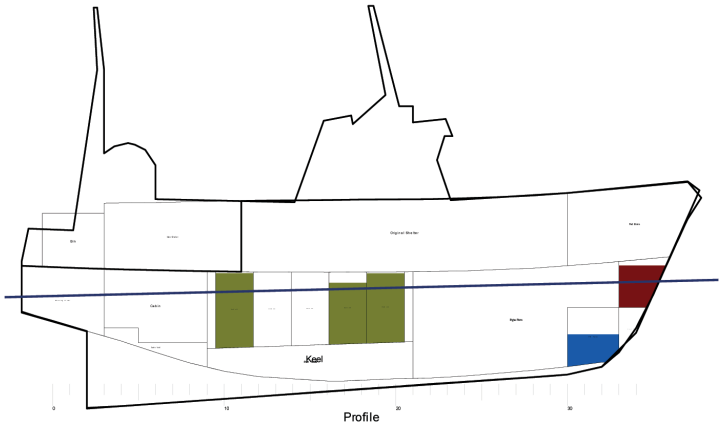
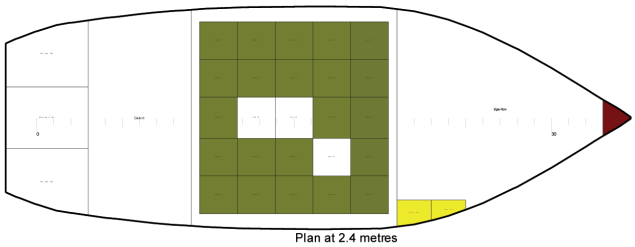
Appendix 10.1: Annex 4-8

2 Departure Grounds shelter open @ fr.11

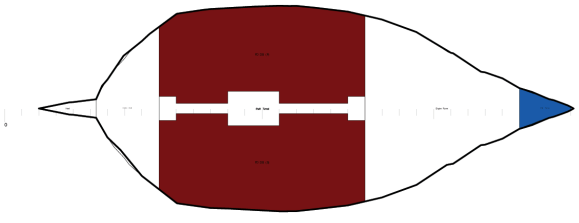
Intact State



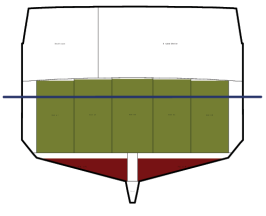
Profile



Plan at 2.4 metres



Plan at 1.0 metres



Section at Fr. 11.5

Appendix 10.1: Annex 4-9

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Fresh Water										
FW Tank	30-33	FW	30.0	1.000	0.8	15.55	-0.00	1.12	0.3	
Total Fresh Water					**0.8**	**15.55**	**-0.00**	**1.12**	**0.3**	
Fish										
Hold a1	18-20	HERRING	98.0	0.932	2.2	9.70	-2.25	2.16	0.1	
Hold a2	18-20	HERRING	98.0	0.932	2.3	9.70	-1.15	2.18	0.1	
Hold a3	18-20	HERRING	98.0	0.932	2.5	9.70	0.00	2.18	0.1	
Hold a4	18-20	HERRING	98.0	0.932	2.3	9.70	1.15	2.18	0.1	
Hold a5	18-20	HERRING	98.0	0.932	2.2	9.70	2.25	2.16	0.1	
Hold b1	16-18	HERRING	85.0	0.932	2.0	8.60	-2.25	2.00	0.1	
Hold b2	16-18	HERRING	85.0	0.932	2.0	8.60	-1.15	2.02	0.1	
Hold b3	16-18	HERRING	85.0	0.932	2.2	8.60	0.00	2.03	0.1	
Hold b5	16-18	HERRING	85.0	0.932	2.0	8.60	2.25	2.00	0.1	
Hold c1	14-16	HERRING	65.0	0.932	1.5	7.50	-2.25	1.78	0.1	
Hold c2	14-16	HERRING	65.0	0.932	1.6	7.50	-1.15	1.79	0.1	
Hold c4	14-16	HERRING	65.0	0.932	1.6	7.50	1.15	1.79	0.1	
Hold c5	14-16	HERRING	65.0	0.932	1.5	7.50	2.25	1.78	0.1	
Hold d1	12-14	HERRING	85.0	0.932	2.0	6.40	-2.25	1.96	0.1	
Hold d2	12-14	HERRING	85.0	0.932	2.1	6.40	-1.15	1.98	0.1	
Hold d4	12-14	HERRING	85.0	0.932	2.1	6.40	1.15	1.98	0.1	
Hold d5	12-14	HERRING	85.0	0.932	2.0	6.40	2.25	1.96	0.1	
Hold e1	9-12	HERRING	98.0	0.932	2.4	5.30	-2.25	2.09	0.1	
Hold e2	9-12	HERRING	98.0	0.932	2.4	5.30	-1.15	2.11	0.1	
Hold e3	9-12	HERRING	98.0	0.932	2.7	5.30	0.00	2.11	0.1	
Hold e4	9-12	HERRING	98.0	0.932	2.4	5.30	1.15	2.11	0.1	
Hold e5	9-12	HERRING	98.0	0.932	2.4	5.30	2.25	2.09	0.1	
Total Fish					**46.4**	**7.46**	**-0.05**	**2.04**	**2.2**	
Fuel Oil										
FO D.B. (S)	9-21	FO	60.7	0.850	4.5	7.79	1.14	0.63	6.5	
FO D.B. (P)	9-21	FO	60.7	0.850	4.5	7.79	-1.14	0.63	6.5	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Total Fuel Oil					**10.1**	**8.78**	**-0.00**	**0.88**	**13.4**	
Lub & Hydr. Oil										
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
Total Lub & Hydr. Oil					**0.9**	**11.32**	**2.68**	**1.93**	**0.0**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	

Appendix 10.1: Annex 4-10

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Deadweight					**72.0**	**8.03**	**0.00**	**2.02**	**16.4**	
Total Displacement					**177.2**	**8.04**	**0.00**	**2.49**	**16.4**	
Buoyancy					**177.2**	**8.06**	**0.00**	**1.73**	**295.7**	
Total Buoyancy					**177.2**	**8.06**	**0.00**	**1.73**	**295.7**	

Intact State

Drafts at equilibrium angle

Draft at LCF	2.715	metres
Draft aft at marks	2.535	metres
Draft fwd at marks	2.960	metres
Draft at AP	2.535	metres
Draft at FP	2.956	metres
Mean draft at midships	2.746	metres

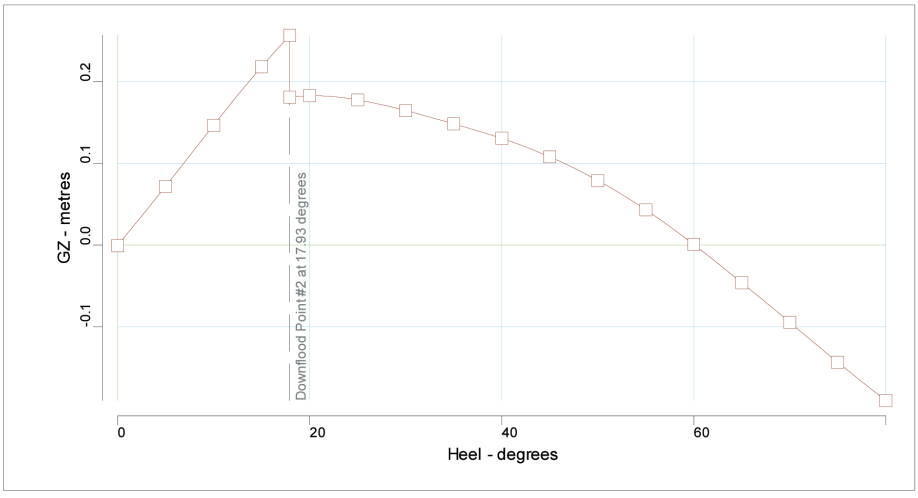
Hydrostatics at equilibrium angle

Density of water	1.0250	tonnes/cu.m
Heel to starboard	0.03	degrees
Trim by the bow	0.421	metres
KG	2.491	metres
FSC	0.092	metres
KGf	2.583	metres
GMt	0.818	metres
BMt	1.669	metres
BMl	12.834	metres
Waterplane area	99.76	sq.metres
LCG	8.041	metres
LCB	8.062	metres
TCB	0.001	metres
LCF	7.484	metres
TCF	0.001	metres
TPC	1.023	tonnes/cm
MTC	1.311	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 4-11

Intact State

2 Departure Grounds shelter open @ fr.11: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)	Unprotected (m)
0.00	-0.0006	0.8178	0.421	2.745	0.33[12]	0.57[0]
5.00	0.0719	0.8317	0.418	2.733	0.07[12]	0.54[2]
10.00	0.1465	0.8518	0.412	2.698	-0.21[10]	0.33[2]
15.00	0.2181	0.7743	0.391	2.643	-0.49[10]	0.13[2]
17.93	0.2565	0.7329	0.361	2.603	-0.65[10]	-0.00[2]
17.93	0.1810	0.0749	0.450	2.659	-0.72[10]	-0.04[2]
20.00	0.1826	-0.0008	0.447	2.647	-0.85[10]	-0.15[2]
25.00	0.1775	-0.1096	0.413	2.609	-1.18[10]	-0.42[2]
30.00	0.1645	-0.1519	0.338	2.557	-1.50[10]	-0.69[2]
35.00	0.1481	-0.1208	0.217	2.487	-1.80[10]	-0.97[2]
40.00	0.1305	-0.1061	0.051	2.397	-2.09[8]	-1.25[2]
45.00	0.1079	-0.1472	-0.149	2.289	-2.39[8]	-1.53[2]
50.00	0.0790	-0.2023	-0.368	2.165	-2.68[6]	-1.80[2]
55.00	0.0432	-0.2860	-0.591	2.027	-2.97[6]	-2.06[2]
60.00	0.0008	-0.3629	-0.813	1.877	-3.23[6]	-2.31[2]
65.00	-0.0461	-0.4037	-1.028	1.717	-3.47[6]	-2.55[2]
70.00	-0.0944	-0.4265	-1.234	1.547	-3.73[2]	-2.76[2]
75.00	-0.1434	-0.4389	-1.427	1.367	-3.99[2]	-2.96[2]
80.00	-0.1901	-0.4359	-1.604	1.180	-4.22[2]	-3.14[2]

Appendix 10.1: Annex 4-12

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf	
1	Area under GZ curve up to 30 degrees > 0.055	0.078	0.055	2.755	0.646	
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.026	0.030	2.541	0.860	Fail
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.104	0.090	2.642	0.759	
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	0.165	0.200	2.512	0.889	Fail
5	Maximum GZ to be at an angle > 25 degrees	17.930	25.000	2.213	1.188	Fail
6	Initial GM to be at least 0.35 metres	0.818	0.350	3.051	0.350	
	Critical			**2.213**	**1.188**	
	Actual			**2.583**	**0.818**	

**** Condition does not comply ****

Immersion Particulars

Unprotected Openings

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)	Downflood Compartment
0	5.500	-0.950	3.240	0.571	Not immersed	OSh
1	5.500	-0.390	3.240	0.571	56.953	OSh
2	5.500	2.300	3.410	0.741	17.898	OSh

Deck Edge

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.786	15.738
1	-0.900	-2.780	3.300	0.786	Not immersed
2	0.000	2.860	3.270	0.734	14.438
3	0.000	-2.860	3.270	0.734	Not immersed
4	3.000	2.980	3.170	0.562	10.774
5	3.000	-2.980	3.170	0.562	Not immersed
6	6.000	3.220	3.120	0.439	7.861
7	6.000	-3.220	3.120	0.439	Not immersed
8	8.000	3.250	3.120	0.390	6.938
9	8.000	-3.250	3.120	0.390	Not immersed
10	10.000	3.250	3.130	0.352	6.255
11	10.000	-3.250	3.130	0.352	Not immersed
12	12.000	3.020	3.155	0.328	6.292
13	12.000	-3.020	3.155	0.328	Not immersed
14	14.000	2.450	3.235	0.360	8.516
15	14.000	-2.450	3.235	0.360	Not immersed
16	16.000	1.525	3.390	0.466	17.918
17	16.000	-1.525	3.390	0.466	Not immersed
18	17.500	0.540	3.525	0.565	33.779
19	17.500	-0.540	3.525	0.565	Not immersed
20	17.950	0.000	3.565	0.594	Not immersed

Appendix 10.1: Annex 4-13

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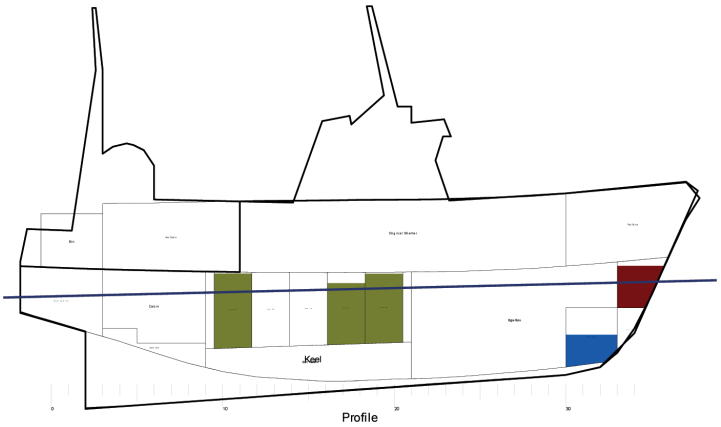
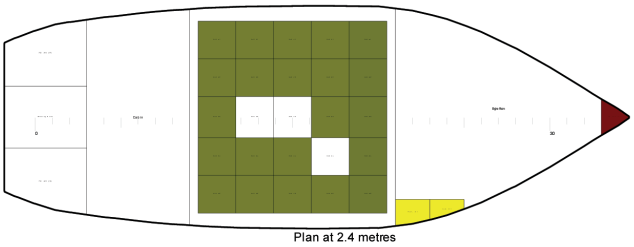
Appendix 10.1: Annex 4-14

2a Departure Grounds shelter open @ fr.11-12

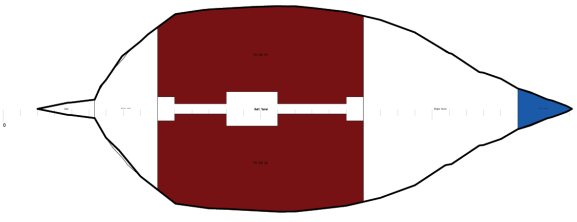
Intact State



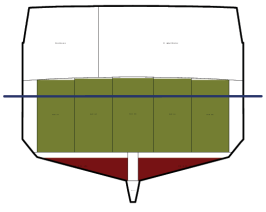
Profile



Plan at 2.4 metres



Plan at 1.0 metres



Section at Fr. 11.5

Appendix 10.1: Annex 4-15

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Fresh Water										
FW Tank	30-33	FW	30.0	1.000	0.8	15.55	-0.00	1.12	0.3	
Total Fresh Water					**0.8**	**15.55**	**-0.00**	**1.12**	**0.3**	
Fish										
Hold a1	18-20	HERRING	98.0	0.932	2.2	9.70	-2.25	2.16	0.1	
Hold a2	18-20	HERRING	98.0	0.932	2.3	9.70	-1.15	2.18	0.1	
Hold a3	18-20	HERRING	98.0	0.932	2.5	9.70	0.00	2.18	0.1	
Hold a4	18-20	HERRING	98.0	0.932	2.3	9.70	1.15	2.18	0.1	
Hold a5	18-20	HERRING	98.0	0.932	2.2	9.70	2.25	2.16	0.1	
Hold b1	16-18	HERRING	85.0	0.932	2.0	8.60	-2.25	2.00	0.1	
Hold b2	16-18	HERRING	85.0	0.932	2.0	8.60	-1.15	2.02	0.1	
Hold b3	16-18	HERRING	85.0	0.932	2.2	8.60	0.00	2.03	0.1	
Hold b5	16-18	HERRING	85.0	0.932	2.0	8.60	2.25	2.00	0.1	
Hold c1	14-16	HERRING	65.0	0.932	1.5	7.50	-2.25	1.78	0.1	
Hold c2	14-16	HERRING	65.0	0.932	1.6	7.50	-1.15	1.79	0.1	
Hold c4	14-16	HERRING	65.0	0.932	1.6	7.50	1.15	1.79	0.1	
Hold c5	14-16	HERRING	65.0	0.932	1.5	7.50	2.25	1.78	0.1	
Hold d1	12-14	HERRING	85.0	0.932	2.0	6.40	-2.25	1.96	0.1	
Hold d2	12-14	HERRING	85.0	0.932	2.1	6.40	-1.15	1.98	0.1	
Hold d4	12-14	HERRING	85.0	0.932	2.1	6.40	1.15	1.98	0.1	
Hold d5	12-14	HERRING	85.0	0.932	2.0	6.40	2.25	1.96	0.1	
Hold e1	9-12	HERRING	98.0	0.932	2.4	5.30	-2.25	2.09	0.1	
Hold e2	9-12	HERRING	98.0	0.932	2.4	5.30	-1.15	2.11	0.1	
Hold e3	9-12	HERRING	98.0	0.932	2.7	5.30	0.00	2.11	0.1	
Hold e4	9-12	HERRING	98.0	0.932	2.4	5.30	1.15	2.11	0.1	
Hold e5	9-12	HERRING	98.0	0.932	2.4	5.30	2.25	2.09	0.1	
Total Fish					**46.4**	**7.46**	**-0.05**	**2.04**	**2.2**	
Fuel Oil										
FO D.B. (S)	9-21	FO	60.7	0.850	4.5	7.79	1.14	0.63	6.5	
FO D.B. (P)	9-21	FO	60.7	0.850	4.5	7.79	-1.14	0.63	6.5	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Total Fuel Oil					**10.1**	**8.78**	**-0.00**	**0.88**	**13.4**	
Lub & Hydr. Oil										
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
Total Lub & Hydr. Oil					**0.9**	**11.32**	**2.68**	**1.93**	**0.0**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	

Appendix 10.1: Annex 4-16

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Deadweight					**72.0**	**8.03**	**0.00**	**2.02**	**16.4**	
Total Displacement					**177.2**	**8.04**	**0.00**	**2.49**	**16.4**	
Buoyancy					**177.2**	**8.06**	**0.00**	**1.73**	**295.7**	
Total Buoyancy					**177.2**	**8.06**	**0.00**	**1.73**	**295.7**	

Intact State

Drafts at equilibrium angle

Draft at LCF	2.715	metres
Draft aft at marks	2.535	metres
Draft fwd at marks	2.960	metres
Draft at AP	2.535	metres
Draft at FP	2.956	metres
Mean draft at midships	2.746	metres

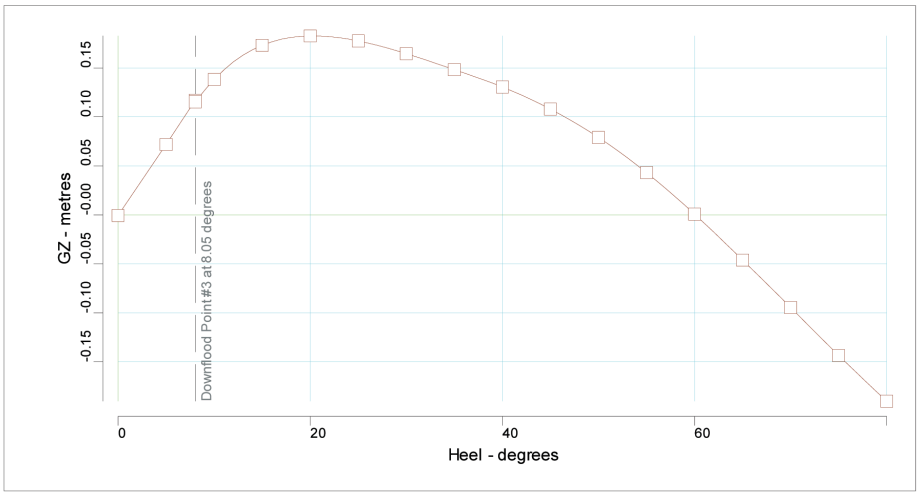
Hydrostatics at equilibrium angle

Density of water	1.0250	tonnes/cu.m
Heel to starboard	0.03	degrees
Trim by the bow	0.421	metres
KG	2.491	metres
FSC	0.092	metres
KGf	2.583	metres
GMt	0.818	metres
BMt	1.669	metres
BMl	12.834	metres
Waterplane area	99.76	sq.metres
LCG	8.041	metres
LCB	8.062	metres
TCB	0.001	metres
LCF	7.484	metres
TCF	0.001	metres
TPC	1.023	tonnes/cm
MTC	1.311	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 4-17

Intact State

2a Departure Grounds shelter open @ fr.11-12: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)	Unprotected (m)
0.00	-0.0006	0.8178	0.421	2.745	0.33[12]	0.35[4]
5.00	0.0719	0.8317	0.418	2.733	0.07[12]	0.17[3]
8.05	0.1171	0.8533	0.414	2.715	-0.10[10]	-0.00[3]
8.05	0.1154	0.7327	0.416	2.716	-0.10[10]	-0.00[3]
10.00	0.1381	0.5792	0.420	2.704	-0.22[10]	-0.12[3]
15.00	0.1730	0.2281	0.444	2.676	-0.53[10]	-0.42[3]
20.00	0.1826	-0.0010	0.447	2.647	-0.85[10]	-0.74[3]
25.00	0.1775	-0.1096	0.413	2.609	-1.18[10]	-1.08[3]
30.00	0.1645	-0.1519	0.338	2.557	-1.50[10]	-1.42[3]
35.00	0.1481	-0.1208	0.217	2.487	-1.80[10]	-1.75[3]
40.00	0.1305	-0.1061	0.051	2.397	-2.09[8]	-2.08[3]
45.00	0.1079	-0.1472	-0.149	2.289	-2.39[8]	-2.40[3]
50.00	0.0790	-0.2023	-0.368	2.165	-2.68[6]	-2.70[3]
55.00	0.0432	-0.2860	-0.591	2.027	-2.97[6]	-2.99[3]
60.00	0.0008	-0.3629	-0.813	1.877	-3.23[6]	-3.26[3]
65.00	-0.0461	-0.4037	-1.028	1.717	-3.47[6]	-3.51[3]
70.00	-0.0944	-0.4265	-1.234	1.547	-3.73[2]	-3.73[3]
75.00	-0.1434	-0.4389	-1.427	1.367	-3.99[2]	-3.92[3]
80.00	-0.1901	-0.4359	-1.604	1.180	-4.22[2]	-4.09[3]

Appendix 10.1: Annex 4-18

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf	
1	Area under GZ curve up to 30 degrees > 0.055	0.073	0.055	2.715	0.686	
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.026	0.030	2.541	0.860	Fail
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.098	0.090	2.619	0.782	
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	0.165	0.200	2.512	0.889	Fail
5	Maximum GZ to be at an angle > 25 degrees	19.976	25.000	2.462	0.939	Fail
6	Initial GM to be at least 0.35 metres	0.818	0.350	3.051	0.350	
	Critical			**2.462**	**0.939**	
	Actual			**2.583**	**0.818**	

**** Condition does not comply ****

Immersion Particulars

Unprotected Openings

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)	Downflood Compartment
0	5.500	-0.950	3.240	0.571	Not immersed	OSh
1	5.500	-0.390	3.240	0.571	56.953	OSh
2	5.500	2.300	3.410	0.741	17.100	OSh
3	5.800	3.250	3.130	0.454	7.999	OSh
4	10.200	-3.250	3.130	0.347	Not immersed	OSh

Deck Edge

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.786	15.645
1	-0.900	-2.780	3.300	0.786	Not immersed
2	0.000	2.860	3.270	0.734	14.331
3	0.000	-2.860	3.270	0.734	Not immersed
4	3.000	2.980	3.170	0.562	10.686
5	3.000	-2.980	3.170	0.562	Not immersed
6	6.000	3.220	3.120	0.439	7.815
7	6.000	-3.220	3.120	0.439	Not immersed
8	8.000	3.250	3.120	0.390	6.907
9	8.000	-3.250	3.120	0.390	Not immersed
10	10.000	3.250	3.130	0.352	6.235
11	10.000	-3.250	3.130	0.352	Not immersed
12	12.000	3.020	3.155	0.328	6.268
13	12.000	-3.020	3.155	0.328	Not immersed
14	14.000	2.450	3.235	0.360	8.398
15	14.000	-2.450	3.235	0.360	Not immersed
16	16.000	1.525	3.390	0.466	15.439
17	16.000	-1.525	3.390	0.466	Not immersed
18	17.500	0.540	3.525	0.565	33.779
19	17.500	-0.540	3.525	0.565	Not immersed
20	17.950	0.000	3.565	0.594	Not immersed

Appendix 10.1: Annex 4-19

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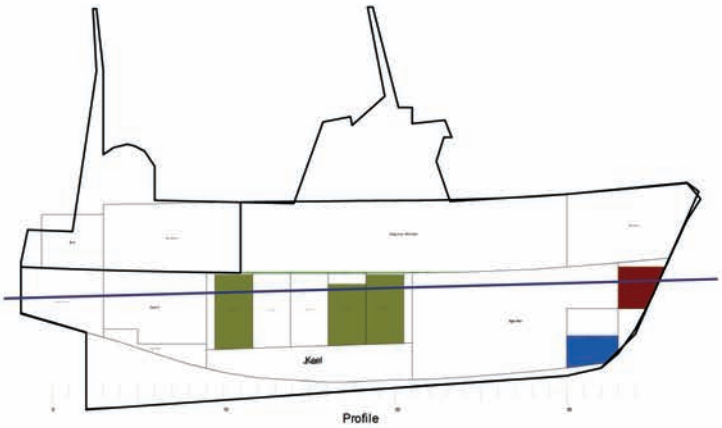
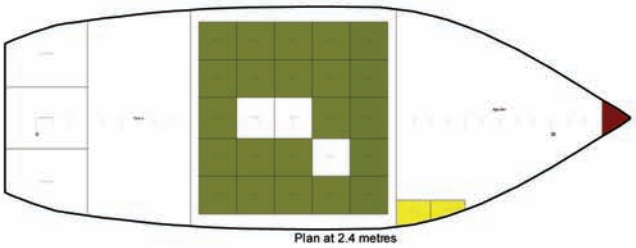
Appendix 10.1: Annex 4-20

3 Departure Grounds shelter intact + water in shelter

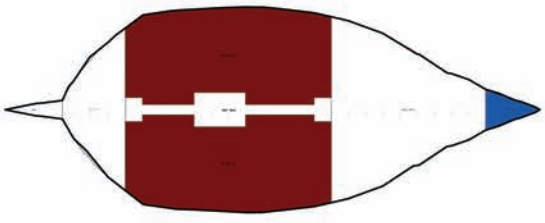
Intact State



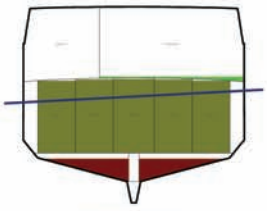
Profile



Plan at 2.4 metres



Plan at 1.0 metres



Section at Fr. 11.5

Appendix 10.1: Annex 4-21

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Fresh Water										
FW Tank	30-33	FW	30.0	1.000	0.8	15.55	-0.00	1.12	0.3	
Total Fresh Water					**0.8**	**15.55**	**-0.00**	**1.12**	**0.3**	
Fish										
Hold a1	18-20	HERRING	98.0	0.932	2.2	9.70	-2.25	2.16	0.1	
Hold a2	18-20	HERRING	98.0	0.932	2.3	9.70	-1.15	2.18	0.1	
Hold a3	18-20	HERRING	98.0	0.932	2.5	9.70	0.00	2.18	0.1	
Hold a4	18-20	HERRING	98.0	0.932	2.3	9.70	1.15	2.18	0.1	
Hold a5	18-20	HERRING	98.0	0.932	2.2	9.70	2.25	2.16	0.1	
Hold b1	16-18	HERRING	85.0	0.932	2.0	8.60	-2.25	2.00	0.1	
Hold b2	16-18	HERRING	85.0	0.932	2.0	8.60	-1.15	2.02	0.1	
Hold b3	16-18	HERRING	85.0	0.932	2.2	8.60	0.00	2.03	0.1	
Hold b5	16-18	HERRING	85.0	0.932	2.0	8.60	2.25	2.00	0.1	
Hold c1	14-16	HERRING	65.0	0.932	1.5	7.50	-2.25	1.78	0.1	
Hold c2	14-16	HERRING	65.0	0.932	1.6	7.50	-1.15	1.79	0.1	
Hold c4	14-16	HERRING	65.0	0.932	1.6	7.50	1.15	1.79	0.1	
Hold c5	14-16	HERRING	65.0	0.932	1.5	7.50	2.25	1.78	0.1	
Hold d1	12-14	HERRING	85.0	0.932	2.0	6.40	-2.25	1.96	0.1	
Hold d2	12-14	HERRING	85.0	0.932	2.1	6.40	-1.15	1.98	0.1	
Hold d4	12-14	HERRING	85.0	0.932	2.1	6.40	1.15	1.98	0.1	
Hold d5	12-14	HERRING	85.0	0.932	2.0	6.40	2.25	1.96	0.1	
Hold e1	9-12	HERRING	98.0	0.932	2.4	5.30	-2.25	2.09	0.1	
Hold e2	9-12	HERRING	98.0	0.932	2.4	5.30	-1.15	2.11	0.1	
Hold e3	9-12	HERRING	98.0	0.932	2.7	5.30	0.00	2.11	0.1	
Hold e4	9-12	HERRING	98.0	0.932	2.4	5.30	1.15	2.11	0.1	
Hold e5	9-12	HERRING	98.0	0.932	2.4	5.30	2.25	2.09	0.1	
Total Fish					**46.4**	**7.46**	**-0.05**	**2.04**	**2.2**	
Fuel Oil										
FO D.B. (S)	9-21	FO	60.7	0.850	4.5	7.79	1.14	0.63	6.5	
FO D.B. (P)	9-21	FO	60.7	0.850	4.5	7.79	-1.14	0.63	6.5	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Total Fuel Oil					**10.1**	**8.78**	**-0.00**	**0.88**	**13.4**	
Lub & Hydr. Oil										
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
Total Lub & Hydr. Oil					**0.9**	**11.32**	**2.68**	**1.93**	**0.0**	
150mm water in shelter										
Original Shelter	11-30	WB	2.0	1.025	2.1	9.05	0.88	3.23	109.1	
Total 150mm water in shelter					**2.1**	**9.05**	**0.88**	**3.23**	**109.1**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	

Appendix 10.1: Annex 4-22

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	
Deadweight					**74.1**	**8.06**	**0.03**	**2.06**	**125.4**	
Total Displacement					**179.3**	**8.05**	**0.01**	**2.50**	**125.4**	
Buoyancy					**179.3**	**8.09**	**0.09**	**1.75**	**297.5**	
Total Buoyancy					**179.3**	**8.09**	**0.09**	**1.75**	**297.5**	

Intact State

Drafts at equilibrium angle

Draft at LCF	2.736	metres
Draft aft at marks	2.534	metres
Draft fwd at marks	3.010	metres
Draft at AP	2.534	metres
Draft at FP	3.006	metres
Mean draft at midships	2.770	metres

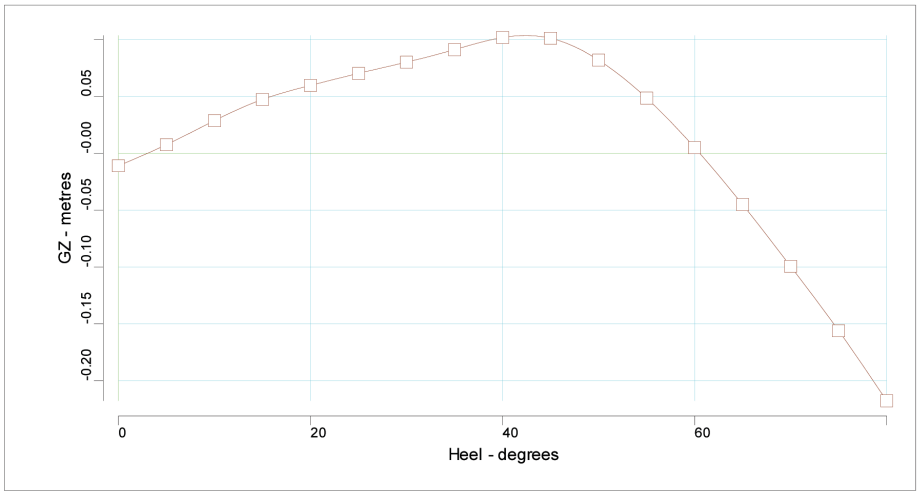
Hydrostatics at equilibrium angle

Density of water	1.0250	tonnes/cu.m
Heel to starboard	3.02	degrees
Trim by the bow	0.473	metres
KG	2.499	metres
FSC	0.699	metres
KGf	3.199	metres
GMt	0.217	metres
BMt	1.659	metres
BMl	12.779	metres
Waterplane area	100.10	sq.metres
LCG	8.053	metres
LCB	8.093	metres
TCB	0.088	metres
LCF	7.510	metres
TCF	0.158	metres
TPC	1.026	tonnes/cm
MTC	1.321	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 4-23

Intact State

3 Departure Grounds shelter intact + water in shelter: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)
0.00	-0.0110	0.1988	0.473	2.769	0.29[12]
5.00	0.0075	0.2164	0.470	2.758	0.03[12]
10.00	0.0287	0.2396	0.462	2.722	-0.24[10]
15.00	0.0473	0.1770	0.437	2.667	-0.52[10]
20.00	0.0597	0.1474	0.371	2.594	-0.79[10]
25.00	0.0703	0.1809	0.261	2.502	-1.06[10]
30.00	0.0801	0.2010	0.118	2.389	-1.31[10]
35.00	0.0911	0.2528	-0.052	2.252	-1.56[8]
40.00	0.1018	0.2410	-0.238	2.088	-1.80[6]
45.00	0.1012	0.0310	-0.441	1.904	-2.04[6]
50.00	0.0820	-0.1568	-0.652	1.709	-2.27[6]
55.00	0.0485	-0.3004	-0.866	1.503	-2.48[6]
60.00	0.0049	-0.4070	-1.075	1.289	-2.68[6]
65.00	-0.0452	-0.4821	-1.277	1.069	-2.91[2]
70.00	-0.0995	-0.5314	-1.471	0.844	-3.14[2]
75.00	-0.1562	-0.5672	-1.660	0.615	-3.35[0]
80.00	-0.2178	-0.5970	-1.850	0.380	-3.55[0]

Appendix 10.1: Annex 4-24

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf	
1	Area under GZ curve up to 30 degrees > 0.055	0.022	0.055	2.951	0.447	Fail
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.016	0.030	3.057	0.340	Fail
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.038	0.090	2.975	0.423	Fail
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	0.080	0.200	2.959	0.439	Fail
5	Maximum GZ to be at an angle > 25 degrees	41.473	25.000	3.341	0.056	
6	Initial GM to be at least 0.35 metres	0.217	0.350	3.061	0.337	Fail
	Critical			**2.951**	**0.447**	
	Actual			**3.199**	**0.199**	

**** Condition does not comply ****

Intact State

Immersion Particulars

Deck Edge

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.646	15.764
1	-0.900	-2.780	3.300	0.938	Not immersed
2	0.000	2.860	3.270	0.587	14.436
3	0.000	-2.860	3.270	0.888	Not immersed
4	3.000	2.980	3.170	0.399	10.627
5	3.000	-2.980	3.170	0.713	Not immersed
6	6.000	3.220	3.120	0.256	7.571
7	6.000	-3.220	3.120	0.594	Not immersed
8	8.000	3.250	3.120	0.200	6.541
9	8.000	-3.250	3.120	0.542	Not immersed
10	10.000	3.250	3.130	0.155	5.742
11	10.000	-3.250	3.130	0.497	Not immersed
12	12.000	3.020	3.155	0.138	5.623
13	12.000	-3.020	3.155	0.456	Not immersed
14	14.000	2.450	3.235	0.194	7.583
15	14.000	-2.450	3.235	0.452	Not immersed
16	16.000	1.525	3.390	0.343	16.299
17	16.000	-1.525	3.390	0.503	Not immersed
18	17.500	0.540	3.525	0.489	Not immersed
19	17.500	-0.540	3.525	0.546	Not immersed
20	17.950	0.000	3.565	0.545	Not immersed

Appendix 10.1: Annex 4-25

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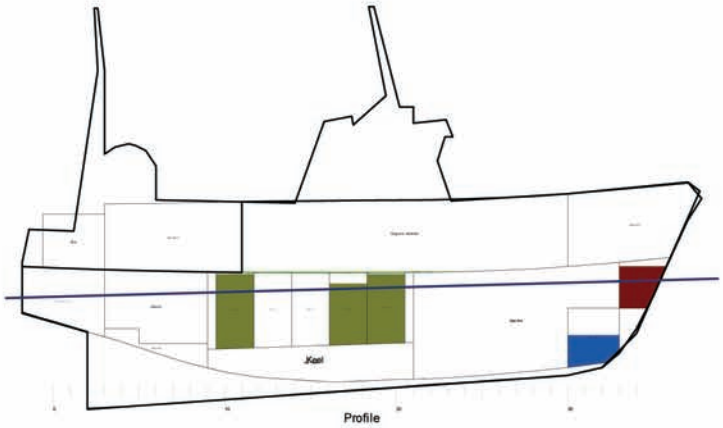
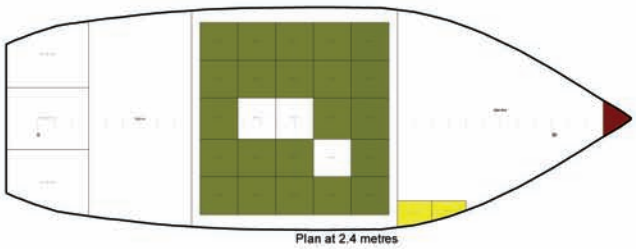
Appendix 10.1: Annex 4-26

3a Departure Grounds shelter open @ fr.11 + water in shelter

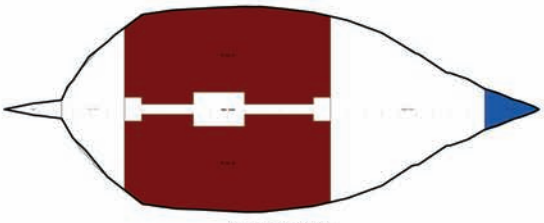
Intact State



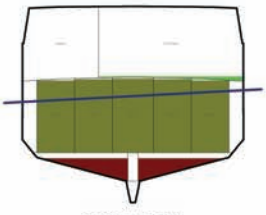
Profile



Plan at 2.4 metres



Plan at 1.0 metres



Section at Fr. 11.5

Appendix 10.1: Annex 4-27

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Fresh Water										
FW Tank	30-33	FW	30.0	1.000	0.8	15.55	-0.00	1.12	0.3	
Total Fresh Water					**0.8**	**15.55**	**-0.00**	**1.12**	**0.3**	
Fish										
Hold a1	18-20	HERRING	98.0	0.932	2.2	9.70	-2.25	2.16	0.1	
Hold a2	18-20	HERRING	98.0	0.932	2.3	9.70	-1.15	2.18	0.1	
Hold a3	18-20	HERRING	98.0	0.932	2.5	9.70	0.00	2.18	0.1	
Hold a4	18-20	HERRING	98.0	0.932	2.3	9.70	1.15	2.18	0.1	
Hold a5	18-20	HERRING	98.0	0.932	2.2	9.70	2.25	2.16	0.1	
Hold b1	16-18	HERRING	85.0	0.932	2.0	8.60	-2.25	2.00	0.1	
Hold b2	16-18	HERRING	85.0	0.932	2.0	8.60	-1.15	2.02	0.1	
Hold b3	16-18	HERRING	85.0	0.932	2.2	8.60	0.00	2.03	0.1	
Hold b5	16-18	HERRING	85.0	0.932	2.0	8.60	2.25	2.00	0.1	
Hold c1	14-16	HERRING	65.0	0.932	1.5	7.50	-2.25	1.78	0.1	
Hold c2	14-16	HERRING	65.0	0.932	1.6	7.50	-1.15	1.79	0.1	
Hold c4	14-16	HERRING	65.0	0.932	1.6	7.50	1.15	1.79	0.1	
Hold c5	14-16	HERRING	65.0	0.932	1.5	7.50	2.25	1.78	0.1	
Hold d1	12-14	HERRING	85.0	0.932	2.0	6.40	-2.25	1.96	0.1	
Hold d2	12-14	HERRING	85.0	0.932	2.1	6.40	-1.15	1.98	0.1	
Hold d4	12-14	HERRING	85.0	0.932	2.1	6.40	1.15	1.98	0.1	
Hold d5	12-14	HERRING	85.0	0.932	2.0	6.40	2.25	1.96	0.1	
Hold e1	9-12	HERRING	98.0	0.932	2.4	5.30	-2.25	2.09	0.1	
Hold e2	9-12	HERRING	98.0	0.932	2.4	5.30	-1.15	2.11	0.1	
Hold e3	9-12	HERRING	98.0	0.932	2.7	5.30	0.00	2.11	0.1	
Hold e4	9-12	HERRING	98.0	0.932	2.4	5.30	1.15	2.11	0.1	
Hold e5	9-12	HERRING	98.0	0.932	2.4	5.30	2.25	2.09	0.1	
Total Fish					**46.4**	**7.46**	**-0.05**	**2.04**	**2.2**	
Fuel Oil										
FO D.B. (S)	9-21	FO	60.7	0.850	4.5	7.79	1.14	0.63	6.5	
FO D.B. (P)	9-21	FO	60.7	0.850	4.5	7.79	-1.14	0.63	6.5	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Total Fuel Oil					**10.1**	**8.78**	**-0.00**	**0.88**	**13.4**	
Lub & Hydr. Oil										
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
Total Lub & Hydr. Oil					**0.9**	**11.32**	**2.68**	**1.93**	**0.0**	
150mm water in shelter										
Original Shelter	11-30	WB	2.0	1.025	2.1	9.05	0.88	3.23	109.1	
Total 150mm water in shelter					**2.1**	**9.05**	**0.88**	**3.23**	**109.1**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	

Appendix 10.1: Annex 4-28

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	
Deadweight					**74.1**	**8.06**	**0.03**	**2.06**	**125.4**	
Total Displacement					**179.3**	**8.05**	**0.01**	**2.50**	**125.4**	
Buoyancy					**179.3**	**8.09**	**0.09**	**1.75**	**297.5**	
Total Buoyancy					**179.3**	**8.09**	**0.09**	**1.75**	**297.5**	

Intact State

Drafts at equilibrium angle

Draft at LCF	2.736	metres
Draft aft at marks	2.534	metres
Draft fwd at marks	3.010	metres
Draft at AP	2.534	metres
Draft at FP	3.006	metres
Mean draft at midships	2.770	metres

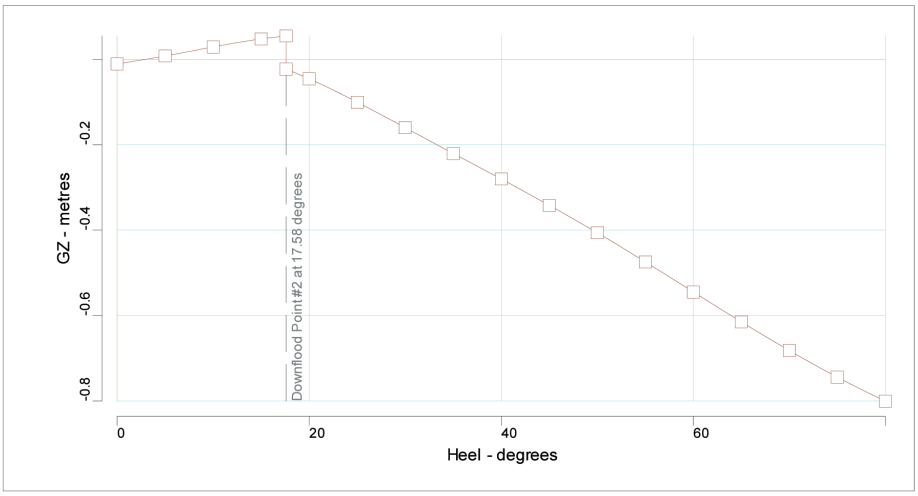
Hydrostatics at equilibrium angle

Density of water	1.0250	tonnes/cu.m
Heel to starboard	3.02	degrees
Trim by the bow	0.473	metres
KG	2.499	metres
FSC	0.699	metres
KGf	3.199	metres
GMt	0.217	metres
BMt	1.659	metres
BMl	12.779	metres
Waterplane area	100.10	sq.metres
LCG	8.053	metres
LCB	8.093	metres
TCB	0.088	metres
LCF	7.510	metres
TCF	0.158	metres
TPC	1.026	tonnes/cm
MTC	1.321	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 4-29

Intact State

3a Departure Grounds shelter open @ fr.11 + water in shelter: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)	Unprotected (m)
0.00	-0.0110	0.1988	0.473	2.769	0.29[12]	0.56[0]
5.00	0.0075	0.2164	0.470	2.758	0.03[12]	0.52[2]
10.00	0.0287	0.2396	0.462	2.722	-0.24[10]	0.32[2]
15.00	0.0473	0.1770	0.437	2.667	-0.52[10]	0.11[2]
17.58	0.0545	0.1498	0.408	2.632	-0.66[10]	-0.00[2]
17.58	-0.0231	-0.5081	0.511	2.691	-0.73[10]	-0.04[2]
20.00	-0.0459	-0.5853	0.508	2.677	-0.89[10]	-0.17[2]
25.00	-0.1006	-0.6594	0.468	2.640	-1.21[10]	-0.44[2]
30.00	-0.1604	-0.6640	0.383	2.589	-1.53[10]	-0.72[2]
35.00	-0.2209	-0.5986	0.245	2.518	-1.84[10]	-1.00[2]
40.00	-0.2805	-0.5546	0.059	2.429	-2.13[8]	-1.28[2]
45.00	-0.3421	-0.5609	-0.158	2.322	-2.42[8]	-1.57[2]
50.00	-0.4064	-0.5787	-0.392	2.201	-2.72[6]	-1.84[2]
55.00	-0.4746	-0.6215	-0.627	2.064	-3.01[6]	-2.11[2]
60.00	-0.5449	-0.6525	-0.857	1.916	-3.28[6]	-2.36[2]
65.00	-0.6150	-0.6409	-1.078	1.757	-3.52[6]	-2.60[2]
70.00	-0.6820	-0.6138	-1.286	1.588	-3.79[2]	-2.81[2]
75.00	-0.7445	-0.5747	-1.477	1.409	-4.05[2]	-3.01[2]
80.00	-0.8007	-0.5169	-1.644	1.220	-4.28[0]	-3.19[2]

Appendix 10.1: Annex 4-30

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf	
1	Area under GZ curve up to 30 degrees > 0.055	0.007	0.055	2.698	0.699	Fail
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.000	0.030	2.513	0.885	Fail
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.007	0.090	2.598	0.800	Fail
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	-0.160	0.200	2.478	0.920	Fail
5	Maximum GZ to be at an angle > 25 degrees	17.578	25.000	2.222	1.176	Fail
6	Initial GM to be at least 0.35 metres	0.217	0.350	3.061	0.337	Fail
	Critical			**2.222**	**1.176**	
	Actual			**3.199**	**0.199**	

**** Condition does not comply ****

Intact State

Immersion Particulars

Unprotected Openings

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)	Downflood Compartment
0	5.500	-0.950	3.240	0.608	78.652	OSh
1	5.500	-0.390	3.240	0.579	54.902	OSh
2	5.500	2.300	3.410	0.607	17.548	OSh

Deck Edge

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.646	15.765
1	-0.900	-2.780	3.300	0.938	Not immersed
2	0.000	2.860	3.270	0.587	14.436
3	0.000	-2.860	3.270	0.888	Not immersed
4	3.000	2.980	3.170	0.399	10.627
5	3.000	-2.980	3.170	0.713	Not immersed
6	6.000	3.220	3.120	0.256	7.571
7	6.000	-3.220	3.120	0.594	Not immersed
8	8.000	3.250	3.120	0.200	6.541
9	8.000	-3.250	3.120	0.542	Not immersed
10	10.000	3.250	3.130	0.155	5.742
11	10.000	-3.250	3.130	0.497	Not immersed
12	12.000	3.020	3.155	0.138	5.623
13	12.000	-3.020	3.155	0.456	Not immersed
14	14.000	2.450	3.235	0.194	7.583
15	14.000	-2.450	3.235	0.452	Not immersed
16	16.000	1.525	3.390	0.343	16.198
17	16.000	-1.525	3.390	0.503	Not immersed
18	17.500	0.540	3.525	0.489	29.941
19	17.500	-0.540	3.525	0.546	Not immersed
20	17.950	0.000	3.565	0.545	Not immersed

Appendix 10.1: Annex 4-31

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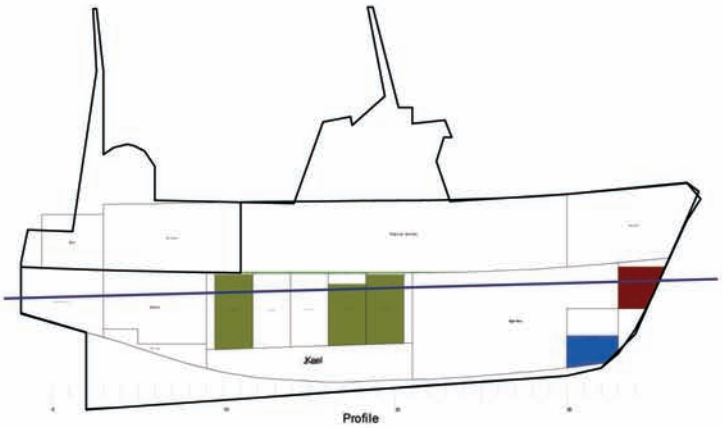
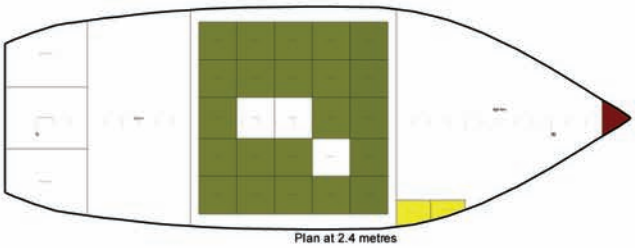
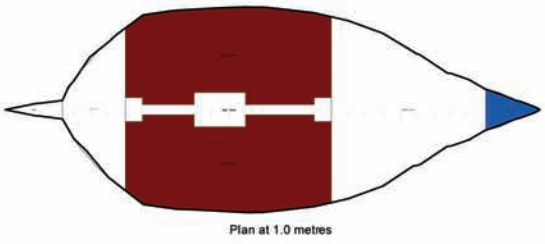
Appendix 10.1: Annex 4-32

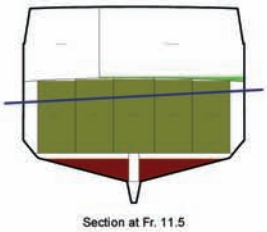
3b Departure Grounds shelter open @ fr.11-12 + water in shelter

Intact State









Appendix 10.1: Annex 4-33

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Fresh Water										
FW Tank	30-33	FW	30.0	1.000	0.8	15.55	-0.00	1.12	0.3	
Total Fresh Water					**0.8**	**15.55**	**-0.00**	**1.12**	**0.3**	
Fish										
Hold a1	18-20	HERRING	98.0	0.932	2.2	9.70	-2.25	2.16	0.1	
Hold a2	18-20	HERRING	98.0	0.932	2.3	9.70	-1.15	2.18	0.1	
Hold a3	18-20	HERRING	98.0	0.932	2.5	9.70	0.00	2.18	0.1	
Hold a4	18-20	HERRING	98.0	0.932	2.3	9.70	1.15	2.18	0.1	
Hold a5	18-20	HERRING	98.0	0.932	2.2	9.70	2.25	2.16	0.1	
Hold b1	16-18	HERRING	85.0	0.932	2.0	8.60	-2.25	2.00	0.1	
Hold b2	16-18	HERRING	85.0	0.932	2.0	8.60	-1.15	2.02	0.1	
Hold b3	16-18	HERRING	85.0	0.932	2.2	8.60	0.00	2.03	0.1	
Hold b5	16-18	HERRING	85.0	0.932	2.0	8.60	2.25	2.00	0.1	
Hold c1	14-16	HERRING	65.0	0.932	1.5	7.50	-2.25	1.78	0.1	
Hold c2	14-16	HERRING	65.0	0.932	1.6	7.50	-1.15	1.79	0.1	
Hold c4	14-16	HERRING	65.0	0.932	1.6	7.50	1.15	1.79	0.1	
Hold c5	14-16	HERRING	65.0	0.932	1.5	7.50	2.25	1.78	0.1	
Hold d1	12-14	HERRING	85.0	0.932	2.0	6.40	-2.25	1.96	0.1	
Hold d2	12-14	HERRING	85.0	0.932	2.1	6.40	-1.15	1.98	0.1	
Hold d4	12-14	HERRING	85.0	0.932	2.1	6.40	1.15	1.98	0.1	
Hold d5	12-14	HERRING	85.0	0.932	2.0	6.40	2.25	1.96	0.1	
Hold e1	9-12	HERRING	98.0	0.932	2.4	5.30	-2.25	2.09	0.1	
Hold e2	9-12	HERRING	98.0	0.932	2.4	5.30	-1.15	2.11	0.1	
Hold e3	9-12	HERRING	98.0	0.932	2.7	5.30	0.00	2.11	0.1	
Hold e4	9-12	HERRING	98.0	0.932	2.4	5.30	1.15	2.11	0.1	
Hold e5	9-12	HERRING	98.0	0.932	2.4	5.30	2.25	2.09	0.1	
Total Fish					**46.4**	**7.46**	**-0.05**	**2.04**	**2.2**	
Fuel Oil										
FO D.B. (S)	9-21	FO	60.7	0.850	4.5	7.79	1.14	0.63	6.5	
FO D.B. (P)	9-21	FO	60.7	0.850	4.5	7.79	-1.14	0.63	6.5	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Total Fuel Oil					**10.1**	**8.78**	**-0.00**	**0.88**	**13.4**	
Lub & Hydr. Oil										
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
Total Lub & Hydr. Oil					**0.9**	**11.32**	**2.68**	**1.93**	**0.0**	
150mm water in shelter										
Original Shelter	11-30	WB	2.0	1.025	2.1	9.05	0.88	3.23	109.1	
Total 150mm water in shelter					**2.1**	**9.05**	**0.88**	**3.23**	**109.1**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	

Appendix 10.1: Annex 4-34

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	
Deadweight					**74.1**	**8.06**	**0.03**	**2.06**	**125.4**	
Total Displacement					**179.3**	**8.05**	**0.01**	**2.50**	**125.4**	
Buoyancy					**179.3**	**8.09**	**0.09**	**1.75**	**297.5**	
Total Buoyancy					**179.3**	**8.09**	**0.09**	**1.75**	**297.5**	

Intact State

Drafts at equilibrium angle

Draft at LCF	2.736	metres
Draft aft at marks	2.534	metres
Draft fwd at marks	3.010	metres
Draft at AP	2.534	metres
Draft at FP	3.006	metres
Mean draft at midships	2.770	metres

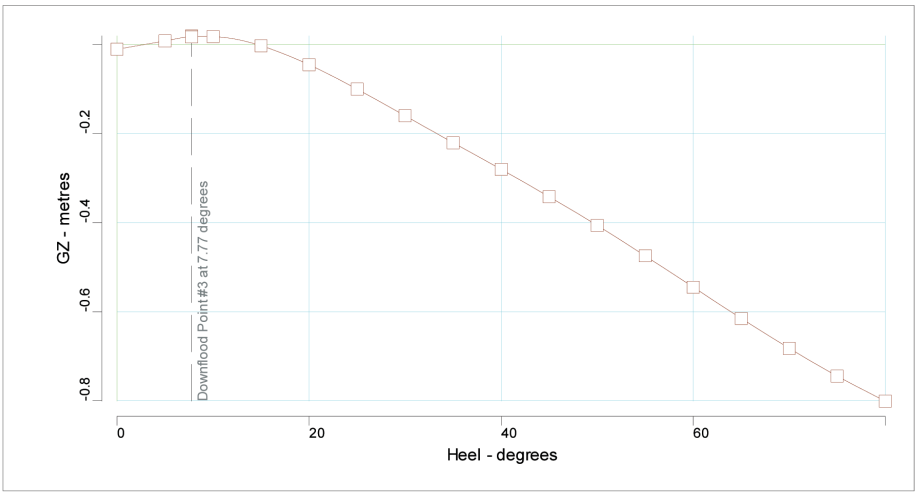
Hydrostatics at equilibrium angle

Density of water	1.0250	tonnes/cu.m
Heel to starboard	3.02	degrees
Trim by the bow	0.473	metres
KG	2.499	metres
FSC	0.699	metres
KGf	3.199	metres
GMt	0.217	metres
BMt	1.659	metres
BMl	12.779	metres
Waterplane area	100.10	sq.metres
LCG	8.053	metres
LCB	8.093	metres
TCB	0.088	metres
LCF	7.510	metres
TCF	0.158	metres
TPC	1.026	tonnes/cm
MTC	1.321	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 4-35

Intact State

3b Departure Grounds shelter open @ fr.11-12 + water in shelter: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)	Unprotected (m)
0.00	-0.0110	0.1988	0.473	2.769	0.29[12]	0.32[4]
5.00	0.0075	0.2164	0.470	2.758	0.03[12]	0.15[3]
7.77	0.0189	0.2395	0.466	2.741	-0.12[10]	-0.00[3]
7.77	0.0167	0.0982	0.469	2.742	-0.12[10]	-0.00[3]
10.00	0.0174	-0.0725	0.475	2.730	-0.25[10]	-0.13[3]
15.00	-0.0032	-0.3876	0.504	2.705	-0.56[10]	-0.44[3]
20.00	-0.0459	-0.5855	0.507	2.677	-0.89[10]	-0.76[3]
25.00	-0.1006	-0.6594	0.468	2.640	-1.21[10]	-1.10[3]
30.00	-0.1604	-0.6640	0.383	2.589	-1.53[10]	-1.44[3]
35.00	-0.2209	-0.5986	0.245	2.518	-1.84[10]	-1.78[3]
40.00	-0.2805	-0.5546	0.059	2.429	-2.13[8]	-2.11[3]
45.00	-0.3421	-0.5609	-0.158	2.322	-2.42[8]	-2.43[3]
50.00	-0.4064	-0.5787	-0.392	2.201	-2.72[6]	-2.74[3]
55.00	-0.4746	-0.6215	-0.627	2.064	-3.01[6]	-3.03[3]
60.00	-0.5449	-0.6525	-0.857	1.916	-3.28[6]	-3.31[3]
65.00	-0.6150	-0.6409	-1.078	1.757	-3.52[6]	-3.56[3]
70.00	-0.6820	-0.6138	-1.286	1.588	-3.79[2]	-3.78[3]
75.00	-0.7445	-0.5747	-1.477	1.409	-4.05[2]	-3.97[3]
80.00	-0.8007	-0.5169	-1.644	1.220	-4.28[0]	-4.14[3]

Appendix 10.1: Annex 4-36

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf	
1	Area under GZ curve up to 30 degrees > 0.055	0.002	0.055	2.656	0.741	Fail
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.000	0.030	2.513	0.885	Fail
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.002	0.090	2.574	0.824	Fail
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	-0.160	0.200	2.478	0.920	Fail
5	Maximum GZ to be at an angle > 25 degrees	7.769	25.000	2.471	0.926	Fail
6	Initial GM to be at least 0.35 metres	0.217	0.350	3.061	0.337	Fail
	Critical			**2.471**	**0.926**	
	Actual			**3.199**	**0.199**	

**** Condition does not comply ****

Intact State

Immersion Particulars

Unprotected Openings

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)	Downflood Compartment
0	5.500	-0.950	3.240	0.608	78.652	OSh
1	5.500	-0.390	3.240	0.579	54.902	OSh
2	5.500	2.300	3.410	0.607	16.726	OSh
3	5.800	3.250	3.130	0.269	7.720	OSh
4	10.200	-3.250	3.130	0.492	Not immersed	OSh

Deck Edge

Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.646	15.718
1	-0.900	-2.780	3.300	0.938	Not immersed
2	0.000	2.860	3.270	0.587	14.351
3	0.000	-2.860	3.270	0.888	Not immersed
4	3.000	2.980	3.170	0.399	10.532
5	3.000	-2.980	3.170	0.713	Not immersed
6	6.000	3.220	3.120	0.256	7.523
7	6.000	-3.220	3.120	0.594	Not immersed
8	8.000	3.250	3.120	0.200	6.511
9	8.000	-3.250	3.120	0.542	Not immersed
10	10.000	3.250	3.130	0.155	5.730
11	10.000	-3.250	3.130	0.497	Not immersed
12	12.000	3.020	3.155	0.138	5.611
13	12.000	-3.020	3.155	0.456	Not immersed
14	14.000	2.450	3.235	0.194	7.523
15	14.000	-2.450	3.235	0.452	Not immersed
16	16.000	1.525	3.390	0.343	13.979
17	16.000	-1.525	3.390	0.503	Not immersed
18	17.500	0.540	3.525	0.489	29.941
19	17.500	-0.540	3.525	0.546	Not immersed
20	17.950	0.000	3.565	0.545	Not immersed

Appendix 10.1: Annex 4-37

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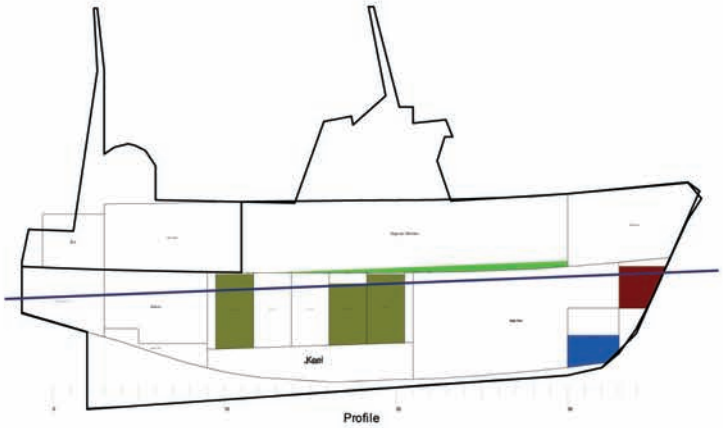
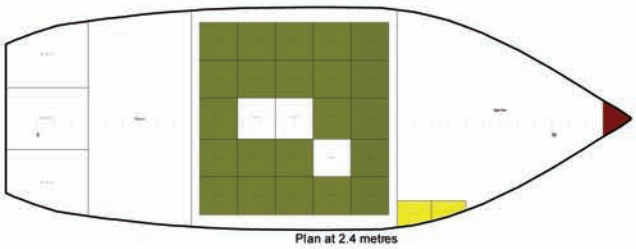
Appendix 10.1: Annex 4-38

4 Departure Grounds shelter intact + water in shelter

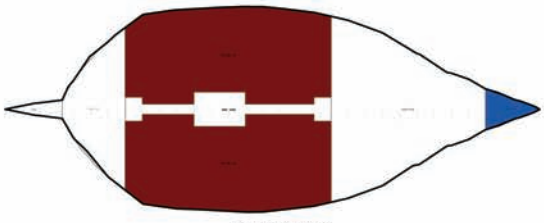
Intact State



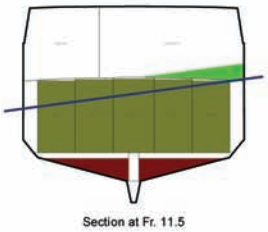
Profile



Plan at 2.4 metres



Plan at 1.0 metres



Section at Fr. 11.5

Appendix 10.1: Annex 4-39

Intact State

Intact State

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Fresh Water										
FW Tank	30-33	FW	30.0	1.000	0.8	15.55	-0.00	1.12	0.3	
Total Fresh Water					**0.8**	**15.55**	**-0.00**	**1.12**	**0.3**	
Fish										
Hold a1	18-20	HERRING	98.0	0.932	2.2	9.70	-2.25	2.16	0.1	
Hold a2	18-20	HERRING	98.0	0.932	2.3	9.70	-1.15	2.18	0.1	
Hold a3	18-20	HERRING	98.0	0.932	2.5	9.70	0.00	2.18	0.1	
Hold a4	18-20	HERRING	98.0	0.932	2.3	9.70	1.15	2.18	0.1	
Hold a5	18-20	HERRING	98.0	0.932	2.2	9.70	2.25	2.16	0.1	
Hold b1	16-18	HERRING	85.0	0.932	2.0	8.60	-2.25	2.00	0.1	
Hold b2	16-18	HERRING	85.0	0.932	2.0	8.60	-1.15	2.02	0.1	
Hold b3	16-18	HERRING	85.0	0.932	2.2	8.60	0.00	2.03	0.1	
Hold b5	16-18	HERRING	85.0	0.932	2.0	8.60	2.25	2.00	0.1	
Hold c1	14-16	HERRING	65.0	0.932	1.5	7.50	-2.25	1.78	0.1	
Hold c2	14-16	HERRING	65.0	0.932	1.6	7.50	-1.15	1.79	0.1	
Hold c4	14-16	HERRING	65.0	0.932	1.6	7.50	1.15	1.79	0.1	
Hold c5	14-16	HERRING	65.0	0.932	1.5	7.50	2.25	1.78	0.1	
Hold d1	12-14	HERRING	85.0	0.932	2.0	6.40	-2.25	1.96	0.1	
Hold d2	12-14	HERRING	85.0	0.932	2.1	6.40	-1.15	1.98	0.1	
Hold d4	12-14	HERRING	85.0	0.932	2.1	6.40	1.15	1.98	0.1	
Hold d5	12-14	HERRING	85.0	0.932	2.0	6.40	2.25	1.96	0.1	
Hold e1	9-12	HERRING	98.0	0.932	2.4	5.30	-2.25	2.09	0.1	
Hold e2	9-12	HERRING	98.0	0.932	2.4	5.30	-1.15	2.11	0.1	
Hold e3	9-12	HERRING	98.0	0.932	2.7	5.30	0.00	2.11	0.1	
Hold e4	9-12	HERRING	98.0	0.932	2.4	5.30	1.15	2.11	0.1	
Hold e5	9-12	HERRING	98.0	0.932	2.4	5.30	2.25	2.09	0.1	
Total Fish					**46.4**	**7.46**	**-0.05**	**2.04**	**2.2**	
Fuel Oil										
FO D.B. (S)	9-21	FO	60.7	0.850	4.5	7.79	1.14	0.63	6.5	
FO D.B. (P)	9-21	FO	60.7	0.850	4.5	7.79	-1.14	0.63	6.5	
FO Day Tank	33-36	FO	80.0	0.850	1.1	16.92	0.00	2.94	0.4	
Total Fuel Oil					**10.1**	**8.78**	**-0.00**	**0.88**	**13.4**	
Lub & Hydr. Oil										
Hydr. Oil	21-23	HO	98.0	0.950	0.6	10.97	2.73	1.94	0.0	
Lub. Oil	23-25	LO	98.1	0.900	0.3	11.91	2.60	1.93	0.0	
Total Lub & Hydr. Oil					**0.9**	**11.32**	**2.68**	**1.93**	**0.0**	
350mm water in shelter										
Original Shelter	11-30	WB	10.6	1.025	11.2	10.52	1.75	3.43	64.1	I
Total 350mm water in shelter					**11.2**	**10.52**	**1.75**	**3.43**	**64.1**	
Fixed weights										
Stores					2.0	15.50	0.00	2.00	0.0	
Provisions					0.5	14.00	0.00	0.50	0.0	
Trawl Nets					3.2	8.16	0.00	3.20	0.0	

Appendix 10.1: Annex 4-40

Title	Frames	Cargo	% full	SG (t/m3)	Weight (t)	LCG (m)	TCG (m)	VCG (m)	FSM (t-m)	S M
Wires					1.8	12.05	0.00	4.00	0.0	
Trawl Doors					1.3	-1.00	0.00	1.30	0.0	
"Bitume" on Deck					5.0	7.25	0.00	3.25	0.0	
Total Fixed weights					**13.9**	**8.75**	**0.00**	**2.87**	**0.0**	
Lightweight					**105.2**	**8.05**	**0.00**	**2.81**	**0.0**	
Deadweight					**83.1**	**8.36**	**0.24**	**2.21**	**80.5**	
Total Displacement					**188.4**	**8.19**	**0.10**	**2.55**	**80.5**	
Buoyancy					**188.4**	**8.22**	**0.21**	**1.81**	**306.6**	
Total Buoyancy					**188.4**	**8.22**	**0.21**	**1.81**	**306.6**	

Intact State

Drafts at equilibrium angle

Draft at LCF	2.825	metres
Draft aft at marks	2.524	metres
Draft fwd at marks	3.223	metres
Draft at AP	2.524	metres
Draft at FP	3.217	metres
Mean draft at midships	2.871	metres

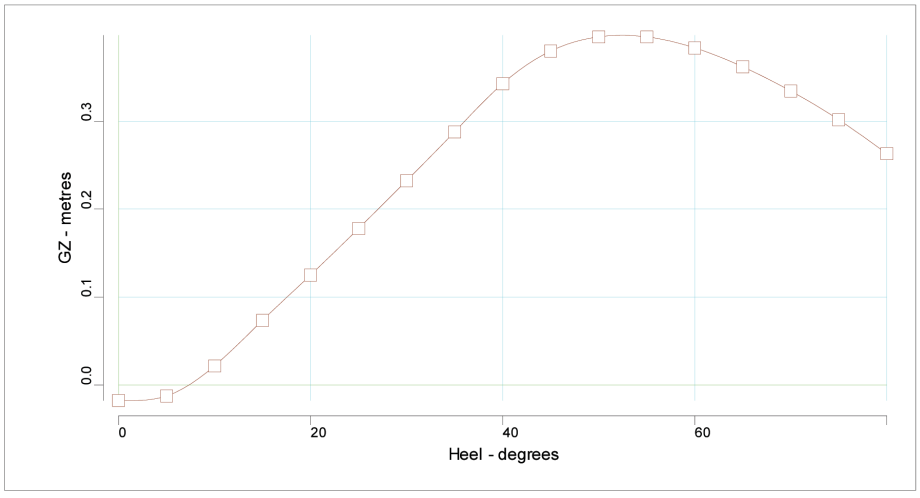
Hydrostatics at equilibrium angle

Density of water	1.0250	tonnes/cu.m
Heel to starboard	7.62	degrees
Trim by the bow	0.693	metres
KG	2.546	metres
FSC	0.427	metres
KGf	2.974	metres
GMt	0.431	metres
BMt	1.628	metres
BMl	12.579	metres
Waterplane area	101.73	sq.metres
LCG	8.189	metres
LCB	8.221	metres
TCB	0.214	metres
LCF	7.643	metres
TCF	0.416	metres
TPC	1.043	tonnes/cm
MTC	1.366	tonnes-m/cm
Shell thickness	8.000	mm

Appendix 10.1: Annex 4-41

Intact State

4 Departure Grounds shelter intact + water in shelter: Intact State



Righting Lever (GZ) Curve

Heel to Stbd (deg)	GZ (m)	Slope (m/rad)	Trim (m)	WLrad (m)	Freeboard (m)
0.00	-0.0176	0.0497	0.766	2.876	0.12[14]
5.00	-0.0125	0.0922	0.714	2.861	-0.12[12]
10.00	0.0217	0.5678	0.668	2.822	-0.37[12]
15.00	0.0735	0.6125	0.618	2.765	-0.63[10]
20.00	0.1250	0.6381	0.527	2.690	-0.90[10]
25.00	0.1779	0.7036	0.391	2.597	-1.16[10]
30.00	0.2324	0.7436	0.222	2.483	-1.41[10]
35.00	0.2879	0.7904	0.028	2.346	-1.65[8]
40.00	0.3427	0.7237	-0.183	2.183	-1.89[6]
45.00	0.3798	0.4703	-0.409	2.004	-2.14[6]
50.00	0.3959	0.2579	-0.642	1.814	-2.37[6]
55.00	0.3958	0.0869	-0.877	1.613	-2.59[6]
60.00	0.3833	-0.0477	-1.107	1.403	-2.80[6]
65.00	0.3618	-0.1542	-1.328	1.187	-3.06[2]
70.00	0.3343	-0.2339	-1.539	0.965	-3.29[2]
75.00	0.3015	-0.2993	-1.741	0.738	-3.52[0]
80.00	0.2630	-0.3629	-1.943	0.507	-3.72[0]

Appendix 10.1: Annex 4-42

Intact State

Torremolinos

#	Criterion	Actual Value	Critical Value	Int.cr. KGf	Int.cr. GMf	
1	Area under GZ curve up to 30 degrees > 0.055	0.044	0.055	2.889	0.505	Fail
2	Area under GZ curve from 30 to 40 deg. or downflood > 0.03	0.050	0.030	3.176	0.218	
3	Area under GZ curve up to 40 deg. or downflood > 0.09	0.094	0.090	2.994	0.400	
4	Maximum GZ to be at least 0.20 metre at 30 degrees or above	0.232	0.200	3.038	0.355	
5	Maximum GZ to be at an angle > 25 degrees	51.408	25.000	3.510	-0.116	
6	Initial GM to be at least 0.35 metres	0.431	0.350	2.679	0.715	
	Critical			**2.679**	**0.715**	
	Actual			**2.974**	**0.420**	

**** Condition does not comply ****

Intact State

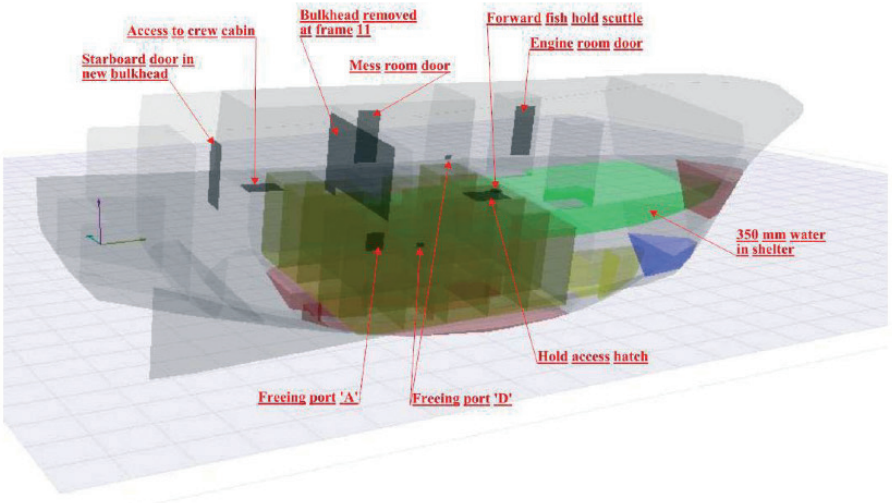
Immersion Particulars

Deck Edge

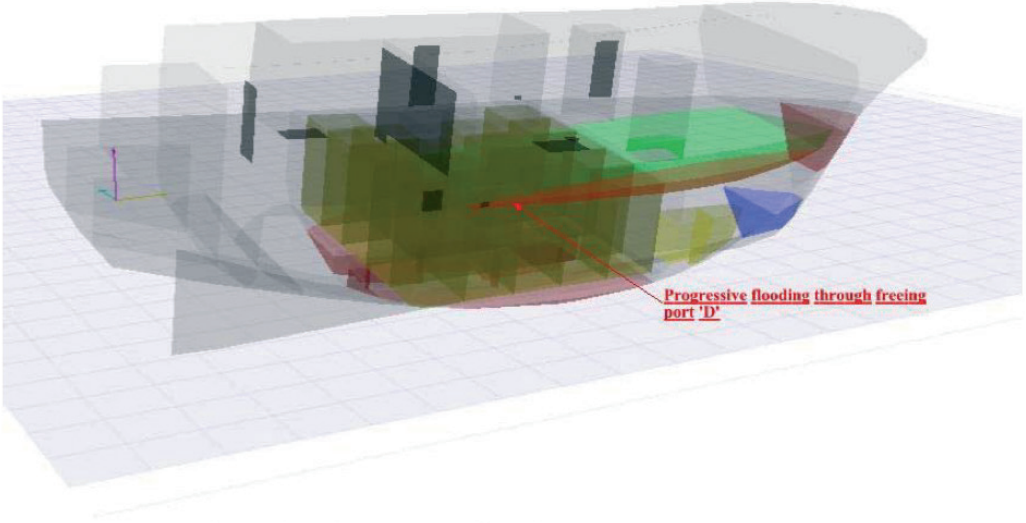
Point #	X position (m)	Y position (m)	Z position (m)	Ht. above WL (m)	Flood Angle (deg)
0	-0.900	2.780	3.300	0.442	15.742
1	-0.900	-2.780	3.300	1.175	Not immersed
2	0.000	2.860	3.270	0.366	14.299
3	0.000	-2.860	3.270	1.120	Not immersed
4	3.000	2.980	3.170	0.132	9.976
5	3.000	-2.980	3.170	0.918	Not immersed
6	6.000	3.220	3.120	-0.069	6.357
7	6.000	-3.220	3.120	0.781	Not immersed
8	8.000	3.250	3.120	-0.152	4.824
9	8.000	-3.250	3.120	0.705	Not immersed
10	10.000	3.250	3.130	-0.222	3.542
11	10.000	-3.250	3.130	0.635	Not immersed
12	12.000	3.020	3.155	-0.246	2.654
13	12.000	-3.020	3.155	0.550	Not immersed
14	14.000	2.450	3.235	-0.171	3.193
15	14.000	-2.450	3.235	0.475	Not immersed
16	16.000	1.525	3.390	0.025	8.662
17	16.000	-1.525	3.390	0.427	Not immersed
18	17.500	0.540	3.525	0.229	Not immersed
19	17.500	-0.540	3.525	0.371	Not immersed
20	17.950	0.000	3.565	0.322	Not immersed

Appendix 10.1: Annex 5-1 - Sequence of Events when the Shelter begins to flood.

Annex 5

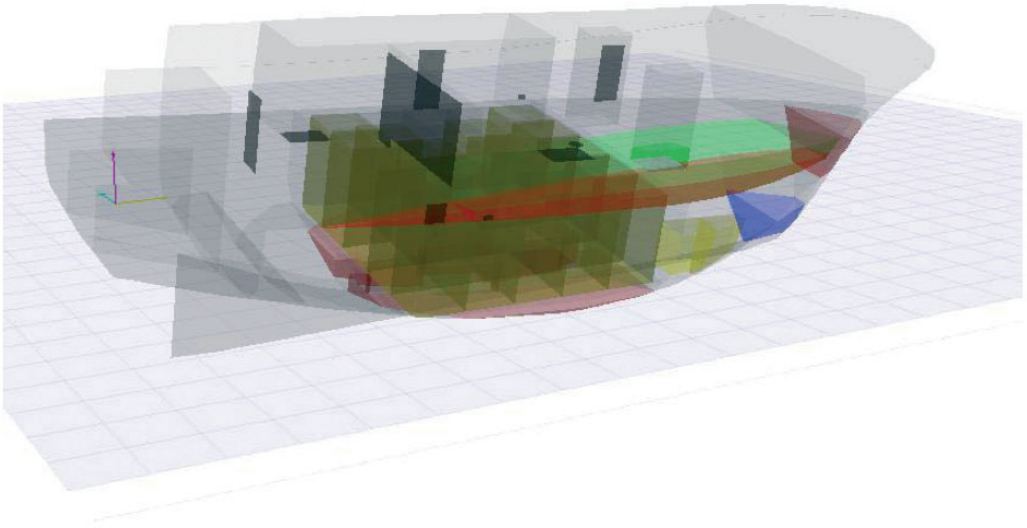


Time: 0 sec Heel: 7.62 deg Trim: 0.69 m WL radius: 2.842 m

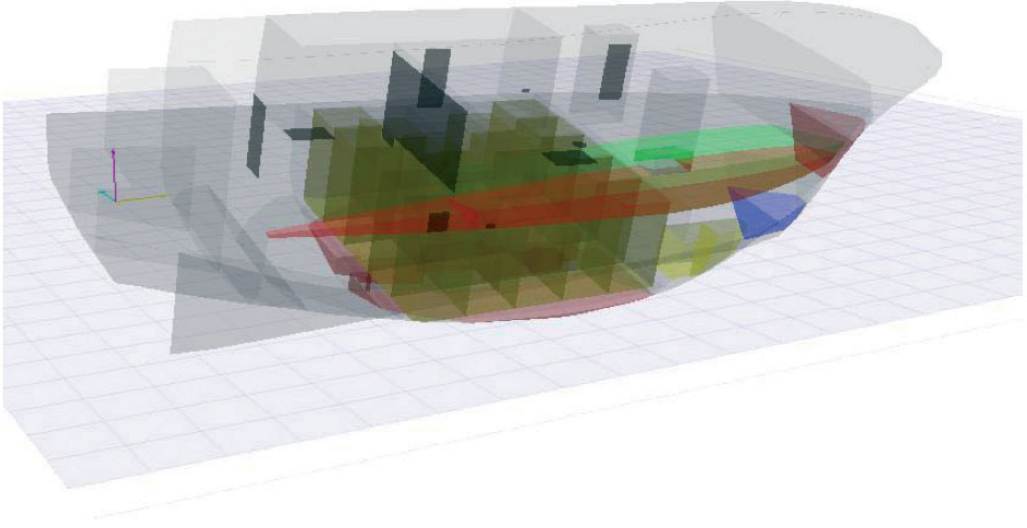


Time: 60 sec Heel: 8.69 deg Trim: 0.70 m WL radius: 2.841 m

Appendix 10.1: Annex 5-2

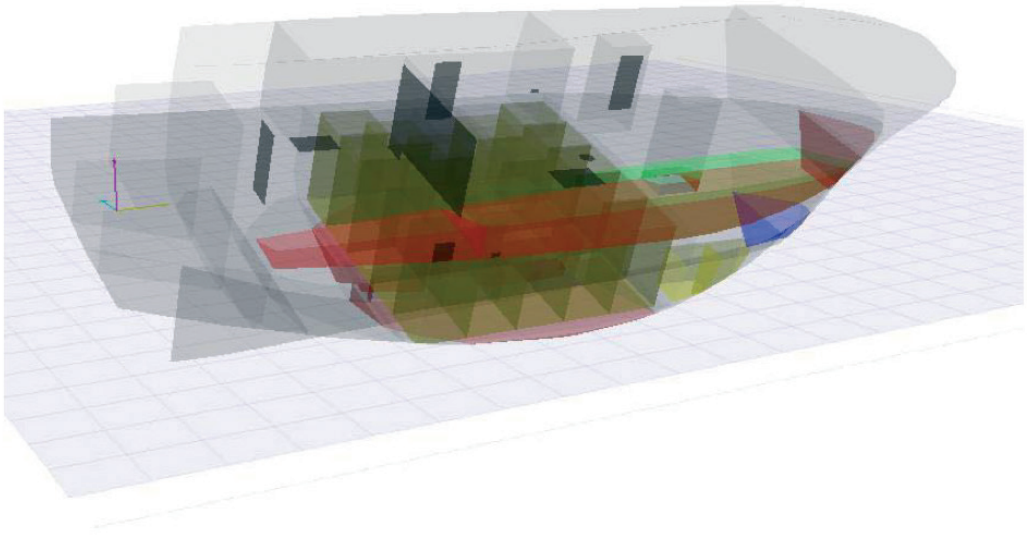


Time: 120 sec Heel: 11.26 deg Trim: 0.71 m WL radius: 2.837 m

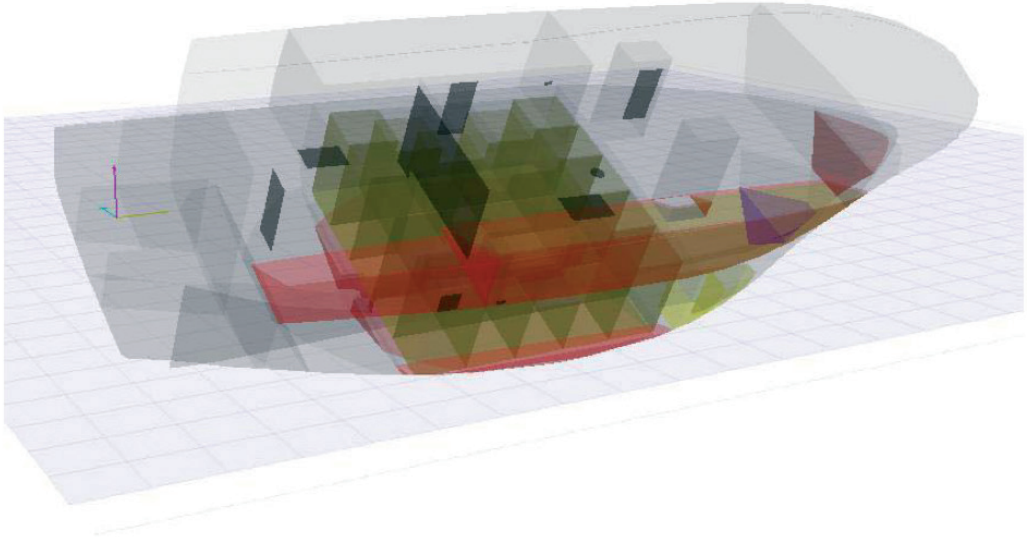


Time: 180 sec Heel: 13.94 deg Trim: 0.71 m WL radius: 2.828 m

Appendix 10.1: Annex 5-3

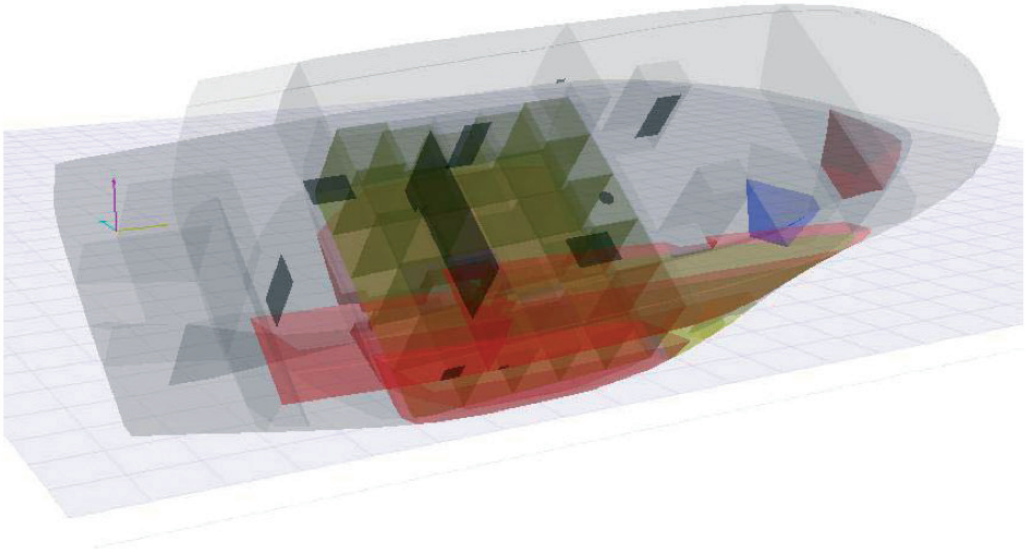


Time: 240 sec Heel: 19.11 deg Trim: 0.62 m WL radius: 2.794 m

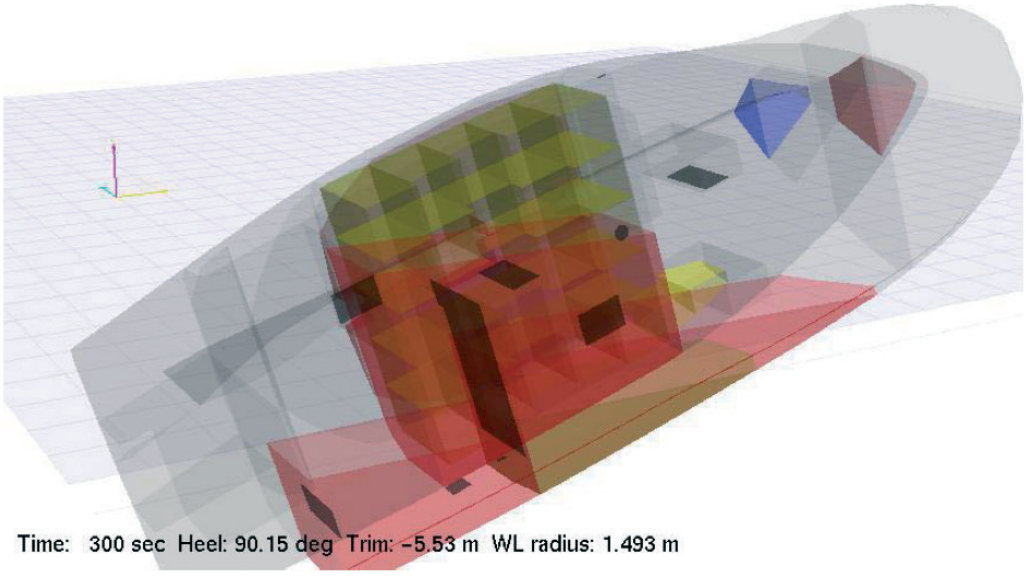


Time: 270 sec Heel: 29.22 deg Trim: 0.18 m WL radius: 2.674 m

Appendix 10.1: Annex 5-4



Time: 285 sec Heel: 42.02 deg Trim: -0.84 m WL radius: 2.446 m



Time: 300 sec Heel: 90.15 deg Trim: -5.53 m WL radius: 1.493 m

Appendix 10.2: Met Eireann weather report.

MET ÉIREANN
The Irish Meteorological Service

Glasnevin Hill, Dublin 9, Ireland. Cnoc Ghlas Naíon Baile Átha Cliath 9, Éire. www.met.ie
Tel: +353-1-806 4200 Fax: +353-1-806 4247 E-mail: met.eireann@met.ie

Appendix 10.2

Weather Report for sea area 52 05.1N 06 54.3W on 10th January 2007 between 1400 hours and 2000 hours UTC.

General Meteorological Situation: A weak, transient ridge of high pressure passed eastwards across the area early in the afternoon. A strengthening, southwesterly airstream set in by 1800UTC. The southwesterly airstream continued to strengthen thereafter as a warm front moved in quickly from the Atlantic.

From 1400 to 2000 hours (GMT):

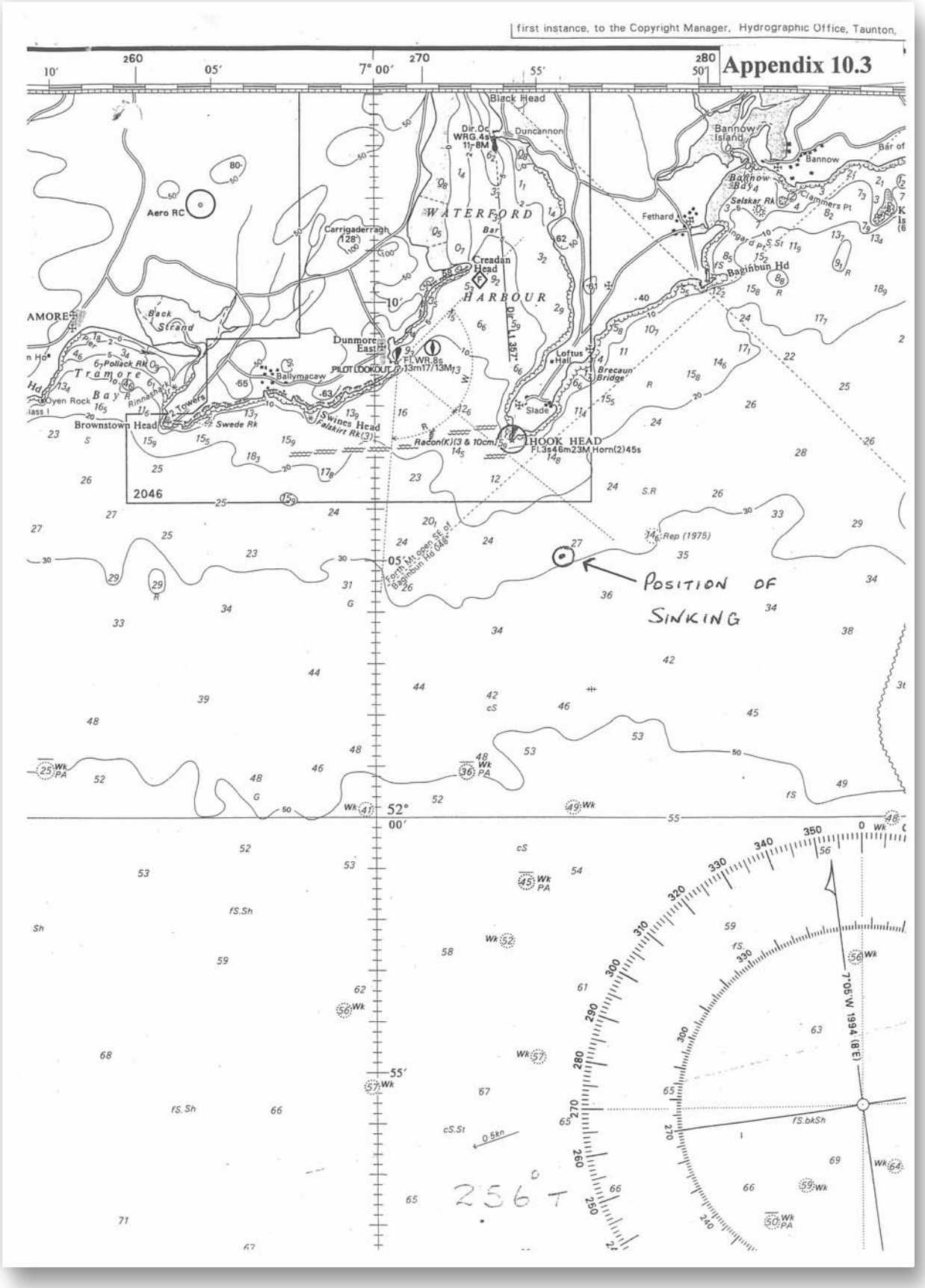
Wind(Beaufort): West 5 or 6; steadily backing southwest and increasing 7, gusting gale 8, by end of period.

Weather: A few light showers initially, otherwise mainly fair; rain and drizzle set in later.

Visibility: Good becoming moderate to poor later.

Sea state: Rough throughout the period.

Appendix 10.3: Chart extract showing the position of the sinking of the Pere Charles.



Appendix 10.4: Photographs of the recovered vessel.

Photo 1

Photo 2

Appendix 10.4: Photographs of the recovered vessel.

Photo 3

Photo 4

Appendix 10.4: Photographs of the recovered vessel.

Photo 5

Photo 6

Appendix 10.5: Marine Notice No. 32 of 2007.

Department of Transport
An Roinn Iompair

Marine Notice No. 32 of 2007

FOR THE ATTENTION OF ALL OWNERS/OPERATORS OF FISHING VESSELS OF 15m IN LENGTH OVERALL AND OVER BUT LESS THAN 24m IN LENGTH

NEW SAFETY REGULATIONS FOR FISHING VESSELS OF 15m IN LENGTH OVERALL AND OVER BUT LESS THAN 24m IN LENGTH

The Minister for Transport has introduced new Regulations entitled *Merchant Shipping (Safety of Fishing Vessels) (15-24 Metres) Regulations 2007 (S.I. No. 640 of 2007)*. These Regulations introduce new requirements to enhance the safety of fishing vessels and their crew in the 15 to 24 metre length category. The Regulations are available on the Department of Transport website www.transport.ie. Hard copies are available from the Maritime Safety Directorate and from the Government Publications Sale Office, Sun Alliance House, Molesworth Street, Dublin 2.

Consultation
These Regulations were the subject of a consultation process with the fishing industry and other interested parties and comments received during the consultation process were taken into consideration.

Main provisions of the Safety of Fishing Vessels (15-24 Metres) Regulations

- The Regulations apply to mechanically propelled fishing vessels of 15 metres in length overall (L_{oa}) and over but less than 24 metres in length (L) as defined in the Regulations, which are registered in the State. There are approximately 200 fishing vessels in this category.

- The Regulations will come into effect as follows:

  (i) on *1 October 2007* for *new* vessels, ("new vessel" means a vessel the keel of which is laid or which is at a similar stage of construction on or after *1 October 2007*);

  (ii) on *1 October 2008*, for existing vessels the keel of which was laid on or after *1 October 1997*;

  (iii) on *1 October 2009*, for existing vessels the keel of which was laid on or after *1 October 1987*; and

(iv) on *1 October 2010*, for existing vessels the keel of which was laid before *1 October 1987*.

- The Regulations are divided into Parts and each Part deals with a specific safety-related area, as follows:

Part 1	General, including Survey & Certification
Part 2	Construction, Watertight Integrity and Equipment
Part 3	Stability and Associated Seaworthiness
Part 4	Machinery and Electrical Installations
Part 5	Fire Protection, Fire Detection, Fire Extinction and Fire Fighting
Part 6	Protection of the Crew
Part 7	Life-Saving Appliances and Arrangements
Part 8	Emergency Procedures, Musters and Drills
Part 9	Radiocommunications
Part 10	Shipborne Navigational Equipment and Arrangements
Part 11	Crew Accommodation

- The Regulations include a survey regime, which will require an initial survey, biennial and renewal surveys during a four-year cycle. The survey regime will require the vessels to be inspected out of the water during the initial and renewal surveys. This requirement will enable the surveyors to carry out a detailed examination of the hull of the vessel.

Fishing Vessel (Fees) Regulations 2007

The Minister will also shortly introduce new Fishing Vessel (Fees) Regulations. These Regulations introduce fees for the survey and certification of fishing vessels of 15 metres length overall and over and restates the Fishing Vessel (Fees) Regulations 2005 (S.I. No 504 of 2005) which applied to vessels of over 24 metres in length only.

N.B.
Under the *Fisheries (Amendment) Act 2003, as amended by the Maritime Safety Act 2005*

1. **it is a condition of a sea-fishing boat licence that the licensee shall ensure that the licensed boat complies with requirements specified by or under the Merchant Shipping Acts 1894 to 2005 *(section 4.8A(a))*, and**
2. **where by or under the Merchant Shipping Acts 1894 to 2005 a survey is required to be carried out of a sea-fishing boat for the purpose of establishing whether or not such boat complies with the requirements specified by or under those Acts, the licensing authority shall not grant or renew a sea-fishing boat licence in respect of the boat unless the licensing authority is satisfied that the boat complies with such requirements. *(section 4.8A(b))*.**

Director General,
Maritime Safety Directorate,
Department of Transport,
Leeson Lane,
Dublin 2.

19/09/2007

For any technical assistance in relation to this Marine Notice please contact
The Marine Surveyors' Office, Leeson Lane, Dublin 2 +353 1 678 3400
For information in relation to technical specification/type approval of radio equipment contact the Radio Surveyors +353 1 678 2363/2364/2365/2367.
For general enquiries please contact the Maritime Safety Division at +353-1-678 3418
Any enquiries concerning Marine Notices should be addressed to:
Maritime Safety Directorate, Department of Transport, Leeson Lane, Dublin 2
Email: marinenotices@transport.ie
Or visit us at: www.transport.ie

10. CORRESPONDENCE RECEIVED

Rose Coady
Barn 4
Trenarveneth Farm
Paul
Newlyn
Penzance
TR18 5NF

Dear Ms Cullinane

I Rose Coady mother off the late Patrick Coady do not have any comments or observations to make on this draft report at this time

Yours Sincerely

Rose Coady.

MCIB RESPONSE
The MCIB notes the contents of this letter.