isseta
INFLATABLE SAFETY AND SURVIVAL EQUIPMENT
TRADE ASSOCIATION LIMITED

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LIFERAFT ON THE BOW PROJECT

BACKGROUND

In 1997, 29 fishermen lost their lives. Following an incident when the liferafts on a capsized fishing boat failed to deploy automatically, the MCA commissioned a research project to try and determine the ideal position for the stowage of inflatable liferaft containers. This project was undertaken by the Wolfson Unit for Marine Technology and Industrial Aerodynamics, which conducted a series of tank tests using models of two types of common fishing vessel.

These tests showed that because of the masts, rigging and fishing gear there is an increased likelihood of liferaft containers and/or painter lines becoming snagged on the superstructure and/or the fishing gear. In some of these cases the container may become so jammed or fouled it cannot deploy correctly. More often, it was found that after the container is released by the HRU, the painter line becomes fouled as the liferaft ascends to the surface, resulting in the weak link becoming non-functional and the liferaft being taken to such a depth the complete inflation is prevented.

The MCA recommended that liferaft containers should be stowed as far apart as possible, both fore and aft and port and starboard. Fishermen, however, expressed concern that any liferaft stowed forward may well be lost overboard in adverse weather.

The Sea Fish Industry Authority proposed a research project for an alternative method of deploying liferafts and MCA asked ISSETA to comment on the proposal. After further discussion, it was proposed that MCA, ISSETA and Sea Fish Industry Authority collaborate to investigate the viability of stowing a liferaft on the bow of a fishing boat.

PROJECT DEFINITION

The aims of the project were decided on as follows:

a) To show that a 6 person Inflatable Liferaft can be satisfactorily stowed on the Bow of a 22.0 metre Fishing Vessel

b) To show that this liferaft, when stowed on the bow, will withstand the more onerous conditions that will be encountered in that position

c) To show that the liferaft will always be ready for use in that position

Period of Trial: 2 years – commencing March 2001

TRIAL VESSEL

MCA advised that Interfish Ltd of Plymouth operators of the fishing vessel, CARHELMAR, BM23, a 22.2 metre Beamer (see GA drawing Annex 1), offered the vessel for the trial and a visit was arranged to determine its suitability.

This visit highlighted the problems associated with conventional liferaft stowage arrangements on fishing vessels. Whilst float free arrangements were satisfactory, accepting the constraints of the rigging and fishing gear, manual launching of the liferafts would be difficult, involving the necessity of lifting the container over a fixed bar before throwing it outboard a distance of more than a metre to clear the side deck below.

The photograph (fig.1) below shows the whole foredeck area. The Skipper and Mate originally suggested the liferaft container should be placed aft of the breakwater, however it was determined that such a position would not be advantageous in a float free situation and it would be better placed forward of the mooring bitts where the only obstruction to floating free was the rail itself.

Fig. 1

Although the area was tight for space, the rail canted forward permitted the installation of the liferaft just forward of the mooring bitts in a position that would not adversely affect the use and position of the mooring ropes in any way.

The MCA suggested that a 5 mm steel plate with holes cut into it be fixed around the rail as shown in Fig. 2. It was thought that such a breakwater may well reduce the effect of heavy seas breaking on the liferaft container, although the Skipper reported that it was very rare for heavy seas to break over the foredeck at all. It was further suggested that a lightweight PVC cover be fitted over the liferaft container to give some added protection – some Dutch fishing boats are reported to have similar covers fitted to protect the liferaft and these have not apparently affected the operation of the liferaft.

In the event, the owners opted to fit a series of angled steel bars to the rails in the area indicated in the illustration below.

Fig. 2

It may be seen in Fig. 3 below, that placing a liferaft container in the position suggested would not have an adverse effect on the visibility from the wheelhouse. In the illustration the red shading shows where the breakwater arrangement was to be placed.

Fig. 3

TRIAL LIFERAFT

The liferaft used for the trial was a 6 person DSB LR97 type liferaft, serial number 56529, manufactured by Deutsche Schlauchboot of Germany (see Annex 2) in January 2001. This is a standard throwover liferaft, approved to MED and MCA.UK requirements, and packed in a rectangular, fibreglass container. The liferaft was equipped with a full, type “A”, emergency equipment pack.

The container was placed in a standard galvanised steel cradle, which was welded to the foredeck, and held in position by a webbing strap. The strap, a "V" type, was fixed at each end to the cradle and at its point was attached by a senhouse slip arrangement to a Hammar, Royal Navy pattern, hydrostatic release unit. This latter equipment was chosen because it is designed to release at a depth of 6 – 10 metres and therefore would be unlikely to release accidentally in bad weather conditions. The standard hydrostatic release unit is designed to release the liferaft container at a depth of 1½ - 4 metres and it was felt there was a danger of unintentional release in heavy seas.

TRIAL

The liferaft and cradle were delivered to the "Carhelmar" on schedule but were not fitted to the vessel until June following a delay in the refit at which time the angled bars were fitted to the rails and the cradle welded to the deck.

The stowage arrangement is shown in the illustration, Fig. 4, below.

Fig. 4

Prior to sailing the Skipper was requested to keep a log to record weather conditions experienced and to take photographs, if possible. The vessel made nine voyages in the first four months of the trial, each lasting for an average of seven days, and the weather conditions actually experienced, which are shown in the table overleaf, were to prove typical of those encountered in the remaining period of the trial.

During a total of 63 days at sea prior to the first interim inspection in November 2001, the Carhelmar encountered 10 days of gale force winds, during which time the seas were rough with a heavy swell. Despite the Skippers reservations about the viability of the position of the liferaft on the bow, the first inspection showed that the container had remained in its correct position at all times and the only modification required was to tighten the webbing securing strap, which had stretched slightly.

Voyage No.	Days at Sea	Weather conditions experienced
1	7	3 days calm, 2 days moderate 1 day SW/W 6, rough sea 1 day W/SW 8, rough sea, heavy swell
2	6	6 days calm – moderate
3	7	Day 1 – Fresh/strong SW 5-6 Days 2-6 – calm – moderate Day 7 Strong SW with rough sea, moderate swell
4	7	Day 1 – SW 6-8, rough sea, heavy swell Days 2-5 – calm – moderate, slight seas Days 6-7 – W/NW 5-6, choppy seas, slight swell
5	7	Days 1-4 – calm Day 5 – NW 5, choppy sea Day 6 – NW 6-7, 2 metre swell Day 7 – W/NW 7-8, rough sea, 4 metre swell
6	8	Days 1-2 - W 4-5, choppy sea, slight swell Days 3-5 – W/SW 2-3, calm Day 6 – N/NE 3-4, slightly choppy Days 7-8 – E/NE 3-5, slightly choppy
7	7	Day 1 – E/ESE 4-5, choppy sea Day 2 – SE 5-6, short sea, 2 metre swell Days 3-4 – SE 5-7, 2 to 3 metre swell Day 5 – SE/SW 5-6, confused sea – very uncomfortable Days 6-7 – SW 3-4, relatively calm
8	7	Day 1 W/SW 5, choppy sea Days 2-3 – SW 5, choppy sea Day 4 – SW 4, big Atlantic swell Days 5-6 – W 3-4, slight sea Day 7 – W 7-9, heavy seas
9	7	Day 1 – NW 3-5, slight sea Days 2-3 – NNW 6-7, very choppy, no swell Days 4-5 – NW 7-8, very choppy, 2 metre swell Days 6-7 – NW 8, very rough sea, heavy 3 metre swell

FIRST ANNUAL INSPECTION

The trial liferaft was removed from the Carhelmar and serviced in March 2002. The only problem noted was that the PVC cover originally fitted was missing and presumed lost in heavy weather.

On opening the container a very small quantity of water, amounting to less than a teaspoonful, was found in the lower half of the container. However, as the liferaft was wrapped in a polythene sheet, which formed a barrier between the raft and container, the liferaft itself was dry.

During the service the liferaft was subjected to a number of tests, namely;

Working pressure test: carried out on each buoyancy tube during which no loss of pressure was recorded for upper or lower chamber over the test period.

Floor pressure test: this chamber passed test with minimal loss of pressure over the test period.

Arch pressure test: this chamber passed test with no loss of pressure over the test period.

The gas cylinder was inspected and check weighed and proved satisfactory.

The emergency equipment pack was inspected and torch cells replaced.

The liferaft container was cleaned and the container seal renewed.

Following the service the liferaft was returned to the vessel.

SECOND ANNUAL INSPECTION

There was a delay in arranging for the service of the trial liferaft in 2003 as the Carhelmar was refitted and the service date did not correspond with the refitting period. As a consequence the liferaft was not collected for its second service until the end of June 2003.

The second service was witnessed by a surveyor from MCA and the same tests as the previous year were conducted. The results were noted as follows:

On opening the container the interior was found to be completely dry, no moisture of any kind being evident.

Working pressure test: no loss of pressure in upper or lower buoyancy tube over the test period.

Floor pressure test: no loss of pressure during the test period.

Arch pressure test: minimal loss of pressure during the test period.

The gas cylinder was inspected and check weighed. There was no weight loss, but there were some rust stains which were removed and the cylinder repainted.

The emergency equipment was inspected and the torch cells replaced.

The container was inspected and the following minor damage was noted:

Upper container half: A small area of gel coat was damaged and repaired using a proprietary repair material. No damage was noted to the interior of the container half.
Lower container half: No damage was noted to the exterior of the container half, but two cracks were discovered on the interior which were repaired using glass fibre matting as a precautionary matter. The cracking was in the area where the gas cylinder is placed and it is believed the damage may have occurred by the cylinder knocking against the container when the vessel was sailing into a heavy head sea. The container seal was replaced as required.

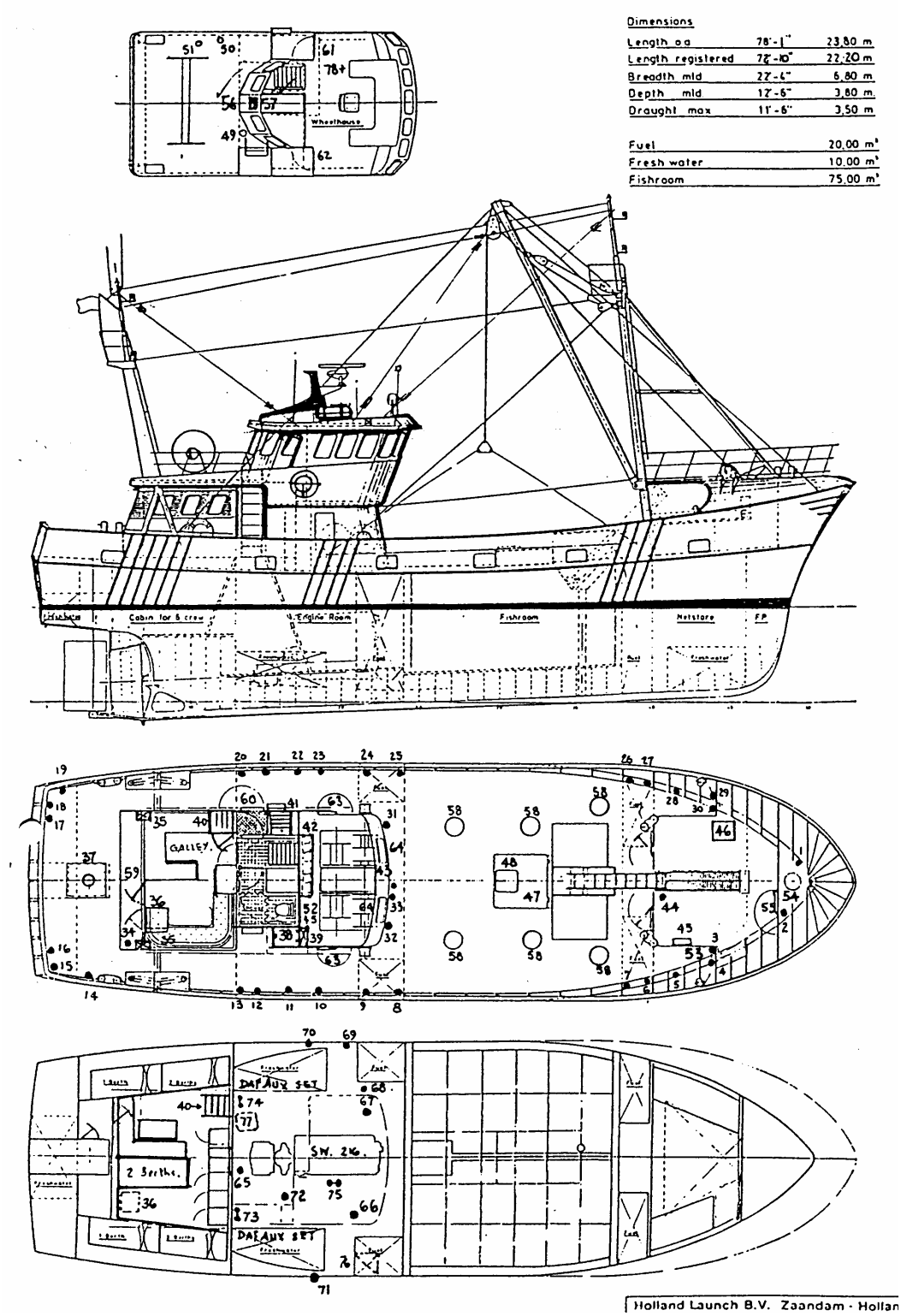
The Hammar hydrostatic release unit was tested in an air pressure chamber and operated in accordance with the designed parameters.

CONCLUSION

It is apparent that the trial has been a success in that the liferaft has remained in position and has not been damaged by heavy seas or suffered any water ingress. The Skipper has reported that in heavy weather the bulk of any water shipped has tended to be aft of the stowage, although it is assumed that the installation of the “breakwater” angled bars has assisted in breaking up waves as intended.

The Skipper and crew have advised that in the event of an emergency, the forward liferaft is the survival craft they would head for, given the difficulties of manually launching the main liferafts stowed on the wheelhouse top.

ANNEX 1


Dimensions
Length o.a 78'-1" 23,80 m
Length registered 72'-10" 22,20 m
Breadth mld 22'-6" 6,80 m
Depth mld 12'-6" 3,80 m
Draught max 11'-6" 3,50 m
Fuel 20,00 m³
Fresh water 10,00 m³
Fishroom 75,00 m³
Cabin for 6 crew
Engine Room
Fishroom
Holland Launch B.V. Zaandam - Holland

ANNEX 2

DSB Rettungsinseln:
Weltweit anerkanntes Sicherheits-Know-How
DSB Liferafts: Recognized worldwide for Safety.

Die DSB ist einer der erfahrensten und kompetentesten Hersteller für Rettungsgerät im zivilen und militärischen Bereich. DSB Rettungsinseln, fierbar oder abwerfbar, haben sich seit Jahrzehnten bei der Marine und Berufsschiffahrt bewährt. Sie sind immer wieder aus den Erfahrungen und Anforderungen der Praxis heraus optimiert und weiterentwickelt worden.

Die DSB bietet ein umfangreiches, allen Anforderungen und Einsatzzwecken gerecht werdendes Programm an Rettungsinseln, das allen nationalen und internationalen Normen entspricht.

The DSB is one of the most experienced and competent producers of life-saving equipment for civil and military use. DSB liferafts, which are suitable for lowering or dropping, have proven their reliability for decades in the navy and in merchant shipping. They are continously optimized and further developed on the basis of sound experience and praktical requirements.

The DSB offers an extensive range of liferafts to suit all purposes and to meet to requirements. DSB liferafts fully comply with all national and international standards.

Staatliche Zulassungen gemäß dem SOLAS LSA Code
Official Permits according to SOLAS LSA Code
EG-Baumusterprüfbescheinigung
EC-Type Examination Certificate
Germany
European notified body
Identification number 0736

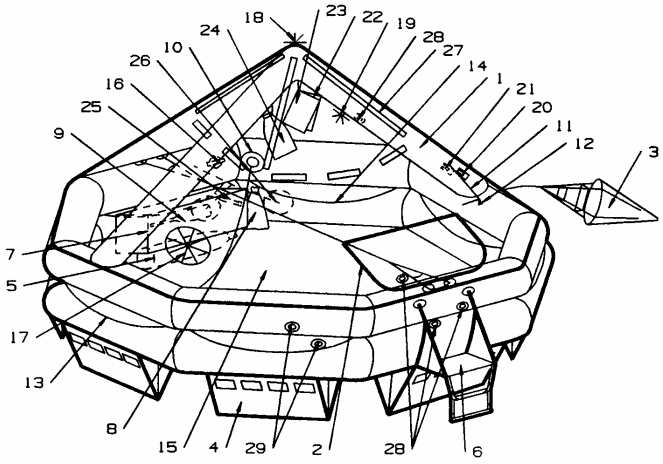
0736
99

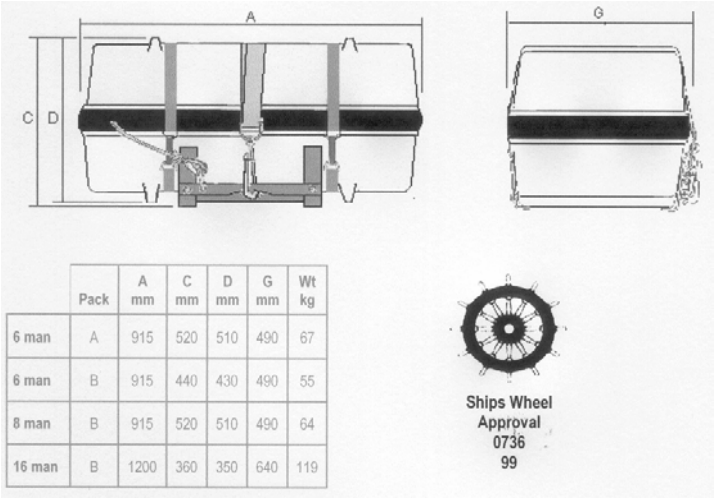
gilt für folgende Länder
applicable for countries as follows

Germany
Belgium
Greece
Portugal
Spain
Denmark
Finland
Great Britain
Netherlands
Sweden
Ireland
France
Italy

Norwegian Maritime Directorate (N)
Icelandic Directorate of Shipping (IS)
China Classifications Society (VRC)
Marine Department Hong Kong (HK)
Ministry of Transport New Zeeland (NZ)
Department of Transport (AUS)
Croatian Register of Shipping (HR)
Maritime Register of Shipping (RUS)
Polski Rejestr Statkow (PL)
Department of Transport
Republic of South Africa (RSA)
China Corporation Register of Shipping (ROC)
Canadian Coast Guard (CDN)
Romanian Register of Shipping (RC)
Maritimo y de Marina Mercante (RCH)

Abwerfbare Rettungsinseln/Liferafts suitable for dropping





Pack	A mm	C mm	D mm	G mm	Wt kg
6 man A	915	520	510	490	67
6 man B	915	440	430	490	55
8 man B	915	520	510	490	64
16 man B	1200	360	350	640	119

Ships Wheel
Approval
0736
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Radarreflektor: wenn von der jeweiligen nationalen Aufsichtsbehörde gefordert
Radar-reflector: if required by the respective national authorities