



CERTIFIED COPY

CERTIFICATE OF TYPE APPROVAL

This is to certify that

The product detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations and with the International Convention for the Safety of Life at Sea, (SOLAS), 1974, as amended, for use on ships and offshore installations classed with Lloyd's Register, and for use on ships and offshore installations when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

Manufacturer	Zodiac Hurricane Technologies Inc.
Address	7830 Vantage Way Delta, British Columbia Canada, V4G 1A7
Product Type	RESCUE BOATS
Product Description	6 persons inboard powered rigid/inflated rescue vessel of the coastal rescue service meeting fundamentally the requirements for fast rescue boats in ro-ro passenger ships - Type: " H1000 DJ - Danish Fast Rescue Boat "
Specified Standards	Technical regulation on the coastal rescue vessels of the Royal Danish Administration of Navigation and Hydrography, Chapters 1 and 4 SOLAS 74, as amended, Regulations III/4, 26.3.1, 34 and X/3 IMO Resolution MSC.48(66), LSA Code, Regulations I/1.2 and V/5.1 IMO Resolution MSC.97(73), 2000 HSC Code, Regulation 8.1 IMO MSC/Circular 809 IMO Resolution MSC.81(70), Part 1

The attached Design Appraisal Document forms part of this certificate.
This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.

Date of issue 20 August 2004

Expiry date 19 August 2009

Certificate No. SAS S040102

Signed

Sheet No 1 of 6

Name

S. Marsh
Surveyor to Lloyd's Register EMEA
A Member of the Lloyd's Register Group

Note:

This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid certificate.

DESIGN APPRAISAL DOCUMENT

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The undernoted documents have been appraised for compliance with the relevant requirements of International Conventions, and this Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

<u>Drawing No.</u>	<u>Date</u>	<u>Title</u>	<u>Status</u>	<u>Date</u>
SM102001(1A)	31.05.2004	General arrangement "as built"	A	06.08.2004
SM102001P(1A)	27.01.2004	Propulsion arrangement (driveshaft)	N	06.08.2004
SM102001(1C)	31.05.2004	Console arrangement - Port Helm	N	06.08.2004
SM102001(2D)	12.11.2003	Typical hull section	N	06.08.2004
SM102001P-1(1A)	25.11.2003	Fuel system	A	06.08.2004
SM102001C-2(1A)	28.05.2004	Self right system (air) assembly	N	06.08.2004
MP102001C-2	19.04.2004	Self right frame general arrangement	N	06.08.2004
SM102001X(1B)	22.03.2004	24VDC Engines, batteries and charging	A	06.08.2004
SM102001X(1C)	22.03.2004	220 VAC 50 Hz Breaker panel and shore power	N	06.08.2004
SM102001X(1E)	22.03.2004	12 VDC Breaker panel and accessories	N	06.08.2004

Stability Study for Swamped Condition "H1000 FRB Danish" Ref. 203-151 dated 8th March 2004, undertaken by Robert Allan Ltd., for Zodiac Hurricane Technologies Inc.

Owners Technical Manual of H1000 DJ - Danish FRB, Part No. M-B-10250, dated 14th April 2004.

TEST REPORTS

Zodiac Hurricane Technologies Inc., H1000 Coastal Rescue Vessel of FRB Type, Evaluation and Test Report dated 11, 12 and 16th March 2004, witnessed by Lloyd's Register North America Inc., Vancouver Office.

Overload Test Report for "H1000DJ Force Protection" No. 72136 dated 29th July 2003.

Mooring Out Test Report of "Zodiac Bombard SOLAS Boat 6E" dated August-September 1991, witnessed by Bureau Veritas.

Hypalon/Neoprene 1880 DTX, Test Report No. ZIT/99/139 dated 17th May 1999.

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CONDITIONS OF CERTIFICATION

1. *This design of rescue vessel of the "fast rescue boat" type has been found to be in accordance with and satisfy the provisions for Fast Rescue Boats (FRB) in ro-ro passenger ships, SOLAS Regulation III/26.3.1, and the Danish Maritime Authority's Technical Regulation on marine equipment no. 12 of 12 December 2002. However, the vessel is allowed to a length of 10.5 metres and it is not approved for lowering from a ship at sea but only for launching from the beach or in port by means of a crane or over skids (refer to Technical regulation on the coastal rescue vessels of the Royal Danish Administration of Navigation and Hydrography, Chapter 4).*

2.	Maximum weights:-	Dimensions:-
	Lightweight: 5257.5 kg	10.5 x 3.2 x 1.4 metres
	Complement weight: 725 kg	
	Recovery weight: 450 kg (6 persons)	
	Fully laden weight: 6432.5 kg	

3.	Inboard engine and propeller details:-
	Engine type: Twin Yanmar 6LY2A-STP (440 HP @ 3300 rpm)
	Propeller type: Hamilton 292 Jet with 15.5 kW impeller
	Maximum Towing Power: 20.996 kN

4.	Materials of hull construction:-
	Hull: Aluminium 5083 H321
	Canopy: Aluminium 5086 HI16
	Collar coated fabric: Hypalon/ Neoprene 1880 DTX
	Inherent buoyancy: Plastazote LD15

Note: Metals in contact with each other must be either galvanically compatible or insulated with suitable non-porous materials such as plastic, rubber, neoprene based compounds or equivalent materials. Provisions shall also be made to prevent loosening or tightening resulting from differences of thermal expansion, freezing, buckling of parts, galvanic corrosion, or other incompatibilities.

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5. This vessel is capable of being righted by manual initiation of an installed righting system comprising an inflatable bag and a compressed air system mounted on an aluminium frame. The air cylinder (18.1 litres @ 4935 psi) is to be manufactured and tested to an appropriate recognised international standard and all pressure system shall be periodically inspected in service according to the manufacturer instructions and tested at intervals not exceeding five years and/or to the satisfaction of the Administration.
6. The vessel is not provided with a painter and a central lifting/sling arrangement for launching from a ship at sea.
7. The vessel shall be fitted with one permanently installed VHF-DSC radio installation and one portable VHF radio installation, both of a waterproof type (at least IP 67).
8. Navigation lights provided on board are to be approved in accordance with the International Regulations for Preventing Collisions at Sea, 1972 (COLREG 72), as amended, for power-driven vessels of less than 12 metres in length.
9. The vessel is fitted with a battery charger of 24VDC input - 12VDC output supplied by the house circuit and two main battery chargers of 220VAC (50 Hz) input - 24VDC output supplied by a shore power connection of 220 VAC, 50 Hz (15A), this being subject to acceptance by the Administration (refer to LSA Regulation IV/4.4.6.11).
10. The VHF-DSC radio installation is connected only to a 12 VDC dedicated radio battery supplied by the 24 VDC-12VDC battery charger, this arrangement being subject to acceptance by the Administration (refer to the Technical regulation on the coastal rescue vessels of the Royal Danish Administration of Navigation and Hydrography, Chapter 1 Regulations 5.9 and 5.10).
11. Each vessel is to be clearly marked at least with the information required by the LSA Code, Regulations 1.2.2.9 and 5.1.3.4, i.e. approval information including the Administration which approved it, the maker's name or trade mark, the date of manufacture, the serial number and the number of persons for which it is approved.
12. Detailed instructions for use, maintenance and installation of the vessel complying with SOLAS Regulations III/35 and 36 and also instructions for use and maintenance of all machinery and equipment shall be provided to each purchaser and be available on board.
13. Adequate tools and spares shall be provided on board for carrying out the maintenance which the rescue crew can reasonably carry out themselves while the vessel is at sea, e.g. fuses, spare bulbs, etc. The equipment shall be kept in good working order at all times and checked at regular intervals according to the manufacturer's instructions, bearing in mind special attention to the driveshaft misalignment configuration (e.g. noise, vibration, etc.).
14. Water-resistant instructions for starting and operating the engine shall be provided and mounted in a conspicuous place near the engine starting controls. Each marking of control, gage or display shall be permanent and weatherproof.

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15. On the outside of all lockers and compartments for equipment as well as next to holders, signs shall be affixed indicating in an appropriate way what equipment is found in the locker or for what component the holder is intended.
16. Batteries shall be provided with casings which form a watertight enclosure around the bottom and sides and having a tight fitting top which provides for necessary gas venting. All batteries installed on board are of the sealed type and a clear notice to this same effect shall be displayed on top of the battery casing.
17. Retro-reflective materials, navigation lights, radio equipment and the rescue boat equipment required by LSA Regulation V/5.1.2 are to be approved by the Administration or those acting on behalf of that Administration.
18. **Installation onboard:** The launching arrangements and installation of the boat are not part of this design appraisal or certificate. All such arrangements are to be to the satisfaction of the attending Surveyors.
19. **Variants of the Approved design:** Where a "H1000 DJ Danish Fast Rescue Boat" is proposed to be supplied to a purchaser's specification which requests omission of one or more of the facilities necessary to meet the SOLAS performance requirements referred to above, the purchaser is required to request the Administration to consider issue of an Exemption Certificate to omit such facilities. Only when the exemption has been granted by the Administration may a variant of the approved "H1000 DJ Danish Fast Rescue Boat" design be supplied under this certificate.
20. If the specified standards are amended during the validity of this certificate, this product type is to be re-approved prior to it being supplied to vessels to which the amended standards apply.
21. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure compliance with SOLAS Regulation III/5.
22. Every vessel flagged by the Danish Maritime Authority shall be surveyed by that Administration and be issued with a trading permit and survey book before it is put into service as new. The trading permit and survey book may be kept at the vessel's shore-based station. The vessel shall thereafter be subjected to periodical surveys carried out by the Danish Maritime Authority every 4 years.
23. Should a change of Place of Production from that stated below be required, i.e. where the final stages of manufacture/assembly/testing of this product take place, the new Place of Production is to be advised to us prior to the change taking place. This Certificate will require to be updated for Approval to be maintained.

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PLACE OF PRODUCTION

Zodiac Hurricane Technologies Inc.
7830 Vantage Way
Delta, British Columbia
Canada, V4G 1A7



Stuart Marsh
Senior Surveyor
Fire & Safety Section
Statutory & Structures Services
London Plan Approval
Lloyd's Register EMEA

The drawings as listed above have been examined for compliance with Standards specified on the certificate and are assigned an appraisal status as indicated.

Appraisal Status Key

A = Approved provided the installation is to the Administration's satisfaction and the remaining requirements of the Standards and conditions specified on the certificate are complied with.

N = Noted as supporting documentation for information only

Supplementary Type Approval Terms and Conditions

This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s).