ANNEX A

Recreational Craft Directive - Chapter 2 - Conformity Assessment

Article 8: Modular choice

Article 8

Before producing and placing on the market products referred to in Article 1(1), the manufacturer or his authorised representative established in the Community shall apply the following procedures for boat design categories A, B, C and D as referred to in section 1 of Annex I.

1. *For categories A and B:*

   — *for boats of less than 12 m hull length: the internal production control plus tests (module Aa) referred to in Annex VI,*

   — *for boats from 12 m to 24 m hull length: the EC type-examination (module B) referred to in Annex VII supplemented by module C (type conformity) referred to in Annex VIII, or any of the following modules: B + D, or B + F, or G or H.*

2. *For category C:*

   (a) *for boats from 2.5 m to 12 m hull length:*

      — *where the harmonised standards relating to sections 3.2 and 3.3 of Annex I are complied with: the internal production control (module A), referred to in Annex V,*

      — *where the harmonised standards relating [to] sections 3.2 and 3.3 of Annex I are not complied with: the internal production control plus tests (module Aa) referred to in Annex VI.*

   (b) *for boats from 12 m to 24 m hull length: the EC type-examination (module B) referred to in Annex VII followed by module C (type conformity) referred to in Annex VIII, or any of the following modules: B + D, or B + F, or G or H.*

3. *For category D:*

   For boats from 2.5 m to 24 m hull length: the internal production control (module A) referred to in Annex V.

4. *For components referred to in Annex II: any of the following modules: B + C, or B + D, or B +F, or G or H.*

The choice of the modules was the subject of difficult negotiation between the Member States and the outcome is a compromise. The modular framework does not permit a manufacturer the freedom to choose another module other than A or Aa, where these are specified, thus involving a notified body, and still remain in the regulatory modular system.

The conformity assessment procedures according to the required module and, in particular, the affixing of the CE marking must take place prior to placing on the market.

As the scope of the modules is defined in Annexes V to XII to the directive, the following is a reminder of the characteristics of the modules.

If a manufacturer chooses for commercial reasons additional assessment or certification following, for example, the procedures laid down in another module than that required, such a decision lies in the voluntary domain. The certification body involved may then undertake certification under its own name and not under an EC certification heading.

Until such time as the choice of modules available within the directive may be amended, the modular choice for manufacturers, within the regulatory sector, remains that shown on the following page.

Design category	*Available modular choice*		
	2.5 m ≤ hull length < 12 m		*12 m ≤ hull length ≤ 24 m*
A 'Ocean'	Aa		B + C, or B + D, or B + F, or G or H
B 'Offshore'			
C 'Inshore'	If harmonised standards for stability and buoyancy are complied with	A	
	If harmonised standards for stability and buoyancy are not complied with	Aa	
D 'Sheltered waters'	A		
'Components'	B + C, or B + D, or B + F, or G or H		

Module	*Title*	*Description*
A	Internal production control	Internal conformity assessment and production control by the manufacturer himself who draws up a written declaration of conformity containing the information given in Annex XV
Aa	Internal production control plus tests	This is module A, plus tests of stability and buoyancy carried out on the responsibility of the notified body, which issues an examination report.
B	EC type-examination	Covers EC type-examination: the notified body issues an EC type-examination certificate for a representative production sample which it has assessed in accordance with the essential safety requirements. This module applies only to the design phase and must be followed up by the manufacturer applying a module providing for assessment in the production phase.
C	Conformity to type	Covers the manufacturer's declaration on the basis of conformity to type, approved by the notified body (module B above).
D	Production quality assurance	Generally supplements module B. Derives from quality assurance standard EN ISO 9002 with the notified body responsible for approving and controlling the quality system set up by the manufacturer.
F	Product verification	Supplements module B. Covers product verification at the production phase, with the involvement of a notified body, which controls conformity to type and issues the certificate of conformity.
G	Unit verification	Covers unit verification of the design and production of each product controlled by a notified body, which issues a certificate of conformity.
H	Full quality assurance	Derives from the quality assurance standard EN ISO 9001 with the intervention of a notified body responsible for approving and controlling the quality system set up by the manufacturer.

Directive/regulatory domain	*Private domain*
Conformity assessment according to the appropriate module	Conformity assessment according to the agreement between the manufacturer and the certification body (the principles laid down in a module may be used)
Notified body	Certification body (which may be a notified body)
CE marking	Private logos and markings
Always COMPULSORY	Always VOLUNTARY

Article 9: Notified bodies

Article 9(1)

1. Member States shall notify the Commission and other Member States of the bodies which they have appointed to carry out the tasks pertaining to the conformity assessment procedures referred to in Article 8, together with the specific tasks which these bodies have been appointed to carry out and the identification numbers assigned to them beforehand by the Commission.

The Commission shall publish a list of the notified bodies, together with the identification numbers it has allocated to them and the tasks for which they have been notified, in the Official Journal of the European Communities. It shall ensure that the list is kept up to date.

Paragraph 1 stipulates that the Member States are responsible for informing the Commission of the bodies which they have appointed to carry out conformity assessment. The notification must indicate the specific field for which the body has been notified.

Appendix 4 provides a non-exhaustive list of notified bodies under the recreational craft directive and the conformity assessment modules they are entitled to apply. This list was updated at the time of going to press; however, Member States may promote or withdraw a notified body at any time.

For more information on the principles of notification, the notification procedure and general responsibilities of notified bodies, see the *Guide to the implementation of directives based on the new approach and the global approach* ('blue book'). This guide is downloadable from the Enterprise DG's website on the Europa server at the following address: http://europa.eu.int/comm/enterprise/newapproach/legislation/guide/legislation.htm.

Article 9(2)

2. Member States shall apply the criteria laid down in Annex XIV in assessing the bodies to be indicated in such notification. Bodies meeting the assessment criteria laid down in the relevant harmonised standards shall be presumed to fulfil those criteria.

Article 9(3)

3. A Member State shall withdraw its approval from such a body if it is established that the latter no longer satisfies the criteria referred to in Annex XIV. It shall inform the Commission and the other Member States of its action forthwith.

Paragraphs 2 and 3 refer to the criteria for assessing the bodies to be notified (Annex XIV) and the possible withdrawal of approval.

ANNEX B

Recreational Craft Directive - Annex 1 - Essential Safety Requirements

Annex I

Essential safety requirements for the design and construction of recreational craft

Article 3 of the directive (Essential requirements) requires that products referred to in Article 1(1) shall meet the essential safety, health, environmental protection and consumer protection requirements set out in Annex I.

1. Boat design categories

Design category	*Wind force (Beaufort scale)*	*Significant wave height ($H_{1/3}$, metres)*
A — 'Ocean'	*exceeding 8*	*exceeding 4*
B — 'Offshore'	*up to, and including, 8*	*up to, and including, 4*
C — 'Inshore'	*up to, and including, 6*	*up to, and including, 2*
D — 'Sheltered waters'	*up to, and including, 4*	*up to, and including, 0.5*

Definitions:

A. OCEAN: Designed for extended voyages where conditions may exceed wind force 8 (Beaufort scale) and significant wave heights of 4 m and above, and vessels largely self-sufficient.

B. OFFSHORE: Designed for offshore voyages where conditions up to, and including, wind force 8 and significant wave heights up to, and including, 4 m may be experienced.

C. INSHORE: Designed for voyages in coastal waters, large bays, estuaries, lakes and rivers where conditions up to, and including, wind force 6 and significant wave heights up to, and including, 2 m may be experienced.

D. SHELTERED WATERS: Designed for voyages on small lakes, rivers, and canals where conditions up to, and including, wind force 4 and significant wave heights up to, and including, 0.5 m may be experienced.

Boats in each category must be designed and constructed to withstand these parameters in respect of stability, buoyancy, and other relevant essential requirements listed in Annex I, and to have good handling characteristics.

Notes on boat design categories

The main purpose for having boat design categories is to differentiate between the various levels of risks related to the construction of boats and to choose from among the various conformity assessment modules the adequate modules for each design category, also taking into account the hull length.

The 'significant wave height' is considered to be the primary factor and other parameters (e.g. meteorological) are descriptions of when these wave heights may be expected to occur.

NB:

The design category parameters are intended to define the physical conditions that might arise in any category for design evaluation, and should not be used to limit the geographical areas of operation due to the variety of physical conditions likely to be met in different geographical areas.

The directive does not include any navigation or usage rules and there is no link between the design categories and any such rules; taking into account construction safety, the user is only clearly informed of what the boat was designed and built for in relation to certain parameters of significant wave heights and wind speeds.

The physical conditions shall be determined from the maximum wind force and wave profiles, where wave profiles are consistent with waves generated by wind blowing at the maximum stated force for a prolonged period

subject to the limits of the implied fetch and of the maximum stated wave heights, and excluding abnormal factors such as sudden change in depth or tidal races.

For **category A**, extreme conditions apply as they reflect that a vessel engaged on a long voyage might be subject to any conditions and should be designed accordingly, excluding abnormal weather conditions, for example 'hurricanes'.

For **category D**, allowance should be made for waves of passing vessels up to a maximum wave height of 0.5 m.

As the design categories define physical conditions that may arise in any category for design evaluation, category D need not be considered, exclusively, as a 'freshwater only' category.

It is possible for a boat to be simultaneously assigned more than one design category with different maximum capacities corresponding to each design category assigned (number of persons, engine power, maximum weight), if all relevant essential requirements are satisfied. The assigned design categories and their corresponding data concerning number of persons, engine power and maximum load should be clearly and consistently indicated on the builder's plate, in the manual and on the relevant certificates.

2. General requirements

Recreational craft and components as referred to in Annex II shall comply with the essential requirements in so far as they apply to them.

A number of harmonised standards, the references of which have been published in the Official Journal, can be used to demonstrate conformity with the essential requirements of the directive in accordance with the provisions of Article 5. A list of standards harmonised under this directive can be found in Appendix 3. See also the comments related to Article 5.

2.1. Hull identification

Each craft shall be marked with a hull identification number including the following information:

— ***manufacturer's code,***

— ***country of manufacture,***

— ***unique serial number,***

— ***year of production,***

— ***model year.***

The relevant harmonised standard gives details of these requirements.

The hull identification number identifies the craft and gives details of the abovementioned subjects. The two-digit code for the country of manufacture refers to the original place of manufacture of the craft, not necessarily the hull, as the construction of the latter may have been subcontracted within or outside the EEA. The three-digit code for the identification of the manufacturer is not designed to refer to the 'nationality' of the person who places the boat on the EEA market or puts it into service.

Relevant harmonised standard

EN ISO 10087:1996/A1:2000: Small craft — Hull identification — Coding system (ISO 10087:1995)

2.2. Builder's plate

Each craft shall carry a permanently affixed plate mounted separately from the boat hull identification number, containing the following information:

— ***manufacturer's name,***

— ***CE marking (see Annex IV),***

— ***boat design category according to section 1,***

— ***manufacturer's maximum recommended load according to section 3.6,***

— ***number of persons recommended by the manufacturer for which the boat was designed to carry when under way.***

Some boat builders may wish to add the maximum rated engine power to the builder's

plate. This information is already contained in the owner's manual: such a practice is considered acceptable, provided the information in the owner's manual and on the builder's plate is fully consistent.

The builder's plate refers to the manufacturer of the boat and not, in the context of second-hand boats, the person who places the boat on the EEA market.

In the case of second-hand boats that are extensively modified to be considered 'new', here, again, the person carrying out the modification becomes the manufacturer. As the rebuilding or modification could change the information on the original builder's plate (load capacity, number of persons and even builder's name) a new builder's plate should be provided in addition to the remaining requirements of the directive.

2.3. Protection from falling overboard and means of reboarding

Depending on the design category, craft shall be designed to minimise the risks of falling overboard and to facilitate reboarding.

The basic principle indicating that essential requirements shall be complied with, 'in so far as they apply' to the craft to be certified, shall be taken into account. Therefore, as far as this essential requirement is concerned, the reduction in the possibility of falling overboard and the provision of 'means of reboarding' should be considered for all craft to be certified.

Relevant harmonised standard

EN ISO 15085:2003: Small craft — Man-overboard prevention and recovery (ISO 15085:2003)

2.4. Visibility from the main steering position

For motor boats, the main steering position shall give the operator, under normal conditions of use (speed and load), good all-round visibility.

Relevant harmonised standard

EN ISO 11591:2000: Small craft, engine-driven — Field of visior from helm position (ISO 11591:2000)

2.5. Owner's manual

Each craft shall be provided with an owner's manual in the official Community language or languages which may be determined by the Member State in which it is marketed in accordance with the Treaty. This manual should draw particular attention to risks of fire and flooding and shall contain the information listed in sections 2.2, 3.6 and 4 as well as the unladen weight of the craft in kilograms.

Relevant harmonised standard

EN ISO 10240:1996: Small craft — Owner's manual (ISO 10240:1995)

The owner's manual is provided as guidance to the owner of the boat, most particularly on safety issues. This manual should be written in the language applicable to the EEA State onto the market of which the product is to be placed.

This manual should cover risks applicable to the type of boat. Information not relevant to the boat model must be deleted to avoid confusion.

The owner's manual does not have to include complete technical service information, but should contain a trouble-shooting part, for example how to change a fuel filter or to get rid of air in the fuel system. Some sections of the manual may be filled in by hand, especially when related to one particular boat design.

3. Integrity and structural requirements

3.1. Structure

The choice and combination of materials and its construction shall ensure that the craft is strong enough in all respects. Special attention shall be paid to the design category according to section 1, and the manufacturer's maximum recommended load in accordance with section 3.6.

Relevant harmonised standards

EN ISO 12215-1:2000: Small craft — Hull construction and scantlings — Part 1: Materials: Thermosetting resins, glass-fibre rein-

forcement, reference laminate (ISO 12215-1:2000)

EN ISO 12215-2:2002: Small craft — Hull construction and scantlings — Part 2: Materials: Core materials for sandwich construction, embedded materials (ISO 12215-2:2002)

EN ISO 12215-3:2002: Small craft — Hull construction and scantlings — Part 3: Materials: Steel, aluminium alloys, wood, other materials (ISO 12215-3:2002)

EN ISO 12215-4:2002: Small craft — Hull construction and scantlings — Part 4: Workshop and manufacturing (ISO 12215-4:2002)

EN ISO 6185-1:2001: Inflatable boats — Part 1: Boats with a maximum motor power rating of 4.5 kW (ISO 6185-1:2001)

EN ISO 6185-2:2001: Inflatable boats — Part 2: Boats with a maximum motor power rating of 4.5 kW to 15 kW inclusive (ISO 6185-2:2001)

EN ISO 6185-3:2001: Inflatable boats — Part 3: Boats with a maximum motor power rating of 15 kW and greater (ISO 6185-3:2001)

3.2. Stability and freeboard

The craft shall have sufficient stability and freeboard considering its design category according to section 1 and the manufacturer's maximum recommended load according to section 3.6.

3.3. Buoyancy and flotation

The craft shall be constructed to ensure that it has buoyancy characteristics appropriate to its design category according to section 1.1, and the manufacturer's maximum recommended load according to section 3.6. All habitable multihull craft shall be so designed as to have sufficient buoyancy to remain afloat in the inverted position.

Boats of less than six metres in length that are susceptible to swamping when used in their design category shall be provided with appropriate means of flotation in the swamped condition.

Relevant harmonised standards

EN ISO 12217-1:2002: Small craft — Stability and buoyancy assessment and categorisation — Part 1: Non-sailing boats of hull length greater than or equal to 6 m (ISO 12217-1:2002)

EN ISO 12217-2:2002: Small craft — Stability and buoyancy assessment and categorisation — Part 2: Sailing boats of hull length greater than or equal to 6 m (ISO 12217-2:2002)

EN ISO 12217-3:2002: Small craft — Stability and buoyancy assessment and categorisation — Part 3: Boats of hull length less than 6 m (ISO 12217-3:2002)

Points 3.2 and 3.3 of the essential requirements are especially referred to in Article 8 ('Modular choice'), paragraph 2: for boats of design category C ('Inshore'), from 2.5 m to 12 m hull length, compliance with the above-mentioned harmonised standards permits the manufacturer to use the internal production control (module A) without third-party intervention.

3.4. Openings in hull, deck and superstructure

Openings in hull, deck(s) and superstructure shall not impair the structural integrity of the craft or its weathertight integrity when closed.

Windows, portlights, doors and hatchcovers shall withstand the water pressure likely to be encountered in their specific position, as well as pointloads applied by the weight of persons moving on deck.

Through hull fittings designed to allow water passage into the hull or out of the hull, below the waterline corresponding to the manufacturer's maximum recommended load according to section 3.6, shall be fitted with shutoff means which shall be readily accessible.

Relevant harmonised standards

EN ISO 9093-1:1997: Small craft — Seacocks and through hull fittings — Part 1: Metallic (ISO 9093-1:1994)

EN ISO 9093-2:2002: Small craft — Seacocks and through hull fittings — Part 2: Non-metallic (ISO 9093-2:2002)

EN ISO 12216:2002: Small craft — Windows, portlights, hatches, deadlights and doors — Strength and watertightness requirements (ISO 12216:2002)

The cockpit and windows, portlights and hatches may be included as possible tests, equivalent calculations or controls in the assessment carried out by or on the responsibility of the notified body in the context of a module Aa conformity assessment (Annex VI), as it may be argued that the design and construction of these details are inseparable parts of the issue and therefore should also be assessed.

3.5. Flooding

All craft shall be designed so as to minimise the risk of sinking.

Particular attention should be paid where appropriate to:

— *cockpits and wells, which should be self-draining or have other means of keeping water out of the boat interior,*

— *ventilation fittings,*

— *removal of water by pumps or other means.*

Relevant harmonised standards

EN ISO 11812:2001: Small craft — Watertight cockpits and quick-draining cockpits (ISO 11812:2001)

EN ISO 15083:2003: Small craft — Bilge-pumping systems (ISO 15083:2003)

EN 28849:1993/A1:2000: Small craft — Electrically operated bilge pumps (ISO 8849:1990)

3.6. Manufacturer's maximum recommended load

The manufacturer's maximum recommended load (fuel, water, provisions, miscellaneous equipment and people (in kilograms)) for which the boat was designed, as marked on the builder's plate, shall be determined according to the design category (section 1), stability and freeboard (section 3.2) and buoyancy and flotation (section 3.3).

Relevant harmonised standard

EN ISO 14946:2001: Small craft — Maximum load capacity (ISO 14946:2001)

This very important indication of the manufacturer's maximum recommended load is to be written in the owner's manual with the relevant load information repeated on the builder's plate.

This paragraph governs the maximum load in relation to design category, stability and freeboard, and buoyancy and flotation. Fixed fuel and water tanks are to be assumed to be full when the recommended load is assigned and excluded from the load specified on the builder's plate.

3.7. Liferaft stowage

All craft of categories A and B, and craft of categories C and D longer than six metres shall be provided with one or more stowage points for a liferaft (liferafts) large enough to hold the number of persons the boat was designed to carry as recommended by the manufacturer. This (these) stowage point(s) shall be readily accessible at all times.

This paragraph refers only to the need to provide a suitable point or space for a liferaft, where appropriate. It does not lay down dimensions for liferaft stowage nor does it specify that any specific fittings, brackets, lockers or tie-down points should be provided.

3.8. Escape

All habitable multihull craft over 12 metres long shall be provided with viable means of escape in the event of inversion.

All habitable craft shall be provided with viable means of escape in the event of fire.

This essential requirement is linked to, but not covered by the essential requirement relating

to stability (3.2), so far as inversion of habitable multihulls is concerned.

Habitable craft are those boats which contain living space designed for sleeping and which are equipped with bunks.

Relevant harmonised standards

EN ISO 9094-1:2003: Small craft — Fire protection — Part 1: Craft with a hull length of up to and including 15 m (ISO 9094-1:2003)

EN ISO 9094-2:2002: Small craft — Fire protection — Part 2: Craft with a hull length of over 15 m (ISO 9094-2:2002)

EN ISO 12216:2002: Small craft — Windows, portlights, hatches, deadlights and doors — Strength and watertightness requirements (ISO 12216:2002)

3.9. Anchoring, mooring and towing

All craft, taking it to account their design category and their characteristics, shall be fitted with one or more strong points or other means capable of safely accepting anchoring, mooring and towing loads.

Relevant harmonised standard

EN ISO 15084:2003: Small craft — Anchoring, mooring and towing — Strong points (ISO 15084:2003)

4. Handling characteristics

The manufacturer shall ensure that the handling characteristics of the craft are satisfactory with the most powerful engine for which the boat is designed and constructed. For all recreational marine engines, the maximum rated engine power shall be declared in the owner's manual in accordance with the harmonised standard.

Relevant harmonised standards

EN ISO 8665:1995/A1:2000 Small craft — Marine propulsion engines and systems: power measurements and declarations (ISO 8665:1994)

EN ISO 11592: Small craft with hull length of less than 8 m — Determination of maximum propulsion power rating (ISO 11592:2001)

The meaning of the last sentence of point 4 is to require that the owner's manual for the craft shall state the maximum rated engine power.

5. Installation requirements

5.1. Engines and engine spaces

5.1.1. Inboard engine

All inboard-mounted engines shall be placed within an enclosure separated from living quarters and installed so as to minimise the risk of fires or spread of fires as well as hazards from toxic fumes, heat, noise or vibrations in the living quarters.

Engine ports and accessories that require frequent inspection and/or servicing shall be readily accessible.

The insulating materials inside engine spaces shall be non-combustible

Relevant harmonised standards

EN 28846:1993/A1:2000: Small craft — Electrical devices — Protection against ignition of surrounding flammable gases (ISO 8846:1990)

EN ISO 9094-1:2003: Small craft — Fire protection — Part 1: Craft with a hull length of up to and including 15 m (ISO 9094-1:2003)

EN ISO 9094-2:2002: Small craft — Fire protection — Part 2: Craft with a hull length of over 15 m (ISO 9094-2:2002)

EN ISO 7840:1995/A1:2000: Small craft — Fire-resistant fuel hoses (ISO 7840:1994)

EN ISO 10088:2001: Small craft — Permanently installed fuel systems and fixed fuel tanks (ISO 10088:2001)

EN ISO 10133:2000: Small craft — Electrical equipment — Extra-low-voltage DC installations (ISO 10133:2000)

EN ISO 11105:1997: Small craft — Ventilation of petrol engines and/or petrol tank compartments (ISO 11105:1997)

EN ISO 15584:2001: Small craft — Inboard petrol engines — Engine-mounted fuel and electrical components (ISO 15584:2001)

EN ISO 16147:2002: Small craft — Inboard diesel engines — Engine-mounted fuel and electrical components (ISO 16147:2002)

Non-combustible materials refer to materials not sustaining combustion.

Materials are considered to be non-combustible if the oxygen index is at least 21 when measured in accordance with ISO 4589, Part 3, as referred to in EN ISO 9094-1:2003.

5.1.2. Ventilation

The engine compartment shall be ventilated. The dangerous ingress of water into the engine compartment through all inlets must be prevented.

Relevant harmonised standards

EN ISO 11105:1997: Small craft — Ventilation of petrol engines and/or petrol tank compartments (ISO 11105:1997)

EN ISO 12217-1:2002: Small craft — Stability and buoyancy assessment and categorisation — Part 1: Non-sailing boats of hull length greater than or equal to 6 m (ISO 12217-1:2002)

EN ISO 12217-2:2002: Small craft — Stability and buoyancy assessment and categorisation — Part 2: Sailing boats of hull length greater than or equal to 6 m (ISO 12217-2:2002)

EN ISO 12217-3:2002: Small craft — Stability and buoyancy assessment and categorisation — Part 3: Boats of hull length less than 6 m (ISO 12217-3:2002)

5.1.3. Exposed parts

Unless the engine is protected by a cover or its own enclosure, exposed moving or hot parts of the engine that could cause personal injury shall be effectively shielded.

5.1.4. Outboard engines starting

All boats with outboard engines shall have a device to prevent starting the engine in gear, except:

(a) when the engine produces less than 500 newtons (N) of static thrust;

(b) when the engine has a throttle limiting device to limit thrust to 500 N at the time of starting the engine.

Relevant harmonised standard

EN ISO 11547:1995/A1:2000: Small craft — Start-in-gear protection (ISO 11547:1994)

5.2. Fuel system

5.2.1. General

The filling, storage, venting and fuel-supply arrangements and installations shall be designed and installed so as to minimise the risk of fire and explosion.

Relevant harmonised standards

EN ISO 7840:1995/A1:2000: Small craft — Fire-resistant fuel hoses (ISO 7840:1994)

EN ISO 8469:1995/A1:2000: Small craft — Non-fire-resistant fuel hoses (ISO 8469:1994)

EN ISO 9094-1:2003: Small craft — Fire protection — Part 1: Craft with a hull length of up to and including 15 m (ISO 9094-1:2003)

EN ISO 9094-2:2002: Small craft — Fire protection — Part 2: Craft with a hull length of over 15 m (ISO 9094-2:2002)

EN ISO 10088:2001: Small craft — Permanently installed fuel systems and fuel tanks (ISO 10088:2001)

EN ISO 11105:1997: Small craft — Ventilation of petrol engines and/or petrol tank compartments (ISO 11105:1997)

EN ISO 14895:2003: Small craft — Liquid-fuelled galley stoves (ISO 14895:2000)

EN ISO 15584:2001: Small craft —Inboard petrol engines — Engine-mounted fuel and electrical components (ISO 15584:2001)

EN ISO 16147:2002: Small craft — Inboard diesel engines — Engine-mounted fuel and electrical components (ISO 16147:2002)

All fuel system components from the fuel filling opening to the point of connection with the propulsion or auxiliary engine, such as filters, non-metallic and metallic, shall be in compliance with EN ISO 10088:2001 as applicable. All engine-mounted fuel and electrical components on diesel and petrol inboard-mounted engines shall be in compliance with EN ISO 16147:2002 (diesel) and EN ISO 15584:2001 (petrol).

NB: Portable fuel tanks and their portable hoses are considered to lie outside the scope of the directive.

5.2.2. Fuel tanks

Fuel tanks, lines and hoses shall be secured and separated or protected from any source of significant heat. The material the tanks are made of and their method of construction shall be according to their capacity and the type of fuel. All tank spaces shall be ventilated.

Liquid fuel with a flashpoint below 55 °C shall be kept in tanks which do not form part of the hull and are:

(a) insulated from the engine compartment and from all other source of ignition;

(b) separated from living quarters.

Liquid fuel with a flashpoint equal to or above 55 °C may be kept in tanks that are integral with the hull.

All fuel tanks shall be provided with a means of preventing over- or under-pressure during filling or draining by adjoining combustion machinery.

The definition of petrol fuel as having a flashpoint lower than 55 °C and diesel fuel as having a flashpoint higher than 55 °C is now obsolete.

Petrol is defined in EN ISO 10088:2001 as hydrocarbon fuel or blends thereof which are liquid at atmospheric pressure and are used in spark ignition engines.

Petrol fuel tanks can be installed in engine compartments according to EN ISO 10088:2001, as this will satisfy the requirements of point 5.2.2(a).

Annex I, points 5.2.1 and 5.3 also apply to fuel-supply arrangements and installations on the engine.

5.3. Electrical system

Electrical systems shall be designed and installed so as to ensure proper operation of the craft under normal conditions of use and shall be such as to minimise risk of fire and electric shock.

Attention shall be paid to the provision of overload and short-circuit protection of all circuits, except engine starting circuits, supplied from batteries.

Ventilation shall be provided to prevent the accumulation of gases, which might be emitted from batteries. Batteries shall be firmly secured and protected from ingress of water.

Relevant harmonised standards

EN ISO 10133:2000: Small craft — Electrical systems— Extra-low-voltage DC installations (ISO 10133:2000)

EN ISO 13297:2000: Small craft — Electrical systems— Alternating current installations (ISO 13297:2000)

EN ISO 28846:1993/A1:2000: Small craft — Electrical devices — Protection against ignition of surrounding flammable gases (ISO 8846:1990)

EN ISO 15584:2001: Small craft — Inboard petrol engines — Engine-mounted fuel and electrical components (ISO 15584:2001)

EN ISO 16147:2002: Small craft — Inboard diesel engines — Engine-mounted fuel and electrical components (ISO 16147:2002)

EN 60092-507:2000: Electrical installations in ships — Part 507: Pleasure craft (IEC 60092-507:2000) (This standard is applicable only to craft with three-phase electrical systems)

In so far as electrical safety is concerned, the low voltage directive (LVD) remains applicable. This is Council Directive 73/23/EEC of 19 February 1973 on the harmonisation of laws of Member States relating to electrical equipment for use within certain voltage limits, as amended by Directive 93/68/EEC (Article 13) of 22 July 1993 on the affixing and use of the CE marking.

Low voltage with regard to the low voltage directive refers to 75 to 1 500 volts DC or 50 to 1 000 volts AC.

Annex I, points 5.2.1 and 5.3 also apply to fuel-supply arrangements and installations on the engine.

5.4. Steering system

5.4.1. General

Steering systems shall be designed, constructed and installed in order to allow the transmission of steering loads under foreseeable operating conditions.

Relevant harmonised standards

EN 28847:1989: Small craft — Steering gear — Wire rope and pulley systems (ISO 8847:1987)

EN 28848:1993/A1:2000: Small craft — Remote steering systems (ISO 8848:1990)

EN ISO 10592:1995/A1 2000: Small craft — Hydraulic steering systems (ISO 10592:1994)

EN 29775:1993/A1:2000: Small craft — Remote steering systems for single outboard motors of 15 kW to 40 kW power (ISO 9775:1990)

EN ISO 13929:2001: Small craft — Steering gear — Geared link systems (ISO 13929:2001)

5.4.2. Emergency arrangements

Sailboat and single-engined inboard powered motor boats with remote-controlled rudder steering systems shall be provided with emergency means of steering the craft at reduced speed.

In case of failure of the remote-control system for the rudder steering, the emergency means of steering should enable a manual control of the rudder, for example by means of an emergency tiller or similar equipment.

5.5. Gas system

Gas systems for domestic use shall be of the vapour-withdrawal type and shall be designed and installed so as to avoid leaks and the risk of explosion and be capable of being tested for leaks. Materials and components shall be suitable for the specific gas used to withstand the stresses and exposures found in the marine environment.

Each appliance shall be equipped with a flame failure device effective on all burners. Each gas-consuming appliance must be supplied by a separate branch of the distribution system, and each appliance must be controlled by a separate closing device. Adequate ventilation must be provided to prevent hazards from leaks and products of combustion.

All craft with a permanently installed gas system shall be fitted with an enclosure to contain all gas cylinders. The enclosure shall be separated from the living quarters, accessible only from the outside and ventilated to the outside so that any escaping gas drains overboard. Any permanent gas system shall be tested after installation.

Relevant harmonised standard

EN ISO 10239:2000: Small craft — Liquefied petroleum gas (LPG) systems (ISO 10239:2000)

5.6. Fire protection

5.6.1. General

The type of equipment installed and the layout of the craft shall take account of the risk and spread of fire. Special attention shall be paid to the surroundings of open flame devices, hot areas or engines and auxiliary machines, oil and fuel overflows, uncovered oil and fuel

pipes and avoiding electrical wiring above hot areas of machine.

5.6.2. Fire-fighting equipment

Craft shall be supplied with fire-fighting equipment appropriate to the fire hazard. Petrol engine enclosures shall be protected by a fire extinguishing system that avoids the need to open the enclosure in the event of fire. Where fitted, portable fire extinguishers shall be readily accessible and one shall be so positioned that it can easily be reached from the main steering position of the craft.

Relevant harmonised standards

EN ISO 9094-1 2003: Small craft — Fire protection — Part 1: Craft with a hull length of up to and including 15 m (ISO 9094-1:2003)

EN ISO 9094-2 2002: Small craft — Fire protection — Part 2: Craft with a hull length of over 15 m (ISO 9094-2:2002)

Due to differing national regulations regarding fire-fighting equipment, this paragraph only requires the position for and capacity of the fire-fighting equipment to be designated.

5.7. Navigation lights

Where navigation lights are fitted, they shall comply with the 1972 Colreg or CEVNI regulations, as appropriate.

Navigation lights have to comply with the 1972 Colreg or CEVNI rules. Rule 1b of Colreg 1972, however, allows different national requirements for local use. Moreover, Colreg 1972, Annex I, point 13, specifies that the construction of light and shapes and the installation on board the vessel shall be to the satisfaction of the appropriate authority of the State whose flag the vessel is entitled to fly.

5.8. Discharge prevention

Craft shall be constructed so as to prevent the accidental discharge of pollutants (oil, fuel, etc.) overboard. Craft fitted with toilets shall have either:

(a) holding tanks; or

(b) provision to fit holding tanks on a temporary basis in areas of use where the discharge of human waste is restricted.

In addition, any through-the-hull pipes for human waste shall be fitted with valves, which are capable of being sealed shut.

The directive states that pipes penetrating the hull and carrying human waste shall be fitted with valves capable of being sealed shut. The concept of sealed shut in this case is to prevent inadvertent or accidental discharge. To this end, these valves shall be provided with the means of being sealed shut, thus preventing the valves being inadvertently opened. If the seal is broken, then there is clear indication that the valve has been operated, whether intentionally or in error.

Relevant harmonised standard

EN ISO 8099:2000: Small craft — Waste water retention and treatment — Toilet waste retention systems (ISO 8099:2000)

ANNEX C

Declaration of Conformity for *Big Yellow*

EC Declaration of Conformity

We hereby declare that the following craft / component complies with the essential requirements of the Recreational Craft Directive 94/25/EC

Boat Type	**Rigid Inflatable Boat**
Boat Class	**VII**
Boat Design Category	**B**
Manufacturers Maximum Recommended Load	**975Kg**
Serial Number	**UK-FMNFRM90D404**
Manufactured by:	**Ferryman Boats Ltd**
Address	**Springtown Ind. Estate L'Derry N.Ireland Bt48 0LY**

A Technical Construction File is retained at the above address detailing how this craft meets the requirements of the Directive and relevant standards.

For and on behalf of ***Ferryman Boats Ltd.***

Paul Ferry

Paul Ferry
Managing Director.

FRM900

ISO/CD 6185-3 Category VII
BMIF Category B
Ferryman Boats Ltd
Max Engine Power = 335 KwW (450 HP)
Max No Persons 13 = 975KG
Max Load =1843

CE 0808 ISO 12217

EU tested by the RYA.

FRM900

ISO/CD 6185-3 Category VII
BMIF Category B
Ferryman Boats Ltd
Max Engine Power = 335 KwW (450 HP)
Max No Persons 13 = 975KG
Max Load =1843

CE 0808 ISO 12217

EU tested by the RYA.

UK – FMNFRM90D404

ANNEX D

Irish Sailing Association Examination Report dated 9 February 2005

IRISH SAILING ASSOCIATION

Examination Report

We hereby confirm that the

FRM 760 - 860

built by

Ferryman Boats
Derry
Northern Ireland

Boat type:	**Rigid Inflatable Boat**		
Design category:	**B**	**B**	as determined by the builder
Length of hull:	**7.6**	**8.6**	m
Beam of hull:	2.2	2.2	m
Unladen weight :	810	954	kg
Maximum number of persons:	13	13	
Maximum load:	**1843**	**1843**	**kg**

Including: Persons at 75kg each
Carry on load
Fluids in fixed tanks
Engine

has been assessed to conform with the requirements of the EU Recreational Craft Directive 94/25/EC

Annex I- Sections 3.2 & 3.3 & Annex VI - Module Aa

Date of issue: 09 February 2005

Statement Number: 129/01

Tony Wright
Irish Sailing Association
EU – Notified Body: 0808

ANNEX E

MECAL Ltd - SCV2 Compliance Document - RIBs, for *Finns Flyer* and *Big Yellow* dated 27 May 2004 and 29 June 2005

PART 1 – DETAILS OF VESSEL & OWNER / MANAGING AGENT

MECAL Ltd *The Certifying Authority for Small Commercial Vessels*	*Queen Anne's Battery Marina* *PLYMOUTH PL4 0LP* *Tel: +44(0)1752 227989* *Fax: +44(0)1752 227990* *E Mail: mecal@mcanet.com*
The Safety of Small Commercial Vessels MCA Codes of Practice	***SCV2 Compliance Document - RIBs***

UNIQUE NUMBER:	

Section 1 – VESSEL PARTICULARS

Name of Vessel ~~FOOT FLYER~~ BIG YELLOW *Official No* — *Port of Registry* ST IVES

Brief Description 9.1 mtr RIB *Call Sign*

Intended type of commercial use (e.g. diving/angling charter) SEA SAFARI

Builder FERRYMAN BOATS Ltd *Type* FRM 900 *Date of Build* MAY 2004

Build No. UK-FMAFRM30M041 *Length (m)* 9.1M *Beam (m)* 2.7M

No. of Persons to be carried 12+2 *Area Category* A

MCA Code (Yellow/Brown/Red) Yellow *Base Port* ST. IVES

Nominated Departure Point(s) (if applicable)

Section 2 – OWNERS' PARTICULARS

Name of Owner / Managing Agent * ~~Neil Peter Squirrell~~ & Chris Carvosso

Address ~~67 Head Weare~~ 3 AYR COURT, ST IVES.
ST. IVES

Town ~~Nr St Ives~~ *County* CORNWALL *Post Code* TR26 ~~2BZ~~ 1EQ

Tel: ~~07977 438991~~ 07830173878 *Fax:* — *E Mail:* —

* *delete as applicable*

PART 2 - RECORD OF PARTICULARS OF THE VESSEL

Code Section	Details		Compliance Examination NA=Not Applicable SR=See Remark(Pt5) NR=Not Required	ME CAL Use
4	**CONSTRUCTION & STRUCTURAL STRENGTH – GENERAL** Does the RIB: Comply with SOLAS 74 Chapter 1 / IMO A.689(17) Comply with Class Soc. Plan approval requirements Qualify as a standard production boat Have individual plan approval Have more than 5 years safe history Qualify under a recognised Type Approval Scheme (eg. MCG/MCA) Have an efficient canopy allowing Cat.3 operation Have a substantial rigid enclosure allowing Cat.2 operation	Yes/No Yes/No Yes/No Yes/No Yes/No Yes/No Yes/No Yes/No	KHW BSG	
5	**WEATHERTIGHT INTEGRITY** Weather deck Hatchways & hatches Console Engine box Exhausts Air Pipes Sea Inlets & Discharges *See tables in Annex 1 of this Section detailing the above*	Weathertight Yes/No Yes/No Yes/No Yes/No Yes/No Yes/No Secure Yes/No	 NA NA NA NA	KHW BSG	
6	**WATER FILLING ARRANGEMENTS** Vessel capable of efficiently clearing shipped water from deck *Describe arrangement:* 2 x 65mm Dia. Trunks in Transom.	Yes/No		KHW BSG	
7	**MACHINERY** *Make/model/type of engine:* 2x 140HP SUZUKI DF140 ZOL DF140 TOL *Means of starting (x2 or spare outboard):* ELECTRIC (12V) *Fuel tank material/capacity:* STAINLESS STEEL - 350 LITRES *Fuel tank location:* HULL TANK - CENTRELINE - HOGSHIPS *Fuel pipe material:* ISO 7840 - A1 Machinery installation to acceptable marine standard	Yes/No		KHW BSG	
7	**OUTBOARDS** Engines installed to acceptable marine standard Sufficient fuel capacity in main tank for intended operation	Yes/No Yes/No		KHW BSG	
7	**SPARE PETROL STOWAGE** Petrol stowed in clearly marked, suitable containers, on deck with overboard spillage & capable of being jettisoned *For small outboard powered RIB, describe proposed arrangement:*	Yes/No	N/A N/A KHW BSG	
8	**ELECTRICAL SYSTEM** System to marine standard Batteries secured & adequately ventilated (vented at top of compartment) *System description:* 2 x HD 12V BATTERIES LOCATED IN CONSOLE SPACE. DISTRIBUTION SYSTEMS PROTECTED BY FUSES. 2 x BATTERY ISOLATION SWITCHES	Yes/No Yes/No	KHW BSG	

PART 2 - RECORD OF PARTICULARS OF THE VESSEL

9	**STEERING GEAR, RUDDER & PROPELLER SYSTEMS** Adequate visibility from steering position Steering to marine standard Emergency steering (for wheel systems) *Describe:* EMERGENCY TILLER BOLTS ONTO OUTBOARD MOTOR.	 (Yes)/No (Yes)/No (Yes)/No	[signature] [signature]	
10	**BILGE PUMPS & ALARMS** *Power pumps no. & type:* RULE 1500 GPH ELECTRIC PUMP *Hand pumps no. & type:* Bailer on board (BUCKETS x2) All compartments capable of being drained Bilge alarm fitted (inboard diesel powered RIB)	 (Yes)/No (Yes)/No Yes/No	[signature] [signature] N/A	
11	**STABILITY** Intact, damaged & swamped conditions assessed Vessel assessed & accepted by MECAL *Stability test report ref.* (APPROVED) FERRYMAN 8-1M RIB - STABILITY, SWAMP & DAMAGE TESTS	 (Yes)/No Yes/No (30-4-04)	[signature] [signature]	
12	**FREEBOARD** Freeboard of tubes >300mm under all loading conditions Freeboard of transom > 250mm or self freeing when moving ahead & with substantial buoyancy reserve & protection of essential elec. Systems etc (lower transom freeboard Cat.6 only) *Describe:*	 (Yes)/No (Yes)/No	[signature] [signature]	
13	**LIFE SAVING APPLIANCES** *Liferaft(s) – Type(ORC or DTp/SOLAS), no. of persons, service date:* ZODIAC - ORC - 8 PERSON - 1-6-05 ZODIAC - ORC - 6 PERSON - 16-5-05 *Liferaft pack:* -ORC + 1x 6 PERS GRAB BAG TO SOLAS 'B' + 1x 8 PERS. GRAB BAG TO SOLAS 'B' *Liferaft stowage arrangement:* 2 x LIFERAFT CONTAINERS LOCATED ON DECK FORWARD. SECURED WITH O/R STRAPS. HRU (if fitted) fitted correctly & in date *Lifebuoys – Type, no.* 2 x 'SOLAS' APPROVED SOLID RING TYPE WITH FLOATING LINES Lifebuoys fitted with reflective tape 1 lifebuoy fitted with 18M buoyant line 1 lifebuoy fitted with drogue (if horseshoe) & light (except daylight cats.) *Lifejackets – Type, no. (Adult/children)* TYPHOON - 150N AUTO - 16 OFF TO EN396 - ADULT Lifejackets fitted with lights (except daylight categories), reflective tape & whistles Flares in date 12/07 *Flares – Type, no.* 2x RED HAND + 2x BUOYANT SMOKE Lifesaving signals table on display(2xSOLAS 2) Training / Maintenance instruction manual on board Thermal Protective Aids on board (no...14...)	 [illegible]404 [illegible]303 Yes/No (Yes)/No (Yes)/No Yes/No (Yes)/No (Yes)/No (Yes)/No (Yes)/No (Yes)/No	[signature] [signature] N/A [signature] [signature] N/A [signature]	

Iss.8 20/01/03/7

PART 2 - RECORD OF PARTICULARS OF THE VESSEL

14	**FIRE SAFETY** **Inboards** Machinery space able to contain fire & extinguishing medium Engine space insulation non combustible & sealed against vapour ingress Machinery space free of combustible materials Engine space clean & able to retain oil spillage for discharge ashore Engine space clear of combustible materials **Inboards/outboards** Remote fuel shut-off(s) fitted Hydrocarbon gas alarm fitted (petrol installations with fixed tank)	Yes/No Yes/No Yes/No Yes/No Yes/No Yes/No Yes/No	N/A N/A N/A N/A N/R	
15	**FIRE APPLIANCES** *Fire extinguishing for engine, describe:* 2 x 2Kg DRY POWDER (BSA 85B) ANAF Portable fire extinguishers *Describe:* 2 x 1Kg dry Powder (BSA 34B) ANAF 2 fire buckets with lanyards ✓ *If RIB is Red code Cat.6 <4M describe fire extinguishing:*	 Yes/No Yes/No	 	
16	**RADIO EQUIPMENT** VHF radio (fixed or, for cat.6, a waterproof portable) Portable VHF on board (not cats. 4,5,6 where fixed vhf fitted) Back-up battery supply or charging facility on board Emergency action card displayed at radio position *Describe radio equipment:* FIXED - DSC VHF - ICOM 601 HAND HELD - ICOM IC-M51	Yes/No Yes/No Yes/No Yes/No	 	
17	**NAVIGATION LIGHTS, SHAPES & SOUND SIGNALS** **Lights for operations between sunset & sunrise:** Steaming light Port & stbd lights Stern light All round white light Bi-colour lantern Shapes & sound signals & special light signals *Describe:* AIR HORN. (IT IS NOT POSSIBLE TO DISPLAY SHAPES.)	Yes/No Yes/No Yes/No Yes/No Yes/No Yes/No	 	
18	**NAVIGATIONAL EQUIPMENT** Magnetic compass visible to helmsman Adequate lighting for compass (where applicable) Deviation table (date) MAY 2004 Back-up power supply (if flux gate compass) Hand bearing compass (or radar or pelorus) *Radio navaids:* GARMIN 182C GPS/PLOTTER.	Yes/No Yes/No Yes/No Yes/No Yes/No	 N/A 	
19	**MISCELLANEOUS EQUIPMENT** Nautical publications appropriate to vessel size, area, duty Search & Rescue searchlight/signalling torch Efficient radar reflector Water resistant torch	Yes/No Yes/No Yes/No Yes/No	 	
20	**ANCHORS & CABLES** Anchors & cables to Code requirements *Describe:* *Required:* MAIN - 10Kg + [10M x 8MM (CHAIN)] + [30M x 12MM (WARP)] KEDGE - 5Kg + [10M x 6MM] + [30M x 10MM] *Supplied:* BOWER - 10Kg + [10M x 10MM] + [30M x 12MM] KEDGE - 5Kg + [10M x 10MM] + [30M x 12MM] Securely stowed Towline (at least equal to length & diameter of required anchor cable)	Yes/No Yes/No Yes/No	 	

PART 2 - RECORD OF PARTICULARS OF THE VESSEL

22	**PROTECTION OF PERSONNEL** Deckhouse of adequate strength (Cat. 2) Canopy of adequate strength (Cat.3) Continuous handholds around tubes Secure seating for all on board (if tubes are used, suitable hand or foot holds must be provided) *Describe seating arrangement:* 4 Rows x 3 Pax Each - Bench Seats with Backrests + Bins Below for L.S.A. Secure Tubular S.S. Frames Non slip working deck Non slip tube top surface Man overboard recovery arrangement *Describe:*	Yes No Yes No Yes No Yes No Yes No Yes No Yes No		
25	**MEDICAL STORES** Medical kit to MSN1726 Category C First Aid Manual	Yes No Yes No		
26	**MANNING** As required by the Annex to the code Single manning endorsement requested Group working concessions requested (Arrangements for single manning & group working to be agreed with the authorised examiner & detailed in his comments in Part 4)	Yes No Yes No Yes No		
28	**CLEAN SEAS** Vessel arranged and operated to minimise pollution *Describe any special measures:*	Yes No		

ANNEX 1 – CODE SECTION 5 DETAILS

Hatches

Ref.	Space	Area(M^2)	Sill height(mm)	Dist from c/l(M)	Hinge position
H1	Cockpit	0.16 - WT HATCH	100	C	STBD
H2	Bow Locker S/D	0.15	350	C	Fwd.

Ventilators & Air Pipes

Sketch ref.	Type	Space	Dist from c/l	Means of closure
V1	Combined Fill / Vent	Fuel Tank	700 mm	WT Cap

Inlets & Discharges

Sketch ref.	System	Position of valve(where applicable)	Material	Internal diameter
	Self Bailer	Port + Stbd @ Stern		

PART 3 – EXAMINER'S REPORT OF CONDITION

The appointed person carrying out the compliance examination must complete this section
The Certificate will date from the final compliance examination carried out by the authorised examiner to ***MECAL***

Each section in the report must be classified as either:

- ***A.*** *Condition satisfactory, no sign of significant deterioration at present*
- ***B.*** *Deterioration evident but not to an extent which immediately compromise the safety of the vessel. Owner/managing agent to monitor for further deterioration and take appropriate remedial action.*
- ***C.*** *Deterioration compromising seaworthiness of vessel evident. Immediate remedial action required*

In the event of any item classified ***C*** *the appointed person must state work required and the evidence of completion to be provided to* ***MECAL*** *before a certificate is issued.*

EXTERIOR EXAMINATION

(tick appropriate column)	A	B	C
1. Shaft propeller and associated stern gear	✓		
2. Skin fittings	✓		
3. Hull & tubes	✓		
4. Cathodic protection	N/A		
5. Deck	✓		
6. Deck house / canopy	N/A		
9. Deck fittings	✓		
10. Safety rails, handholds, hand/foot straps & attachments	✓		
11. Hatches	✓		
12. Steering gear	✓		
13. Masts, struts, A frame etc & attachments	✓		
14. Console	✓		

INTERIOR EXAMINATION

	A	B	C
15. Skin fittings, including pipework	✓		
16. Internal structural integrity	✓		
17. Deck fitting attachment reinforcement	✓		
18. Engine mounting	✓		
19. Engine pipework	✓		
20. Stern glands, stern tubes and propeller shafts	N/A		
21. Cathodic protection	N/A		
22. Electrical wiring	✓		
23. Steering gear	✓		
24. Tanks	✓		
25. Passive fire protection (condition of insulation, cleanliness etc)	✓		

PART 3 – EXAMINER'S REPORT OF CONDITION

Ref No.	Nature of Defect	Remedial action and evidence of rectification required before issue of Certificate
	No Defect	
		Continue on separate sheet if necessary or attach report of condition or other supporting documentation

Examiner's Signature & Stamp

MECAL
AUTHORISED
EXAMINER

MECAL
AUTHORISED
EXAMINER

PART 4 – DECLARATION BY AUTHORISED EXAMINER

I have examined the vessel BIG YELLOW ST IVES + FALMOUTH ON ~~Enid's Flyer at Derry~~ on ~~30/4/04 – 20/5/04~~ 29.06.05 & 24.06.05
I believe that the vessel complies with the requirements of the relevant MCA Code of Practice for Small Commercial Motor Vessels (see Part 1), with the following comments/explanations and exceptions/alternatives agreed with the Owner / BUILDER ✓
I also declare that all due fees have been paid:

Code Section	Comments/Alternative Provisions
~~SECTION 13~~	~~1 X 8 PERSON ZODIAC LIFE RAFT TO BE DELIVERED TO OWNER~~ ✓ KHW
~~SECTION 25~~	~~1 X MSN 1766 CAT C MEDICAL KIT TO BE DELIVERED TO OWNER~~
	16 MAN NAUTIV ATLANTIC L/RAFT CERT No. PLS 01359/05
	ROOT PACK WITH BASIC 13 RORC 'R' EMERGENCY PACK
	EXPIRES 06/2006
	MSN 1766 CAT C MEDICAL KIT CARRIED

Examiners' general comments & recommendations (include sketches / photos if relevant):

INFORMATION FOR CERTIFICATE:

Date of final survey: ~~25 MAY 2004~~ 29 JUNE 05
Type of Certificate (Red/Yellow/Brown): – YELLOW - CATEGORY A
Limitations/conditions (e.g. seasonal, navigational):
DAYLIGHT HOURS AND FAVOURABLE WEATHER.

Name of Appointed Person: KENNETH H WALSH
Signature: Kenneth H Walsh
Date: 27 MAY 2004

MECAL AUTHORISED EXAMINER

29 JUNE 05

MECAL Scrutiny Signature and Stamp

ANNEX F

Small Commercial Motor Vessel Certificate for *Finns Flyer* dated 1 July 2004

MECAL *MCA Approved Certifying Authority for Small Commercial Vessels*

Queen Anne's Battery Marina, PLYMOUTH PL4 0LP Tel 01752-227989 Fax 01752-227990 Email mecal@mecal.co.uk

SMALL COMMERCIAL MOTOR VESSEL CERTIFICATE

mv "FINNS FLYER"

MCA Unique No. M04MV0090412

Name of Owner/Managing Agent Company	**N Spurrell**
Address	**Cats Cradle** **67 Mount Wise** **NEWQUAY** **Cornwall** **TR7 2BL**

Official Number	**N/A**
Port of Registry	**N/A**
Gross Tonnage	**N/A**
Maximum number of persons onboard	**14**
Length Overall	**9.1m**
Load Line Length	**N/A**
Date of Build	**2004**

This is to certify that the above named vessel was examined by MECAL Approved CoP Examiner, **Kenneth Walsh** at **L.Derry** on **25 May 2004** and found to be in accordance with the requirements of the *Code of Practice for the Safety of Small Commercial Motor Vessels,* published by the Department of the Environment, Transport and the Regions and controlled by the Maritime & Coastguard Agency.

This certificate will remain valid until **25 May 2009** subject to the vessel, its machinery and equipment being efficiently maintained, annual examinations and manning complying with the Code of Practice, and the following conditions

1. **Compliance with parts 4 & 5 of the Documentation of Compliance SCV2.**
2. **Total loading of persons and equipment is not to exceed 1050kg.**
3. **Limited to a maximum of 12 passengers only.**

Permitted area of operation	**Category 4 (Up to 20 miles in daylight & favourable weather)**

This certificate was issued at **Plymouth,** with an effective start date of: **25 May 2004**
This certificate expires on : **25 May 2009**

Name **Julie Fearnley,** for and on behalf of *MECAL* Ltd.

Date: **01 July 2004** Signature:

Change of owner, name of vessel, or any change of circumstance relating to the Code of Practice renders this certificate invalid

ANNEX G

St Ives Harbourmaster’s Instructions to Fast RIB Operators

FAST RIB OPERATORS

ALL DUTIES TO BE CARRIED OUT IN A SAFE AND PROFESSIONAL MANNER

PLEASURE RIBS TO KEEP WELL CLEAR OF BEACH AREAS, WORKING BOATS, MARKER BUOYS, SWIMMERS AND ROCKS

SPEED RESTRICTIONS TO BE ADHERED TO WHILST INSIDE HARBOUR LIMIT BUOYS

ALL PASSENGERS TO BE ADVISED OF ANY UNFAVOURABLE WEATHER CONDITIONS TO BE ENCOUNTERED

BECAUSE OF THE SPEED OF THE RIBS A GOOD LOOKOUT MUST BE KEPT AHEAD AT ALL TIMES

OPERATORS MUST BE AWARE OF ANY SMALL VESSELS IN THE VICINITY AND THE EFFECT THAT THEIR WASH COULD HAVE TO THESE SMALLER VESSELS

RIBS ONLY TO BE OPERATED BY PROPERLY CERTIFIED OPERATORS

NO CHILDREN TO PARTICIPATE IN TOUTING ACTIVITIES

PASSENGERS SAFETY AND WELLBEING MUST BE PARAMOUNT

S. E. BASSETT
(HARBOUR MASTER)

ANNEX H

DRB Technology Ltd’s report dated 8 November 2005 - Discussion and Conclusion

5 Discussion & Conclusions

Following our examination of the samples we make the following comments:

i. There is evidence of an impact on sample 1 above the reverse chine. Due to there being no corresponding damage on sample 2, it is considered unlikely that this damage occurred whilst the boat was travelling at speed. The damage is predominantly in the gel coat and does not appear to be structural.

ii. It is suspected that there may have been an intention to repair the damaged, as evidenced by the buffed nature of the gel coat around the damage. No evidence of a structural repair on samples 1 or 2 was found.

iii. It has been difficult to assess whether the stress cracking was present prior to the accident. Gel coat cracks opened up on sample 4 have shown featureless surfaces, with no evidence of arrest marks (starts and stops) indicative of progressive failure. It is possible that by examining longer sections more evidence could be found. The lack of arrest marks suggest that the stress crack sections examined occurred as a single event. And although it is likely they occurred in the accident, the evidence does not preclude them having occurred before.

iv The laminate composition at the various locations has been assessed by preparation of micro sections and burn off tests. These have shown that broadly the laminates have complied with the specification we have been supplied and the fibre contents are at acceptable levels for hand laid up laminates. Resin rich regions have been found in sample 1 around the reverse chine, which will probably reduce physical properties locally.

v. High void contents have been found in samples 4 and sample 8 (one of the drape sections) (14 & 17% respectively), these can be seen visually in figs. 16 & 20. These high void contents are likely to have compromised the strength of these sections locally. It is of note that sample 4 includes the region between the deck and the flange where significant stress cracks were seen.

vi. The physical tests performed on sample 11 have shown acceptable performance at the fibre contents found, indicating that ther e are no significant material defects in these regions.

vii. It has not been possible to find an overa ll failure origin from examination of the samples supplied. It is hoped that th e calculations being performed by MSA Technology will assist in determining the most likely failure origin region.

ANNEX I

MSA Technical Solutions report dated 25 November 2005
- Discussions of Results and Conclusions

4. DISCUSSION OF RESULTS

The results of this study in to selected aspects of the structural performance of the hull suggest that the stiffness of the topsides is likely to be a major limitation to the ultimate strength of the hull. Whilst the stresses in the topsides resulting from gentle immersion to a greater depth than normal, eg in large waves could account for around 30% of the failure stress of the laminate, dynamic effects will provide much greater stresses and have the capacity to cause failure along the reverse chine, which is a stress concentrating feature. Once initiated, a crack can propagate along the reverse chine. As the crack progresses, water will enter the hull and will add mass to the bilges. In rough water, the additional mass will assist in pulling the bilge section away from the deck. The deck to hull joint is not considered to be adequate to resist these forces.

This RIB was used for pleasure rides for thrill seekers and whilst the conditions were not abnormal at the time of failure, it is considered that some of the aspects of the design of this RIB were unsuitable for this type of usage.

5. CONCLUSIONS

The main conclusions of this study are:

8. The raked topsides extend approximately 30 cm above deck level but have no lateral support. In rough water, hydrostatic pressure may act on the exterior surface of the topsides generating bending stresses.

9. Partial submersion of the inflated chamber will generate an upthrust that will add to the bending stresses in the topsides.

10. The combined effects of the two hydrostatic load cases, described in 1. and 2. above, could generate 30% of the failure stress for the topsides.

11. The dynamic loads generated by bouncing through large waves have the capacity to generate large bending stresses in the topsides and a drop height of 1 metre may be sufficient to cause failure of the topsides at the reverse chine.

12. Once a crack has occurred, it will propagate along the chine, which acts as a stress concentrating feature.

13. Failure of the topsides will allow seawater to enter the hull and the additional weight will assist in separating the bilge section of the hull from the deck.

14. The deck is important as a lateral stiffener of the hull but only a few screws attach it to lightweight plywood /GRP frames. This arrangement is not considered to provide adequate strength for use in rough water conditions.

ANNEX J

Extracts of David Cox, Marine Surveyors and Consultants Ltd Report
dated 29 November 2005

12 CONCLUSIONS RELATING TO INADEQUACIES IN THE STRUCTURAL DESIGN.

I appreciate that the specifications discussed above will have varying factors of safety because all these craft may well have slightly different maximum pay loads and horse power stipulated on the builders plate. I also appreciate that small variations in these two factors will have a significant effect on the potential stresses that will be imposed on the structure. I would however suggest that if 'Big Yellow' was designed to take 12 passengers totalling an average of 75KG each at a speed of 40 knots, then the loadings that are likely to be imposed on the hull will be comparable with the others mentioned.

The following table summarises the power speed and weight characteristics for these craft. Which are all approx 9m LOA

Company	Bare hull	Lightship	Pay load	HP	Max speed
	Kg	Kg	Kg		
Ferryman	945	1712	1250	280	40
Company 1				450	
Company 2		2700		450	
Company 3	1500	2500	1350 *	400	40+

* Company 3 pay load same number of persons larger fuel tank

From this table is evident that the other RIBS have significantly more structure in them if one compares the bare hull weights which include the hull deck and tubes. If one considers that the pay load is likely to be similar, then the all up displacement of 'Big Yellow' would be significantly less than the others which explains why she can attain the same speed for less horse power. What should be appreciated however is that the payload being the same is supported by a much lighter structure and therefore it is evident that the factors of safety built into the design are very much lower than for the other craft .

As I would consider that these vessels all have the potential of being subjected to similar operating loads, I would consider that the following conclusions about Big yellow's structural design can be made having examined the build of these similar craft.

12.1 The laminating schedule that has been adopted is very light compared to the schedules used by others. I would expect to see more than one layer of 600g woven rovings in a laminate for a vessel of this type, and I have to say that the first time I read the laminating schedule, I assumed that the three layers comprising 1 off 600 CSM, 1 off 600g WR and 1 off 600g CSM should have read three complexes each comprising this amount of reinforcing. In other words three times the amount of laminate. This point was discussed with Paul Ferry and he confirmed that he had not misinterpreted the schedule and this is the laminating schedule that he had learnt when these hulls were being produced at South Down Marine

12.2 There is a lack of longitudinal stiffening which means that the hull will have a greater degree of longitudinal flexing. I note that Paul Ferry had indicated that the glassed in fuel tank would act as a longitudinal stiffener. Providing the tank is totally rigid, then this could be so over the length of the tank itself. However there is a discontinuity in strength at the forward end of this tank and therefore I do not consider that this item should be considered as part of the structure. Further more, if this tank was acting as a substantial stiffener in the after body of the vessel, this could produce a hard spot in the hull structure which could cause fracturing of the hull laminate in the fullness of time as the forward end of the hull flexed and hinged about this point.

12.3 The lack of stiffening in the hull will also increase the panel sizes which will increase the degree of panting in the underbody laminate. This will have a knock on effect of applying upward forces through the ineffective floors which may to some extent transmit these loads again to the underside of the deck. The other option here is that these floors are so weak that their walls will pant and absorb some of this loading

12.4 It is evident that the manner in which the deck has been laid on Big Yellow is sub standard, because this relies totally on the over laminate for keeping it in place bearing in mind the very few screw fastenings that were used to secure it. I would also criticise the fact that the plywood was also butted together, which would produce additional weaknesses in the structure

12.5 The use of a non structural filler at the deck edge has produces an area which will delaminate very quickly if sufficient stress is applied to it and this would produce a area where tearing of the laminate could easily start to propagate.

12.6 The use of the same type of filler on the tube carrier flange has also produced a weak bond between the hull laminate and the overlaminate for the deck which is bonded onto this flange as well.

12.7 The presence of stress cracks in the gelcoat just above the deck edge suggest a lack of rigidity in the hull laminate at is point. It is appreciated that DRB's comments are that these have occurred as a result of a single event, and it is certainly possible that they could have occurred as a result of the hull tearing apart on the outer edge of the reverse chine, which would have produced some flexing of the laminate where these cracks exist. This does not however explain why they are present leading aft from the transition point where the tear in the chine merges into the delaminated part of the hull where the failure transfers to the tube carrier. I would therefore suggest that these were pre existing and may have occurred as a result of a major slamming load that the vessel encountered on a previous occasion.

12.8 I would also consider that it cannot be ruled out that longitudinal crack were appearing on the reverse chine where the laminate finally tore apart. I have discussed the lack of stiffening in this area caused by the deck being placed lower into the vessel than it is on another make of craft using the same mould

13 CONCLUSIONS RELATING TO THE FAILURE OF THE STRUCTURE

Having examined the vessel and considered the inadequacies of the structural design, I would suggest that the failure occurred in the following manner

13.1 It is apparent from the stress calculations that the lack of longitudinal stiffening in itself would not have subjected the hull laminate to stresses which were in excess of the stress level required to cause a failure of the hull laminate.

I would however suggest that there would have been a degree of sagging and hogging in the hull which would have further reduced the strength of the bond between the laminates in the areas where the bond was compromised by the presence of the non structural filler from the outset. I am referring to the tube carrier flange which was sandwiched with this filler and also the area in way of the deck edge. Having said that I appreciate that the deck is fairly close to the neutral axis of the girder and therefore this area will not be subjected to the levels of stress that will be present further away from this point.

13.2 The structural analysis has determined that it is the transverse flexing of the hull laminate that will play a more significant part in the eventual failure.

As discussed in the structural analysis report Annex 3, the horizontal component of the buoyancy force created by the hull and the tubes diving into a wave will exert a bending moment on the hull laminate in way of the deck and also on the outer edge of the reverse chine. This lateral force would cause a compressive force in the deck which would cause it to buckle and break away from the sub structure because of the inadequate method of fastening . Once the deck started to lift this would exert a force on the sheathing at the deck edge and because of the filler which is present at this point, there would have been a sufficient area of weak interlaminar strength to cause the laminate to start tearing up towards the reverse chine.

13.3 In addition to this the hull laminate at this point would have been flexing about the deck line and the stress cracks in the gelcoat shown in photograph 13 demonstrate that this has already happened . I appreciate that DRB state that this stress cracking is likely to have resulted from a single event of over stressing However, I feel that the stress analysis carried out demonstrates that this flexing would have been happening on a fairly frequent basis.

This hinging at this point would also increase the potential for delamination to occur between the deck sheathing and the hull laminate in this area where the interlaminar bond between these two laminates had been compromised by the filler

13.4 The structural analysis stated that the hydrostatic force assuming the tubes were almost totally immersed, would have produced a bending moment which was about 30% of the bending moment required to fracture the laminate a the reverse chine. However if one considers the hydrodynamic forces associated with the vessel being thrown up and then dropping 1m into a wave, then the resultant bending moment will be sufficient to cause a failure. (See my comments in section 14.3)

If one considers the vertical and horizontal components of the buoyancy force on the hull and tubes as the vessel slams into a wave, these would create a tensile force coupled with a bending moment which would fracture the laminate on the edge of the reverse chine which because of the sudden change in angle on the hull surface could be considered stress raised area. The result would be that the fracture would then propagate along this line until it met at the bow.

13.5 The fact that this fracture occurred on both side of the vessel at the same time demonstrates that the vessel must have been slamming into the wave without any angle of heel and must therefore have been travelling in a straight line when the failure occurred.

13.6 At the same time the vertical component of the buoyancy force on the tubes would have created the required upwards force to delaminate the tube carrier where there was an inbuilt weakness caused by the non structural filler being present. This delamination would have propagated downwards to meet with the delamination which was happening in way of the deck edge.

13.7 Once the fractures on the edge of the reverse chine had travelled far enough forward to dip below the deck edge, water would have been forced into the hull at great pressure bearing in mind the speed of the vessel. This force would have hinged the heaved the deck upwards which would have created the tear in the deck sheathing shown in Photograph 11, and it would then have forced the hull open hinging about the butt in the deck plywood just forward of the passenger seats.

It is possible that his hydrodynamic force from underneath could have also been responsible for the delamination between the deck sheathing and the hull if it forced the deck bodily upwards before hinging open.

13.8 The final part of the failure is the delamination of the tube carrier flange, running aft from the area of delamination between the hull and the deck sheathing. This would have happened as a result of the hull being forced open by the inrushing water would to some extent would have been resisted by the stiffness of the tubes themselves. This combination of forces would have resulted in the a wrenching force being exerted on this flange which would have delaminated it where the interlaminar bond was weakest. This is where the non structural filler was present.

14 CONCLUDING REMARKS AND RECOMMENDATIONS

My concluding remarks are as follows

14.1 I would conclude that the failure occurred as a result of inadequate structural design. A comparison with other well known and respected makes of RIBS demonstrates that it is essential to insert proper longitudinal stiffening in the hull as well as transverse stiffening.

14.2 It is evident to me that there was no detailed design calculations carried out before this vessel was made and I would also suggest that there must have been a lack of previous experience which might have enabled the builder to produce a structurally sound hull.

There is no evidence to suggest that poor laminating or any external factors played a part in the failure of this structure.

14.3 The structural analysis did not cover the hydrodynamic loadings imposed on the hull resulting from speed. What has been demonstrated is that a vertical drop of about 1m would be sufficient to fracture the laminate and the calculations are based on an initial velocity of zero.

In reality the vessels speed should be considered because while it is appreciated that this would have no effect on the impact velocity of a vertical drop of 1m , it would have an effect if the vessel was slamming into the face of a wave whose tangent is at perhaps 45 degrees to the horizontal. The impact velocity in this instance would be the resultant of the vertical and horizontal velocity components which would be significantly higher than the ones calculated in this instance bearing in mind the vessel was travelling at 25.6 knots at the time of the failure.

The conclusions that I draw from this is that the laminate was clearly not strong enough to withstand the loadings imposed on it during normal operating conditions.

14.4 I would also conclude from this that the vessel would not survive a standard drop test which other manufacturers subject their craft to.

14.5 I would suggest that the vessel does not conform to the Recreational Craft Directive so far as structural strength is concerned.

Signed

David Cox 29th November 2005

ANNEX K

Paragraph 1.12 of The Safety of Small Commercial Motor Vessels - A Code of Practice

South West Ports Association
Sovereign Sailing
Sunsail International Limited
Surveyor General's Organisation, Department of Transport
Yacht Brokers, Designers and Surveyors Association
Yacht Charter Association

1.8 The primary aim in developing the Code has been to set standards of safety and protection for all on board and particularly for those who are trainees or passengers. The level of safety it sets out to achieve is considered to be commensurate with the current expectations of the general public. The Code relates especially to the construction of a vessel, its machinery, equipment and stability and to the correct operation of a vessel so that safety standards are maintained.

1.9 It will be noted that the Code deals with the equally important subject of manning and of the qualifications needed for the senior members of the crew.

1.10 In addition, however, designers and builders of new vessels will need to pay special regard to the intended area of operation and the working conditions to which a vessel will be subjected when selecting the materials and equipment to be used in its construction.

1.11 The builder, repairer or owner/managing agent of a vessel, as appropriate should take all reasonable measures to ensure that a material or appliance fitted in accordance with the requirements of the Code is suitable for the purpose intended having regard to its location in the vessel, the area of operation and the weather conditions which may be encountered.

1.12 The Commission of the European Communities' general mutual recognition clause should be accepted. The clause states:-

Any requirement for goods or materials to comply with a specified standard shall be satisfied by compliance with:-

.1 a relevant standard or code of practice of a national standards body or equivalent body of a Member State of the European Community; or

.2 any relevant international standard recognised for use in any Member State of the European Community; or

.3 a relevant specification acknowledged for use as a standard by a public authority of any Member State of the European Community; or

.4 traditional procedures of manufacture of a Member State of the European Community where these are the subject of a written technical description sufficiently detailed to permit assessment of the goods or materials for the use specified; or

.5 a specification sufficiently detailed to permit assessment for goods or materials of an innovative nature (or subject to innovative processes of manufacture such that they cannot comply with a recognised standard or specification) and which fulfil the purpose provided by the specified standard;

provided that the proposed standard, code of practice, specification or technical description provides, in use, equivalent levels of safety, suitability and fitness for purpose.

1.13 It is important to stress that, whilst all reasonable measures have been taken to develop standards which will result in the production of safe and seaworthy vessels, total safety at sea can never be guaranteed. As a consequence, it is most strongly recommended that the owner/managing agent of a vessel should take out a policy of insurance for all persons who are part of the vessel's complement from time to time. Such insurance should provide cover which

is reasonable for claims which may arise. If a policy of insurance is in force, a copy of the certificate of insurance should be either displayed or available for inspection by persons on board the vessel.

1.14 Compliance with the Code in no way obviates the need for vessels and/or skippers to comply with local authority licensing requirements where applicable.

1.15 When a vessel to which the Code is applicable is permanently based abroad and subject to Rules, Regulations and examination by the administration of the country from which it operates, the owner/managing agent may approach a Certifying Authority with the purpose of establishing "equivalence" with the Code.

"Equivalence" should be established for the construction of a vessel, its machinery, equipment, stability, correct operation and examination of the vessel.

The Certifying Authority, when it is satisfied that it is appropriate to do so, may make recommendations for exemption from the Regulations and compliance with the Code in order to issue a certificate based on declaration(s) and report(s) from the administration of the country in which the vessel is permanently based.

The Certifying Authority should make its recommendations to the Department of Transport for approval by the Secretary of State.

1.16 The Organisations listed in 1.7 above were concerned that the ownership of a small commercial vessel by a club should not be seen as a loophole to circumvent the regulations. It is considered that any vessel owned by a proprietary club for use by the members is likely to fall within the scope of the Code.

The Organisations listed in 1.7 above also considered that the officers and committees of members' clubs with responsibility for the maintenance and operation of club owned vessels operated as pleasure yachts could usefully adopt standards set out in the Code as guidelines on safe practice, for the protection of their members.

2 Definitions

In the Code:-

"Accommodation space" means any space enclosed on all six sides by solid divisions, provided for the use of persons on board;

"Annual examination" means a general or partial examination of the vessel, its machinery, fittings and equipment, as far as can readily be seen, to ascertain that it has been satisfactorily maintained as required by the Code and that the arrangements, fittings and equipment provided are as documented in the Compliance Examination and Declaration report form SCV2;

"Authorised person" means a person who by reason of relevant professional qualifications, practical experience or expertise is authorised by the Certifying Authority chosen by the owner/managing agent from those listed in the Code to carry out examinations required under section 27 of the Code;

"Bare boat charter" means a charter for which the charterer provides the skipper and the crew.

"Category C waters" means waters designated category C waters in the Merchant Shipping (Categorisation of Waters) Regulations 1992, SI 1992 No.2356 and Merchant Shipping Notice No. M.1504;

"Category D waters" means waters designated category D waters in the Merchant Shipping (Categorisation of Waters) Regulations 1992 and Merchant Shipping Notice No. M.1504;