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## STATUTORY INSTRUMENTS

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1981 No. 1098

### MERCHANT SHIPPING

#### **THE MERCHANT SHIPPING (SUBMERSIBLE CRAFT CONSTRUCTION AND SURVEY) REGULATIONS 1981**

Text of the Regulations as they have effect in the *Isle of Man*. Amendments are indicated by *bold italics*

<i>MANX EXTENDING INSTRUMENT</i>	<i>UK S.I.s APPLIED</i>
Merchant Shipping (Safety Provisions) (Application) Order 1992 (GC 361/92)	1981/1098  1987/306

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## STATUTORY INSTRUMENTS

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1981 No. 1098

### MERCHANT SHIPPING

#### THE MERCHANT SHIPPING (SUBMERSIBLE CRAFT CONSTRUCTION AND SURVEY) REGULATIONS 1981

Made.....30th July 1981

Laid before Parliament...10<sup>th</sup> August 1981

Coming into operation.....1st October 1981

The Secretary of State, in exercise of his powers under sections 16 and 17 of, and Schedule 5 to, the Merchant Shipping Act 1974 <sup>(a)</sup>, and of all other powers enabling him in that behalf, hereby makes the following Regulations :-

#### Citation, commencement and interpretation

1.- (1) These Regulations may be cited as the Merchant Shipping (Submersible Craft Construction and Survey) Regulations 1981 [...].

(2) In these Regulations, unless the context otherwise requires :

“autonomous submersible craft” means a submersible craft which does not rely on a parent craft for launch and recovery and recharging its power source or for surface support;

*“Certifying Authority” means the Department of Trade and Industry or any person authorised by the Department of Trade and Industry and includes (if so authorised) Lloyds Register of Shipping, the British Committee of Bureau Veritas, the British Committee of Det Norske Veritas, the British Committee of Germanischer Lloyd and the British Technical Committee of the American Bureau of Shipping;*

*(Definition inserted by S.I. 1987/306 and amended by GC 361/92)*

“collapse depth” means that depth at which failure of the pressure hull is estimated to occur, due to the external pressure;

“command module” means the main compartment of a lock-out submersible craft which may house the crew, the diving supervisor and the control equipment for both the submersible and the diver lock-out compartment;

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(a) 1974 c. 43; paragraph 3(2)(a) of Schedule 5 was amended by section 43(3) of and paragraph 20 of Part VI of Schedule 6 to the Merchant Shipping Act 1979 (c.39)

***“crew” means the person or persons within the submersible craft required to operate the craft and its equipment;***

***(Definition inserted by S.I. 1987/306)***

“depth” means the depth measured from the surface to the lowest part of the submersible craft’s pressure hull;

“diver lock-out compartment” means a compartment forming part of the submersible craft with underwater access for personnel and with a means of controlling the differential pressure between the inside and outside environment;

“exostructure” means all structures and appendages outside the pressure hull such as floodable structure, supporting equipment and including hydrodynamic fairings, lifting pads, manipulators and other such structures and appendages;

“hull penetration” means any opening in the pressure hull;

“life support systems” means equipment installed to render a manned submersible craft habitable and includes breathing systems, temperature and humidity control equipment, waste disposal and toxic fume removal equipment and food and water supplies;

***“Manx ship” has the meaning assigned to it by section 1 of the Merchant Shipping Registration Act 1991 (an Act of Tynwald);***

***(Definition inserted by GC 361/92)***

“maximum operating depth” means the maximum depth to which the submersible craft is designed to submerge during normal operations;

“prescribed” means prescribed in regulations made by the ***Department of Trade and Industry***;

“pressure hull” means the pressure resistant structures including closing appliances, reinforced openings, viewports and penetrations, which is subject to pressure differential during service conditions;

***“submersible craft” means any description of manned mobile submersible apparatus which is designed to maintain some or all of its occupants at or near atmospheric pressure including free, self-propelled, tethered, towed or bottom contact propelled apparatus and atmospheric diving suits. A diving bell is not a submersible craft for the purposes of these Regulations; and “diving bell” means any compression chamber which is capable of being manned and is used or designed for use under the surface of water in supporting human life being a chamber in which any occupant is or may be subjected to a pressure of more than 300 millibars above atmospheric pressure during normal operation;***

***(Definition inserted by S.I. 1987/306)***

“supporting equipment” means the launching and recovery gear used in connection with a submersible craft;

*“surveyor” means a surveyor appointed by a Certifying Authority;*

*(Definition inserted by S.I. 1987/306)*

“umbilical” means a connecting link to a submersible craft, which contains one or more life support, surveillance, communication or remote control leads with or without power supply cables.

(3) Reference in the Regulations to the owner of a submersible craft or supporting equipment are, for the purpose of the application of any provisions of these Regulations in relation to any particular submersible craft or supporting equipment, references to the person who at the relevant time has the management of that submersible craft or supporting equipment.

### **Application**

2. (1) These Regulations apply to any submersible craft and its supporting equipment which is :

(a) operated within waters which are in the *Isle of Man* or which are adjacent thereto and within the seaward limits of territorial waters, or

(b) *launched recovered or operated or supported from or comprises a Manx ship.*

(2) *These Regulations do not apply to submersible craft which are not used in the course of or in connection with any trade or business or by any person for hire or reward.*

*(Amended by S.I. 1987/306 and GC 361/92)*

### **Surveys**

3. (1) On or after 1<sup>st</sup> May 1982 submersible craft and supporting equipment to which these Regulations apply shall not be operated unless there are in force safety certificates issued, after satisfactory surveys, to the owner of the submersible craft and of the supporting equipment under regulation 5(1) of these Regulations *as they have effect in the Isle of Man or the United Kingdom.*

(2) Application for the initial survey of a submersible craft and of supporting equipment for the purpose of the issue of safety certificates shall be made to *the Certifying Authority* by or on behalf of the owner, together with such plans, drawings, specifications and other documents relating to the construction requirements set out :

(a) in the case of submersible craft and supporting equipment, (other than those specified in sub-paragraph (b)) in Schedule 1 hereto; and

(b) in the case of one man submersible craft, atmospheric diving suits and supporting equipment, in Schedule 2 hereto,

together with such other information relating to the design, construction and testing of the submersible craft and the supporting equipment, as the *Certifying Authority* may require.

(3) After receipt of the application and payment of the prescribed fees, a surveyor shall survey the submersible craft or the supporting equipment or both as specified in the Application and the owner or his agent shall supply the necessary information in order that the surveyor may be able to ascertain whether the submersible craft and the supporting equipment comply with such of the criteria of Schedule 3 hereto as are applicable to that type of craft and equipment. ***The owner or his agent shall afford all necessary facilities for such survey and shall at the request of the Certifying Authority furnish such further documents or information as may be required.*** In the course of the survey the submersible and any of its fittings or equipment or the supporting equipment shall be submitted to such tests as the surveyor may require.

(4) On completion of the survey the surveyor shall provide the *Certifying Authority* with a Declaration of Survey in respect of the submersible craft and of the supporting equipment.

(5) The submersible craft and the supporting equipment shall be resurveyed upon application by or on behalf of the owner for the renewal of the certificates.

#### **Reporting of modifications or damage**

4. While a safety certificate is in force the owner shall report to the *Certifying Authority* any modifications or any instance of damage which affects or may affect the safety of the submersible craft or its supporting equipment.

#### **Issue and extension of safety certificates**

5. (1) If the *Certifying Authority* is satisfied, on receipt of the Declaration of Survey in respect of the submersible craft and of the supporting equipment, that they comply with these Regulations, *it* may issue to the person applying therefor safety certificates, in respect of the submersible craft and in respect of the supporting equipment specified in the certificates. The certificates shall remain in force for two years or for such shorter period as may be specified in the certificates subject to satisfactory inspection by a surveyor after 12 months from the date of issue or until suspended or revoked by the *Department of Trade and Industry*;

(2) Safety certificates may be extended by the *Department of Trade and Industry* without a Declaration of Survey for such further period, not exceeding four months, as *it* thinks fit.

#### **Suspension or revocation of safety certificate**

6. The *Department of Trade and Industry* may at any time suspend or revoke a safety certificate if *it* is satisfied that :

- (a) the submersible craft or the supporting equipment no longer complies with the criteria of Schedule 3 hereto; or

- (b) the submersible craft or the supporting equipment is in a condition unfit for operation; or
- (c) information supplied for the purposes of any initial survey or re-survey was materially incorrect; or
- (d) the submersible craft or the supporting equipment has been significantly changed from the particulars supplied at the time of the initial survey or re-survey.

## **Offences**

7. (1) An owner who contravenes any provision of Regulation 3(1) or 4 of these Regulations shall be guilty of an offence.

(2) The punishment for an offence created by these Regulations shall be :

- (a) on summary conviction, a fine not exceeding £1,000;
- (b) on conviction on *information*, imprisonment for a term not exceeding two years, or a fine, or both.

(3) In proceedings for an offence under this Regulation it shall be a defence for the accused to prove -

- (a) that he has exercised all due diligence to prevent the commission of the offence; and
- (b) that the contravention was committed without his consent or connivance.

8. (1) These Regulations shall apply to persons, whether or not British subjects, and to companies, whether or not incorporated under the law of the *Isle of Man*.

(2) Proceedings for any offence under these Regulations may be taken and the offence be treated for all incidental purposes as having been committed, in any place in the *Isle of Man*.

(3) *In any proceedings for an offence under these Regulations an averment in any process of the fact that anything was done or situated within waters to which these Regulations apply shall, until the contrary is proved, be sufficient evidence of that fact as stated in the averment.*

*(Paragraph (3) inserted by S.I. 1987/306)*

30<sup>th</sup> July 1981.

*Trefgarne,*  
Parliamentary Under-Secretary of State,  
Department of Trade.

**CONSTRUCTION REQUIREMENTS FOR SUBMERSIBLE CRAFT  
AND SUPPORTING EQUIPMENT**

The construction requirements referred to in regulation 3(2)(a) are as follows :-

1. *Hull*

1.1 Manned submersible craft shall consist of PRESSURE HULL(S) and an EXOSTRUCTURE.

The pressure Hull and Exostructure shall be :-

- 1.1.1. so designed that all loads to be exerted on the structure are taken into account. These shall include the most severe loads imposed in normal conditions together with loads resulting from several conditions occurring simultaneously. The planned maximum operating depth and the collapse depth shall be specified;
- 1.1.2 where practicable, all pipe systems penetrating the pressure hull shall be provided with two isolating valves, primary and secondary, readily accessible to the crew, the primary valve to be immediately inboard of the penetration. Where this is not practicable all components of the system between the hull penetration and the primary isolating valve shall be designed for an internal pressure of not less than that equivalent to the collapse depth;
- 1.1.3 fitted with a lifting point and a towing point (where appropriate), and external structural members capable of withstanding the stresses that may be experienced in service conditions;
- 1.1.4 subjected to satisfactory tests and survey during building and acceptance trials. Records of these and copies of all certificates obtained shall be made available;
- 1.1.5 subjected to regular maintenance inspections. Details of the current and proposed inspection intervals and the tests involved shall be made available;
- 1.1.6 equipped with at least one alternative lifting point (where appropriate) to which attachments may be secured to raise the submersible craft to the surface in an emergency;
- 1.1.7 provided with an access hatch operable from both sides. Where practicable, the hatch shall be positioned so that the crew may leave the craft when it is on the surface.

## 2. *Power*

### 2.1 Manned submersible craft shall be :-

#### 2.1.1 provided with :

- (a) a source of power capable of maintaining normal services for a period adequate for the service envisaged and including the minimum life support requirements set out in paragraph 5 of this Schedule;
- (b) an emergency source of power capable of providing continuity of communications for the minimum life support requirements set out in paragraph 5 of this Schedule;

#### 2.1.2 equipped with means of propulsion adequate for the service envisaged.

### 2.2 Where electrical power is used the craft shall be :-

#### 2.2.1 fitted with equipment compatible with the special conditions pertaining to marine service. Where practicable, all equipment shall be continuously rated;

#### 2.2.2 provided with adequate electrical protection;

#### 2.2.3 fitted with an effective means of isolating all poles or phases from every circuit and sub-circuit as may be necessary to minimise shock hazard;

#### 2.2.4 fitted with gas control safeguards, where applicable, on the compartments containing the power source;

#### 2.2.5 equipped with a pressure compensation device for the power source if it is external to the pressure hull and is subjected to ambient sea pressure;

#### 2.2.6 fitted with circuits which do not use hull return;

#### 2.2.7 provided with an earth leakage measuring device.

## 3. *Control*

### 3.1 Manned submersible craft shall (where appropriate) :-

#### 3.1.1 contain valves, gauges and such other equipment as is necessary to control the propulsion and auxiliary systems, including any fuel supply and exhaust systems;

#### 3.1.2 contain such equipment as is necessary to control the direction of the craft in azimuth;

- 3.1.3 contain such valves, gauges and other equipment as are necessary to control the depth, attitude and rate of descent and ascent without inducing resonant or unstable motions;
- 3.1.4 be fitted with jettisonable weights or other means suitably protected against inadvertant operation to achieve positive buoyancy in an envisaged emergency situation;
- 3.1.5 be fitted with valves or other fittings to enable manipulators, grasping or anchoring devices and jettisonable equipment to be released in a planned or envisaged emergency situation;
- 3.1.6 be fitted with an umbilical capable of maintaining services and of sufficient strength for its intended service;
- 3.1.7 be equipped with an internal release device suitably protected against inadvertant operation, for severing or releasing the umbilical cable. In the case of a towed submersible craft, similar arrangements should be provided for the towing cable;
- 3.1.8 be equipped with a device for the early detection of water leakage into the pressure hull or any other compartment;
- 3.1.9 be equipped (in the case of an autonomous submersible craft) with an effective bilge pumping system;
- 3.1.10 be equipped (in the case of an autonomous submersible craft) with such anchors and cables as are sufficient in number, weight and strength having regard to the size and intended service of the craft.

#### 4. *Buoyancy and Stability*

- 4.1 Manned submersible craft shall, where appropriate, have sufficient buoyancy and stability to enable a properly trained crew to operate it in all sea states and conditions for which it is intended.
- 4.2 There shall be provided for each craft instructions showing operating procedures in intended service conditions together with emergency procedures. The instructions shall take into account the fully submerged and transient submerging and surfacing conditions together with a full buoyancy condition. The effects of releasing any jettisonable devices either singly or in combination shall be taken into account.

#### 5. *Life Support*

- 5.1 Manned submersible craft shall be provided with the means of life support to maintain all occupants carried at or near atmospheric pressure in a safe and breathable atmosphere for a minimum period of 96 hours over and above the planned dive time.

5.2 Manned submersible craft shall :-

- 5.2.1 contain adequate equipment to maintain a safe and breathable atmosphere in the crew compartment. The equipment shall be capable of functioning whether or not the main electrical power source of the craft is operable. When oxygen is stored, in bottles, at least two shall be provided. If these are fitted externally, they shall be piped separately to the inside of the submersible craft;
- 5.2.2 contain monitoring devices to test the atmosphere in the crew compartments;
- 5.2.3 contain valves, gauges and other equipment as are necessary to monitor the pressure, temperature and humidity and (where practicable) to control the pressure, temperature and humidity within the crew compartment;
- 5.2.4 be equipped with an adequate emergency breathing system for use in case of fire or smoke;
- 5.2.5 at all times carry supplies of food and water;
- 5.2.6 under normal conditions and in the event of an emergency either have sufficient power reserves to maintain an adequate temperature in the crew compartment, or be equipped with a means of thermal protection of the crew;
- 5.2.7 contain the minimum of flammable and toxic material;
- 5.2.8 be fitted with an adequate fire extinguishing system.
- 5.2.9 *be fitted with such medical stores as the Department of Trade and Industry may direct.***

6. *Communications*

- 6.1 Submersible craft shall be fitted with such equipment as is necessary for the submersible craft to communicate with its parent craft when on the surface and when submerged. Equipment using through-water communication methods shall have a minimum range of twice the maximum operating depth of the craft.
- 6.2 Autonomous submersible craft shall be fitted with :-
  - (a) such main and reserve equipment as is necessary for the submersible craft to communicate with its support base;
  - (b) such equipment as is necessary for the submersible craft, when on the surface, to alert by radio other shipping in the vicinity in the event of distress and to communicate with such shipping;

- (c) such equipment as is necessary for the submersible craft, when submerged to communicate with surface craft. The equipment should have a minimum range of twice the operating depth of the craft.

6.3 Where the submersible craft has more than one manned compartment equipment shall be fitted to provide communication between these compartments.

## 7. *Navigation and Position Indication*

7.1 Manned submersible craft shall be :-

7.1.1 fitted with a compass;

7.1.2 fitted with an adequate means of determining the distance of the craft from the seabed;

7.1.3 provided with an adequate means of visual out-look ahead of the craft or be fitted with equipment to determine and avoid obstacles when submerged;

7.1.4 fitted with such gauges or instruments to provide a continuous read-out of depth to the crew; a minimum of two such instruments shall be fitted; one of which shall be a dial gauge; they shall not share a common hull penetration;

7.1.5 fitted with equipment to indicate heel and trim;

7.1.6 fitted with a visual means of position indication for use when on the surface, including highly visible paint, and strobe light;

7.1.7 fitted with a sonic location device to provide position indication in an emergency when submerged;

7.1.8 be equipped with a timepiece which does not use the main power supply.

## 8. *Supporting Equipment - Launch and Recovery System*

8.1 Manned submersible craft shall be so constructed as to be capable of use in association with a lifting gear system (where appropriate) which enables the craft to be lowered into and recovered from the water with adequate safety factors for the intended service.

8.2 If wires or ropes are incorporated for hoisting or lowering any submersible craft these shall have safety factors based upon the proven or calculated breaking strength of the wire or rope.

8.3 The lifting gear system shall be subjected to static and dynamic load tests.

9. *Lock-out Arrangements*

- 9.1 Manned submersible craft fitted with Diver Lock-Out facilities shall be provided with the means of life support to maintain any occupants subjected to raised pressures in a safe and breathable atmosphere.
- 9.1.1 be fitted with a Saturation Control Compartment or a Command Module adjacent to the Diver Lock-Out compartment from which control and monitoring of the chamber may be carried out;
- 9.1.2 be equipped with sufficient storage capacity to contain the appropriate breathing mixture to supply to persons occupying or working from the Lock-Out compartment;
- 9.1.3 be fitted with such equipment as may be necessary to ensure that each diver's body temperature is kept within safe limits;
- 9.1.4 contain such valves, gauges and other fittings as are necessary to control and monitor the pressures and the composition of the atmosphere within the Lock-Out compartment and to ascertain the external water pressures on the Lock-Out compartment. This equipment shall be duplicated in both the Command Module, the Saturation Control Compartment and the Diver Lock-Out compartment; except that the control valves shall only be operable from the Control Compartment.
- 9.1.5 be equipped with a two way oral communication system whereby contact may be maintained between personnel in the Command Module or Saturation Control Compartment and the divers inside and outside the compartment under all operating conditions; the system shall be fitted with an auxiliary power source for use in emergency.
- 9.2 The command module shall be equipped with a means of settling the submersible craft on the seabed and, if mid-water operations are to be carried out, the craft shall have positive control of depth so that divers can move freely between the Diver Lock-Out compartment and the water.
- 9.3 The Diver Lock-Out compartment shall :-
- 9.3.1 be equipped with means whereby each diver using the compartment is able to enter and leave without difficulty;
- 9.3.2 contain adequate first aid facilities and lifting equipment sufficient to enable an unconscious or injured diver to be hoisted into the compartment by a person located therein;
- 9.3.3 be capable, where applicable, of allowing a person to transfer under pressure between the compartment and a compression chamber;

- 9.3.4 be equipped with doors with act as pressure seals and which may where appropriate be opened from either side;
- 9.3.5 contain adequate re-generation equipment to maintain a safe and breathable atmosphere in the compartment. The equipment shall be capable of functioning whether or not the main power source of the submersible craft is operable;
- 9.3.6 at all times carry food and water;
- 9.3.7 be equipped with a means of thermal protection for the divers;
- 9.3.8 be equipped with a medical lock or equivalent arrangements of adequate size which can be used at pressures equivalent to the maximum operating depth of the Diver Lock-Out compartment.

**CONSTRUCTION REQUIREMENTS FOR ONE MAN SUBMERSIBLE CRAFT,  
ATMOSPHERIC DIVING SUITS AND SUPPORTING EQUIPMENT**

The construction requirements referred to in regulation 3(2)(b) are as follows :-

1. *Hull*

1.1 One man submersible craft and Atmospheric Diving Suits shall consist of a PRESSURE HULL and an EXOSTRUCTURE.

The Pressure Hull and the Exostructure shall be :-

1.1.1. so designed that all loads to be exerted on the structure are taken into account. These shall include the most severe loads imposed in normal conditions together with loads resulting from several conditions occurring simultaneously. The planned maximum operating depth and the collapse depth shall be specified;

1.1.2 where practicable, all pipe systems penetrating the pressure hull shall be provided with two isolating valves, primary and secondary, readily accessible to the crew, the primary valve to be immediately inboard of the penetration. Where this is not practicable all components of the system between the hull penetration and the primary isolating valve shall be designed for an internal pressure of not less than that equivalent to the collapse depth;

1.1.3 fitted with a lifting point and external structural members capable of withstanding the stresses that may be experienced in service conditions;

1.1.4 subjected to satisfactory tests and survey during building and acceptance trials. Records of these and copies of all certificates obtained shall be made available;

1.1.5 subjected to regular maintenance inspections. Details of the current and proposed inspection intervals and the tests involved shall be made available;

1.1.6 equipped with at least one alternative lifting point to which attachments may be secured to raise the submersible craft to the surface in an emergency;

2. *Power*

2.1 One man submersible craft and atmospheric diving suits shall be :-

2.1.1 provided with a source of power capable of maintaining normal services for a period adequate for the service envisaged and including the minimum life support requirements set out in paragraph 5 of this Schedule;

2.1.2 equipped with means of propulsion adequate for the service envisaged.

2.2 Where electrical power is used the craft shall, where appropriate, be :-

2.2.1 fitted with equipment compatible with the special conditions pertaining to marine service. Where practicable all equipment shall be continuously rated;

2.2.2 provided with adequate electrical protection;

2.2.3 fitted with an effective means of isolating all poles or phases from every circuit and sub-circuit as may be necessary to minimise shock hazard;

2.2.4 fitted with circuits which do not use hull return;

2.2.5 provided with an earth leakage measuring device;

2.2.6 fitted with gas control safeguards, where applicable, on the compartments containing the power source;

### 3. *Control*

3.1 One man submersible craft and atmospheric diving suits shall, where appropriate :-

3.1.1 contain valves, gauges and such other equipment as is necessary to control the propulsion and auxiliary systems, including any fuel supply and exhaust systems;

3.1.2 contain such equipment as is necessary to control the direction of the craft in azimuth;

3.1.3 contain such valves, gauges and other equipment as are necessary to control the depth, attitude and rate of descent and ascent without inducing resonant or unstable motions;

3.1.4 be fitted with jettisonable weights or other means, suitably protected against inadvertant operation, to achieve positive buoyancy in an envisaged emergency situation;

3.1.5 be fitted with valves or other fittings to enable manipulators, grasping or anchoring devices and jettisonable equipment to be released in a planned or envisaged emergency situation;

3.1.6 be fitted with an umbilical capable of maintaining services and of sufficient strength for its intended service;

3.1.7 be equipped with an internal release suitably protected against inadvertant operation, for severing or releasing the umbilical cable. In the case of a towed submersible craft, similar arrangements should be provided for the towing cable.

4. *Buoyancy and Stability*

4.1 One man submersible craft and atmospheric diving suits shall, where appropriate, have sufficient buoyancy and stability to enable a properly trained person to operate it in all sea states and conditions for which it is intended.

4.2 There shall be provided, for each craft or suit, instructions showing operating procedures in intended service conditions together with emergency procedures. The instructions shall take into account the fully submerged and transient submerging and surfacing conditions together with a full buoyancy condition. The effects of releasing any jettisonable devices either singly or in combination shall be taken into account.

5. *Life Support*

5.1 One man submersible craft and atmospheric diving suits shall be provided with the means of life support to maintain the occupant in a safe and breathable atmosphere for a minimum period of 72 hours.

5.2 One man submersible craft and atmospheric diving suits shall :-

5.2.1 contain adequate equipment to maintain a safe and breathable atmosphere in the crew compartment. Where electrical power is used the equipment shall be capable of functioning whether or not the main electrical power source of the craft is operable. When oxygen is stored in bottles, at least two bottles shall be provided. If these are fitted externally, they shall be piped separately to the inside of the submersible craft;

5.2.2 contain monitoring devices to test the atmosphere in the crew compartment;

5.2.3 contain valves, gauges and other equipment necessary to monitor and control the pressure within the crew compartment;

5.2.4 at all times carry supplies of food and water;

5.2.5 contain the minimum of flammable and toxic material;

5.2.6 *be fitted with such medical stores as the Department of Trade and Industry may direct.*

6. *Communications*

- 6.1 One man submersible craft and atmospheric diving suits shall be fitted with such equipment as is necessary for the submersible craft to communicate with its parent craft when on the surface and when submerged. Equipment using through water communication methods shall have a minimum range of twice the maximum operating depth of the craft.
- 6.2 Where main communications are transmitted through the umbilical, emergency through water means of communication shall also be provided.

7. *Navigation and Position Indication*

- 7.1 One man submersible craft and atmospheric diving suits shall be :-
  - 7.1.1 fitted with a compass;
  - 7.1.2 provided with an adequate means of visual out-look ahead of the craft;
  - 7.1.3 fitted with such gauges or instruments to provide a continuous read-out of depth to the crew;
  - 7.1.4 fitted with a visual means of position indication for use on the surface, including highly visible paint, and strobe light;
  - 7.1.5 fitted with a sonic location device to provide position indication in an emergency when submerged.

8. *Supporting Equipment - Launch and Recovery System*

- 8.1 One man submersible craft and atmospheric diving suits shall be so constructed as to be capable of use in association with a lifting gear system which enables the craft or suit to be lowered into and recovered from the water with adequate safety factors for the intended service.
- 8.2 If wires or ropes are incorporated for hoisting or lowering any submersible craft or suit these shall have safety factors based upon the proven or calculated breaking strength of the wire or rope.
- 8.3 The lifting gear system shall be subjected to static and dynamic load tests.

**CRITERIA FOR CERTIFICATION OF SUBMERSIBLE CRAFT AND SUPPORTING EQUIPMENT AND FOR ONE MAN SUBMERSIBLE CRAFT, ATMOSPHERIC DIVING SUITS AND SUPPORTING EQUIPMENT**

1. The construction of the submersible craft shall be such that the general structural strength is sufficient for the use for which it is intended.
2. Materials, fittings and fluids used in the construction of the submersible craft and its equipment shall be suitable for the intended service.
3. The sealing arrangements of all openings and penetrations shall be sufficient for use at all depths up to the collapse depth of the submersible craft.
4. The testing and inspection programme shall be adequate both in frequency and standard.
5. The margin of safety from pressure damage calculated from the manufacturer's specified operating limits shall be adequate for the use for which the submersible craft is intended.
6. The capacity and design of the power and propulsion systems shall be sufficient for the use for which the submersible craft is intended.
7. The design and construction of the submersible craft and its equipment shall be such as to ensure that it has an adequate margin of buoyancy, where applicable, and stability in all probable operating and emergency conditions.
8. The life support systems and emergency arrangements, shall be as sufficient as is practicable for the type of submersible craft.
9. An adequate fire extinguishing system shall be fitted except in the case of one man craft and atmospheric diving suits.
10. The communication systems shall be adequate for the use for which the submersible craft is intended.
11. The navigational system shall be adequate for the use for which the submersible craft is intended.
12. The launch and recovery system, where applicable, shall be adequate for the type of submersible craft used.
13. Diver Lock-Out arrangements, if applicable, shall be adequate for the use for which the submersible craft is intended.

## EXPLANATORY NOTE

*(This Note is not part of the Regulations)*

These Regulations prohibit manned mobile submersible craft (except diving bells) and supporting equipment from operating in *Isle of Man* waters or from ships which are *Manx* ships, without a valid safety certificate issued by the *Department of Trade and Industry* after a satisfactory survey (Regulation 3(1)). Application for the initial survey of the submersible craft and for the supporting equipment must be accompanied by the documents relating to the construction requirements specified in Schedule 1 for submersible craft and in Schedule 2 for one man submersible craft, atmospheric diving suits and supporting equipment (Regulation 3(2)) and they must each comply with the construction criteria specified in Schedule 3 (Regulation 3(3)). The safety certificate will usually be valid for two years (Regulation 4(1)) but may be suspended or revoked (Regulation 5).