

	TECHNICAL SPECIFICATION		Nº: I-ET-3010.00-5400-947-P4X-009
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	JOB:		
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SRGE	TITLE: LIFEJACKET AND LIFEBOUY		INTERNAL ESUP

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1 SCOPE

This document establishes mandatory requirements for lifejacket and lifebuoy specification, which shall be installed in the Offshore Units.

2 ABBREVIATION AND DEFINITIONS

2.1 Abbreviation

- **DPC:** Diretoria de Portos e Costas (meaning: Directorate of Ports and Coasts);
- **POB:** people on board.

2.2 Definitions

- **Lifejacket:** flotation device designed to keep a person's airway clear of the water;
- **Work Lifejacket:** personal equipment to aid the flotation (PEAF), to be used by personnel who execute specific work with risk to fall into the sea;
- **Lifebuoy:** circular device designed to be thrown to a person in the water to be used to rescue personnel at sea and also to show where the person is;

3 APPLICABLE STANDARDS AND RECOMMENDATIONS

Regulations to be followed in the design, installation and testing of the Lifejacket and Lifebuoy are stated below:

- IMO - SOLAS: Convention for the Safety of Life at Sea – 1974 and Amendments in Force;
- IMO - LSA CODE: International Life-Saving Appliances;
- IMO Resolution MSC 81(70): Testing of Life-Saving Appliances;
- NORMAM 01: Normas da autoridade marítima para embarcações empregadas na navegação em mar aberto - Ministério da Marinha - DPC (meaning: Brazilian Maritime authority standard for offshore navigation);
- NORMAM -05/DPC: Normas da autoridade marítima para homologação de material e autorização de estações de manutenção - Ministério da Marinha - DPC (meaning: Brazilian Maritime authority standard for material certification and maintenance stations);
- Ministry of Labor and Social Security - Regulatory Standard – NR-37 -

Segurança e Saúde em Plataformas de Petróleo.

- Requirements of the Classification Society of the Unit;

4 TECHNICAL REQUIREMENTS

4.1 General

4.1.1 Lifejacket and lifebuoy shall comply with the provisions of IMO-LSA CODE.

4.2 Requirements for Lifejackets and Lifejackets Boxes

4.2.1 The lifejacket shall allow a person, after demonstration, to put it on correctly in no more than one (01) minute.

4.2.2 It shall be provided at each muster station, an amount of lifejackets equals to 10% of POB, at least.

4.2.3 It shall be provided at embarkation point an amount of lifejackets equals to 100% of POB, at least.

4.2.4 Lifejackets shall have sufficient buoyancy and stability in calm fresh water to lift the mouth of an exhausted or unconscious person not less than 120 mm clear of the water with the body inclined backwards at an angle of not less than 20° from the vertical position.

4.2.5 It shall make body of an unconscious person turn rapidly from whatever position it may be into a safe position, in less than five (05) seconds.

4.2.6 Lifejackets shall allow the person wearing it to swim a short distance and to board a survival craft.

4.2.7 It shall allow the user to jump into the water from a height of 4.5 m without causing any injury or damaging to the lifejacket and without changing its position in relation to the user's body.

4.2.8 It shall be able to stand ambient temperatures that vary from -30 °C to 65 °C.

4.2.9 It shall be able to stand, when submersed in water, temperatures that vary from -1 °C to 30 °C.

4.2.10 It shall have buoyancy not reduced by more than 5% after 24 hours submersion in fresh water.

4.2.11 The cloth material used for jacket and accessories shall be resistant to the contact with petroleum and its products, and to the seawater, fresh water, sunlight exposure and fungus, in accord with NORMAM-05/DPC.

4.2.12 The Lifejackets shall be Class I and capable to support an adult body mass and size according to NORMAM-05/DPC. They shall be safety orange color (Munsell

2.5 YR. 6/14).

4.2.13 The life jacket shall be the rigid type.

4.2.14 Lifejackets shall be provided with the following accessories:

- One (01) whistle, firmly attached to jacket by a cord and contained in a pocket;
- One (01) white colored light with a luminous intensity of not less than 0.75 candlepower in all directions of the upper hemisphere, with an energy source of at least eight (08) hours without being damaged by fresh or sea water;
- Six (06) 5 x 10 cm reflecting strips on outside of Lifejacket front.

4.2.15 There shall be an indelible tag below jacket, firmly fixed and in visible place with the following information, in accordance with NORMAM-05/DPC:

COLETE SALVA-VIDAS CLASSE I

CERTIFICADO DE HOMOLOGAÇÃO DPC Nº _____.

DATA DE FABRICAÇÃO: ___/___/___.

FABRICANTE: _____.

MODELO: _____ N° DE SÉRIE: _____.

TAMANHO: _____ MASSA DA PESSOA APOIADA: _____.

ADVERTÊNCIAS:

- NÃO CORTAR AS TIRAS OU ALTERAR QUALQUER PARTE DO COLETE.
- LAVAR EM ÁGUA DOCE E SECAR APÓS O USO.
- NÃO UTILIZAR COMO ASSENTO OU ENCOSTO.
- NÃO COLOCAR OBJETOS PESADOS OU PONTIAGUDOS EM CIMA.
- GUARDAR EM LOCAL VENTILADO.
- NÃO SECAR AO SOL OU PRÓXIMO DE FONTES DE CALOR COMO RADIADORES E AQUECEDORES.
- COLOCAR PARA VENTILAR CASO LONGO TEMPO SEM USO.
- IDENTIFICAR O COLETE COM O NOME DA EMBARCAÇÃO.
- TESTAR COMO UTILIZAR O COLETE ANTES DE SAIR PARA O MAR.
- INSPECIONAR REGURLAMENTE SEU ESTADO DE CONSERVAÇÃO.
- SUBSTITUIR O COLETE QUANDO ESTIVER EM MAU ESTADO DE CONSERVAÇÃO.
- NÃO USAR EM ATIVIDADES DE ALTA VELOCIDADE.

4.2.16 The light supply wiring shall be built into the jacket in order to protect against mechanical impacts.

4.2.17 The lifejacket shall not continue to burn or to melt after having been completely involved by flames for two (02) seconds.

4.2.18 It shall be manufactured in way to guarantee the vest flotation is assured by inside material approved, without depending of maintenance. It shall not be used granulated material inside.

4.2.19 All tests shall be done according to IMO Resolution MSC 81(70) and NORMAM-05/DPC.

4.2.20 Lifejacket's foreign certificates of approval, in accordance with SOLAS, shall be kept on board with official translation to Brazilian Portuguese, in places that can be examined during an inspection of the Brazilian Maritime Authority (DPC).

4.2.21 Supplier shall provide boxes for lifejackets, according to the following items.

4.2.21.1 Boxes installed outdoors shall be made of strengthened fiberglass to resist to weather conditions. Boxes installed indoors cannot be made of fiberglass. They shall be metallic.

4.2.21.2 Boxes shall have dimensions suitable to storage the number of Lifejackets required for muster stations and embarkation areas

4.2.21.3 Boxes shall be painted in safety orange color (Munsell 2.5 YR 6/14).

4.2.21.4 The following legend shall be written on the Boxes: "COLETES SALVAVIDAS" (Lifejackets). Letters shall be in white and stand 70 mm high, 40 mm in width, 10 mm thick and 5 mm apart.

4.2.21.5 Box cover shall be slip-on type (like a shoebox) and shall be provided with a non-ferrous cover-shutting device.

4.2.21.6 Boxes for embarkation areas shall be waterproof and keep out other substances as well.

4.2.21.7 SUPPLIER shall provide all accessories needed to fasten the Boxes.

4.3 Requirements for Work Lifejackets and Work Lifejackets Boxes

4.3.1 The Lifejacket shall be designed in such a way that anyone can put it on in just 1 (one) minute, without any help.

4.3.2 It shall be provided at warehouse, at least, an amount of work lifejackets equals to 15% of POB.

4.3.3 It can be dressed by the contrary, unless it is evident that it can only be dressed on a side, eliminating the possibility to dress it incorrectly.

- 4.3.4 The Lifejacket shall make the body of an unconscious person turn rapidly from whatever position it may be into a safe position, in less than 5 (five) seconds.
- 4.3.5 It shall not be damaged or moved from the body in case of a person jump of a height of 10 m and also without causing an injury to the user.
- 4.3.6 A lifejacket shall allow the person wearing it to swim a short distance and to board a survival craft.
- 4.3.7 The vest shall not continue to burn or to melt after having been completely involved by flames for 2 seconds.
- 4.3.8 A lifejacket shall have buoyancy, not reduced by more than 5% after 24 hours submersion in fresh water.
- 4.3.9 Fabric used for jacket and accessories shall withstand contact with petroleum and its products, the action of seawater, fresh water, sunlight and fungus without be rot.
- 4.3.10 The Lifejackets shall be Class IV, safety orange color (Munsell 2.5 YR. 6/14).
- 4.3.11 Work Lifejacket shall be rigid type.
- 4.3.12 It shall have 6 (six) of 5 x 10 cm reflecting strips on outside of jacket front or in the two faces, in case it can be dressed on the two sides.
- 4.3.13 It shall be manufactured in way to guarantee the vest flotation is assured by inside material approved, without depend of maintenance of any shut aerial volume. It shall not be used granulated material inside, in way to avoid losses due to tears in the vest.
- 4.3.14 There shall be a tag below jacket collar bearing with the following shape and information, in accordance with NORMAM-05/DPC:

COLETE SALVA-VIDAS CLASSE IV

CERTIFICADO DE HOMOLOGAÇÃO DPC Nº _____.

DATA DE FABRICAÇÃO: ____/____/____.

FABRICANTE: _____.

MODELO: _____ N° DE SÉRIE: _____.

TAMANHO: _____ MASSA DA PESSOA APOIADA: _____.

ADVERTÊNCIAS:

- NÃO CORTAR AS TIRAS OU ALTERAR QUALQUER PARTE DO COLETE.
- LAVAR EM ÁGUA DOCE E SECAR APÓS O USO.
- NÃO UTILIZAR COMO ASSENTO OU ENCOSTO.
- NÃO COLOCAR OBJETOS PESADOS OU PONTIAGUDOS EM CIMA.
- GUARDAR EM LOCAL VENTILADO.
- NÃO SECAR AO SOL OU PRÓXIMO DE FONTES DE CALOR COMO RADIADORES E AQUECEDORES.

- COLOCAR PARA VENTILAR CASO LONGO TEMPO SEM USO.
- IDENTIFICAR O COLETE COM O NOME DA EMBARCAÇÃO.
- TESTAR COMO UTILIZAR O COLETE ANTES DE SAIR PARA O MAR.
- INSPECIONAR REGULAMENTE SEU ESTADO DE CONSERVAÇÃO.
- SUBSTITUIR O COLETE QUANDO ESTIVER EM MAU ESTADO DE CONSERVAÇÃO.
- NÃO USAR EM ATIVIDADES DE ALTA VELOCIDADE.

4.3.15 Lifejackets for work (class IV) that don't include any device to maintain the head of an unconscious individual out of water shall exhibit the following warning: "UTILIZAR SOB SUPERVISÃO OU ACOMPANHAMENTO - EQUIPAMENTO INCAPAZ DE MANTER A CABEÇA DE UMA PESSOA INCONSCIENTE FORA DA ÁGUA" (meaning: to be used under supervision or accompaniment, equipment unable to maintain the head out of water of an unconscious person).

4.3.16 All tests shall be done according to IMO RESOLUTION MSC 81(70) and NORMAM-05/DPC.

4.3.17 Supplier shall provide boxes for work lifejackets, according to the following items.

4.3.17.1 Boxes installed outdoors shall be made of strengthened fiberglass to resist to weather conditions. Boxes installed indoors shall be metallic.

4.3.17.2 Boxes shall have dimensions suitable to storage the number of Lifejackets required by the Purchase Order.

4.3.17.3 Boxes shall be painted in safety orange color (Munsell 2.5 YR 6/14).

4.3.17.4 The following legend shall be written on the Boxes: "COLETES SALVA-VIDAS DE TRABALHO" (Work Lifejackets). Letters shall be in white and stand 70 mm high, 40 mm in width, 10 mm thick and 5 mm apart.

4.3.17.5 Box cover shall be slip-on type (like a shoebox) and shall be provided with a non-ferrous cover-shutting device.

4.3.17.6 Boxes shall be waterproof and keep out other substances as well.

4.3.17.7 SUPPLIER shall provide all accessories needed to fasten the Boxes.

4.4 Requirements for Lifebuoy

4.4.1 Lifebuoys shall be made of polyurethane coated with fiberglass and weight not less than 4 kg.

4.4.2 Lifebuoys shall be provided according to the dimensions below:

CLASS	MAXIMUM EXTERNAL DIAMETER (mm)	MINIMUM INTERNAL DIAMETER (mm)	MINIMUM WEIGHT (kg)
I	800	400	4

- 4.4.3 Lifebuoys shall be provided along with all accessories requested for proper installation.
- 4.4.4 Lifebuoys shall be made of materials able to resist to fresh water, seawater, petroleum and its products, and fungal attack.
- 4.4.5 They shall be in safety orange color (Munsell 2.5 YR 6/14) and be provided with 4 retro-reflective tapes.
- 4.4.6 Lifebuoys shall be able to stand ambient temperatures that vary from -30 °C to 65 °C, and shall be able to stand sun light exposure.
- 4.4.7 Lifebuoys shall be able to stand, when submersed into water, temperatures that vary from -1 °C to 30 °C.
- 4.4.8 Lifebuoys shall not burn if exposed to flames for a period of two (02) seconds.
- 4.4.9 Lifebuoys shall be made to support a drop into the water from the height at which it is stowed above the waterline in the lightest seagoing condition or 30 m, whichever is greater, without impairing either its operating capability or that of its attached components.
- 4.4.10 Lifebuoys shall be fitted with polypropylene grab line or similar material not less than 9.5 mm in diameter and not less than four (04) times the outside diameter of the body of the buoy in length. The grab line shall be secured at four equidistant points around the circumference of the buoy to form four equal loops using fixtures that allow its substitution in case of damage.
- 4.4.11 At least 50% of Lifebuoys installed on each board shall be provided with buoyant lifelines with diameter of not less than 8 mm, twice as long as the height of the facility under light draft or 30 meters, whichever is greater and having a breaking strength of not less than 5 kN, in accord with NORMAM-05/DPC and MODU. The design shall also comply with those requirements prevailing whichever is more restrictive.
- 4.4.12 All Lifebuoys shall be provided with rests and accessories needed to fix them to the Unit's rail in such a way that they might be dropped into the sea promptly.
- 4.4.13 At least two Lifebuoys, one for each board, shall be provided with self-igniting lights and self-activating smoke signals, that allows the easily visualization of a person in the sea and capable of emitting smoke signal for 15 minutes. The lifelines that connect the smoke signals with the Lifebuoy should be 4 meters long 8 mm thick.

Self-igniting lights shall be certified to work at hazardous area classification zone 1, group IIA, T3.

4.4.14 Lifebuoys shall be permanently marked, on one side, with a 5 cm x 9 cm tag with the following information, in accord with NOMAM-05/DPC:

MARINHA DO BRASIL
DIRETORIA DE PORTOS E COSTAS
• CERTIFICADO N°: _____
• CLASSE: _____
• FABRICANTE: _____
• MODELO: _____ N° SÉRIE: _____
• DATA DE FABRICAÇÃO: ____/____/____

4.4.15 The Unit name and the port of registry to which it belongs, shall be written on the Lifebuoys in black letters standing 70 mm high, 40 mm in width, 10 mm thick and 5 mm apart.

4.4.16 Lifebuoy's foreign certificates of approval, in accordance with SOLAS, shall be kept on board with official translation to Portuguese, in places that can be examined during an inspection of the Brazilian Maritime Authority.

4.4.17 Lifebuoy support shall be stainless steel made and painted in safety yellow color (Munsell notation 5Y 8/12).

4.5 Minimum documents required

4.5.1 For both Lifejacket and Lifebuoy, it shall be provided Certificates of Approval issued by Ministério da Marinha – DPC.

4.5.2 For lifejacket and work lifejacket, it shall be provided:

- Description of jackets and its accessories, specifying color and materials used.
- Instructions, in Brazilian Portuguese language, as how to put jacket on, and how to use and look after it.

4.5.3 For lifejacket boxes, box shall be provided, showing:

- Dimensions;
- Weight;
- Details of how to fasten boxes;



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- Details of how to fasten covers.

4.5.4 For lifebuoy, drawings containing the following information shall be provided:

- Dimensions;
- Weight;
- Details on how buoys shall be fixed to hand rail;
- Materials.