OISD-STANDARD-184
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STANDARD ON REPLACEMENT OF PERSONAL PROTECTIVE EQUIPMENT AND LIFE SAVING APPLIANCES

Oil Industry Safety Directorate
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Ministry of Petroleum & Natural Gas
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OISD - STD-184

STANDARD ON REPLACEMENT OF PERSONAL PROTECTIVE EQUIPMENT AND LIFE SAVING APPLIANCES

Prepared by
COMMITTEE ON
STANDARD ON REPLACEMENT OF PERSONAL PROTECTIVE EQUIPMENT AND LIFE SAVING APPLIANCES

OIL INDUSTRY SAFETY DIRECTORATE
8th Floor, OIDB Bhavan,
Plot No. 2, Sector - 73
Noida – 201301 (U.P.)
Preamble

Indian petroleum industry is the energy lifeline of the nation and its continuous performance is essential for sovereignty and prosperity of the country. As the industry essentially deals with inherently inflammable substances throughout its value chain – upstream, midstream and downstream – Safety is of paramount importance to this industry as only safe performance at all times can ensure optimum ROI of these national assets and resources including sustainability.

While statutory organizations were in place all along to oversee safety aspects of Indian petroleum industry, Oil Industry Safety Directorate (OISD) was set up in 1986 Ministry of Petroleum and Natural Gas, Government of India as a knowledge centre for formulation of constantly updated world-scale standards for design, layout and operation of various equipment, facility and activities involved in this industry. Moreover, OISD was also given responsibility of monitoring implementation status of these standards through safety audits.

In more than 25 years of its existence, OISD has developed a rigorous, multi-layer, iterative and participative process of development of standards – starting with research by in-house experts and iterating through seeking & validating inputs from all stake-holders – operators, designers, national level knowledge authorities and public at large – with a feedback loop of constant updation based on ground level experience obtained through audits, incident analysis and environment scanning.

The participative process followed in standard formulation has resulted in excellent level of compliance by the industry culminating in a safer environment in the industry. OISD – except in the Upstream Petroleum Sector – is still a regulatory (and not a statutory) body but that has not affected implementation of the OISD standards. It also goes to prove the old adage that self-regulation is the best regulation. The quality and relevance of OISD standards had been further endorsed by their adoption in various statutory rules of the land.

Petroleum industry in India is significantly globalized at present in terms of technology content requiring its operation to keep pace with the relevant world scale standards & practices. This matches the OISD philosophy of continuous improvement keeping pace with the global developments in its target environment. To this end, OISD keeps track of changes through participation as member in large number of International and national level Knowledge Organizations – both in the field of standard development and implementation & monitoring in addition to updation of internal knowledge base through continuous research and application surveillance, thereby ensuring that this OISD Standard, along with all other extant ones, remains relevant, updated and effective on a real time basis in the applicable areas.

Together we strive to achieve NIL incidents in the entire Hydrocarbon Value Chain. This, besides other issues, calls for total engagement from all levels of the stake holder organizations, which we, at OISD, fervently look forward to.

Jai Hind!!!

Executive Director

Oil Industry Safety Directorate
FOREWORD

The Oil Industry in India is more than 100 years old. Because of various collaboration agreements, a variety of international codes, standards and practices have been in vogue. Standardisation in design philosophies and operation and maintenance practices at a national level was hardly in existence. This coupled with feed back from some serious accidents that occurred in the recent past in India and abroad, emphasised the need for the industry to review the existing state- of- the-art in designing, operating and maintaining oil and gas installations.

With this in view, the Ministry of Petroleum and Natural Gas in 1986 constituted a Safety Council assisted by the Oil Industry Safety Directorate (OISD) staffed from within the industry in formulating and implementing a series of self regulatory measures aimed at removing obsolescence, standardising and upgrading the existing standards to ensure safe operations. Accordingly, OISD constituted a number of functional committees of experts nominated from the industry to draw up standards and guidelines on various subjects.

The present standard on “Guidelines for Replacement of Life Saving and Personal Protective Safety Items (STD-184)” was prepared by the functional committee based on industry experience and on various national and international standards and codes of practice. It is meant to serve as a users guide and is no way, a substitute for existing standards and manufacturers recommendations.

It is hoped that the provision of this document, if implemented objectively will go a long way in improving the safety standard of oil and gas industry.

This document will be reviewed periodically for improvements based on the new experiences and better understanding. Suggestions from industry members may be addressed to:

The Co-ordinator

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8th Floor, OIDB Bhavan,
Plot No. 2, Sector - 73
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These documents are intended to supplement rather than replace the prevailing statutory requirements.
COMMITTEE ON
"STANDARD ON REPLACEMENT OF
PERSONAL PROTECTIVE EQUIPMENT AND
LIFE SAVING APPLIANCES"

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<td>Leader</td>
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<td>2</td>
<td>&quot;Gulab Singh&quot;</td>
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<td>Co-ordinator</td>
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<td>3</td>
<td>&quot;R.G. Goyal&quot;</td>
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<td>&quot;P.K. Nigam&quot;</td>
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<td>5</td>
<td>&quot;C. Bose&quot;</td>
<td>OIL</td>
<td>Member</td>
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1.0 INTRODUCTION

The life saving appliances are the means which are used during emergency, to ensure emergency preparedness. These appliances are the life boat, survival craft and scrambling net etc. Similarly the personal protective equipment (PPE) are primarily required for the personal protection and these are the secondary means of protection, the primary protection being the engineering controls. It is, therefore, necessary that certain minimum standard regarding the specifications are maintained in order to ensure quality and also to standardise its replacement norms which is based on the normal usage pattern.

It is noted that disparity exists amongst different organisations as regards the PPE specifications and also the PPE replacement norms. The disparity regarding the specifications and replacement norms exists within the same organisation also at different functional units. The same situation exists for the life saving appliances as well. Accordingly, a need was felt among the industry members for the guidelines to be prepared regarding the specification and replacement norms of life saving appliances and the personal protective equipment, due to the following reasons:

1. To ensure quality through standardised specifications
2. To provide industry guidelines to facilitate procurement of quality items
3. To suggest replacement period / norm
4. To establish uniformity in the industry as regards the provisioning, issuance, replacement of life saving and as well as PPE items.

To facilitate provisioning, usage and the replacement, it is equally important to understand the qualitative features of the life saving appliances and also the personal protective equipment. Accordingly, to facilitate understand the broad features of the personal protective equipment items, its qualitative features have been provided. Similarly, the description and the qualitative features of the life saving appliances have also been covered to a large extent.

2.0 SCOPE

The scope of this standard covers the following areas:

a) The qualitative features of personal protective equipment items
b) The specification and replacement norms of personal protective equipment
c) The personal protective equipment Rules
d) The qualitative features of the life saving appliances
e) The specification and replacement norms of life saving appliances

3.0 DEFINITIONS:

Brim - The rim surrounding the shell.
Chin strap - An adjustable strap that fits under the chin to secure the helmet on the head.

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Harness (Helmet) - The complete assembly by means of which the helmet is maintained in position on the head which includes head band, cradle etc.

Headband - Part of harness surrounding the head. The plane of lower margin of headband shall correspond to reference line of the head form.

Supporting straps which form the cradle

Anti-concussion tapes Cradle - The fixed or adjustable assembly comprising of anti-concussion tapes & nape strap, where provided.

Nape Strap - An adjustable (with respect to the shell) strap that fits behind the head to secure the helmet & may be an integral part of the headband.

Neck Curtain - Additional part of the helmet to protect the neck.

Peak - The extension of the shell above the eyes.

Shell - The hard, smoothly finished material that provides the general outer form of the helmet.

Ventilation - Holes provided in the shell to permit circulation of air inside the helmet

Holes for ventilation

Filter - The device through which the wearer of the equipment views the welding or cutting operation & which provides protection to the eyes against glare, injurious radiations, sparks or hot particles of metal or a combination of these hazards.

Filter-Cover-Goggles - A transparent cover to protect the surface of the filter.

A device worn over the eyes & held in place by a headband used for protecting the eyes & eye sockets from flying particles & injurious radiations.

Hand Shield - A device held in the hand and designed to give protection during welding & cutting to the eyes, ears, face, neck & part of the top of the head of the user.

Helmet - A device supported on the head and designed to give protection during welding and cutting to the eyes, ears, face, neck and part of the top of the head of the user.

Cuff - Extension of the glove, gauntlet or mitt which covers the wrist or arm.

Full-arm Gauntlets - A covering for the hand having separate fingers & thumb with cuff length greater than 300 mm but not exceeding 400 mm.

Gauntlet - A covering for the hand having separate fingers & thumb with cuff length greater than 63.5 mm but not exceeding 300 mm.

Glove - A covering for the hand having separate fingers & thumb with cuff length not greater than 63.5 mm.

Gun Pattern - A pattern of the four-fingers & thumb design, having the face of the thumb, the palm and first (index) & fourth (little) fingers made of one piece of material. The back is of one piece up-to the cuff & includes the back of the four fingers at least. The fronts of the second and third fingers may be one piece each, attached to the palm at the base of appropriate finger.

Hand Guards - A piece of protective material of various designs used to protect the hand.

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Mitt - A covering for hand with separate thumb & a common covering for the fingers.

Clute-Pattern - Gloves of the four fingers and thumb design having a one piece palm including the front of all four fingers and the back of the index finger also. The seam on the back of the hand may be an outseam or an inseam.

Montpelier Pattern - The Montpelier pattern shall be of the four fingers and thumb design having the front and all four fingers of one piece and the back of the gloves and gauntlet and back of all four fingers of one piece. There shall be one piece fourchettes between the first & second, second & third and third & fourth fingers.

One Finger Mitt - A covering for the hand having a separate thumb and index finger and a common covering for the remaining fingers.

Reinforcement - An extra thickness of material attached to portions of the gloves to meet a particular requirement.

Bib Type - Apron covering chest, waist & legs down to the knees or sometimes to ankles.

Waist Type Apron - Apron covering waist and legs down to the knees and below.

Suit - Covering from head to foot, for complete protection and normally used with respiratory provision.

Hood - Protects wearer's head, face, neck and shoulders.

Thermal Flux - It is the rate of the transfer of heat per unit area per unit time.

Thermal Resistance - It is an inverse measure of the capability of the clothing to transmit heat.

Thermal Protective Index (Flame) - A number equal to the time in seconds before the temperature of the back surface of the protective clothing assembly rises by 25 degree C when exposed to standard heat source burning hexane.

Thermal Protective Index (Radiation) - A number equal to the time in seconds before the temperature of the back surface of protective clothing assembly rises by 25 degree C when exposed to standard radiation source consisting of radiant panel.

Reflectivity - When radiation falls on the material, part of it may be absorbed, part transmitted and the rest reflected. The reflectivity is the ratio of the radiation reflected to the total incident radiations.

Clothing Assembly - Clothing Assembly means composite material made from layers of similar or different materials, including lining which is used for making a single garment.

Safety Belt - The equipment which provides protection & safety in situations like working at higher elevation, maintenance of buildings, structures or jobs such as...
window cleaning & chimney cleaning and includes all components & fittings required for its use.

**Safety Harness** - The assembly which consists of the waist belt together with shoulder straps.

**Life Line** - The line which provides linear communication between the user & rescue party at the remote distance by tension or other means, particularly in enclosed space.

### 4.0 PERSONAL PROTECTIVE EQUIPMENT:

#### 4.1 GENERAL INFORMATION;

#### 4.1.1 Torso and body protection

Proper clothing should be provided to all personnel working at operational sites. Only cotton overall (dangri) should be worn by the personnel working in the fields. Wind cheaters and rains coats should also be used in extreme weather conditions.

#### 4.1.2 Eye and Face Protection

Eye and face protection should be provided in hazardous environment where there is a reasonable probability that related injuries can be prevented or reduced by the use of such equipment. Suitable eye protection should be used where machines or operations present danger from flying objects, flash lights & glares and hazardous liquids injurious radiation or a combination of these hazards.

Protectors should meet the following minimum requirements:

1. It should provide adequate protection against the particular hazard for which they are being used.
2. It should be reasonably comfortable when worn under the designated conditions.
3. It should fit snugly and should not unduly interfere with the movement of the wearer.
4. It should be durable.
5. It should be capable of being disinfected and cleaned (unless they are disposable.)

Goggles, Face masks, Face shields, Side shields, Safety glasses, Welder’s lens etc. are used for protection of the eyes. These are required for welding, grinding, gas cutting and while handling corrosive chemicals.

Personnel using these eye protectors should undergo examination for visual acuity and depth perception.

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4.1.3 Head Protection

Head protection should be used where there is a danger from impact or penetration from falling or flying objects or from limited electric shock or burn. The head protectors should be of comfortable and proper fit.

Helmets, Hard hats, Safety hats (full brim, brimless, limited voltage protection, no voltage protection) etc. are used for head protection. Thin-shelled plastic “bump caps” should not be used as a substitute for approved head protection.

4.1.4 Foot Protection

Foot protection should be provided where there is a potential for foot, toe or instep injuries from external forces. Safety shoes, Gum boots etc. are used for foot protection. A toe box, cup or instep protector may be incorporated as an internal part of footwear during construction or a variety of suitable approved foot guards to cover or attach to standard work shoes may be utilised. Additionally, the footwear should have a sole on insole that will protect against penetration.

4.1.5 Hand Protection

Hand protection should be used where there is danger of cuts such as handling knives or slicing equipment, or danger from handling corrosive materials, such as cleaning chemicals or solvents, acids, alkalis, scale inhibitors, bactericides. These should also be used where there is risk from hot surfaces or electrical shocks. Cotton, leather, asbestos or rubber gloves; gauntlets; heat resistant gloves; hally-gloves; chain mail gloves (full or partial) and barrier creams are typical hand protection devices.

4.1.6 Hearing Conservation

A hearing conservation system including PPE, noise monitoring, periodic audiometric testing and employee education shall be initiated wherever the noise exposures equal or exceed an 8-hour time weighted average of 85 dBA. Ear plugs, ear muffs, Swedish wool, disposable plugs etc. are used for hearing protection. The hearing protectors should be current type for noise exposure and of proper fit.

Employees required to wear hearing protection should receive training in
1. The effect of noise on hearing
2. The purpose of hearing protectors, the advantages and disadvantages of various types of protectors and instructions for selection, fitting, use and care of protectors.
3. The purpose of audiometric testing and an explanation of test procedures.

4.1.7 Respiratory Protection

Air purifying respirators, Chemical cartridge respirators, Air supplied respirators, Combination respirators, Self contained breathing apparatus (SCBA). Escape masks,

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Canisters etc. are used for protection in irrespirable and toxic atmospheres. These are required particularly in those areas which present limited breathable environment, where the possibility of an oxygen deficient environment exists or where there is air contamination. These protectors have significant fitting requirements based on the facial bone structure of the user and for spectacle as well as bearded users.

The use of breathing apparatus shall be demonstrated in the group safety meetings, such demonstrations will cover

- Respiratory hazards and availability of breathing apparatus at various locations.
- Controls being used for respirators.
- Reasons for selecting particular type of respirator.
- Functions, capabilities and limitations of respirators.
- Methods of donning respirators.

4.1.8 Fall Protection

Personnel should wear fall protection devices, when working six feet or more above deck unless adequate protection against falling is provided. Safety belts, harnesses, work vests, life jackets etc. are required while working on heights and / or over sea.

It should be ensured that the devices fit properly. Before using any of these devices, they should be inspected for excessive wear or damage that could cause failure. The worn or damaged devices should be destroyed or discarded.

4.1.9 Selection, use and maintenance

For selection, use and maintenance of PPE OISD standard STD-155 may be referred

4.2 Maintenance

It is the responsibility of the individual to whom PPE is issued to maintain the PPE in good conditions. It is the responsibility of the concerned in-charges to provide adequate facilities for proper storage and cleaning of PPE to all their subordinates. Proper PPE maintenance procedures must also be explained to each individual at the time of issuance of the PPE.

The PPE which are issued not to each individual but to the section, should be maintained by Sectional In-charges. Specialised PPE like breathing apparatus will be maintained by the In-charge maintenance / Safety Officer. These will be brought on to the PMS.

4.3 PPE Rules

The following personal protective equipment must be owned by all personnel:

1. Cotton overall / dangri: Cotton overalls / dangries are must in all operating areas of complex.

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2. Safety helmets: Safety helmets are compulsory in all open areas.
3. Safety shoes: Safety shoes are compulsory in all open areas and switch gear rooms.
4. Hand gloves: Cotton hand gloves must be used for material handling, wire ropes and slings. Special gloves must be used while welding, electrical jobs and handling chemicals.
5. Safety goggles: Safety goggles must be used compulsorily while handling corrosive chemicals, welding, gas cutting, grinding, drilling and other machine shop operations.
6. Ear muffs / plugs: These must always be used where noise level is high (85 dB)
7. Life jackets / Work vests: Life jackets / Work vests must be used while working over water, at spider deck and during passenger transfer by crane.
8. Safety belts / harness: Safety belts / harness must be used while working over heights.
9. Self Contained Breathing Apparatus (SCBA): SCBA must be used for vessel entry and for performing repair jobs in areas where air may be contaminated with smoke or toxic gases.
### 4.4 SPECIFICATION AND REPLACEMENT NORMS:

**PERSONAL PROTECTIVE EQUIPMENT SPECIFICATION AND REPLACEMENT NORMS**

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<th>Quantity and Replacement Norms</th>
<th>Purpose</th>
<th>Remarks</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Safety Shoe</td>
<td>IS5852-77 For steel toe IS 10667-83 Guide for selection</td>
<td>Ankle high safety shoe with injection moulded PVC / nitrile rubber sole, collar cushion, fully leather lined with steel toe cap as per BIS. Shoe sole to be anti skid and provide adequate insulation. No nails be used on sole.</td>
<td>2 Pairs/yr. For all offshore personnel and onland drilling crew. 1 pair/year for other technical / operational personnel</td>
<td>Foot Protection</td>
<td>Safety Shoes of reputed companies shall be accepted.</td>
</tr>
<tr>
<td>2.</td>
<td>Hunting Shoe / Jungle Boot</td>
<td>Rubber sole and heel as per IS 3976 – 75</td>
<td>Safety rubber canvas boot, ankle high (without steel toe cap) rubber sole and rubber at the toe end</td>
<td>2 pairs/yr. For geology / geophysical / civil survey / C&amp;M field party</td>
<td>Foot Protection</td>
<td>No other shoe is required to be issued.</td>
</tr>
<tr>
<td>3.</td>
<td>Gum Boot</td>
<td>IS3738-75</td>
<td>Molded foot wear made up of PVC and cotton fabric with steel toe cap</td>
<td>1 pair/3 yr.</td>
<td>Protect feet /leg during rain or slushy area</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Safety helmet</td>
<td>IS2925-84</td>
<td>Made of high density polyethylene thermoelastic with radium (for offshore). Should have head harness and chin strapped for fixing Polyester fiber reinforced polycarbonate /polyester fiber glass material shall also be cosidered.</td>
<td>1 No. / 3 yrs.</td>
<td>Protection of head from impact and penetration</td>
<td>For use at operational site only.</td>
</tr>
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<th>Remarks</th>
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</thead>
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<tr>
<td>5.</td>
<td>a)</td>
<td></td>
<td>Should be PVC dotted for grip</td>
<td>As &amp; when required</td>
<td>Protection of fingers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b)</td>
<td>IS6994(PT I)-73</td>
<td>Length 30 cm required.</td>
<td>As &amp; when required</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>c)</td>
<td>IS 4770-68</td>
<td>Suitable for 5 KV to 33 KV</td>
<td>1 pair/yr. or as required</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d)</td>
<td>IS69949-73</td>
<td></td>
<td>1 pair/yr. or as required</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e)</td>
<td></td>
<td></td>
<td>As required</td>
<td>For hot work</td>
<td></td>
</tr>
<tr>
<td></td>
<td>f)</td>
<td></td>
<td></td>
<td>As required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Overall / dangri</td>
<td>IS8519-77</td>
<td>One piece apparel of cotton material. Colour orange for offshore</td>
<td>3 Nos/yr. Offshore personnel / 2 Nos/year for onland field going personnel</td>
<td>Body protection</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Immersion Suit</td>
<td>IS6153-71</td>
<td>On offshore installation, one suit each for 20 persons, Replacement 5 yrs. or as per manufacturer’s recommendation whichever is earlier</td>
<td>Protection of person from low water temp.</td>
<td>To be kept as standby</td>
<td></td>
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<tr>
<td>9.</td>
<td>APRON (PVC, Rubber, Lead plastic, Lead leather)</td>
<td>IS4501-81</td>
<td>Acid &amp; alkali resistant</td>
<td>Need based.</td>
<td>Body protection during chemical handling</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Fireman suit/ Outfit</td>
<td>Chapter 2 of SOLAS-74 as amended till 1999</td>
<td>Kit consists of Fireman axe, crowbar, grab hook, quick release knife, bolt cropper, sludge hammer, heavy duty hacksaw, fire protective clothing, hand safety lamp and cabinet.</td>
<td>Minimum-4 Nos for (offshore installation) and need based replacement. For onshore, to be kept at fire station. Replacement need based.</td>
<td>For fire fighting jobs/body protection</td>
<td>To be kept as standby</td>
</tr>
<tr>
<td>11.</td>
<td>Raincoat / rainsuit with cap</td>
<td></td>
<td></td>
<td>1 No./3 yrs.</td>
<td>Body protection from rain</td>
<td>Light weight of reputed brand</td>
</tr>
<tr>
<td>12.</td>
<td>Woolen jersey / jacket</td>
<td></td>
<td>100% pure wool for jersey / Polyurethane jacket with inside cotswool lining.</td>
<td>1 No./3 yrs.</td>
<td>Body protection in winter</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Safety goggles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>Grinding</td>
<td>IS7524</td>
<td>Impact resistant &amp; thermally toughened glass, suitable to be worn over normal spectacles.</td>
<td>As &amp; when required</td>
<td>eye protection</td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>Gas cutting</td>
<td>IS1179-67</td>
<td>Thermally resistant &amp; protection from radiation</td>
<td>- do -</td>
<td>eye protection</td>
<td></td>
</tr>
<tr>
<td>c)</td>
<td>Welding screen</td>
<td>IS1176-76</td>
<td>Thermally resistant &amp; protection from radiation</td>
<td>- do –</td>
<td>eye &amp; face protection</td>
<td></td>
</tr>
<tr>
<td>d)</td>
<td>Chemical handling</td>
<td>IS5983-80</td>
<td>Suitable for chemicals handling</td>
<td>-do –</td>
<td>eye protection</td>
<td></td>
</tr>
<tr>
<td>e)</td>
<td>Dust</td>
<td></td>
<td>Approved mask shall be provided.</td>
<td>-do-</td>
<td>eye &amp; face protection</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Sl. No</th>
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<th>Salient Features</th>
<th>Quantity and Replacement Norms</th>
<th>Purpose</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Ear muff with head band</td>
<td>IS6229-80</td>
<td>Noise protection should be made of high impact polypropylene for rugged use. No metal parts to be used. Should attenuate sound level by 30 to 30 db.</td>
<td>1 No./yr./per person at designated place</td>
<td>Ear protection</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Ear plug</td>
<td>IS9167-79</td>
<td>Moisture &amp; heat resistant. Should be made of soft pliable, non allergic rubber should reduce sound level by minimum 17 db.</td>
<td>Ear protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Gas mask</td>
<td>IS8318-77</td>
<td>20 nos on each offshore installation to be replaced before expiry date.</td>
<td>Nose/face protection</td>
<td>For offshore</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Escape mask</td>
<td>IS8318-77</td>
<td>1 No./per person / 5 yrs or as per manufacturer’s recommendation</td>
<td>Eyes, head &amp; respiratory tract</td>
<td>For offshore</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Safety mask chemical</td>
<td></td>
<td>Should be of replaceable cartridge type.</td>
<td>As &amp; when required</td>
<td>Nose/face protection</td>
<td>For chemical hazard only</td>
</tr>
<tr>
<td>19</td>
<td>Safety torch</td>
<td></td>
<td>Hand held approved type Leak proof Standard dry cell.</td>
<td>Min. 5 Nos. for offshore installation and Min. 3 Nos. for onshore installation. Replacement on need basis</td>
<td>Suitable for hazardous /Hydrocarb on Atmosphere</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Fireman personal kit</td>
<td>SOLAS Regn1 11-2</td>
<td></td>
<td>One set for each fireman</td>
<td>Self protection</td>
<td></td>
</tr>
</tbody>
</table>
5.0 LIFE SAVING APPLIANCES:

5.1 GENERAL INFORMATION

5.1.1 LIFE BOAT
Self propelled, totally enclosed survival craft, capable of sailing through fire & smoke, to be equipped with food, water, pyro techniques and communication system etc as per SOLAS regulation 1974 amended to latest addition. Minimum. two per installation. Lifeboat shall accommodate twice the number of persons on board. It should be inspected yearly by surveyor.
During evacuation drill it should be ensured that boat should not be lowered with more than four person on board. During maintenance it shall be hanged on maintenance slings. Pyro-tech item shall never be operated inside the boat.

5.1.2 LIFE RAFT
The life raft should inflate completely as a canopy when dropped in the sea in emergency. The persons on board can evacuate the platform through life raft.

a) The raft is having twin buoyancy chamber. Each chamber is capable of supporting the person’s up to certified capacity of raft i.e. 6 and 20 persons respectively.
b) The buoyancy chamber and the floor fabric should be of high quality rubber coated fabric certified by government recognized Test House.
c) Outer Canopy is made from highest quality coated fabrics of fluorescent orange colour having excellent air retention properties and good weather resistance.
d) Integral boarding ramp and ladder is incorporated to facilitate rapid entry into the life raft as per SOLAS specification in force.
e) All other important features like water pockets, rainwater catchment system, observation port with marker light retro-reflective tape shall be provided as per SOLAS recommendation. MMD approved Radar reflector with patch shall be provided.
f) All other accessories to be provided as per latest international convention to the SOLAS amendments in force for ‘B’ part raft.
g) The raft with all accessories will be supplied in rigid / FRP / GRP container having Nylon Securing Bell and quick release house snap. Both items are manufactured under warranty by their principal.
h) The raft along with container will be drop tested and certified for minimum 25-30 meters drop. Certificate will be provided at the time of inspection.
i) Each raft will be filled with certified painter line of 50 meters length.
j) Rafts are required to be manufactured as per SOLAS recommendation and the International Standards, and should give 10 years guarantee against all manufacturing defects.

Rafts shall be equipped with “B” type full emergency pack as per SOLAS recommendation, latest IMO Resolution approved by MMD / DOT with maximum shelf life of life rafts incorporating a single gas cylinder for quick inflation with serial number embossed. The rafts shall inflate completely within the prescribed limits.
The Neck Valves and Operating Heads should be as per Solas and have MMD / DOT approval besides each unit to be individually certified for 10 years life.

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First Aid Kit and Pyrotechnics provided along with the rafts will no case be 3 months older at the time of delivery of raft (First Aid Kits are of their Principals Own Manufacturer and the Pyrotechnics are directly imported by them).

Thermal protective Aid provided in the raft will be “ASOTHERM” make or another reputed make. Serial number of the raft will be displayed over the container in waterproof ink on a plate at 2 places. Company name to be written with waterproof ink over canopy in 3” prominent letter should be provided.

Each raft shall be certified by MMD and the original copy of the certificate to be provided at the time of inspection.

Normally a good quality life raft has the following special features:

**SPECIAL FEATURES:**

1. Have “THANNER” World Famous valves with serial number embossed on them and having individual certificate for 10 years service life.
2. Life rafts light should be with lithium batteries having self life of 5 years.
3. Life rafts can be serviced in India (important cities) by their Principals Servicing Stations as well as at Major Ports.
4. Raft should be provided with Retro effective Tape which is DOT / MMD approved.
5. Life rafts should have 12 years guarantee / warranty certificate and also to be provided with one set of catalogue and literature along with the material for ease of identification and usage.

**5.1.3 SCRAMBLE NET**

1. **Material**: Nylon rope as per IS 4572 – 1982.

2. A) **Size of Net**: Rope size : 18.0 mm Net size : 3.7 M (width) X 20 M (long)
   - Mesh size : 250 mm FRP core size : 50 mm OD & 40 mm ID & Length as per drawing.
   - Float size – 190 mm X 150 mm X 55 mm hole.
   - B) **D-shackle**: Alloy steel (grade – 4140 conforming to IS 6132) . D = 16 mm d = 14 mm S = 49 mm W = 22 mm Screw in with eye SWL = 2 ton
   - C) **Hooks**: Spring loaded iron hook. Hot galvanized with lock arrangement.

3. **Construction**:
   - a) Plastic covered FRP core at 4 m. with minimum three float. Floats should not come in same mesh in subsequent core. No float required in last two cores.
   - b) Total 3 hooks having spring loaded lock arrangements with D – shackle will be provided.

4. **Cover**: Suitable tarpaulin cover to be provided to cover ¾ th the net when in rolled condition for safety from rain & sun. Suitable fixing arrangement to be provided.

5. **Marking** : The following information shall be printed or tagged on top of the scramble net.
   - a) Manufacturer’s Name.
   - b) Size, length & width.
   - c) Year of manufacture.

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5.1.4 ESCAPE ROPE LADDER

1. Description:
   a) The rope of the ladder made of ¾" dia Nylon rope as per IS 4572-1982.
   b) All the aluminium rods for steps should be as per IS 733 of 1966 or latest and having a spiral scarration at ½" distance, 1.0 mm deep, to make it non skid.
   c) The ends of aluminium rods should pass through the Nylon rope and should be guided by two aluminium collars which are fixed with circlips and pins.
   d) The details of collar steps etc. are shown in the steps details of drawing.
   e) One end of the ladder should have rope of length 6 ft. and other end should have rope spliced in loop.
   f) Total length of ladder should be 70 ft. (Excluding the rope of 6 ft. for tying on the deck)
   g) Steps should be at every one foot (min. 65 steps to be provided)
   h) Steps should be as per the drawing.

5.1.5 JUMPING ROPE

Material
Jumping ropes are to be made of Nylon material confirming to IS – 4572 of 1982.

Size
a) Rope:
   i) Circumference of the rope = 75 mm (approx) Diameter of the rope = 24 mm (approx)
   ii) Length of Jumping Rope to be around 19.0 meters with knots. One end of the rope should be spliced and fixed with 50 mm dia M. S. Galvanized Eye and Dee shackles (as per Drawing). Other end should have minimum ten knots in interval of 300 mm.
   Rope should have 03 strands.

b) Dee Shackle:
   Having IS – 6132, Grade – 6140 Eye size : 50 m dia of M. S. Galvanized body – 24 mm and 28 mm dia pin. jaw inside width(W)–40 mm inside length(V)–88 mm

5.1.6 PERSONNEL LIFTING NET

1. The personnel lifting net should be able to carry persons along with their baggage and shall be certified for Maximum Test Load for 12500 LBS & Safe Working Load for 5600 LBS by any recognized certifying agency like ABS/LLOYDS/DNV etc.

   The overall length of the Net should be 33 ft.

2. The lifting net should contain the followings :-
   a) Top Lifting Ring:
      Forged steel ring, weldless 7/8" dia with 5 ½" ID and 7 ¼" OD approx.

   b) Stabilizer Unit:
      This unit should be covered with Canvas bags and must be protected for sea weather condition. The stabilizer should have elastic and resilient properties to

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ensure proper performance in rough seas. One safety load line of ½” dia conforming to API standard 9A is to be connected across the stabilizer material with hand spliced eyes at both ends to work as main load line. This rope should be corrosion resistant. This unit should also be provided with another safety load line of steel wire rope of size 5/8” dia conforming to API standard 9A which will take care of the unit in case of failure of main load line. This wire also is corrosion resistant. The length of stabilizer unit is approx 22 ft.

c) Bottom Lifting Ring:
Forged steel ring weldless 7/8” dia having approx. 4” ID X 5 ½“ OD.

d) Netting Line:
It consists of ¾” dia polypropylene ropes which should be tested not less than 9950 lbs. test each and should be treated for UV resistant.

e) Top Padded Ring:
Ring overall dimension with padding is 30”. It consists of heavy duty anti-corrosive alloy pipe ring impregnated in synthetic, shock absorbing, flotation padding material. This flotation material should be having no effect on sea weather condition. The distance between bottom lifting ring to top padded ring is approx 2 ft.

f) Bottom padded Ring:
Overall dimensions with padding is 72” dia. It consists of 2 nos. heavy duty anti-corrosive alloy pipe ring impregnated in synthetic shock absorb, flotation padding material. It should have enough buoyancy to float 5 (five) men. T ce between top padded ring to bottom padded ring is 9 ft approx. Bottom of the net must be have 05 rubber chaf pads.

g) Cross Netting Line:
For each group of 5 nos. of netting lines, a total of 8 nos. of cross netting lines of ¾” dia propylene ropes at a regular interval will be provided. This line should be tested not less than 9950 lbs. Test each and should be treated for UV resistant.

h) Entrance:
Total 04 (four) entrances to the persons should be provided.

5.1.7 LIFE BUOY

1. Material:
Poly-urethane foam filled life buoy having outer skin of tough durable polythene.

2. Feature:
A. The life buoys should meet SOLAS – 1983 regulations with latest amendments.
B. Grab line should not be less than 9.5 mm in dia and not less than 4 times the outside dia of the body of the buoy in length. The grab line shall be secured at four equi-distant points around the circumference of the buoy to form four equal loops. The life buoy should have provision for replacement of grab line if required.

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C. It should be orange in colour.
D. The life buoy should not sustain burning or continue melting after being totally
   enveloped in a fire for a period of 2 seconds.
E. Each life buoy shall be provided with 50 mtrs. of life line of 8 mm dia
   polypropylene rope / (orange in colour)
F. 3 m. retro reflective tape as per latest SOLAS regulation to be provided.

3. Dimension & Weight :
   The life buoy should have an outer diameter of not more than 800 mm and an inner
diameter of not less than 400 mm. The weight of the life buoy should not be less
than 2.5 kg. It should have a minimum buoyancy of 14.5 kg. & should be able to
support two average weight persons in fresh water.

4. Approval :
   Life buoy must be approved by MMD or Dept. of Transport Marine Division, UK or
   such similar certifying agencies.

5. Drop test :
   It should be constructed to withstand a drop into the water from the height of 30
   meters or more and certificate to be provided with the bid.

5.1.8 LIFE BUOY LIGHT

1. Life buoy light should be sea water activated with lithium battery conforming to latest
   international requirements of SOLAS/DOT/MMD.
2. Light output – 2 candles in all directions at a rate of not less than 50 flashes per
   minute and source of energy should be capable for providing this light for a minimum
   period of two hrs.
3. Lamp – 3v, 3w.
4. The light should have buoyancy chamber with lamp units and a lithium battery. The
   unit should have long time shelf life (more than 3 years) and should withstand wide
   range of temperature and humidity conditions.
5. The unit should be provided with mounting brackets and provisions for attaching with
   life buoy by a rope.
6. Dimension – 184 mm X 76 mm (approx)
8. Lights should be capable of withstanding the drop test as required by Solas regulation.

5.1.9 LIFE JACKET

1. Material :
   Polyfoam Life Jacket made from foam blocks and should be packed in suitable nylon
   fabric of orange colour.

2. Features:
   a) Jacket should be approved. by MMD/DOT/US Coast Guard or any authorized
      certifying agency and suitable for person over 100 kg. in weight.

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b) Jacket should have buoyancy of 16 kg, plus and should not reduce by more than 5% if submerged in fresh water for 24 hours.

c) Bottom of life jacket foam should be wedge / tapered.

d) Life jacket shall be capable of being warm inside-out or is clearly capable of being warm in only one way and as far as possible cannot be donned incorrectly.

e) Life jacket should allow to wearer to jump from a height of at least 4.5 m into the water without injury and without dislodging or damaging the life jacket.

3. Performance
   a) Life jacket should be able to lift the mouth of an exhausted and unconscious wearer not less than 120 mm clear of water with the body and places the head inclined backward at an angle of not less than 20 degree and not more than 50 degree from the vertical position.
   
b) It turns the body of an unconscious person in the water from any position to one where the mouth is clear of the water in not more than 5 seconds.

4. Other accessories
   a) Life jacket should be fitted with whistle formally secured by a cord.
   b) Life jacket light to be fixed on one side to make both side front.
   c) Life jacket lights should have following specifications:
      I. It should have a luminous intensity of not less than 0.75 Cd for a period of atleast 08 (Eight) hours.
      
      II. It should have a luminous cell having a shelf life of about five years. At the time of delivery, the manufacturing date of the light should not be more than 03 (three) months old.
      
      III. Each light unit should have an automatic electronic water activation system and should be capable to work between −1 deg.C to + 30 deg. C.
      
      IV. Each unit should have detachable light bulb to be fixed with crocodile clip.
      
      V. On each light, the expiry date of the battery should be clearly mentioned.
      
      VI. Warranty certificate of the shelf life of the battery and complete unit to be submitted at the time of inspection.

   d) Six reflectors DOT/MMD/US coast guard or any authorized certifying agency approved should be provided on each side as per latest SOLAS regulations.
   e) Polyester yarn No. 12/2 wrap-way 68 white colour, with 25 mm should be used for webbing’s stainless steel / PVC webbing ring, should be used.

5.1.10 SAFETY BELT

Type:
General purpose (GP) Harness safety belt as per IS 3521-1983 type – 2.
Material / Dimensions / Construction:

   a) All belts and harness should be made form Nylon or other synthetic material such as polyester. The material should have a uniform thickness and uniform width. This material shall not break under a minimum tensile load of 2000 kg.

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b) Safety belts should be having two cross adjustable shoulder straps and waist strap of minimum width and thickness should be 44 mm and 3 mm respectively fitted with 3 buckles with galvanized and PVC coated to avoid sparks. A ‘D’ ring should be provided on the back to which the safety line is attached. Nylon webbing to be used should be approx 5.0 m.

c) The material of life line will be strictly Nylon rope conforming to IS – 4572 of 1982 (proof to be submitted). Life line should be attached with the belt by hand splicing covered with the leather. Length will be 3 mtrs. and it should not break under minimum tensile load of 2000 kg. The dia is 12 mm(min).

d) It should be constructed as per IS –3521-1983 type – 2.

   Marking :
   Each safety belt to be marked in convenient place so that it can be easily find out the following :

   i) Name of manufacturer.
   ii) Year of manufacture.
   iii) Type of belt.

5.1.11 EYE / FACE WASH FOUNTAINS

1. Combination of push plate operated Eye / Face wash fountain and pull rod operated Drench shower.

2. The material of construction of the entire unit should be of stainless steel (SS 304).

3. The unit should contain twin cushion – flow atomizers with pop off covers and automatic flow compensators.

4. Both the eye / face wash fountain and shower should operate independently.

5. The unit should have appropriate sizes of valves for supply, drain etc. and should be tested and certified (by BIS) as per IS : 10592 – 1982. Documentary evidence for the same should be submitted along with the offer.

5.1.12 WORKVEST

1. All floatation material should be coated with VINYL which is tough fire resistant, self extinguishing and highly abrasion resistant and can be easily cleaned. At the same time it should be unaffected by oil, grease or basic chemicals.

2. Adjustable 1 ¼” black nylon web strobes securely sewn with nylon thread, which is rot and mildew proof.

3. Heavy duty manganese bronze hardware, corrosion resistant.

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4. All straps should be moulded inside of floatation material.

5. The design of work vest should be such that a man can be lifted comfortably from water simply by attaching hook on line either shoulder strap and with no distortion to the floatation material.

6. The item should be approved by MMD / US Coast Guard.

7. Buoyancy and stability of the work vest should be sufficient to hold body of persons having normal weight (normal weight 75 kg.) in calm fresh water.

8. Design of work vest should be such that it is easy to wear and comfortable for use while at work.

9. Sea water absorption by the work vest should not be more than 5% by weight over a period of 24 hrs. in water.

10. It should be fitted with Retro-Reflective tape as per latest SOLAS regulations & IMO regulations.

5.1.13 LIFE LINE FOR LIFE BUOY

1. Material : Polypropelene
2. Color : Orange
3. Diameter : 8 mm
4. Length : 50 m
5. Breaking strength : More than 5 kN
6. It should fulfill SOLAS guidelines & its subsequent amendments

5.1.14 JUMPING ROPE TIE-UP CHAIN

1. Material :

   It shall be of an alloy steel & shall contain at least one of the following alloying elements or their equivalent
   a) Nickel
   b) Chromium
   c) Molybdenum.
   It should be made as per IS – 6217-1982 and should be marked and stamped with ISI mark.

2. Size of
   i) Chain Link :
      14mm nominal size x 50 mm (approx) Internal length x 47 mm outside (apron widths per IS 6217-1982).
   ii) Intermediate Link :

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16 mm nominal size x 70 mm (approx) Internal length & 72 mm (approx). Outside width, as per IS 2760 – 1984.

iii) Master Link:
   25 mm nominal size x 135 mm (approx) Internal length x 125 mm (approx). Outside width, as per IS 2760 – 1984.

iv) D-shackle:
   Screw Pin type inside width = 40 mm inside length = 88 mm body material dia = 24 mm pin dia = 28 mm eye outside dia = 56 mm as per IS 6132 (part II) – 1972.
   Material : Alloy steel Hot dip galvanized.

3. Safe working load : 5.0 Tones.
4. Finish : Hot dip Galvanized
5. Construction:
   Chains are to be made with alloy steel (hot dip galvanized links). As per IS 6217-1982. Both ends of the chain connected with a intermediate link 16 mm as per IS 2760-1984 & a master link of 25 mm as per IS 2760-1984. One ‘D’ shackle of 24 mm as per IS 6132 (part – II) – 1972 is to be connected in one end. Detail drawing is shown in Annexure – ‘A’.

6. Effective length of chain:8.0 meter (0.5%+)

5.1.15 SAFETY TORCH

1. Safety torch will be suitable for use in hazardous area where Hydrocarbon gases are present.

2. It will be suitable for Marine Environment.

3. It will be explosion proof and intrinsically safe.

4. Safety torches will be used with 3 nos. leak proof standard dry cell.

5. Its body will be made from non-metallic, Non abrasive and impact resistant. It should have approval from DOT/MMD/DOMS/DGMS/CMRS-DHANBAD/ASTMF-1014-86 TYPE-III standard. (Approval certificate to be provided at the time of inspection).

6. Each torch to be packed in the card board packing and after that these are to be packed in wooden / card board box for delivery.

5.1.16 LIFE JACKET LIGHT

1. Each life jacket light should have a luminous intensity of not less than 0.75 cd.(Candles)

2. Each light should have a source of energy capable of providing a luminous intensity of 0.75 cd for a period of atleast 8 hrs.

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3. Each light should have lithium cell having a shelf life of about 5 years.

4. Each light unit should have an automatic electronic water activation system and should be capable to work between – 1 Deg. C to + 30 Deg. C.

5. Each unit should have detachable light bulb to be fixed with crocodile clip.

6. One ring to be provided with a chord attached to the unit for actuation.

7. On each light, the expiry date of the battery should be clearly mentioned.

8. Warranty certificates of the shelf life of the battery and complete unit to be submitted at the time of inspection.

### 5.2 LIFE SAVING APPLIANCES (SPECIFICATIONS & NORMS)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Item</th>
<th>Std./ Insp./ Testing</th>
<th>Salient features</th>
<th>Qty /frequency</th>
<th>Purpose</th>
<th>Remarks</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Life Boat</td>
<td>Regn. 41, 44,45,46</td>
<td>Self propelled, totally enclosed survival craft, capable of sailing through fire &amp; smoke in the area, to be equipped with food, water, pyrotechniques and communication system etc as per</td>
<td>Minimum. 2 per installation. To accommodate twice the no. of persons on board. Yearly inspection by surveyor.</td>
<td>Evacuation in emergency</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Section IV, Chapter III, Solas 74 amended till 1999</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Life raft</td>
<td>Regn. 38, 39,40 of Section. IV Chap III, Solas 74 amended till 1999</td>
<td>Buoyancy chamber &amp; floor fabric must be of quality rubber coated fabrics duly certified regulations. Inflated in emergency using painter line after dropping in sea.</td>
<td>To accommodate all persons on board. Yearly servicing required and certification by MMD. Replacement every 10 yrs or when unserviceable</td>
<td>Evacuation in emergency</td>
<td></td>
</tr>
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<tr>
<td>3</td>
<td>Scramble net</td>
<td>Nylon rope as per IS4572-1982</td>
<td>Net made of nylon rope and fixed with deck support facing sea.</td>
<td>Replacement in 3 yrs.</td>
<td>Escape in emergency</td>
<td>Preferably should be treated from UV rays.</td>
</tr>
<tr>
<td>4</td>
<td>Escape rope ladder</td>
<td>Nylon rope as per IS4572-1982</td>
<td>Made of nylon rope, of 3/4” dia to be used as ladder as means to evacuate the platforms to board the life raft/OSV.</td>
<td>Replacement in 3 yrs.</td>
<td>Escape in emergency</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Jumping rope</td>
<td>Nylon rope material as per IS 4572-82</td>
<td>To enable jumping from platform’s boat landing deck to OSV / boat and vice versa.</td>
<td></td>
<td>Transfer from one place to another.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Personnel lifting basket</td>
<td>Third party inspection required.</td>
<td>For transfer of personnel from platform deck to OSV / MSV / Boat and vice versa.</td>
<td>Replacement every 2 yrs. &amp; inspection and certification after one year</td>
<td>Transfer of personnel from platform to OSV / MSV / Boat and vice versa. Also for transfer of small material</td>
<td>Basket to be kept under shed and not exposed to rain.</td>
</tr>
<tr>
<td>7</td>
<td>Fast rescue boat</td>
<td>Reg.47, Section V, chap. III Solas 74 amended till 1999</td>
<td>Open boat, speed 25 nautical miles, installed on OSVs and MSV’s. Lowered on water with launching mechanism.</td>
<td></td>
<td>For search and rescue emergency.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Helicopter rescue kit</td>
<td>DGCA guidelines</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>9</td>
<td>H2S personal detector</td>
<td></td>
<td>Shall be capable of giving audible alarm, in case H2S in area is increasing beyond threshold limit</td>
<td>One for eachoperator working in hazardous area.</td>
<td>For knowing the presence of hazardous gases.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Breathing apparatus (a)</td>
<td>IS 10245 – 1982</td>
<td>Positive pressure, self contained for minimum 30 minutes use.</td>
<td>1 No.for each person in H2S prone area in offshore.Minim um 20 Nos at each offshore installation. For onland 4 sets to be kept in fire station or as per need.</td>
<td>Self rescue and emergency evacuation.</td>
<td>Should be of approved type from reputed bodies/agency</td>
</tr>
</tbody>
</table>

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<tr>
<td>10</td>
<td>Respiratory Equipment</td>
<td></td>
<td>Device is fitted with mechanical blower, hoses etc.</td>
<td>As per requirement</td>
<td>Required for continuous supply of air.</td>
<td></td>
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<tr>
<td></td>
<td>Air Purifying equipment</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>i) Mechanical filter respirators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Air supplying Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>ii) Hose mast with blower/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>without blower</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>iii) Continuous flow respirator</td>
<td></td>
<td></td>
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<td></td>
<td>iv) Demand type respirator</td>
<td></td>
<td></td>
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<td></td>
<td>v) Pressure demand type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>respirator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Supplied Air suits</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>11</td>
<td>Fall Prevention Device</td>
<td>OSHA – 1100</td>
<td>Should have notched rail attached to the climbing object and lock sleeve with a locking paw attached to the climbers' belt.</td>
<td>Prevention of fall during ascending / descending the ladder.</td>
<td>For use on rig, communication on towers and other tall structures.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Emergency Escape Device</td>
<td></td>
<td>Access to cage from monkey board should be easy and trouble free and should have 2 independent braking systems. Guy rope angle should not be more than 45 deg.</td>
<td>1 unit for each drilling / workover rig.</td>
<td>Topman escape during emergency.</td>
<td>Unit's capacity should be for escape of 2 persons together. Landing base have arrangement for soft landing.</td>
</tr>
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<td>13.</td>
<td>(A)Life buoys</td>
<td>Regn.31, chap III, Solas 74 amended till 99</td>
<td>Should be made of tough durable polyethylene and fitted with polyurethane foam. Colour orange. Minimum buoyancy 14.5 Kg and duly approved by concerned authority. Light output of 2 candles in all directions at a rate of not less than 50 flashes per minute. Made of polyurethane of 8 mm dia., 50 m to Life buoy</td>
<td>Replacement every 3 yrs.</td>
<td>Personnel floating device thrown into sea when man overboard.</td>
<td></td>
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<tr>
<td></td>
<td>B)Life buoy light</td>
<td></td>
<td></td>
<td>Replacement every 2 yrs.</td>
<td></td>
<td>Attached to life buoy for guiding life buoy thrown into sea</td>
</tr>
<tr>
<td></td>
<td>C)Lifeline for life buoy</td>
<td></td>
<td></td>
<td>Replacement every year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Life jackets</td>
<td>Regn.7, 32 chap III, Solas 99</td>
<td>Personnel floating device made of polyethylene shall have buoyancy of 16 kg. Plus suitable for person of 100 kg.</td>
<td>Twice the no. of persons on board</td>
<td>Personnel floating device</td>
<td>Should be approved by agency/reputed body.</td>
</tr>
<tr>
<td>15.</td>
<td>Safety belt</td>
<td>IS 3521 – 89</td>
<td>Should have 2 cross adjustable shoulder straps and waist strap, type II of general purpose use</td>
<td>4 Nos. each on drill rig, 2 Nos. each on workover rigs, 8 nos. each on offshore rig / Installation.</td>
<td>Prevention of fall from height.</td>
<td>Should be of DGMS/IS spec approved.</td>
</tr>
<tr>
<td>16.</td>
<td>Eye wash facility</td>
<td>IS 10592 – 91</td>
<td>Should be push plate operated eye/face wash fountain. Facility required near chemical handling area &amp; on drilling rigs.</td>
<td></td>
<td>Used for washing and cleaning of eyes/face due to chemical spills.</td>
<td></td>
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<td>17.</td>
<td>Communication facility</td>
<td></td>
<td>Effective mode of communication necessary.</td>
<td></td>
<td>At the rig between top man and rig floor. Between other operational areas as per need.</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Work vests</td>
<td></td>
<td>Combination of life jackets and safety belts.</td>
<td></td>
<td>For working at elevated places</td>
<td></td>
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<tr>
<td>19.</td>
<td>Tieup chains for Jumping ropes</td>
<td>Made of Stainless Steel/ Alloy Steel as per IS 6217-82</td>
<td></td>
<td></td>
<td>Used for fixing jumping ropes</td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Life jacket lights</td>
<td></td>
<td>Should have luminous intensity of not less than 0.75 cd. Capable of providing light for 8 hours.</td>
<td></td>
<td>Replac ement every 5 yrs.</td>
<td></td>
</tr>
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</table>
6.0 Reference:

1. Solas regulation 1974 amended up to date.
2. IS standard as indicated in tables