

**LIBERIA
CIVIL AVIATION REGULATIONS**

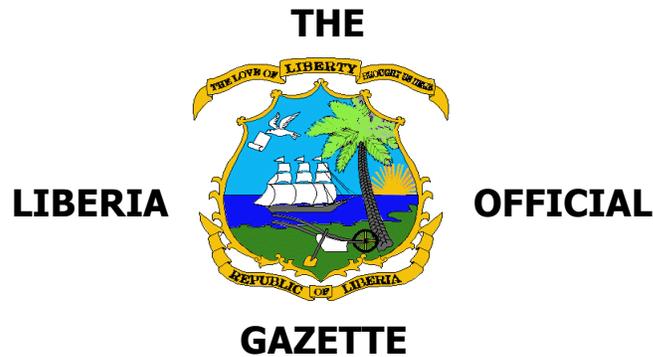


**PART 13.8
AERODROMES
(HELIDECK AUTHORIZATION)**

EDITION 1.0

JULY 2021





PUBLISHED BY AUTHORITY

VOL. XXI WEDNESDAY, AUGUST 11, 2021 NO. 46

EXTRAORDINARY

The Government of the Republic of Liberia announces that the Liberia Civil Aviation Authority, pursuant to its mandate under the Liberia Civil Aviation Act of 2019, and specifically consistent with Subchapter XII, Section 1218 (1), has issued on August 11, 2021 its Regulation N0. LCAA/LCAR/001/2021, herein under:

CONCERNING LIBERIA CIVIL AVIATION REGULATIONS

BY ORDER OF THE PRESIDENT

AMB. DEE-MAXWELL SAAH KEMAYAH, SR.
MINISTER OF FOREIGN AFFAIRS

MINISTRY OF FOREIGN AFFAIRS
MONROVIA, LIBERIA



AUTHORITY TO PROMULGATE CIVIL AVIATION REGULATIONS

IN EXERCISE OF THE POWERS CONFERRED ON THE DIRECTOR GENERAL OF LIBERIA CIVIL AVIATION AUTHORITY UNDER THE LIBERIA CIVIL AVIATION ACT OF 2019 THESE REGULATIONS ARE MADE.

DATE: 13th July 2021



SIGNATURE: _____

Hon. Moses Y. Kollie
DIRECTOR GENERAL

PART 13.8 - HELIDECK AUTHORIZATION

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SUBPART A - GENERAL

13.8.1 APPLICABILITY

- (a) The Liberia Civil Aviation Authority is responsible for the safety regulation of civil air operations in Liberia territory under the Civil Aviation Act, 2006 (Revised 2019) and the operation of Liberian registered aircraft. As such LCAA is responsible for helicopter safety during landing and taking off from offshore facilities, and the competence of the helicopter crew.
- (b) The role of LCAA is not expanded to include structural integrity of offshore installations, as such, it will accept installations that have certified by Liberia Maritime Authority or recognized international classification organization.
- (c) This section of LCAR Part 13.8 deals with requirements and procedures for authorization of helidecks on installations and vessels.
- (d) This section addresses the regulatory requirements and enforcement affecting Offshore Installation operators, mobile offshore drilling unit (MODU) owners and, where appropriate, vessel owners.
- (e) If a helicopter operator finds serious failings and deficiencies in the facilities, he may decide not to authorize the helideck for use by Flight Crews.
- (f) Offshore helidecks fall within the definition of ‘uncertified aerodromes’ and are outside the CAA certification remit. However, the CAA will monitor any items of non-compliance with the helideck physical characteristics and emergency equipment requirements.
- (g) The LCAA will however assess and inspect helideck designs and apply appropriate operational restrictions where there are non-compliances. The LCAA monitors the operations of Helidecks through its regulation on helicopter operators. It is therefore important to realize that non-compliance with this Regulation may result in significant loss of helicopter operational flexibility (e.g. reduction in available payloads or even a landing ban in certain weather conditions).

13.8.2 DEFINITIONS

- (a) The following are definitions of terms used in this part:
 - (1) **Aiming Circle.** Described in other publications as ‘landing circle’ or ‘touchdown/position marking’; the aiming point for normal landing, so designed that the pilot’s seat can be placed directly above it in any direction with assured main and tail rotor clearances.
 - (2) **Aircraft Operator.** Company operating helicopters.
 - (3) **Air operator certificate (AOC).** A certificate authorizing an operator to carry out specified commercial air transport operations.
 - (4) **Class Societies.** Organizations that establish and apply technical standards to the design and construction of marine facilities including ships. Members of IACS are Class Societies that establish and maintain technical standards for the construction and operation of ships and offshore structures. The societies also validate that construction is in accordance with industry standards and carry out regular surveys in service to ensure compliance with

the standards.

- (5) **“Chevron” mark:** A mark stating the definitions of the obstacle free surface over the helicopter deck level at an angle of 210⁰.
- (6) **D-Circle.** A circle, usually imaginary unless the helideck itself is circular, the diameter of which is the D- Value of the largest helicopter the helideck is intended to serve.
- (7) **D-Value (D).**The ‘D’ value is the largest dimension of the helicopter when the rotors are turning and in a conventional helicopter with an exposed tail rotor; it is the distance from the front of the main rotor tip path to the rear of the tail rotor tip path. *Also see Perimeter D marking.*
- (8) **Final approach and take off.** Area surrounding a takeoff or landing point, usually includes air space around flight paths for final approach and take off phases of flight.
- (9) **Helideck.** A landing area on an offshore installation or vessel.
- (10) **Helicopter landing officer (HLO).** A person with a special training who is in charge of the daily work in connection with helicopter operations on an offshore installation.
- (11) **Independent Competent Persons (ICPs).** Individuals or Organizations that may be authorized by the LCAA to undertake verification of offshore helideck and facilities design and operations inspections and audits.
- (12) **Installation.** Oil/gas production platform or rig (also known as mining installation).
- (13) **Limited Obstacle Sector.** The 150° sector, within which obstacles may be permitted, provided the height of the obstacles is limited. Also referred to as Obstructed Sector of a helideck.
- (14) **Midship HLS.** A marine HLS the center of the FATO of which lies on the ship's longitudinal axis.
- (15) **Movement.** A landing or a lift off of a helicopter.
- (16) **Obstacle-Free Sector.** The 210° sector, extending outwards to a distance of 1000 meters within which no obstacles above helideck level are permitted. Also available is 180° Vertical Obstacle free Sector of a helideck.
- (17) **Offshore installation.** Platform or other installation on the sea. Off-shore installations include both stationary and mobile offshore installations.
- (18) **Offshore installation, mobile.** Offshore installation which can be moved from one position to another by sailing or towing and which is intended to be used in several different positions in its life, including the following vessels: drill ships, diving ships, floating production store and shipping units as well as cable and culvert vessels. The vessels thus being mobile offshore installations are collectively called vessels in this Regulation.
- (19) **Offshore installation, stationary.** Offshore installation permanently erected on the sea bed.

- (20) **Perimeter D Marking.** The marking in the perimeter line in whole numbers; i.e the D-Value (see above) rounded up or down to the nearest whole number.
- (21) **Run-Off Area.** An extension to the Landing Area designed to accommodate a parked helicopter; sometimes referred to as the Parking Area.
- (22) **Safe landing area (SLA).** The actual area on a bounded by the perimeter line and perimeter lighting The SLA is the area of a helideck is the actual area on a helideck that is contained within the WHITE Perimeter Line marking. Designation for the safe landing area in certain cases can be larger than the area defined by the D value.

Note: – 1. The safe landing area (SLA) must be big enough to accommodate the largest helicopter that the landing area is intended to serve. This does not necessarily mean that the SLA will be the largest possible ‘D’ circle that can be accommodated within the overall structural dimensions of a helideck.

*Note – 2. The construction of the OFS and LOS segments should ensure that the main rotor will not risk conflict with obstacles when the nose of the helicopter is butted-up to, but not projecting over, the perimeter line. Thus the pilot, when landing in unusual circumstances, has confidence that he can touch down provided that all wheels are within the SLA and the nose of the helicopter is not projecting over the nearest perimeter line ahead. It should be noted, however, that only correct positioning over the aiming circle (see ‘Aiming Circle’ above) will ensure proper clearance with respect to physical obstacles **and** provision of ground effect **and** provision of adequate passenger access/egress.*

- (21) **Ship's Side HLS.** A marine HLS that is located on the side of a ship.
- (22) **Verification Scheme.** A suitable written scheme for ensuring the suitability and proper maintenance of safety-critical elements. Also see Design and Operability Report in 26.8(b)(iii)

13.8.3 ACRONYMS

- (a) The following acronyms are used in this Part— (1).

- AOC – Air operator certificate
- (2). AFFF - Aqueous Film Forming Foam Agent.
- (3). DLCAA - Director General of Liberia Civil Aviation Authority
- (4). ERP - Emergency Response Plan
- (5). FPSO - Floating Production Storage and Offloading (6).
- FOD - Foreign object debris/damage.
- (7). ft – Feet
- (8). LCAA – Liberia Civil Aviation Authority (9).
- LCARs – Liberia Civil Aviation Regulations (10).
- HDA - Helideck Assistant
- (11). HLL - Helideck Limitation List
- (12). HLO - Helicopter Landing Officer
- (13). HOM – Helideck Operations Manual
- (14). IACS - International Association of Classification Societies

- (15). ICAO – International Civil Aviation Organization
- (16). IFR – Instrument Flight Rules
- (17). IMC – Instrument Meteorological Conditions
- (18). km – Kilometer
- (19). LOS - Limited Obstacle Sector
- (20). m – Meter
- (21). MSL – Mean Sea Level
- (22). MODU – Mobile Offshore Drilling Unit
- (23). NDB - Non-Directional Beacon.
- (24). nm – Nautical Mile
- (25). NOTAM – Notice to Airmen
- (26). OFS – Obstacle-Free Sector
- (27). PBE – Protective Breathing Equipment (28).
- RFF - Rescue and Firefighting Service. (29). RO -
Radio Operator.
- (30). R/T - Radio Telephony. (31).
- SAR – Search and Rescue
- (32). SMS – Search and **Safety** Management System
- (33). VFR – Visual Flight Rules
- (34). VMC – Visual Meteorological Conditions

13.8.4 REVOCATION

The Liberia Civil Aviation Authority may revoke authorization, if the conditions for obtaining the authorization are no longer met, and the conditions are not corrected within a time limit set by the Liberia Civil Aviation Authority.

13.8.5 EXEMPTION

The Liberia Civil Aviation Authority may in particularly exceptional cases grant exemption from the Regulations laid down in this part if it is deemed compatible with the considerations on which the Regulations in question are based.

SUBPART B — GENERAL OBLIGATIONS

13.8.6 OBLIGATIONS OF HELIDECK OPERATOR

- (a) The owner of an offshore installation on which a helideck is established, shall be responsible for the establishment, operation and maintenance of installations, equipment and services being performed in accordance with the provisions in this section of LCAR Part 13.8 and any special conditions stated in the heliport standards.
- (b) The manager of the offshore installation shall be responsible for the daily operation and maintenance of the helideck being performed in accordance with the heliport standards, the helideck manual and existing provisions, for observing the provisions in this Part and the instructions in accordance with subparagraph 26.55(e), and for persons employed in connection with helicopter operations having the necessary training and the necessary knowledge of existing instructions etc. Further the manager in question shall be responsible for notifying the Liberia Civil Aviation Authority and any helicopter operators of circumstances arisen that implies that the helideck no longer meets the provisions in this regulation. If the person in question estimates that such circumstances may lead to danger when using the helideck, the flying activities shall immediately be discontinued.
- (c) The helicopter landing officer (HLO) shall be responsible for observing the obligations resting with him under subparagraph 26.55(c).
- (d) The radio operator shall be responsible for attending to the correspondence with the helicopter pilots under paragraph 26.52(b)

13.8.7 OBLIGATIONS OF HELICOPTER OPERATOR

- (a) A Liberia registered helicopter shall not operate to an offshore helideck unless the operator has satisfied itself that the helideck is suitable for the purposes and it is properly described in the helicopter operator's operations manual.
- (b) Pursuant to paragraph (a), the legal responsibility for acceptance of the safety of landing site rest with the helicopter operator.
- (c) Where an AOC holder has established by inspection, or by other means, that a deficiency or combination of deficiencies relating to helicopter operations, then further operations to that installation must be suspended pending rectification. The LCAA must be notified in the event of any such suspension.

13.8.8 AUTHORISATION REQUIREMENTS

- (a) Before a helideck is taken into operation, it shall have been authorized by the Liberia Civil Aviation Authority. The LCAA normally inspects a helideck before authorization is issued, and supervises its operation.
- (b) The Liberia Civil Aviation Authority shall have received an application for approval of a helideck not later than one month prior to commencement of operation. The following information shall be enclosed:
 - (1) Specification of the largest helicopter type to be operated.
 - (2) Declaration substantiating that the load-bearing capacity of the helideck is sufficient for the helicopter type in question. The declaration shall be issued by Liberia Maritime

- Authority or recognized a classification organization.
- (3) Design and Operability Report, bearing signatures of the installation owner and duty holder. Appendix 2 to this Regulation provides template for developing Design and Operability Report acceptable to the Director General of the Liberia Civil Aviation Authority.
 - (4) Situation drawings with dimensions showing the entire offshore installation in plane and section views in a legible scale.
 - (5) Drawing of the helideck and its immediate surroundings. The drawing shall show the location of the obstacle free surfaces specified in paragraph 26.14 and any obstacles with specification of their height above the helideck surface.
 - (6) Drawings specifying the details of the helideck in accordance with subparts C and D.
 - (7) Description, specification of quantity and information on the positioning of the equipment mentioned in accordance with subparts E, F and G.
 - (8) Information on liability and instructions in accordance with 26.4, 26.7, 26.9 and 26.55.
 - (9) Copy of any approvals from foreign civil aviation authorities.
 - (10) Helideck manual for the stationary installations.
- (c) The Liberia Civil Aviation Authority may exempt an operator from requirements of subparagraph 26.8(b)(ii) if it is satisfied with the Design and Operability Report mentioned in 26.8(b)(iii).
 - (d) As a requirement for authorization, helideck must meet the requirements heliport standards and other requirements in this Regulation.
 - (e) The authorization is granted for a period of up to five years for helidecks on stationary offshore installations and up to one year for helidecks on mobile offshore installations.
 - (f) The authorization shall be revoked if the offshore installation leaves Liberia waters.
 - (g) If a previously approved helideck returns to Liberia waters area, a renewed authorization may be issued on the basis of a declaration from the owner stating that the helideck has undergone no changes since the latest approval.

13.8.9 NIGHT OPERATIONS RESTRICTIONS

At nights, single-engined helicopter should be used to transfer stores only. They should not be used to transfer personnel.

SUBPART C — PHYSICAL CHARACTERISTICS OF HELIDECK

13.8.10 REQUIREMENTS

- (a) A helideck for single main rotor helicopters shall be designed in such a way that all dimensions of the helideck are always larger than or equal the D value of the largest helicopter type using the helideck.

Note - The helideck structure should be designed to accommodate a safe landing area ('D' circle) suitable for the largest and heaviest helicopter that it is anticipated will use the helideck.

- (b) The operational needs of the installation, MODU or vessel and the helicopter crews, helideck crews and passengers should also be taken fully into account in the design.
- (c) The final helideck size, shape and configuration, should consider the following:
- (1) The safe landing area (SLA) should be positioned for optimum operational efficiency and clearance from obstructions. Also, the SLA should be positioned toward an appropriate outboard edge of the main structure so that overflying installation structures is avoided, and there are adequate clear landing and take-off sectors available
 - (2) Safe passenger access to and egress from a helicopter in both normal and emergency situations in all weather conditions
 - (3) Safely performing routine helideck crew activities such as refuelling, freight and baggage handling, firefighting and rescue, and maintenance requirements
 - (4) The need to provide a parking area for an unserviceable helicopter to make the landing area available for a 'recovery' aircraft should be seriously considered. This facility may be operationally desirable where alternate landing sites / arrangements cannot be easily obtained

13.8.11 LOCATION OF HELIDECK

A helideck shall be located in such a way that turbulence induced by the structure above and below the helideck platform in connection with strong wind is minimized as much as possible in the final approach and take-off directions for the helideck normally used. Further exhaust from gas turbines etc. shall be taken into consideration.

13.8.12 MAXIMUM SIZE AND MAXIMUM ALLOWABLE MASS

- (a) The maximum size (D-value) and allowable mass (t-value) of helicopter for which the helideck has been designed shall be stated in the Installation/Vessel Operations Manual and Verification and/or Classification document.
- (b) No helicopter using a helideck facility shall be more than the certified maximum size and mass of helicopter for which the helideck has been designed.

13.8.13 FINAL APPROACH AND TAKE-OFF AREA AND TOUCHDOWN AND LIFT-OFF AREA

A helideck shall be provided with at least one Final approach and take-off area and touchdown and lift-off area (TLOF/FATO).

Note. - On helidecks it is presumed that the FATO and the touchdown and lift-off area (TLOF) will be coincidental.

13.8.14 OBSTACLE FREE-SURFACES

- (a) A circle of diameter D (D-circle) equal to the largest dimension of the helicopter when the rotors are turning should be totally unobstructed.
- (b) Objects whose function requires that they be located on the surface of the landing area such as landing nets and lighting systems shall not exceed the surface of the landing area by more than 2.5 cm. Such objects shall only be present provided they do not cause a hazard to helicopter operations.
- (c) Before helicopter movements take place, all crane work shall cease and jibs, 'A' frames, etc. are positioned clear of the obstacle protected surfaces and flight paths.
- (d) A helideck shall be provided with an obstacle free sector of 210° above the helideck surface with origin in a defined point on the helideck periphery. The point shall be marked with a painted "Chevron" mark. There must not be any obstacles in the obstacle free sector at an angle of 210° above the helideck surface out to a distance of 1,000 m from the helideck.
- (e) For existing offshore installations it is acceptable that the obstacle free 210° sector is turned to each side $\pm 15^{\circ}$ relative to the symmetry line goes through the helideck centre and the "Chevron" mark.
- (f) Within the 210° sector there must not be any equipment penetrating a height above 25 cm measured relative to the helideck surface.
- (g) For existing offshore installations it is acceptable that the obstacle free 210° sector is turned to each side $\pm 15^{\circ}$ relative to the symmetry line goes through the helideck centre and the "Chevron" mark.
- (h) If the 210° sector is not turned, a turn of the 180° to each side, if relevant, is optional as mentioned in paragraph (g).
- (i) If the 210° sector is turned relative to the symmetry line mentioned in paragraph (g), a turn of the 180° sector can only be accepted if it is turned to the same side and at the same angle as the 210° sector is turned.
- (j) In the remaining 150° sector over the helideck surface an obstacle free surface shall be established consisting of two sectors called sector 1 and sector 2, respectively.
 - (1) Sector 1 stretches horizontally out to a distance of $0.62 \times D$ value calculated from the helideck centre. The height of the sector shall be $0.05 \times D$ value.
 - (2) If the safe landing area (SLA) covers a larger area than the declared D value, the origin of sector 1 shall be located at the helideck perimeter line ending at a distance from the perimeter line calculated by the formula $0.12 \times D$ value.

- (3) Sector 2 is defined by a surface with a positive gradient of 30° with origin located at the outer limit of sector 1 and ending at a distance calculated by $0.83 \times D$ value with origin in the helideck centre.
 - (4) If the safe landing area (SLA) covers a larger area than the declared D value, the origin of sector 2 shall be calculated by the distance $0.12 \times D$ value and the end by $0.21 \times D$ value, both distances calculated from the actual perimeter line of the helideck.
 - (5) Sector 1 as well as sector 2 will in all possible configurations be lines parallel with the edge off the helideck, including the edge off the safety net.
- (k) A helideck shall be provided with an obstacle free surface in level with and below the helideck platform in a sector of an angle of 180° out to a distance of 1000 m from the helideck. This sector's origin shall be located in the helideck centre and shall be provided with a sloping obstacle free surface originating from the helideck perimeter, including the edge of the safety net, down to sea level with a falling gradient of 5:1.

13.8.15 HELIDECK SURFACE

- (a) An adequate non-slip surface shall be provided for the whole of the helideck to ensure the safe movements of both helicopters and personnel. The landing area should have an overall coating of non-slip material and all markings on the surface of the landing area shall be made with the same non-slip materials.
- (1) The helideck surface shall have a coating ensuring that the coefficient of friction is at least 0.65. Coated surface may, however, be omitted if the helideck used is made of extruded aluminum profiles where the same friction conditions can be obtained by a worked-up or casted, fluted structure in the surface.
 - (2) The installation operator should ensure that the helideck is kept free from oil, grease, excessive surface water or any other contaminant, particularly guano that could degrade surface friction.
 - (3) Procedures shall be in place for elimination and removal of contaminants prior to a helicopter movement.
- (b) A helideck shall be equipped with adequate surface drainage arrangements around the safe landing area (SLA) of the helideck and a free-flowing collection system or gutter that will quickly and safely direct any rainwater and fuel spillage and/or fire fighting media away from the helideck surface to a safe place.
- (c) The helideck on mobile offshore installations shall be equipped with a kerb encircling the entire safe landing area (SLA). The kerb shall be perforated with appropriate numbers of holes to allow rainwater and fuel spills to pass the kerb down to the gutter. The kerb must not be of a height that shades the helideck edge lights in accordance with 26.30.
- (d) A helideck shall be equipped with tautly-stretched rope netting, made of natural products (sisal) to aid the landing of helicopters with wheeled undercarriages in adverse weather conditions. The rope net shall be located with midpoint in the centre of the aiming circle and shall be made of 20 mm rope with a mesh size of 200 mm.
- (1) The rope netting size shall depend upon the type of helicopter using the helideck.

However, only rope nets of the below-mentioned three sizes may be used:

- D value < 12 m: 9 x 9 m
- 12 m < D value < 20 m: 12 x 12 m
- D value > 20 m: 15 x 15 m

13.8.16 TIE-DOWN POINTS

- (a) A helideck shall be equipped with sufficient flush fitting (when not in use) or removable semi-recessed tie-down points to secure all types of helicopters operating on the helideck with respect to undesirable movements when parked.
- (b) Tie-down points shall be compatible with the dimensions of tie-down strop attachments.
- (a) The number and dimensions of the tie-down points shall be made in such a way as to ensure a helicopter in any weather situation which can occur at the locality. In connection with the dimensioning the inertial forces as additional forces shall be taken into account introduced by the vessel's or ship's own movements in the sea.

13.8.17 SAFETY NETS

- (a) Safety nets for personnel protection shall be installed around the landing area except where adequate structural protection against falls exists.
- (b) A helideck shall be equipped with a 1.5 m wide safety net on all sides, except for sections where the helideck is in level with large surrounding areas.
- (c) The safety net shall have a positive slope outwards and upwards of 10° and shall be mounted in such a way that the safety net protects persons on the helideck and at the same time does not exceed a height of 25 cm above the helideck level in accordance with LCAR Part 13.
- (d) The safety net shall be flexible and dimensioned so that it can stand any load that may occur if a person weighing 100 kg falls out in the safety net.
- (e) The safety net shall be designed to be able to produce a 'hammock' effect which should securely contain a body falling, rolling or jumping into it, without serious injury or not act as a trampoline.

13.8.18 ACCESS/ESCAPE ROUTES

- (a) A helideck shall be provided with at least two access/escape routes located so that, in the event of an accident, passengers can escape upwind of the landing area in all wind conditions.
 - (1) Landing orientation in relation to landing area access points shall be in a manner that will ensure that embarking and disembarking passengers are not required to pass around the helicopter tail rotor, or under the main rotors.
 - (2) Emergency access points shall be positioned to ensure that two major access points clear of the obstructions are always possible.
- (b) Adequacy of the emergency escape arrangements from the helideck should be included in any evacuation, escape and rescue analysis for the installation, and may require a third

escape route to be provided.

- (c) There shall be procedures employed to prevent inadvertent access to helidecks by passengers. In this regard, chains that may be used for the prevention of access shall be frangible.
- (d) Safety notices for ensuring clear deck and protection of passengers must be displayed at the access points.

13.8.19 WINCHING AREA AND OPERATIONS

- (a) For any installation or vessel, attended or unattended, fixed or mobile for which helicopter is a normal mode of transport for personnel, a helicopter landing area shall be provided.
- (b) Winching shall not be adopted as a normal method of transfer. If winching operations are required, they should be conducted in accordance with procedures agreed between the helicopter operator and the LCAA and contained within the helideck operator's Operations Manual.
- (c) Winching operations required for specific helicopter operator and operations in paragraph (b) shall be discussed well in advance. Such agreements are conducted under subsection 26.5 of this Regulation.

SUBPART D — VISUAL AIDS

13.8.20 HELIDECK NAME MARKING

- (a) The installation name marking should be provided at a helideck where there is insufficient alternative means of visual identification.
 - (1) The name of the installation should be clearly displayed in such positions on the installation so that it can be readily identified from the air and sea from all normal angles and directions of approach.
 - (2) Where an obstacle sector exists the marking should be located on the obstacle side of the “H” identification marking.
- (b) A helideck name marking intended for use at night or during conditions of poor visibility shall be illuminated, either internally or externally.

13.8.21 HELIDECK IDENTIFICATION MARKING

- (a) A helideck identification marking shall be provided at a helideck.
- (b) A helideck identification marking shall be oriented with the cross arm of the “H” at right angles to the preferred final approach direction. A white helideck identification marking ‘H’ marking should be marked co-located with the TD/PM with the cross bar of the ‘H’ lying along the bisector of the OFS.
- (c) Specifically the installation identification marking and side identification panels are used by pilots to obtain a final pre-landing confirmation that the correct helideck is being approached.

13.8.22 HELIDECK PERIMETER LINE

A helideck shall be provided with a perimeter line marking to contain and indicate the safe landing area (SLA). Helideck perimeter line marking and lighting serves to identify the limits of the Safe Landing Area for day and night operations.

13.8.23 HELIDECK WIND DIRECTION INDICATOR

- (a) A helideck shall be provided with a windsock located so that it is in a free wind field without noticeable disturbances from the surrounding structure, so as to indicate the clear area wind conditions at the installation/vessel location.
- (b) The windsock shall be illuminated for night operations so that it can be seen from all directions in all illumination conditions

13.8.24 HELIDECK SURFACE PAINTING AND DISPLAY OF D-VALUE

- (a) The helideck surface shall be painted in the colors dark grey or dark green. Helidecks of pure aluminum may, however, be unpainted if all other markings are surrounded by a 10 cm wide blackline.
- (b) The actual D value of the helideck shall be painted in white color in 3 positions around the

white perimeter line on the helideck. The D value shall be painted in alphanumeric symbols with a height of 60 cm and a line diameter of 10 cm.

13.8.25 MAXIMUM ALLOWABLE MASS MARKING

- (a) The approved load bearing capacity shall be painted on the helideck. Marking indicating mass of the heaviest helicopter allowable to use the landing area shall be displayed in a number painted in white color with a height of 90 cm and width of 12 cm.
- (b) The maximum allowable mass marking shall be located within the touchdown and lift-off area and so arranged as to be readable from the preferred final approach direction, towards the obstacle-free sector origin.
- (c) A maximum allowable mass marking shall consist of a two digit number followed by a letter "t" to indicate the allowable helicopter mass in tonnes (1 000 kg).

13.8.26 TOUCHDOWN/POSITIONING MARKING

- (a) A Touchdown/Positioning Marking (TD/PM), also known as the aiming circle, shall be provided on the surface of a helideck.
- (b) The marking shall be a yellow circle with an inner diameter of 0.5 of the certificated D- value of the helideck and a line width of 1 meter. The center of the marking should be concentric with the center of the D-circle.

Note: On a helideck the center of the TD/PM Circle will normally be located at the center of the landing area, except that the marking may be offset away from the origin of the OFS by no more than 0.1D where an aeronautical study indicates such offsetting to be beneficial, provided that the offset marking does not adversely affect the safety of flight operations or ground handling issues.

13.8.27 HELIDECK OBSTACLE-FREE SECTOR MARKING

- (a) A helideck obstacle-free sector marking should be provided at a helideck on the touchdown and lift-off area marking.
- (b) On existing helidecks on mobile off-shore installations constructed so that it is not possible to remove certain obstacles penetrating the obstacle free surfaces, a restriction mark shall be marked where the helicopter nose must not be parked. The painting of the restriction area shall be in accordance with specifications in the heliport standards.
 - (1) Where helicopter types with long tail bar are operated and where there may be a risk of collision between the tail rotor and installation on the helideck, the helideck shall be provided with the painting mentioned in paragraph 26.28(c). 13.8.21(c).

13.8.28 PROHIBITED AREAS

- (a) At a helideck there shall be a signal in the form of a red cloth with a yellow cross which shall be placed on the helideck surface in case a situation has arisen where landing is prohibited with specifications in the heliport standards.

- (b) Prohibited landing heading sectors should be marked where it is necessary to protect the helicopter from landing or maneuvering in close proximity to limiting obstructions.
- (c) In addition to (b), for existing installations where the number of deck access points is limited, prohibited landing heading sectors may be desirable to avoid placing the tail rotor in close proximity to access stairs. Where required, prohibited sector(s) are to be shown by red hatching of the TD/PM, with white and red hatching extending from the red hatching out to the edge of the landing area.

Note: When positioning over the TD/PM helicopters should be maneuvered so as to keep the aircraft nose clear of the hatched prohibited sector(s) at all times.

13.8.29 MAINTENANCE OF HELIDECK MARKINGS

- (a) The helideck markings and side identification panels shall be maintained in the best possible condition, regularly re-painted and kept free of all visibility-reducing contaminants.
- (b) Helideck owners/operators shall ensure that specific inspection and re-painting maintenance procedures and schedules for helideck markings and side identification panels take account of the importance of their purpose.

13.8.30 LIGHTING

- (a) A helideck shall be provided with green perimeter lights equally spaced at intervals of not more than 3 m. The perimeter lights shall be located immediately outside the perimeter line for the area defined by the D value of a helideck, or the safe landing area (SLA) if the latter area is the larger.
- (b) Where the declared D-value of the helideck is less than the physical helideck area, the perimeter lights should delineate the limit of the safe landing area (SLA) so that the helicopter may land safely by reference to the perimeter lights on the limited obstacle sector (LOS - 150°) 'inboard' side of the helideck without risk of main rotor collision with obstructions in this sector.

(1) The perimeter lights shall be green and emit omnidirectionally over a horizontal plane with an effective intensity complying with the following values:

Vertical angle	Intensity
0° - 90°	Maximum 60 candelas
> 20° - 90°	Minimum 3 candelas
> 10° - 20°	Minimum 15 candelas
0° - 10°	Minimum 30 candelas

- (c) Where the shape of the helideck is a rectangle there shall at least be placed perimeter lights in each corner and a number of perimeter lights on the sides that implies that the interval does not exceed 3 m.
- (d) In cases where a helideck is provided with a helicopter parking area outside the obstacle free 210° sector, the parking area shall be marked with red perimeter lights with the same intensity as stated in 13.8.30(b)(1).

- (e) The helideck surface shall be equipped with flood lights if it is intended to be used by night. It must be possible to turn on and switch off the lights independently of the rest of the lighting system.
- (f) The floodlighting should be arranged so as not to dazzle the pilot and, if elevated and located off the landing area clear of the LOS, the system should not present an obstacle to helicopters landing and taking off from the helideck
- (g) The touchdown and lift-off area lighting system for helideck shall consist of:
 - (1) perimeter lights; and
 - (2) arrays of segmented point source lighting (ASPSL) or luminescent panel (LP) lighting to identify the touchdown marking where it is provided and/or floodlighting to illuminate the touchdown and lift-off area.
- (h) A visual warning system should be installed if a condition can exist on an installation which may be hazardous for the helicopter or its occupants. The system (Status Lights) should be a flashing red light (or lights), visible to the pilot from any direction of approach and on any landing heading.
- (i) The system should be automatically initiated at the appropriate hazard level (e.g. impending gas release) as well as being capable of manual activation by the HLO.

13.8.31 OBSTACLE MARKING AND LIGHTING

- (a) Fixed obstacles which present a hazard to helicopters should be readily visible from the air.
- (b) Fixed obstacles on a helideck which are not easy to identify from the air, shall be marked in daytime with alternate pattern in one of the following three colour Combinations:
 - Red and white.
 - Black and white.
 - Black and yellow.
- (c) The single painted bands in the pattern in paragraph (b), shall not be less than 50 cm and not more than 6 m wide.
- (d) The color should be chosen to contrast with the background to the maximum extent. Paint colors should conform to provisions the set out in the Helicopter standards.
- (e) Obstacles to be marked in these contrasting colors include any lattice tower structures and crane booms which are close to the helideck or the LOS boundary.
- (f) All fixed obstacles located outside, but close to the obstacle free sectors shall be equipped with a red obstacle light with an intensity of at least 10 candelas. Obstacles with a height above 15 m above the helideck level shall be equipped with obstacle lights with the same intensity spaced vertically at maximum 10 meters intervals. Illumination by floodlight of the structure in question can be accepted as alternative to the above-mentioned obstacle marking.
- (g) Any ancillary structure within one kilometer of the landing area, and which is significantly

higher than it, should be similarly fitted with red lights.

- (h) The highest point of an offshore installation or vessel shall be fitted in the top with red omnidirectional obstacle lights with an intensity of from 32 to 200 candelas.

SUBPART E — HELIDECK RESCUE AND FIRE FIGHTING

13.8.32 RESPONSE REQUIREMENTS

- (a) A helideck shall be equipped with rescue and firefighting facilities which can be used with a response time of not more than 30 seconds.
- (b) Delivery of firefighting media to the helideck area at the appropriate application rate shall be achieved in less than thirty seconds, measured from the time of incident to actual production at the required application rate.

13.8.33 FIRE FIGHTING EQUIPMENT AND AGENTS

- (a) The rescue and firefighting facilities shall include foam producing equipment located close to the helideck, or as an integrated part of the helideck, which can uniformly spread foam on every part of the helideck in all weather situations expected to arise at the locality. All equipment should be located at points having immediate access to the helicopter landing area. Also the location of the storage facilities should be clearly indicated.
 - (1) The helideck operator shall use only foam concentrates that is compatible with seawater and meeting performance level 'B' are used.
 - (2) The amount of foam per minute to be available at the helideck shall equal to at least the amount of foam produced by 6 liters of water/foam per minute per square meter. The area on which the calculation of the amount of foam is based, is the area defined by the D value for the helideck.

Note: When calculating the amount of water the following formula can be used: Total amount of water per minute = (D value) $2 \times \pi / 4 \times 6$ liters per minute.

- (3) The foam producing system shall include integrated induction equipment to ensure that water and foam concentrates are mixed in correct proportions, except where premixed water/foam solutions are used as agent.

Note: If adjustable inductors installed, settings should correspond with strength of concentrate in use.

- (4) The foam producing system shall be able to produce foam without interruption for at least 5 minutes.
- (5) The operator must ensure that the capacity of the main helideck fire pump is sufficient to guarantee that finished foam can be applied at the appropriate induction ratio and application rate, for minimum required duration to the whole of the safe landing area (SLA) when all helideck monitors are being discharged simultaneously.
- (6) If foam concentrate is to be delivered by use of foam monitors, there shall be at least three foam monitors at the helideck distributed in such a way that at least one of these can always be operated in the wind direction. The angle between the foam monitors shall not exceed 140° . Main fire pump, piping system and foam monitors shall be designed so that the water pressure immediately before the foam monitors' fitting flange is at least 6 bars, but not more than 8 bars when the system is in operation. It shall be possible to uphold this pressure level when one or two foam monitors are in operation. It shall be possible for each foam monitor to deliver at least half the amount of foam required in paragraph 13.8.33(a) (2).

- (7) Subject to subparagraph (6), particular consideration should be given to the loss of a foam monitor i.e. remaining monitor(s) should be capable of delivering finished foam to the SLA at or above the minimum application rate.
 - (8) If the discharge of foam concentrate is made by use of a multi nozzle system integrated in the helideck or located in a ring around the helideck, it shall be designed to be capable of operating in weather conditions with frost and supercooled rain.
 - (9) Not all fires are capable of being accessed by monitors and on some occasions the use of monitors may endanger passengers. For areas of the helideck or its appendages which, for any reason, may be otherwise inaccessible to fixed monitor systems, it is necessary to provide additional hand controlled foam branch pipes. Therefore, in addition to fixed foam systems, there shall be the ability to deploy at least two deliveries with hand controlled foam branchpipes for the application of aspirated foam at a minimum rate of 225 liters/min through each hose line.
- (b) Mixing of different concentrates in the same tank, i.e. different either in make or strength, is not acceptable. It must be ensured that foam containers and tanks are correctly labelled.
 - (c) The operator of helideck shall ensure that all parts of the foam production system, including the finished foam, are tested by a competent person on commissioning and annually thereafter. The tests should assess the performance of the system against original design expectations
 - (d) While foam concentrate is considered the principal media for dealing with fires involving fuel spillages, the wide variety of fire incidents likely to be encountered during helicopter operations may require the provision of more than one type of complementary agent. Dry powder and the gaseous agents, carbon dioxide, are generally considered acceptable for this task.
 - (1) Dry powder shall be used as the primary complementary agent. The minimum total capacity should be 45 kg delivered from one or two extinguishers.
 - (2) The dry powder system should have the capacity to deliver the agent anywhere on the SLA at the recommended discharge rate of 1.35-2 kg/sec.

Note: Containers of sufficient capacity to allow continuous and sufficient application of the agent should be provided.
 - (e) In addition to the use of dry powder as the primary complementary agent in (a), there shall be use of a gaseous agent.
 - (1) CO₂ shall be provided with a suitable applicator for use on engine fires.
 - (2) The appropriate minimum quantity of CO₂, delivered from one extinguisher, is 18kg.

Note: Containers selected should be capable of delivering gaseous agents at the minimum discharge rate stated in subparagraph (a) (2).
 - (f) The complementary agents should be sited so that they are readily available at all times and should be subject to annual visual inspection by a competent person and pressure testing in accordance with manufacturers' recommendations.
 - (g) Type of principal and complimentary media shall be stated in the Helideck Operations Manual.

- (h) Record of quantity of principal and complementary agents available at the helideck at any given time, including reserve quantities, shall be maintained.

13.8.34 RESCUE EQUIPMENT

In some circumstances, lives may be lost if simple ancillary rescue equipment is not readily available.

- (a) Self-contained-breathing apparatus (compressed air type) for protection of respiration shall be available to firemen.
- (b) In addition, the following extra equipment shall be available near the helideck:
- (1) Two hand controlled fire hoses with spray nozzles each capable to deliver minimum 250 liters per minute of clear water.
 - (2) A 45 kg dry powder (ABC powder) extinguisher capable of discharging at least 2 kg powder per minute.
 - (3) One carbon dioxide extinguisher of at least 18 kg.
 - (4) The following equipment:
 - rescue equipment box(es) that must be accessible from all helideck access points
 - 1 adjustable wrench.
 - 1 large rescue axe (non wedge or aircraft type)
 - 1 bolt cutter.
 - 1 large crowbar.
 - 1 grab or salving hook.
 - 1 hacksaw with 6 spare blades.
 - 1 two-piece ladder.
 - 1 15 m lifeline (diameter 5 cm), including rescue harness.
 - 1 set of assorted screwdrivers.
 - 2 Side cutting pliers
 - 1 escape knife for each helideck crew member
 - portable safety lamp

 - Fire resistant blanket
 - Power cutting tool
 - (5) A metal boat-hook with a shaft 3 m long.
 - (6) Power cutting tools for helidecks with a D value above 24 m.
- (c) A motor rescue boat which is ready for immediate assistance in case of an aircraft accident during take-off and landing.

13.8.35 PERSONNEL PROTECTIVE CLOTHING

- (a) The operator shall ensure that all personnel assigned to rescue and firefighting duties should be provided with suitable personal protective equipment to allow them to carry out their duties.
- (b) The level of PPE should be commensurate with the nature of the hazard and the risk (consideration should be given to the provision of face masks where, helicopters are partially or substantially constructed of composite material).
- (c) Sufficient personnel to operate the RFF equipment effectively should be dressed in protective clothing prior to helicopter movements taking place.
- (d) The protective equipment should not in any way restrict the wearer from carrying out his duties.
- (e) The following equipment shall be available for each fireman when on duty:
 - (1) Protective clothing, including fire-resistant gloves, boots and helmet with visor.
 - (2) Fire tunic and trouser, or one piece
- (f) For the purpose of ease identification, the HLO shall be equipped with a brightly coloured “HLO” safety waistcoat/tabard and the portable radio mentioned in subsection 26.37.
- (g) Protective clothing shall appropriately be stored in conditions that do not compromise their integrity, and readily available close to the helideck for fast deployment by the helideck crew.
- (h) Respiratory protective equipment enables the wearer to enter and work in an atmosphere which would not otherwise support life. The operator shall therefore store, test and serviced respiratory equipment in such a way that it will ensure that it can be used confidently by personnel.
- (i) A responsible person(s) should be appointed to ensure that all personal protective equipment is installed, stored, used, checked and maintained in accordance with the manufacturer’s instructions.

13.8.36 EMERGENCY PROCEDURES

- (a) The installation or vessel emergency procedures manual should specify the actions to be taken in the event of an emergency involving a helicopter on or near the installation or vessel. Exercises designed specifically to test these procedures and the effectiveness of the firefighting teams should take place at regular intervals.

SUBPART F — RADIO AND METEOROLOGICAL EQUIPMENT

13.8.37 RADIO STATION

At a helideck there shall be at least one radio station and a portable radio intended for aeronautical communication with belonging frequencies approved in accordance with the provisions in LCAR Part 23.

13.8.38 RADIO BEACON (NDB)

If a helideck installation is equipped with a radio beacon (NDB), this equipment shall be approved in accordance with the provisions in LCAR Part 23.

13.8.39 BANK INDICATOR ETC.

A helideck located on a mobile offshore installation shall be provided with instruments capable of showing the vessel's heave, pitch and roll.

13.8.40 METEOROLOGICAL EQUIPMENT

A helideck at an offshore installation shall be provided with the following meteorological equipment:

- 1) An anemometer capable of measuring wind direction and force which must be approved in accordance with the provisions in LCAR Part 20. The anemometer must be capable of transmitting data from sensor to an operator room so that the data are easily accessible for the personnel serving the helideck.
- 2) A thermometer capable of measuring the outdoor temperature, approved in accordance with the provisions in LCAR Part 20.
- 3) A hygrometer which either electronically or by use of conversion tables is capable of giving the actual dew point. The hygrometer shall be approved in accordance with the provisions in LCAR Part 20.
- 4) A barometer which either electronically or by use of conversion table is capable of giving the actual QNH value or QFE value measured in units Hecto Pascal. The barometer shall further be approved in accordance with the provisions in LCAR Part 20.

SUBPART G — OFFSHORE HELICOPTER OPERATIONS SUPPORT

13.8.41 HELICOPTER REFUELLING

If there is a refuelling installation at the helideck, check of fuel and refuelling shall be made in accordance with the provisions in heliports standards.

13.8.42 OTHER EQUIPMENT

A helideck at an offshore installation shall be provided with a scale for weighing baggage, cargo and persons. Chocks and tie-down strops/ropes shall be available.

13.8.43 ALARM SYSTEM

A helideck at an offshore installation shall be provided with an alarm system which can be activated from a location from where the helideck can be kept under surveillance constantly.

13.8.44 BACK-UP POWER SYSTEM

- (a) A helideck at an offshore installation shall be provided with a back-up power system. Changing over shall be done within 15 seconds. The helideck lighting systems, communication systems, navigation equipment, meteorological equipment and alarm system shall be supplied by the back-up power system.
- (b) Any failures or outages should be reported immediately to the helicopter operator. The lighting should be fed from a UPS system.

13.8.45 SIGNS

Safety and information signs and posters shall be provided at a helidick to clearly inform embarking passengers of the potential dangers and to give specific instructions during helideck operations and also to provide safety and general instructions to all personnel, including the helideck crew.

- (1) The following signs with text in English shall be put up at the access routes to the helideck, at the foot of the stairways or landings leading to the helideck surface:
 - i. No unauthorized entry (Prohibition) – to prohibit entry to the helideck during helicopter operations
 - ii. Tail Rotor hazards (Warning)
 - iii. Anti-Collision Light (Advice)
 - iv. No smoking and use of open fire (Prohibition).
- (2) In special cases the Liberia Civil Aviation Authority may require signs in other languages than mentioned above.

13.8.46 MAINTENANCE

A maintenance system shall be established ensuring that the helideck and its equipment and services always meet the Regulations in this section of Part 13.8.

SUBPART H — HELICOPTER LANDING AREAS ON VESSELS

13.8.47 HELIDECKS FOR SINGLE ROTOR HELICOPTERS LOCATED AMIDSHIP ON VESSELS

Note: Helideck located between stem and stern (amidship) shall meet the requirements of this Subsection in addition to the requirements in Subpart C and Subpart D

- (a) The helideck shall be provided with two symmetrical obstacle free surfaces of 150⁰ each on each side so that these are located with an extension to both sides at right angles to the approach and take-off directions with point of origin in the helideck edge line. Further the two 150⁰ sectors shall have an outward and upward slope of 5⁰ out to a distance given by the D value. No objects above a height of 25 m above helideck level are allowed in the area

outside the helideck edge and in the approach and take-off sectors.

- (b) The helideck shall be painted as described in subsection 13.8.24 and heliports standards except that it shall be provided with two “Chevron” marks, one opposite each of the apexes of the two 150° sectors. The “H” marking and the aiming circle shall always be located in the geometric center of the helideck. The helideck name shall be painted close to one of the two “Chevron” marks in accordance with heliport standards.
- (c) The helideck may only be used then there are operative limitations approved by the Liberia Civil Aviation Authority.

13.8.48 HELIDECKS FOR SINGLE ROTOR HELICOPTERS LOCATED NEAR ONE SIDE OF THE VESSEL

Note: Helideck located on one side of a vessel shall meet the requirements of this Subsection in addition to the requirements in Subparts C and D.

- (a) The helideck may only be used then there are operative limitations approved by the Liberia Civil Aviation Authority
- (b) The obstacle free surfaces shall consist of a zone around the helideck area with a width of 0.25 x D value with a height limitation determined by the value 0.05 x D value. The obstacle free surface shall have an inner width of 1.5 x D value at the ship’s or vessel’s side and shall be secant to the circle or edge line making up the helideck periphery in a point located in the distance 0.5 x D value from the vessel’s side.
- (c) No objects above a height of 25 m above helideck level are allowed in the area outside the helideck edge and in the approach and take-off sectors.
- (d) The “H” marking and the aiming circle shall always be located in the geometric center of the helideck.

13.8.49 HOIST AREA ON OFFSHORE INSTALLATIONS

- (a) A hoist area may only be used for transportation of persons if there is no other possibility of establishing a normal helideck on the vessel.
- (b) The hoist area shall be established as a clear zone with a diameter of 5 m. The clear zone shall be surrounded by an obstacle free surface with a diameter of 1.5 x D value with a height limitation of 3 m. Finally out to a distance of 2 x D value there shall be a height limitation of 6 m.

13.8.50 HELIDECKS ON OFFSHORE INSTALLATIONS INTENDED FOR TANDEM ROTOR HELICOPTERS

Helidecks on offshore installations intended for tandem rotor helicopters shall meet the technical requirements specified by the Liberia Civil Aviation Authority in each individual case.

SUBPART H — HELIDECK PERSONNEL

13.8.51 HLO

- (a) When helicopters are operated an HLO must be present at the helideck.
- (b) To be allowed to discharge his duties as HLO, the person in question shall have completed a HLO course at a school which is approved by the Liberia Civil Aviation Authority, or at a comparable foreign school.
- (c) It lies with an HLO
 - (1) to be in charge of the daily work in connection with helicopter operations,
 - (2) to keep the head of the offshore installation informed of the state of affairs regarding the helideck, equipment and services,
 - (3) to ensure that there are no persons or loose items on the helideck during take-offs and landings,
 - (4) to maintain contact with the helicopter pilot, either directly or via the radio operator of the off-shore installation, to inform him whether the deck is clear, and
 - (5) to ensure that the firemen are ready.
- (d) If HLO uses portable radio equipment with a range of more than 1 nm or permanent radio equipment, he shall be authorized to do so by the Liberia Civil Aviation Authority or comparable foreign authority.
- (e) Coordinate preparation of freight and supervise loading and unloading of passengers, baggage & freight.
- (f) The HLO should be readily identifiable to the helicopter crew as the person in charge of helideck operations. The preferred method of identification is a brightly coloured 'HLO' tabard/waistcoat.
- (g) Identify and locate helicopter operational hazards, hazardous areas, access routes & points
- (h) Identify, locate and operate all relevant equipment & controls
- (i) Conduct emergency exercises

13.8.52 RADIO OPERATOR/METEOROLOGICAL OBSERVER

- (a) Transmission on the aeronautical frequencies shall only be done by persons who hold a national N-JOR licence with English phraseology, or by persons approved to do so by the Liberia Civil Aviation Authority.
- (b) The radio operator shall communicate with the helicopter pilot in accordance with existing Regulations and shall pass on meteorological information, etc.
- (c) If the radio operator does not prepare the meteorological information himself, another person on the offshore installation shall be appointed to do so.

- (d) The meteorological observer may in special cases be subject to the approval of the Liberia Civil Aviation Authority.

13.8.53 FIREMEN

- (a) The operator of helideck shall ensure that sufficient trained firefighting personnel immediately available on the facility whenever aircraft movements are taking place.
- (b) At least one of these personnel shall be dressed in a protective suit and shall stay near the foam monitor for rapid intervention, if necessary. An HLO trained person identified in subsection 26.51, may be one of the two firemen.
- (c) They should be deployed in such a way as to allow the appropriate firefighting and rescue systems to be operated efficiently and to maximum advantage so that any helideck incident can be managed effectively.

13.8.54 TRAINING

- (a) If personnel are to effectively utilize the equipment provided, all personnel assigned to rescue and firefighting duties on the helideck should be fully trained to carry out their duties to ensure competence in role and task. The LCAA recommends that personnel attend an established helicopter firefighting course.
- (b) In addition, regular training in the use of all RFF equipment, helicopter familiarization and rescue tactics and techniques should be carried out. Correct selection and use of principal and complementary media for specific types of incident should form an integral part of personnel training.
- (c) All the members of the teams must undergo helideck and Fast Rescue Craft (FRC) training courses.

SUBPART J — HELIDECK MANUAL

13.8.55 HELIDECK MANUAL AND INSTRUCTIONS

- (a) The operation of a helideck on a stationary installation shall be covered by a Safety Management System which must be described in the helideck operations manual.
- (b) A helideck manual shall be in place for both stationary and mobile offshore installations.
- (c) The helideck manual for stationary installations shall include elements in Appendix 1.
- (d) For mobile offshore installations the helideck manual shall include the following:
 - (1) A description of the deck and its equipment and services.
 - (2) All instructions and guidelines connected with the operation of the deck.
- (e) It lies with the person holding the approval of a helideck to ensure that;
 - (1) instructions have been prepared for the head of the offshore installations, for HLO, for radio operators, for meteorological observers and for firemen,
 - (2) instructions have been prepared for inspection and maintenance of installation and equipment etc., including record keeping for inspections and maintenance, and
 - (3) There are instructions for emergency situations and accidents.

APPENDICES

APPENDIX 1: HELIDECK OPERATIONS MANUAL CONTENT

Part I: Administration

- 1.1 Introduction
 - 1.1.1 Helideck Owner and Operator
 - 1.1.2 Operating Conditions
 - 1.1.3 Maximum Aircraft Size
 - 1.1.4 Helideck Operations
 - 1.1.5 Operational Limitations
 - 1.1.6 System for recording aircraft movements
- 1.2 Operations: General Procedures, Structure and Description of Duties
 - 1.2.1 General Operating Procedures
 - 1.2.2 Organizational Chart
 - 1.2.3 Duties and Responsibilities
 - 1.2.4 Names and telephone numbers of Installation Manager and Helideck Landing Officer
- 1.3 Obligations of Helideck Owner/Operator
- 1.4 Helideck Operational Policy
- 1.5 Technical Documents and Drawings
- 1.6 Publications
- 1.7 Committees

Part 2: Particulars of the Helideck Site

General information, including a plan of the helideck showing the main helideck facilities, including visual aids and non-visual aids provided;

Part 3: Particulars of the Helideck

- 3.1 General Information
 - (a) the name of the helideck;
 - (b) the type of the helideck;
 - (c) the location of the helideck from the nearest town and nearest aerodrome;
 - (d) the geographical coordinates of the helideck reference point [WGS-84];
 - (e) the elevation of the helideck; and
 - (f) details of helideck beacon [if provided].
- 3.2 Helideck Physical Characteristics
 - (a) Maximum Size and Maximum Allowable Mass
 - (b) Final Approach and Take-Off Area and Touchdown and Lift-Off Area FATO
 - (c) Obstacle Free-Surfaces
 - (d) Helideck Surface
 - (e) Tie-Down Points
 - (f) Safety Nets
 - (g) Access/Escape Routes
- 3.3 Visual Aids
 - Provision of information as specified in subpart D

Part 4: Helideck Operations Procedures

4.1 ATC Coordination Procedures

Particulars of procedures for coordination with Air Traffic Services Unit[s], including –

- (a) procedures for arrivals;
- (b) procedures for departures; and
- (c) communication facilities provided

4.2 Helideck Reporting Procedures

Particulars of procedures for notifying any changes to the infrastructure, facilities and operational procedures, including –

- (a) arrangement for reporting changes; and
- (b) recording of changes.

4.3 Access to Helideck Area

Procedure for the preventing of the unauthorized entry of person[s] into the helideck area including facilities provided to prevent such occurrence.

4.4 Helideck Emergency Response Plans

Particulars of the helideck emergency plan, including the following –

- (a) plans for dealing with emergencies occurring at the helideck;
- (b) details of test for equipment to be used in emergencies, including frequency of those tests; and
- (c) details of exercise to test the emergency plan, including the frequency of those exercises.

4.5 Rescue and Fire Fighting

- (a) level of protection
- (b) Equipment and extinguishing media
- (c) Personnel and procedures for meeting the rescue and fire fighting requirements.

4.6 Inspection of Helideck

Particulars of procedures for the inspection of the helideck area and obstacle limitation surfaces, including –

- (a) details of inspection intervals and times;
- (b) inspection checklist and logbook; and
- (c) reporting of inspection findings and correction of unsafe conditions.

4.7 Visual Aids and Electrical Systems

Particulars of procedures for the inspection and maintenance, aeronautical lights [including obstacle lights], signs, markers and electrical systems –

- (a) arrangements for inspection;
- (b) reporting and recording of inspection findings;
- (c) correction of deficiencies;

- (d) arrangements for routine maintenance; and
- (e) arrangements secondary power supply.

4.8 Helideck Safety Management

Particulars of procedures to ensure safety during helideck operations –

- (a) helicopter arrival procedures [including engine shut-down];
- (b) helicopter departing procedure [including engine-start];
- (c) fuelling procedures and safety precautions;
- (d) protection from rotor downwash;
- (e) deck cleaning;
- (f) arrangements for reporting incidents and accidents; and
- (g) personnel safety procedures.

4.9 Obstacle Control

Particulars setting out the procedures for ceasing crane operations prior to helicopter operations, ensuring obstacle free areas are clear;

4.10 Handling of Hazardous Materials

Particulars of the procedures for safe handling and storage of hazardous materials, including -

- (a) arrangements for special areas on the helideck for storage of inflammable liquids [including aviation fuel] and other hazardous material; and
- (b) method for the delivery, storage, dispensing and handling of hazardous material.

APPENDIX 2: TEMPLATE FOR A DESIGN AND OPERABILITY REPORT

1.0 Report Objectives

The objectives of a Design and Operability Report are:

1. To present an overview of the facilities design and the provisions being made for supporting helicopter operations to and from an installation or vessel.
2. To provide relevant information about the helideck and support systems design and operability, to enable the verification process to be completed.
3. To achieve acceptance for flight operations by the helicopter operators with minimum operating limitations.
4. To provide a document that interfaces with the Safety Case and provides relevant operating information for helicopter crews and helideck teams.

2.0 Suggested Report

2.1 Structure SECTION 1

INTRODUCTION

Preferably limited to general statements about the facility and to report objectives.

2.2 SECTION 2 – MANAGEMENT SUMMARY

To include statements on the completion of design and operability assessment activities, completion of helideck hook-up and commissioning activities and overall conclusions on the helideck operational status and acceptability.

2.3 SECTION 3 – DOCUMENTATION

Provide listings of key helideck project and vendor design drawings, design specifications, data sheets and reports (e.g. helideck wind tunnel testing). The information that is provided for each document should include the Document number, Originator, Title, Revision and Approval status and date.

2.4 SECTION 4 – LOGISTICS & OPERATIONS PHILOSOPHY

Following a brief introduction, the contents of this section should address the installation, MODU or vessel operator's preferred or specific aircraft selection, routings and payload expectations. Diversion and adverse weather policies should be included along with relevant information on intended search & rescue provisions / coverage and a statement on adverse weather policy. The field operator's requirements (taken from initial design specification) for the helideck and facilities should be noted along with any variations requested as design proceeds. Additionally, the installation / vessel operator's requirements for helicopter refuelling, passenger and freight handling should be noted. Finally, a brief statement covering the installation / vessel operator's existing facilities and operating experience should be included.

2.5 SECTION 5 – REGULATORY REQUIREMENTS AND VERIFICATION PROCESS

This section should briefly set out the Regulations, rules, codes and standards that are applicable to the helideck design, fabrication, construction and verification processes. It is also prudent to

identify each of the 'official' bodies concerned with the verification of the helideck, its support facilities and their areas of involvement.

This process is usually simple for fixed installations but, in the case of FPSOs, MODUs and vessels, which may retain class for world-wide operations, it can be more complicated. It is therefore essential to identify the classification aspects, which introduce the need to observe international conventions that may conflict with established Liberia offshore requirements.

Verification meetings and the initial LCAA Helidecks review and inspection should be noted.

Reference to the outcomes and outstanding work lists should be included.

2.6 SECTION 6 – DESIGN AND OPERABILITY REVIEW

This section should address the whole range of topics relevant to the helideck design and its future safe operation. Sub-sections should cover the following:

1. Production and Operating Environments

Includes field / operating location(s), environmental conditions, the facility layout and leading particulars, production processes and helideck / helicopter transportation risk assessments.

2. Aircraft Operating and Performance Considerations

Data relevant to helicopter types that may use the helideck, For example, motion limits imposed on FPSOs, MODUs and vessels.

3. Helicopter Landing Area Operational Standards

Information provided should include the landing area height (vessels should include variations to draught conditions AMSL), wind direction, frequency and velocity distribution, vessel motions affecting helicopter operations including a motion analysis (when applicable).

4. Helicopter Landing Area Physical Characteristics

This section should address the following list of topics and should clearly demonstrate that each element has been properly considered during the design phase. Where the requirements are exceeded these should also be stated.

- Helicopter Safe Landing Area size
- Overall helideck size (if larger than the basic safe landing area)
- 210° Obstacle Free Sector
- 0.12 'D' Limited Obstacle Sector (0.62 'D' from centre of D circle)
- 0.21 'D' Limited Obstacle Sector (0.83 'D' from centre of D circle)
- 5:1 Falling Gradient
- The adverse effects of combined operations on clearances (if applicable)
- Helideck and landing area design, materials, airgap, etc.
- Helideck friction surface / helideck net
- Helicopter tie-down points arrangement, fittings, etc.
- Perimeter Safety Net
- Access and Escape arrangements
- Routine or emergency parking and laydown arrangements (drawings to be provided showing locations and revised obstruction clearances)

- Helideck drainage.

5. Aerodynamic and Process Thermal Effects on the Helideck and Helicopters

This is a key section that deals with providing good information for flight crews on the likely adverse flying effects (aircraft handling difficulties and pilot workload) they may encounter from turbulence over the helideck and around the installation / vessel environs during approach, landing and take-off. Potential turbulence (from structures, etc.) and thermal sources (from gas turbines, diesel exhausts, process vents and flares, etc) that are identified during model testing (using physical or CFD methods) should be quantified and fully explained.

Estimates of helideck operability should be provided and conclusions drawn in respect of flight safety and the potential for additional operating costs if accepting helideck operational impairment and landing limitations.

6. Visual Aids

It should be demonstrated that helideck and obstruction markings fully meet LCAR requirements. Any deviation must be justified and accepted.

This section should also address helideck and other associated lighting systems, their power sources and control. The lighting systems will include perimeter and surface lights, floodlights, general helideck and installation / vessel lighting, status lights, etc. Information should be provided on system design, equipment selection and lighting performance.

Finally, statements should be made to demonstrate that the design and location of installation / vessel identification markings / signs have been properly addressed in order to eliminate the potential for wrong deck landings. Reference should be made to signage and safety notices.

7. Firefighting and Rescue Facilities

This section should summarise the detection, protection and firefighting philosophy adopted for the helideck landing area (e.g. the identification and control of helideck emergencies) and its support systems (e.g. helicopter fuel storage and supply). As a minimum, it should be clearly demonstrated that the systems design, equipment selection, operation and maintainability meet offshore Regulations and the requirements of LCAR. Details of rescue equipment, helideck crew protective equipment and breathing apparatus should be included.

8. Helicopter Fueling Facilities

Where helicopter fueling facilities are provided, the following topics should be addressed:

- basic system requirements
- storage requirements
- bulk capacity and location
- fuel supply and dispenser systems design and locations.

9. Helicopter Operations Support Equipment

This section should summarise the many items of helicopter operations support equipment. Items will include, but not necessarily be limited to:

- Meteorological equipment
- Communications equipment
- Helicopter starting unit

- Safety and information signs and posters
- Aircraft tiedown equipment
- Aircraft chocks
- Windsocks
- Passengers, baggage & freight weighing equipment
- Helideck de-icing equipment
- Safety briefing system.

2.7 SECTION 7 – MATTERS TO BE PROVIDED FOR IN WRITTEN INSTRUCTIONS

This section should include references and information specific to the helideck and its systems that should be embodied in the installation, MODU or vessel Operations Manual and Emergency Procedures. Also, where there is a need for notifications to helicopter operators, specific operating procedures or maintenance instructions to be written, these should be included. Details should also be included about Flight Information Reporting including meteorological reporting and vessel movement.

APPENDIX 3

Appendices should be included to assist document readability. As a minimum, an A3 sized general arrangement drawing should be included clearly illustrating the installation/vessel plan and an elevation (showing the helideck arrangements), details of the helideck and its helicopter operating criteria and equipment layout. Also include plan view of helideck and the obstacle environment.

Helideck plans should show the following details:

- All helideck markings, giving dimensions and colour
- Deck net location
- Helicopter tie-down points arrangement, fittings, etc.
- Perimeter Safety Net
- Lighting – both perimeter and floodlighting
- Location of Rescue and Fire Fighting Facilities
- Refuelling system
- Helideck drainage (Guttering & downpipes)
- Access and Escape arrangements
- Windssock(s)
- 210°, 150° & 180° sectors to be clearly shown
- All obstructions non compliance's to be detailed, stating height above/below deck level
- Colour scheme of above
- Structures that might cause turbulence over the helideck
- Hot emission sources e.g. flares, turbine exhausts