English version

Norsk olje&gass

HELIDECK MANUAL

Helicopter operations on offshore installations

In cooperation with

CHC Bristow BLUEWAY OFFSHORE NORGE NHS NORSK HELIKOPTERSERVICE

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Changes in this edition:

- “OLF” is systematically changed to “Norwegian Oil and Gas Association”
- References to Authority regulations updated
- Relevant EN-standards updated
- Minor changes in health requirements
- Minor addition in refueling procedures
- Enclosure F1 updated
- Enclosure F2 updated
- Enclosure F3 cancelled
- Enclosure G updated
- Enclosure I updated
- Enclosure L updated

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1 General

This manual describes procedures and guidelines for personnel working on helicopter decks (helideck crew) on petroleum installations on the continental shelf.
The manual is the document to which the helideck crew shall relate unless the situation requires an exemption for safety reasons.

The manual has been developed as a joint project between Norwegian Oil and Gas Association and the helicopter operating companies on the Norwegian Continental Shelf.

Chapters 1 – 6 describe common procedures and guidelines based on requirements from the authorities and accepted industrial standards.
Chapter 7 covers specific requirements relating to installations and companies.

1.1 Purpose and scope

The purpose of the manual is to describe the areas of responsibility on the helideck, requirements to the helideck crew and their equipment, and to determine how activities and tasks are managed and conducted so that operations on the helideck are executed in a safe and proper manner.
The manual is intended to contribute to the safe conduct of helicopter operations on the Norwegian shelf by ensuring uniform standards and behaviour.

1.2 Responsibilities

Norwegian Oil and Gas Association is the owner of this document and is responsible for either updating or revoking the document should organisational or operational conditions so require.
Norwegian Oil and Gas's Expert Group on Aviation matters, in cooperation with the helicopter operators on the Norwegian shelf, are to assume this responsibility.

1.3 Approval

The document has been verified by CHC Helikopter Service A/S, Bristow Norway A/S, Blueway Offshore Norge A/S and Norsk Helikopterservice A/S.

1.4 Distribution and Amendments

The document is included in Norwegian Oil and Gas Association's set of regulations, and is available via Norwegian Oil and Gas Association home page on the Internet (http://www.norskoljeoggass.no/en/).
The latest amendment dates will be published here.
The operating companies' internal distribution lists will be shown in Chapter 7.

1.5 References

The following documents are relevant for the contents of this manual:

The Civil Aviation Authority: Regulations for Civil Aviation;

- BSL D 1 – 7 Regulations relating to the transport of cargo by civil aircraft (http://www.lovdata.no/cgi-wift/ldles?doc=/sf/sf/sf-20030111-0041.html)
- BSL D 5 – 1 (Regulations pertaining to aviation on the continental shelf)(FOR-2007-10-26-1181)(http://www.lovdata.no/cgi-wift/ldles?doc=/sf/sf/sf-20071026-1181.html)
- BSL A 1-3 forskrift om varslingsplikt ifm. luftfart. (http://www.lovdata.no/cgi-wift/ldles?doc=/sf/sf/sf-20061208-1393.html)

The Maritime Directorate

- Regulations relating to helicopter decks on mobile installations FOR-2008-01-15-72 (http://www.lovdata.no/cgi-wift/ldles?doc=/sf/sf/sf-20080115-0072.html)

The Petroleum Safety Authority Norway ; The Facility Regulation §70, including the guidelines to the regulations.

ICAO – TI Restricted Articles List.

European Aviation Safety Agency (EASA) Ops Commercial Air transportation (Helicopters).

Norwegian Oil and Gas Association Guideline 074 - Recommended guidelines for helideck crew, chapter 9: Helideck crew and competence.

1.6 Definitions

- **luggage free cabin,** passengers are not allowed to carry hand luggage with them on board the helicopter, exemptions are reading matters/magazines/newspapers.
- **anti-collision lights**, powerful rotating lights above and below the helicopter fuselage.
- **fire guard**, operates the firefighting equipment on the helideck and assists the heliguard with the loading and unloading of passengers and cargo from the helicopter.
- **drainage samples (fuel)**, samples taken from the lowest point of the tank or from the filter housing.
- **specific weight measuring (of Jet A – 1)**, measuring the specific weight (density) of the fuel. To be conducted when receiving fuel offshore. The specific weight is checked by using a hydrometer and a thermometer or corresponding electronic instrument.
- **free approach and departure sector**, within the 210 degree approach and departure sector there must be no obstacles, neither on nor in the immediate vicinity, that reach above the level of the helideck.
- **filling nozzle**, arrangement on the refuelling hose at the end nearest to the helicopter, used for gravity refuelling of the helicopter.
- **helideck crew**, consists of a minimum of three persons, HLO, heliguard and fireguard.

- **HFIS.** Helicopter Flight Information Service.
- **heliguard**, responsible for the embarkation and disembarkation of passengers and cargo, and assisting the fireguard and the HLO in emergency situations.
- **HLO (helicopter landing officer)** supervises the heliguard and the fireguard.
- **winching area**, a pre-defined area which, in situations where the helideck is closed, is suitable for winching patients and personnel up to a rescue helicopter.
- **chocks/wheel chocks**, blocks which are placed in front of and behind the wheels on both sides of the helicopter.
- **cabin cargo**, as a general rule, when transporting passengers, cargo shall not be transported in the helicopter's cabin. Exemptions may be made for priority cargo.
- **manifest**, an official document stating the names of the passengers, their employers, the weight of the passengers and their luggage, the weight of the cargo and the destination.
- **night conditions**, when the sun is more than 6 degrees below the horizon.
- **Jet A – 1**, jet turbine fuel used by aircraft.
- **clear and bright (Jet A – 1)**, the expression is independent of the fuel's natural colouring. Clear states that no sediments or emulsions are present. Shiny refers to the clear shiny look of completely clean fuel.
- **grounding point**, point on the helicopter for attaching the anti static wire. The helicopter, the supply cabinet, refuelling and pressure refuelling connectors must all be wired to electrical conductors during refuelling to eliminate any differences in current between the units.
- **particles (in fuel)** , consist mainly of small pieces of rust, sand, dust or deposits from hoses and equipment.
- **rotor disc**, the area covered by the main rotor.
- **Shell water detector test**, the "Shell Water Detector" has been developed for those borderline cases where the human eye cannot be trusted. The test is a positive indication of finely divided water at concentrations of 30 parts per million or lower (30 ppm) The detector consists of an unbreakable 5 ml syringe and a plastic detection capsule containing water sensitive paper.
- **safety zone** (for helideck crews during landing, take off, shutting down and starting up the helicopter), by the stairways to/from the helideck (not on installations not having stairways).
- **safety zone** (for embarking and disembarking passengers), all movement of personnel shall primarily take place at a 90 degree angle from the main axis of the helicopter and thereafter outside the rotor disc. Passengers waiting to embark shall follow the instructions given by the crew of the helideck (in an area where there is a low risk of injury should there be a helicopter accident on the helideck).
- **safe rotor zone**, an area where there is no risk of contact with either the main rotor (low), or the tail rotor.
- **safe zone with eye contact with the pilot**, an area in the vicinity of the nose of the helicopter, limited to the rear by eye contact with the pilot and taking into consideration a full view of the helideck, and where there is no risk of contact with the main rotor.
- **end of hose sample**, sample taken from the end of the delivery hose through the filling nozzle.
- **satisfactory result (fuel sample)**, the fuel has the correct colour**,** is visually clear and transparent, free from particles and dissolved water at normal temperatures.

- **pressure fuel connector**, arrangement at the end of the filling hose nearest to the helicopter.
- **fire protective clothing**, clothing used to protect response crews from heat and other stresses during fire/smoke diving situations. Exempted from this definition is the protection of head, hands and feet that is regulated through separate NS-EN standards.

2 Responsibilities, requirements and operational regulations

The authorities place minimum requirements regarding helicopter decks, equipment and personnel. These may be found in BSL D 5 – 1. Some extracts from the BSL are quoted here. This chapter also contains several additional requirements developed by the Helicopter operators and the Norwegian Oil and gas association.

2.1 Responsibility

The operator of an installation is responsible for ensuring that the installation's helideck, refuelling plant and competence meet current requirements.

2.2 Approval of mobile and fixed installations

Prior to initial use on the Norwegian Continental Shelf, an installation's helideck and refuelling plant must be approved by relevant authorities and the helicopter company(s) operating on the installation. For permanent installations the relevant authorities are The Petroleum Safety Authority Norway and the Norwegian Civil Aviation Authority.

For mobile installations the relevant authorities are the flag state, alternatively the Norwegian Maritime Directorate, assisted by the Norwegian Civil Aviation Authority. Reference is made to chapter 3.

2.3 Inspection

The operator of an installation is responsible for routine inspections of the helideck and refuelling plant.

2.4 Supervision

The operating company is responsible for supervision relating to helicopter activities on the installation such as the helideck, the refuelling plant, the helideck crew, the radio operator/person responsible for communications, radio and navigational equipment etc. Such supervision is in addition to the installation's routine for maintenance and inspection.

2.5 Maintenance programme

A maintenance programme for the helideck, its' equipment and refuelling plant (if installed) is to be established and maintained.

2.6 Audits

The helicopter company and the Petroleum Safety Authority Norway, with professional support from the Civil Aviation Authorities will carry out periodical audits on the operator's systems/installation.

2.7 Training of helideck crews

Basic and refresher training for helideck crew is to be carried out in accordance with the Norwegian Oil and Gas Association curriculum. The courses are titled HLO Basic Course and HLO Refresher Course.
The HLO Refresher Course must be implemented within 24 months after the last HLO Basic/Refresher course.

Refresher training on the installation should be carried out at least every 14 days for all helideck crews. During this training special emphasis should be placed on fire and damage control. See Enclosure E. for examples of such a training programme.
All basic and refresher training must be documented!

2.8 Experience

Helicopter deck crew members who have only recently completed their basic training shall participate in a minimum of 20 helicopter landings and take offs under the guidance of an experienced HLO before being fully qualified to stand independent duty and becoming part of the minimum manning of the helicopter deck. Such training should be conducted on an installation with heavy helicopter traffic. Reference is also made to "Norwegian Oil and Gas Association guidelines #074 para.9, Helidekkbemanning og kompetanse" (Norwegian only).

Personnel who have completed their training in accordance with item 2.7, but who have not acted in that position during the past two years, shall have a thorough introduction to the helideck and refuelling plant in question under the guidance of the HLO.
Personnel who have not acted in a position on the helideck during the past four years must redo the basic HLO training course.

Personnel who are to act as HLO should have held a regular position as heliguard and/or fireguard for a minimum of one year before being allowed to fill the position as HLO. The installation should furthermore facilitate education and training for the new tasks he/she will face as HLO.

2.9 Physical fitness

The Helideck crew shall be able to conduct immediate effort in a helicopter accident until dedicated emergency personnel are on site. The Operator Company must ensure that the helideck crew are physically and mentally fit for this task. This includes documented knowledge in the use of smoke diving apparatus.

2.10 Special responsibilities and duties for the leader of the helicopter deck (HLO)

It is the duty of the HLO to supervise and run day to day operations on the helideck during helicopter visits, including updating the installation manager in writing at regular intervals regarding the status of the helideck, equipment and services. He shall i.e. ensure that:

- necessary steps are taken to deny unauthorised persons access to the helicopter deck prior to take off and landing.
- the deck is cleared of loose objects, snow and ice, inflammable substances etc.
- necessary personnel are present and at a state of readiness.
- the helideck crew has been briefed on any special conditions prior to the arrival of the helicopter, especially on the arrival of unfamiliar types of helicopter or in the event of special operations.
- all equipment and instruments are in place and in full working order.
- all crane operations in the vicinity of the landing area have been stopped and the cranes are correctly positioned in relationship to the free approach and departure sectors.
- passengers are held in the safe zone during landing/take off and that they are given guidance during disembarkation and embarkation.
- passengers are wearing on their survival suits in a proper manner.
- passengers have fastened their safety belts.

Before landing the HLO shall maintain contact with the helicopter pilot and inform whether the deck is clear for landing. Ref. Enclosure D “Phraseology”.

The HLO shall immediately report any form of deviation on the helicopter deck to his immediate superior/installation manager, so that the helicopter operator may be informed of the situation.

The HLO shall be positioned to be able to observe as best as possible, and closely monitor, landing and take-off. The HLO shall immediately inform the pilot via radio or visually if any abnormal situation occurs. The threshold using the radio should be low and with no demands regarding phraseology or language. Warning should though preferably be given in English if this can be achieved without time loss.

2.11 Clothing and protective equipment for the helideck crew

All persons who are part of the helideck crew during take-off and landing shall each have immediate access to one set of equipment consisting of:
European Norm:

EN 469	Protective clothing for firefighting
EN 659	Protective gloves for firefighting
EN 443	Helmets for firefighting
EN 15090	Boots for firemen (alternative EN 354 or EN 345)
EN 14116	Balaclava helmet (alternative EN 11612 or EN 533)
EN 137	Smoke diving equipment (a minimum of two (2) sets for distribution)

When the equipment is not in use it shall be stored in a separate locker, ready for rapid donning, in the immediate vicinity of the helideck. The locker must be painted red and marked:
“Brannbeskyttelse” and **“Fire Protection”**.
In addition to the required numbers/sets of fire protection equipment, the locker must also contain:

- two lifelines with a minimum length of 30 m
- fire inhibiting blankets

The member of the helideck crew who is stationed at the foam cannon shall wear all the fire protection gear described above, apart from the smoke diving equipment.
During take-off and landing, when there is reason to believe that a hazardous situation may arise on the helideck, all persons who make up the helideck crew must wear fire protection gear.

Coverall used for work on the helideck must meet the requirements for fire safety according to **EN 11612** (alternative EN 531)**.**
The HLO shall clearly be marked front and back with the letters HLO, or by an armband, so as to be easily identifiable by the helicopter crew.

2.12 Manning the helicopter deck

The helicopter deck shall be manned by minimum three persons:

- **HLO (In charge of the helicopter deck)**
- **Heliguard**
- **Fireguard**

These are nominated as the Helideck Crew.

They must be able to document that they have completed their familiarization in the use of the helicopter deck’s firefighting equipment, including the training stipulated in Chapter 2.7.

During take-off and landing at least one person, dressed in fire protection clothing as stated in Chapter 2.11, shall be stationed at the remote control unit for the helideck’s firefighting system/foam monitor or at the most practical foam monitor to be used in the prevailing weather conditions.

During refuelling with the engine running the helideck crew shall consist of (Refer also to Chapter 5.12.6 and enclosure K):

- **The operator of the refuelling plant**
- **The operator of the pistol grip nozzle**
- **The fireguard**

The HLO may be one of the three persons. The fireguard shall be dressed as described for take-off and landing.

When required, additional personnel without training and/or experience can act as assistants on the helideck, but must be briefed by the HLO and be under constant supervision by a Helideck crewmember during helicopter operations.

2.13 Helideck report

- Not later than one hour before planned helicopter departure from base the offshore installation shall give the helicopter operator updated information regarding the status of the helideck and flying conditions.
- The information shall be given on a separate form; Helideck Report Form OLF v1.(See separate enclosure to the manual)
- The report is valid maximum 6 hours on condition there are no changes in the information.
- The helideck report shall be forwarded in pdf. format as attachment to an E-mail.
  The **subject** field in the E-mail shall be filled in as follows:
  <Name of Installation, “Helideck Report” Date, Flight number>
  Example:
  “Troll A, Helideck Report 13.08.10”
  or “Aasgard B, Helideck Report 13.08.10, HKS477”
- On installations with moving helideck a screen dump of the HMS data page shall be submitted together with the Helideck report.

Send the completed form via E-mail to the relevant helicopter operator:

- **Bristow Norway:** helideck.norway@bristowgroup.com
- **CHC Helikopter Service:** helideck@chc.ca
- **Norsk Helikopterservice:** ops@norskhelikopterservice.no
- **Blueway Offshore Norge:** TBD

NB! These e-mail addresses are for receiving helideck reports only and will not be monitored for other requests.

2.13.1 Filling in the form

The form is self-explanatory, but rolling the pointer above a writable field then additional information will show up. Items that need further explanations are detailed in the below paragraphs.

Dynamic positioning
Cross “YES” or “NO” to indicate if the vessel is positioned dynamically (DP).
If DP system is active: ”YES”.
If inactive, moored, anchored, free floating with or without steering speed or fixed installation: “NO”.

Accurate monitoring equipment (HMS system):
If a moving helideck (i.e. not a fixed platform) and HMS system operative: Cross “YES”.
If no operational HMS system or fixed platform: Cross “NO”.
Log info
Logistics data have to filled in if this information are not reported separately in accordance with local arrangement.

Return load may not be available when this form is forwarded to the helicopter operator. However, if the information is available or even only partially available (i.e. number of passengers) it can be useful to the pilots for fuel planning purposes etc. The pilots will confirm information in this section upon arrival.

In case of multiple landings the ROUTING fields can be used to indicate routing including exchange of passengers. i.e.: **1: XXA -8 /+9, 2: XXB -9 /+11.**
NOTE: An information update of relevant weather, movements and log info (i.e. return load) for the installation shall be submitted to the arriving helicopter upon initial radio contact. (See also enclosure I Radio-communications)

Helideck nonconformities
Any helideck nonconformities shall always be filled into the form.
Examples: ships within the 500 meter zone, non-conformities of helideck equipment, temporary objects close to the obstruction free zones, deviation from standard helideck procedures, flaring of gas, other info which may be useful to the pilots.

Weather observation
All weather information shall be filled into the form, but some exceptions as per local procedures:
If the installation is covered by HFIS services the “QNH” and the “cloud base” field might be omitted.
If the installation is covered by local METAR services the ”cloud base” field might be omitted writing “see metar” in the field.
Wind
Wind direction shall be stated in degrees relative to magnetic North and Wind velocity (speed) in knots.
The wind sensor position relative to the helideck shall be stated with height and distance in meters from the edge of the helideck.
Other relevant weather info:
Fill in additional relevant weather information that is not presented elsewhere in this section. I.e. fog banks, variable winds, resent rain-/snow showers, thunderstorm activity, lightning, variable visibility in different directions etc.

Sea spray observed over the helideck
Check Yes or No if there has been / has not been observed/reported sea spray over the helideck. This can be difficult to determine, but in regard to incidents of sea spray causing engine flame out. The helicopter operator does require observed/reported sea spray to be reported.

HELIDECK MOVEMENT
Max pitch UP/DOWN with reference to horizon:
The largest pitch movement up/down over the last 20 minutes measured in degrees with reference to the horizon.
Max roll Starboard/Port with reference to horizon:
The largest roll movement starboard/port, over the last 20 minutes, measured in degrees with reference to the horizon.
Max Helideck Inclination:

The largest measured helideck inclination, over the last 20 minutes, measured in degrees with reference to the horizon.

Max heave (top to bottom):

The maximum heave (total vertical movement) of the helideck is the maximum top to bottom value in one cycle (one movement curve) over the past 20 minutes.

Heave period:

The time in seconds between tops of two waves. If measurement equipment is not available the pilots will use a standard heave period of 10 seconds for manual calculations of **average heave rate**.

Max Heave rate (expression for Max Average Heave rate):

Shall be entered if measurement equipment for this purpose is available. Heave rate shall be reported as the highest value (average heave rate meaning average speed from top to bottom or bottom to top of a wave) measured over the last 20 minutes. If measurement equipment in not available, the column should not be filled in. The pilots will calculate **average heave rate** manually by dividing maximum total heave (measured over the last 10 min.) by half the motion period (**heave period).**

HELIDECK REPORT		Installation:
		Email:
		Tel:
Date:	Time (UTC):	Position:
Dynamic positioning: Yes No		NDB: kHz
Accurate monitoring equipment: Yes No		VHF: mHz

LOG INFO				
Flight number:	Helifuel available: Yes No		Fuel quantity: Litres	
Return load: Passengers			Luggage (incl. In total): kg	
Total weight: kg			Cargo (incl. In total): kg	
Routing:	1	2	3	4
The helideck is inspected according to OLF helideck manual. Nonconformities will appear under Remarks.				
Remarks:				
			NAME OF HLO	

WEATHER OBSERVATION					
WIND	Height:	Distance:	Direction:	Velocity:	Gust (2 min):
Helideck:	M	M		kn	kn
Area (derrick):	M	M		kn	kn
Visibility: M			QNH: hPa	Helideck heading:	Vessel heading:
Temperature: Degrees C		Dewpoint:	Clouds (few / sct / bcn / ovc in feet):		
Other relevant weather info(fog banks, rapid changes, etc):					
Sea spray observed over helideck: Yes No					

HELIDECK MOVEMENT 20 MIN. INTERVAL				INSTALLATION CATEGORY:
MAX PITCH AND ROLL IN DEG. WITH REF. TO HORIZON				Max heave (top to bottom): M
Pitch up	Pitch down	Roll port	Roll starboard	Heave Period (if available): Sec.
Max Helideck Inclination:				Max heave rate (if available): m/s

OLF ver.1

2.14 Helideck Monitoring Systems

Unstable Helidecks
The helicopter Companies and CAA-N have set requirements to all installations and vessels with unstable helidecks that a system which can measure Pitch, Roll, Helideck Inclination and Heave Rate must be installed.
Definition
The definition of an unstable helideck is in this context a helideck mounted on ships, floating production units, semi-submersible rigs, jack up rigs when they are floating/moving and other helidecks that are moving. These are all defined as unstable if pitch and roll movements exceeds 1 degree to either side from the horizontal plane, and if the vertical movement of the helideck exceeds 2 meters.
Measuring equipment for unstable helidecks (Helideck Monitoring System)
The Helicopter Companies have developed a Standard that covers this requirement. This standard represents the minimum requirements to measuring equipment for operations to an unstable helideck.
See enclosure L: Standard Helideck Monitoring Systems.

2.15 Reporting of incidents

Reporting of ground incidents on the helideck
In accordance with CAA-N's reporting requirements all relevant incidents on the helideck shall be reported to the CAA-N within 72 hours.
The form attached to Norwegian Oil and Gas Association Helideck Manual (enclosure M) describes types of reportable incidents, and shall be used in addition to any internal reporting procedures.
The report shall be filled out as soon as possible and sent to the Operations Centre of the Helicopter Company involved in the incident. They will enter the report into their reporting system and forward the report to CAA-N.

3 Helicopter deck and equipment parts

The contents of this section are of an informative nature and describe:

- The helicopter deck in general
- Equipment parts and guidelines on helicopter safety and their relationship to rules and regulations.

The authorities place minimum requirements on helidecks, equipment and personnel. These are to be found in BSL D 5-1. The following items are mainly extracts of the most important regulations in this BSL.

3.1 The helicopter deck in general

3.1.1 Obstacles in the approach and departure sectors

In the 210° approach and departure sectors and in the immediate vicinity of the deck there shall be no obstacle that rises above the level of the helideck. Exempted are:

- A raised safety curb.
- Perimeter lights and floodlights no higher than 25 cm above the level of the helideck.
- The outer edges of the safety net.
- Individual obstacles required for operating the helicopter deck (railings, stairs, foam monitors) that do not rise more than 25 cm above the level of the helideck.

3.1.2 Friction

The helideck shall have a surface that prevents the helicopter from sliding (non-skid).

With a rope net in place the helicopter deck shall have a friction coefficient of at least 0.40 or higher, also when the deck is damp or wet.
Without the rope net the friction coefficient shall be at least 0.65 (see item 3.1.3.below).

3.1.3 Rope net

The helicopter deck shall be fitted with a rope net.
The size of the net is determined by the size of the largest helicopter that is used.
Such a net is normally dimensioned for a large helicopter, the minimum size being 15 x 15 metres.
The meshes in the net shall be so dimensioned that they do not snag the helicopter's undercarriage.
The rope net must be fastened every 1.5 metre. To ensure that the rope net is kept sufficiently taut, at least 50% of the fastening points shall be fitted with tightening mechanisms. The net shall be so taut that it cannot be lifted more than maximum 25 cm clear of the surface.

A rope net is not required on installations where the surface of the helicopter deck consists of single profiles with special friction arrangements ("safe-deck").

The requirement for rope netting on non-movable helidecks may be deviated from, provided that the deck is suitably constructed and there is a system in place to ensure that the helicopter cannot skid, and that the friction coefficient is at least 0.65. The requirement for rope netting cannot be deviated from if there is snow or ice on the helideck.

3.1.4 Visual aids

The term visual aids means windsock, markings and illumination of the helideck.

3.1.5 Windsock

The windsock must be:

- Easily visible
- Mounted in an area minimally affected by turbulence from surrounding constructions.
- Single coloured (orange) or dual coloured orange/white, red/white or black/white, conically formed and of sufficient size. (Standard size: inner diam. 60 cm, outer diam. 30 cm, length 2.4 m)
- Illuminated during night flying.

3.1.6 Identification

The helicopter deck shall be marked with the name of the installation clearly visible from all approach directions above the level of the helicopter deck.

3.1.7 Lighting

Helicopter decks that are to be used for night flying and/or in conditions with reduced visibility must:

Have a satisfactory shielded floodlighting arrangement so that the pilots cannot be dazzled during the approach and landing phase. The floodlights are to be used at the request of the pilot.

Be marked with perimeter lighting consisting of green lamps equally spaced at a interval of not more than 3 metres
The perimeter lighting must not reach more than 25 cm above the level of the helideck.
The floodlighting and the perimeter lighting must be connected to the installations/plants emergency power supply and switchover time must, in the event of a failure of the main power supply, be no more than 10 seconds.

The highest point of the derrick, crane booms and cabins or any other obstacle that represents a hazard to flying must be marked with red warning lights and be visible from all positions. The derrick and crane booms must also be fitted with red lights at levels for every third of the overall length calculated from the highest point of the derrick/crane boom.

At least one light at each level must be visible from all directions.

3.1.8 Operational equipment

The helicopter deck shall at all times maintain all the equipment that is required for operations, such as:

- Wheel chocks
- Ropes for tying down a parked helicopter
- Scales for weighing luggage/cargo (should be available on the installation)
- Equipment for removing snow and ice.

3.1.9 Rescue equipment

The following rescue equipment should be found in the immediate vicinity of the helicopter deck:

- 2 Fire axes
- 3 Non corrosive knives (for cutting seat belts).
- 2 Flashlights (Explosion proof)
- 1 Crowbar
- 1 Wire cutter
- 1 Hacksaw w/spare blades
- 1 Hammer
- 1 Cutting chisel
- 1 Sheet metal shears
- 1 Bolt cutter
- 1 Jack for minimum lift of ½ tonne

The equipment must be stored so that it is readily available, visible and in a safe place, preferably in a sealed locker or container. If the locker or container can be locked with a key, the key must be placed behind a window of breakable material. The locker or container shall be painted red and marked “Nødutstyr” and “Emergency Equipment”.
One metal hook on a 3 m long metal handle, together with a light ladder of about 3 m in length, shall be stored in a suitable place near the locker or container holding the emergency equipment.

3.1.10 Communications equipment

Personnel who comprise the minimum manning requirement for the helicopter deck shall be equipped with portable two way VHF radios capable of communicating with the crew of the helicopter and the installation’s radio room.

3.1.11 Signs

Access routes to the helicopter deck shall be marked with clearly visible signs prohibiting:

- Presence on the deck during start and landing
- Movement of personnel on the helicopter deck behind a parked helicopter with the rotor engaged.

- Exits steps from the helicopter deck shall be clearly marked with “**EXIT**”.

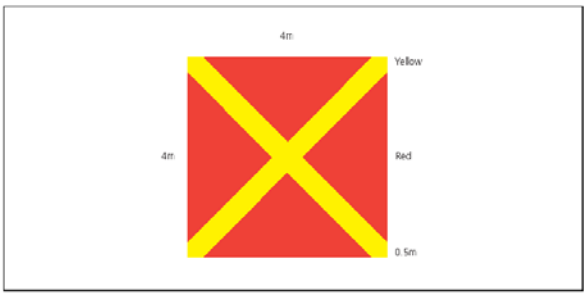
The text shall be visible in the dark.

3.1.12 Marking of closed Helideck

A helicopter will normally not land before a “deck clear” message is received from the HLO, but in an emergency or by misunderstanding this can still happen. A helideck that is not marked as closed is therefore assumed safe to land on, without any threat to the helicopter or personnel on the ground. To ensure against this the helideck shall be marked as closed if a landing will give unacceptable consequences.

The Marking shall be used:
• If the helideck is dangerous to land on, for example due to work in progress with loose objects, weakened structure, obstacles as wires stretched above the helideck etc.
NB! Does not normally apply to crane operations because the crane structure will be visible to the pilots.
• If landing will represent a danger to personnel on or near the helideck.
• If another installation with helideck is close by or alongside, i.e. a flotel, and only one of the helidecks are to be used.

NB! The marking shall not be used just because the helideck is not manned or due to general equipment failures.
A temporary or permanently closed helideck shall be marked in accordance with an internationally accepted standard with a yellow cross on red background. The marking should be painted on the deck or by using a painted canvas laid out and secured. The marking shall be placed over the "H" in the centre of the helideck.
When the helicopter deck is marked closed the green perimeter lights shall be turned off.
AMB / SAR helicopters will not land when the helideck is marked closed.



3.2 Safety equipment

This section describes in general terms the safety equipment available on the installations. The type of equipment may vary from installation to installation. Special information pertaining to a specific installation is included in the local operations manuals.

3.2.1 Alarm systems

It must be possible to activate the alarm system from the helicopter deck or its' immediate vicinity.
The start button for the alarm system must be clearly marked.

3.2.2 Fire alarms and General alarms

Alarm buttons are located at the helicopter decks fire posts.
These are only to be used in emergency situations, including a fire in a helicopter or on the helicopter deck.

3.2.3 Alarm systems (Fire Alarm Boxes, FAB's)

Boxes for activating the fire pumps are located near the helicopter deck.
Throwing the switches in these boxes will start the fire pump(s) and indicate in the control room which fire alarm box has been activated.

3.3 Firefighting equipment

The authorities' requirements relating to fire protection on the helicopter deck are to be found in the Civil Aviation Authority's,
the Maritime Directorate's and the Petroleum Directorate's regulations, See Chapter 1.5

The Helicopter Landing Officer (HLO) shall ensure that the firefighting equipment is always in good working order and ready for use.
Any deviation shall be reported to his/her immediate superior.

NOTE: The fire extinguishers system of the helideck must not be activated prior to helicopter landing. Activation before completed landing could lead to loss of deck references for the pilots.

3.3.1 Fire water system

A fire water system is compulsory.

3.3.1.1 Purpose and effect

By using water a fire may be controlled or extinguished in the following manner:

Water can act as a dilutor when converted to steam in the fire zone.
Steam reduces the oxygen content in the air current mixture by 1/3
Water absorbs heat when being converted to steam.
Water may be used for cooling surrounding areas so as to prevent the fire from spreading or to improve access to the area of the fire.

3.3.1.2 Application

Water is the best extinguishing agent for fires in woodwork/paper/garbage and is good for damping down fires following the use of hand held extinguishers.

3.3.1.3 Equipment

1.5” hoses are standard equipment for fire water/hosing down.
Foam equipment may alternatively be used with water only.

3.3.1.4 Use

Water used on an oil fire should be in the form of a fine spray.
Water must never be used on fires in electrical equipment before the power supply has been shut off.
Water must be used in the form of a fine spray for cooling.
For most fires the water jet must be directed at the root of the flames

3.3.2 Foam systems

3.3.2.1 Purpose and effect

By using foam a fire may be controlled and/or extinguished in one or more of the following manners:

Foam acts as a “smothering agent”.
If used in sufficient amounts it reduces the oxygen supply by preventing the influx of air.
Foam acts as a dilutor.
When forced into a fire zone foam is converted to steam and will, under certain conditions, reduce the air current mixture by 1/3.
The process of converting foam to steam will absorb heat.
A sufficiently thick layer of foam will protect explosive materials that are exposed to the fire by insulating and absorbing heat.
Fires involving inflammable liquids will be extinguished when covered by a thick carpet of foam. The carpet must have the proper consistency and thickness and must be maintained for a sufficient length of time.

3.3.2.2 Application

Foam must be applied in the largest possible amounts so as to cover the whole surface of the fire.
Foam is suitable for all kinds of fire, apart from electrical fires.

3.3.2.3 Equipment

There are three each of foam monitors and three hose reels.
Exceptions may be found on some of the older helicopter decks where there are only two monitors and two hose reels (only two fire posts). On new decks with Pop-up spray systems integrated in the helideck the monitors might be omitted.
Producing foam requires the mixing of the following three components in a turbulent condition:

- Water
- Air
- Foam concentrate.

This is usually achieved by injecting the concentrate under pressure into the water flow.
The system will usually start to produce foam about 20 seconds after the start-up of the equipment.

3.3.2.4 Use

The fixed foam system is controlled from permanently installed firefighting cabinets.
After using the foam system all piping must be thoroughly flushed with water to remove any remaining foam solution.
Note that too much water will break down the foam.

3.3.3 Dry powder system

3.3.3.1 Purpose and effect

The effect of the dry powder in very fine form:
The chain reaction of the fire is stopped by introducing into the atmosphere a large number of finely powdered particles.

Remember: When extinguishing a fire by using dry powder, any evaporation through the powder will present the possibility of re-ignition from hot metal, smouldering insulation etc.

3.3.3.2 Application

Dry powder is effective against most fires, especially electrical fires, as it is non-conductive.
When used to extinguish a petrochemical fire, in most cases re-ignition will occur unless the source of ignition is removed.
Foam must be used to prevent re-ignition.

3.3.3.3 Equipment

The equipment is of the gas cartridge propellant type.
The powder is propelled by internal overpressure.
Discharging a CO2 propellant cartridge located inside the extinguisher creates this overpressure.

3.3.3.4 Use

The powder will normally start to flow within 15 seconds of activating the fixed equipment.

The units should be directed towards the base of the flames. If possible, from up-wind.

Immediately after use all piping must be cleaned of any remaining powder.
This is to prevent powder /lumps that may later block the hose/piping.

3.3.4 Maintenance

All rescue and safety equipment shall be maintained in good working order and be ready for use at all times. Maintenance, periodical testing and inspection must be carried out in accordance with established procedures.

4 Operations

This section of the manual describes operational limitations and the routine tasks of the helideck crew during helicopter operations.
The step-by-step duty of each individual member of the helideck crew during take-off and landing is described in enclosure G, and for stop/start of rotors/engines in enclosure H.
Operations related to the fuel plant and refuelling are described in Chapter 5 “Fuel Control and Operations”.
Reference is also made to Chapter 6.4, “Refuelling in strong winds”.

4.1 Operating on the helicopter deck

4.1.1 The use of anti-collision lights as a signal to the helideck crew

After the helicopter has landed and is ready for unloading, the helicopters anti-collision lights will be switched off.
This indicates that the helideck crew have permission to approach the helicopter in order to carry out their tasks. See enclosure B Danger Zones.

Immediately before take-off, or when the situation so requires, the pilot will switch on the anti-collision lights.
This indicates that the helideck crew must immediately vacate the helideck. The HLO will give the thumbs up signal when all personnel have left the helideck, and all objects have been removed there from.

4.1.2 Use of wheel chocks

This procedure applies to all helicopters with a wheeled undercarriage during operations on fixed installations, mobile rigs and vessels.
Standard hand signals must be used. (See Enclosure A)
Exempted from this procedure are helicopters in shuttle traffic where both pilots remain in the cockpit. Wheel chocks may then be used at the pilot’s discretion.

4.1.3 Standard procedure

- The wheel chocks must immediately be put in place as soon as the anti-collision lights have been switched off.
- The wheel chocks must be placed in front of and behind both main wheels.
- Both pilots must remain in the cockpit until the wheel chocks are in place.
- The wheel chocks are removed when both pilots have taken their respective seats, and the pilot has signalled, “Remove wheel chocks”.

4.2 Cargo in the helicopter

4.2.1 General

The restrictions described in this chapter apply to all types of helicopter.
The restrictions are supplementary to the authorities' requirements (EASA OPS).

Personal luggage must not exceed 10 kg. per piece. Cargo that is sent by helicopter should not weigh more than 15 kg per parcel. Heavier packages must be divided if possible. Exemptions may be made for priority cargo. The cargo must then be specially labelled ("heavy cargo" with the weight listed on each package) and the installation/destination must be notified.

4.2.2 Passenger-/cargo manifest

Whenever passengers, luggage and/or cargo are transported by helicopter a passenger/cargo manifest must be completed and accompany the helicopter.
When the passenger/cargo manifest has been completed it is considered to be an official document and therefore subject to inspection.
The standard weight per passenger, including survival suit, is 211 lbs. (96 kg) for men and 174 lbs. (79 kg) for women.
The weight of cargo/luggage comes in addition.
The manifest shall contain the following information:

- The full name of the passenger
- Employer
- The weight of the passenger
- The weight of the luggage (per person)
- Weight of cargo/luggage
- Description of the content in each package
- Destination

When sending cargo from an installation to shore the HLO is responsible for checking the manifest and ensuring that it accompanies the transmittal.
The HLO is responsible for checking that the number of passengers on board complies with the passenger manifest, and that the manifest is handed to the helicopter crew.
In loading the Super Puma the pilot shall be informed of the total load in cargo compartment 3.

4.2.3 Cargo and passengers together in the helicopter cabin

As a rule, when transporting passengers, cargo must not be placed in the helicopter cabin.
When exempted the following shall apply:

- Only prioritized cargo
- Cargo shall not be blocking the cabin doors
- Cargo must not block the main exits from that part of the helicopter cabin where the passengers are seated.

- Cargo must not be placed so that passengers do not have direct access to alternative escape routes (push out windows). Passengers must not be placed in seats where the adjacent “push out window” is blocked, or in a seat where cargo hampers free access to the nearest such window.
- Cargo must not be placed in the centre aisle. Exempted are pipes with a diameter of up to 10 cm.
- Cargo must not hamper access to emergency equipment.
- Cargo must be secured in accordance with the authorities strictest requirements.
- Cargo must primarily be placed in front of the passengers in the cabin.

4.2.4 Luggage free cabin

Passengers may not bring hand luggage with them into the helicopter cabin. All form of bags/ briefcases/ portfolios etc. are considered to be hand luggage and consequently prohibited. Reading matter/magazines/newspapers are exempted.

4.2.5 Transporting cargo in passenger seats

If cargo is to be placed in a passenger seat the following restrictions will apply:

- Max. one package per seat with a maximum weight of 80 kg (NB! Single packages weighing up to 15 kg may be transported accumulatively in a sack with a total weight of no more than 80 kg.)
- The sack’s exterior measurements must be less than the height and width of the seat.
- In addition to the seat belt, the cargo must always be secured by a strap, cargo net or other approved means.
- Cargo must not be placed in seats adjacent to the main emergency exits of the helicopter.

4.2.6 Transportation of passengers and cargo

Transportation of passengers and cargo in helicopters requires, according to EASA Part OPS Helicopter ORO.GEN.110(i), and EASA AMC1 SPA.DG.105(a) and (f) that the personnel involved in the operation has the necessary awareness training in dangerous goods. This is to enable the personnel to recognize dangerous goods in passenger luggage and also to identify/ recognize unmarked cargo that could be Dangerous Goods.

4.2.7 Training requirements

The personnel categories requiring dangerous goods awareness training is:

- The person checking in the passengers, luggage and cargo that also makes the passenger and cargo manifest.
- The HLO and the helideck personnel involved in loading and unloading of passengers and cargo on the helicopters offshore

This training has to be performed every 24 months and requires a separate test. Records of this have to be filed and maintained on board the vessel /installation for each person.

4.2.8 Dangerous Goods requirements

If a capacity of transportation of dangerous goods is required from an offshore installation/vessel the IATA regulations require a full IATA Dangerous Goods course for the nominated person accepting the cargo. This course has to be repeated every 24 months. Records of this have to be available on the vessel/installation.
If dangerous goods are to be transported in helicopters from offshore destinations the installation/vessel has to have the following available:

- Nominated Person (Shipper and Packer)
- Latest version of IATA DGR Goods Regulations available
- Shippers declaration forms
- Checklists – Radioactive and None Radioactive
- NOTOC forms
- UN Specification packages
- Inner packages matching UN Spec. markings
- Limited Quantity Packages
- Absorbent and Cushioning material
- Dangerous Goods Labels
- Provision of spill kits

4.2.9 The transport of fish

In order to avoid corrosion and/or other damage to baggage, the following restrictions will apply to the transport of fish:

- The fish must be packed in watertight containers, or,
- The fish must be frozen and packed in plastic or a similar material in such a manner as to avoid damage in the event of thawing.

4.2.10 Personal Locator Beacon (PLB)

Flights where passengers are equipped with personal Locator Beacons (PLB) to be left behind in the helicopter after the flight, the HLO is responsible for departing passengers not taking their PLB's with them.
If any PLB's are left on the installation, information of this incident must be communicated to the heliport which has the daily supervision of the PLB's.

4.3 Communications

This section of the manual contains procedures and guidelines for communication between the helicopter deck crew and the helicopter pilots. See enclosure I for guidance to radio communications.

4.3.1 Language

Normally all aeronautical communication is in English. It may, however, be more practical to communicate in Norwegian if the English capabilities are limited and both parties speak Norwegian.

4.3.2 Responsibilities

The HLO will inform when the helideck is cleared for landing. He will also provide safety related information, e.g. that the helideck may not be used due to an alarm, that the undercarriage is not lowered, loose articles that may have struck the rotor, oil or fuel leaks or faults with the helicopter (loose covers etc).
The HLO may not assume control of the air space or exercise air traffic control over the helicopter traffic.

4.3.3 Establishing radio communications

Prior to establishing radio communications one should ensure that:

- The correct radio frequency is being used.
- Listen first so as not to interrupt ongoing communications.
- Be aware of what one wants to say

If a radio station hears a call without being able to identify the call sign of the station being called, it shall not answer until the call sign has been repeated and understood.
If a station receives a call without being able to make out the identity of the caller, the following terminology shall be used:
“Station calling, this is Statfjord B HLO, say again your call sign”.

4.3.4 The call sign of the helicopter

The call sign of the helicopter may be the flight number of the helicopter in question (e.g. Helibus 012) or the registration letters of the helicopter, usually abbreviated to the first and the last two letters (e.g. LN-OMN = LMN).

4.3.5 Radio failure

Even though modern radio equipment is reliable, radio failure between the helicopter and the helicopter deck crew cannot be excluded.
In practice, a suspected loss of contact will arise when a helicopter fails to respond when called or if the frequency becomes silent.
In the event of a suspected radio failure, contact should be made with another member of the helicopter deck crew or the radio operator so that the helicopter pilot can receive information.
As an exception, hand signals may be used to indicate that the helicopter deck is clear for landing. (***Hand signal OK***)

4.3.6 Phraseology

During radio communication between the helicopter and a ground station certain words and expressions, known as phraseology, are used in order to ease understanding. The most possible use of standard phraseology is recommended.
Enclosure D contains a list of standard English expressions with their Norwegian equivalent.

4.3.7 Frequencies

The information frequency for helicopter services is used for

- Deck clearance
- Wind direction and velocity
- Any other information of importance to flight safety

Where two frequencies are in operation all other communication shall take place on the **Logistics frequency** (on another radio).

5 Aviation fuel

5.1 General

The contents of these guidelines cover the minimum requirements regarding the use of equipment for supplying fuel to the helicopter. It is important that the helideck crew is familiar with these guidelines, and the relevant safety requirements.

5.2 Purpose

This document contains operational guidelines and includes the control and handling of the product aviation fuel Jet A – 1.

5.3 Personnel duties

It is the responsibility of each individual installation to establish a preventative maintenance programme relating to the unit with regard to safety and environment, and ensuring that such measures are in accordance with current regulations.
The most important duties for personnel involved in operating the units are to always ensure that the correct fuel quality is delivered, that the product is free from water and pollutant solids, and that refuelling is carried out in a safe, secure and efficient manner.
The HLO has the day to day supervision of the refuelling operations. He shall ensure that all work is conducted in a safe manner and in accordance with the relevant procedures and instructions. All inspections relating to operations shall be logged.

5.4 Sampling and controls

5.4.1 General

Jet A – 1 shall be subject to quality assurance controls from the refinery to consumption. All quality assurance shall be controllable. This must be conducted in accordance with the relevant guidelines.
All samples must be taken by competent personnel using proper procedures and equipment. It is important that persons suffering from colour blindness do not carry out water detector tests. This is to ensure that that samples that are taken give a correct picture of the product being controlled. All sampling must be logged.

5.4.2 Water

Water in the fuel may be found in two forms:

- As dispersed water, i.e. fine/small droplets that have separated from the fuel. The dispersed water may be removed/separated from the fuel in the filter separator. Any remaining water will be absorbed in the filter monitor.
- As water molecules, i.e. loosely attached to the fuel molecules.

Water attached to the molecules in this manner cannot be removed by these methods.

Even though it occurs in only minute quantities it is nevertheless of no little importance for the fuel.
Such fine dispersion may be generated during the water and the fuel's path through a pump or a micro filter.
A visual check will normally disclose dispersed water. However, experience has shown that with the turbine fuels used by aircraft, there may be borderline cases where the human eye cannot be trusted.
It is against this background that the "Shell Water Detector" has been developed. This will give a positive indication of dispersed water with a concentration of 30 parts per million (30 ppm). The capsules may also show a slight change in their appearance in a concentration as low as 5 parts per million (5 ppm).

5.4.3 Visual controls

In order for the fuel samples to be accepted, the fuel must be of the correct colour, visibly clear and transparent and free from particles and dispersed water at normal temperatures. The colour of Jet A – 1 varies from a watery white to a straw yellow. Refer also to the chapter on "Visual Check". Water that has not dispersed will appear as drops on the inner walls of the sampling glass or as water at the bottom of the glass. This may also "fog" the sample/make it opaque.
Particles and other visual pollution will generally consist of rust, sand or dust, either mixed with the fuel or as sediment at the bottom of the glass.
When using the permanently installed sampling glasses, by discharging the sampled fuel onto the outer rim of the glass, an automatic cyclone movement is achieved. In this manner particles and larger water droplets are gathered at the bottom of the glass.
It is therefore important that samples that are taken from the portable tanks are given a powerful rotation in order to achieve such a cyclone.

Satisfactory result.
When none of the above mentioned are visible and the sample is clear and sediment free.

Unsatisfactory result
The sample is not clear and transparent; water or pollution is present.
If a sample contains sediment and/or free water:

- Further samples must be taken until the fuel is clear and free from water (clear and bright)
- If the sample contains finely dispersed water, a settling time of 1 hour per meter tank depth shall be allowed. After which a new purity test must be carried out.

This process must continue until the samples are completely free from water and/or sediment (clear and bright, satisfactory test results).

5.5 Testing and controls

Shell's water detector should be used to check the samples taken from the helicopter fuel (Jet A –1).
Should a detector change colour, it is most important that the procedures described in the following are used to remove the pollution from the fuel. The detector is comprised of the following components.

- An unbreakable injection syringe of 5 ml.
- A plastic detector capsule containing water sensitive paper.

5.5.1 Storing Shell's Water Detectors

The capsule lid should be screwed on as soon as possible after the detector has been removed from the container. This is because of the possible risk of discolouring the paper due to air humidity.
As a consequence, detectors should not be left lying around, or left loose in the pockets of overalls, clothes etc.
The maximum storage time for a detection capsule is nine (9) months from the date of production.

- The expiry date will be stamped on one side of the storage box.
- The expiry date will also be stamped on each capsule; this must be respected.

Unused capsules should be stored indoors under dry conditions until they are to be used.

5.5.2 Procedure for using the Water Detector Test

Check that the expiry date has not been exceeded (to be found on the box/container).
Prepare a sample of at least 3,5 litres in a clean, clear glass.
The sample must be powerfully rotated until a cyclone effect is generated in the glass. By using this method particles will accumulate at the bottom of the glass and any water particles will be crushed into the fuel. This takes place automatically in the enclosed sampling glasses.
Mount the detector on the syringe and immediately submerge both into the sample.
Withdraw the plunger until the fuel reaches the 5 ml mark.
Make sure that the plunger is not withdrawn before the syringe is submerged in the liquid.
If the plunger is withdrawn when in the open air, humidity will create an indication in the detector. This will result in a faulty reading.
Any possible water droplets in the fuel will be absorbed onto the paper fibres, releasing and spreading the colouring. In this manner a distinct colour change will occur.
If this change in colour takes place it means that the fuel is polluted by water and must consequently not be used. The part of the paper that is protected by plastic will remain unaffected. Any colour change between the inner and outer (wet) part or measured area, is a positive indication of the presence of finely dispersed water.
A generally light pastel colouring over the whole centre of the detector, or no colour at all can be approved. A light yellow pastel colouring with darker specks or spots indicates that there

are still some drops of water remaining suspended in the fuel, which may be above the permitted maximum concentration of 30 parts per million (30 ppm).
Further precipitation, discharging and separation is required to remove this water so that the concentration reaches below the level of 30 parts per million. Large and darker specks, or a generally darker colour in the centre of the detector, will of course indicate the presence of even more water in the fuel. This must be removed before it is safe for the helicopter to use the fuel.
When testing just before and after refuelling the helicopter, let the pilot wet the detector after the test has been completed to see that the colour changes to green, and to ensure that the detector was not defect.
On other occasions, apart from refuelling:

- Wet the detector, even though the test has been concluded, so as to get a confirmation of the change of colour.
- A detector must be used only once and thereafter discarded.

5.5.3 Drainage, Sampling and Checking

Drainage and product sampling – routines at the plant
In order to check that the storage tanks and delivery equipment are particle and water free drainage samples must be taken on a regular basis.
The equipment must be drained for water and particles at the following intervals:

- Daily from storage tank, filter separator and filter monitor before the day's first delivery.
- Before and after each delivery.
- After heavy rain and storms.

Drainage must be carried out with a full flow of liquid from the tank sump, the filter water separator and from the inlet side of the filter monitor. The liquid must be drained into clean clear glass jars of at least 3,5 litres for Visual Check. If the sample does not give a satisfactory result by Visual Check, the plant must be drained and new samples taken until a satisfactory Visual Check is achieved
If unusually large amounts of free water or particles are found, or if it is not possible to achieve a satisfactory Visual Check, then the system must be taken out of service. Investigations must be carried out immediately to find the cause of the pollution.

5.5.4 Visual Check

The following subsections are guidelines regarding the visual checking of fuel samples.

- **Colour**: Jet fuel may vary in colour from completely clear (water colour) to a straw yellow colour.
- **Water**: Free water will normally show as drops on the sides or at the bottom of the sample jar (free floating). It may also occur as a misty cloud in the fuel. (Emulsification).
- **Particles**: Consists mainly of small specks of rust, sand, dust or scale from hoses and equipment; settle at the bottom of the sample jar.
- **Clear and bright**: This expression is independent of the natural colour of the fuel. Clear means that there is no presence of sediments or emulsion. Shiny refers to the shiny appearance of the fuel when it is completely clean. If water or particles are discovered, new samples must be taken until the test is clear and bright.

- **Control Check**: This check consists of a Visual Check and the specific weight (density) of the fuel. This check is made to ensure that the fuel has the proper quality and has not degraded or been polluted during storage. The results of this test are compared to the values listed on the certificate. When the actual weight has been corrected to standard (15° C) the difference must be no more than 0.003 kg/l. If the difference is greater, the product must be quarantined and not supplied until the reason for the deviation has been clarified and new approval given.

If the discovered deviation is in the form of a technical problem relating to the unit, competent personnel must be summoned.

5.5.5 Sampling and inspection

Daily (every morning), to be carried out by the HLO

- Take a 3,5litre sample from the filter separator and monitor with the system pressurised.
- Take a 3,5litre sample from the tank currently in use.
- All samples to be checked with the Shell Water Detector
- The accepted sample from the storage tank must be kept for 24 hours: The sample must not be exposed to sunlight. If two tanks are being used during the course of one day then the samples from both tanks must be kept for 24 hours. The samples must be labelled.
- Carry out a visual inspection of the equipment to check for leaks and damage..
- When transferring fuel, read off and note in the helicopter tank log the monitor's pressure difference.
- Earth cables: Daily inspection for good mechanical contact with the unit and for possible damage.

All tests and inspections must be logged.

Weekly checks and inspections, to be carried out by the HLO

- If the system has been out of operation for more than a week, in addition to the other samples, a 3,5litre sample must be taken from the filling nozzle.
- In order to distribute wear and tear on pumps A and B a weekly alternation of the pump in use is recommended.
- Take a 3,5litre sample (or until the sample is acceptable) from portable tanks that are in storage.
- Drain the air separator collector glass.
- When pumping fuel, read off the pressure difference and note the result in the weekly log for pressure difference in the separator and monitor (See enclosure). If the maximum pressure difference for the filter separator or possibly the monitor is exceeded, the filter elements must be replaced (for the filter separator only step 1). For the filter separator, the maximum pressure difference is 15 psi, and for the monitor 22 psi.
- Inspect all earth cables (for portable tanks, supply unit, and the filling nozzles). If there is any fault or suspected fault, maintenance personnel must be summoned. The delivery unit must not be used if there is any fault or suspected fault with the unit's grounding system.
- Once a week the differential pressure for the separator and the monitor must be read whilst pumping at the selected delivery volumes. The results shall be logged.

Monthly checks and inspections, to be carried out by the HLO

- Check the delivery hose for damage and log the result, ref item 5.8 and the enclosures.
- Carry out function testing of the piston type differential pressure manometer for correct operation. This is done by opening the three-way valve connected to the meter. It is only necessary to check that the piston has free movement throughout its whole length, and ensure visually that it properly returns to its initial adjustment. The result shall be logged.
- Check the hose end filters in the pressure hose connectors and the filling nozzles. During each inspection of the filter strainer (monthly) the hose in question must be pressurized for at least one minute.

Checks and inspections with longer intervals than those listed above are part of the installations individual maintenance systems.

5.5.6 Returning products to the unit.

Clean products containing no water that are accumulated during draining and sampling may be returned to a slop tank. The product in the slop tank shall be allowed to settle and be drained free of water and particles before being transferred to a product tank.

5.5.7 Sampling when delivering to the helicopter

- A 3,5litre sample shall be taken from the filter monitor or the filling nozzle before delivery. The sample must be checked visually, including testing with the water detector. Any water must be drained off and new samples taken until a satisfactory water detector test has been achieved.
- A 3,5litre sample shall be taken from the filling nozzle or from the inside of the filter monitor immediately after delivery has been completed. This is in order to confirm the quality and to carry out a visual check with a water detector.

If there are any indications of water, or any marked change in colour in the water detector, a new sample must be taken. The pilot and the airline company must be informed immediately. No further fuel must be delivered until the cause has been found and rectified.

5.6 Specific weight measuring (density measuring)

According to the specifications the specific weight (density) of Jet A – 1 lies in the area of 0.775 – 0.840 kg/litre. The specific weight (density) of the product must be checked when received offshore. The specific weight is checked by the use of a hydrometer and a thermometer (may be built in as part of the hydrometer). The test must be conducted in a well-lit area, protected from rain and wind.
The hydrometer shall be sunken slowly and carefully into the fuel. This is to avoid breakage, or it becoming wet above the flotation level. Care must be taken to ensure that air bubbles do not attach themselves to the submersed surface. The hydrometer must float freely.
The hydrometer must float for some three to four minutes so that its temperature and movement are stabilised. Then carefully push the hydrometer down 2 marks on the scale and release. Once the hydrometer has re-stabilised, read the specific weight (density).

The fuel will creep slightly up along the thermometer so that the level indicated on the scale will be above the real fuel level.
Look along the surface of the fuel and read off at the lowest indicated level. Read off to the nearest 0.001 kg/l and log the products specific weight.
Shake the hydrometer and take two or three more readings as confirmation that they are correct.
Thereafter read the temperature. Note both temperature and specific weight (density) as direct readings from the hydrometer.
Use the noted temperature and specific weight (density) and correct them to 15 ° C by using the conversion table for density (ASTM-IP table 53), or by using the conversion unit for fuel density (the plastic circular sliding converter Aristo 60 208 – Germany). Note the specific weight corrected to 15° C. NB As sliding converters becomes worn they will show faulty readings. If such instruments are used they must be regularly checked for wear.
The specific weight (density) corrected to 15° C must be within +/- 0.003 kg/litre of the specific weight, corrected to 15° C, which is to be found on the upper part of the transport certificate for the aviation fuel.
If an electronic Density Meter are being used the manufacturers user manual must be adhered to.
If the specific weight is not within the limits, then the guidelines for faulty fuel must be followed, and the fuel may be sent in return.

5.7 Basic requirements for laboratory samples

Samples that are to be certified by a laboratory must be taken from an outlet having direct access to the space where the liquid is stored.
Before sampling the equipment must be rinsed thoroughly, and washed at least three times in the product from which the samples are being taken. The containers must be properly dried before use.
The containers must not be filled completely. Some 5% of the volume must remain in order to allow the liquid to expand. Approved containers must be used; these should be labelled and preferably sealed.
The containers must be sealed and labelled immediately after filling. The label shall contain the following information:

- Date and time:
- Sample taken by (signature)
- Installation/vessel
- Tank no.
- Batch no.

Documentation for all samples shall be logged. A copy of the transport certificate shall be attached for each product.

5.7.1 Containers

Containers for laboratory samples:
Glass, metal or approved plastic containers for laboratory or duplicate tests must be either new or approved by the laboratory and absolutely clean. (Refer to ASTM D 4306 for suitable containers). Metal containers must be approved and preferably have epoxy coated linings.

Even though they may be new, all containers must be rinsed at least three times in the product from which the samples are being taken.

Containers for visual sampling:
Clean, transparent containers with a capacity of a minimum of 3,5 litres and a wide opening that will accept a threaded lid, must be used for sampling. If a bucket is used for draining, it must be of stainless steel, or perhaps white enamel, and have approved grounding.

5.8 Hoses for aviation fuel – approval and control

Each hose must have a permanent identification, and a log for inspection and controls. This must contain the date and year of manufacture, the date and year of when the hose was taken into use, and information relating to the results of maintenance and inspection.

The maximum storage time is two years. The maximum lifetime for hoses is 8 years, subject to annual pressure testing and inspection in accordance with API 1529/BS-EN 1361. Both periods are to be calculated from the date of production. If the hose is not pressure tested annually, the maximum lifetime is set to 2 years.

Prior to use, new hoses shall be flushed in accordance with API 1529/BS-EN 1361, and then pressure tested. Products that have been used for flushing are to be returned to a slop tank that is either being filled or settling.

All hoses used for supplying fuel shall be subject to routine inspections and checks.

Hoses are to be kept under observation during refuelling. If any weaknesses or faults are discovered, delivery through the hose must be stopped and the hose replaced.

Inspection of the hoses may take place in the following manner: Pull the hose out all the way and apply full pumping or operational pressure with the delivery connector shut. When the hose is under pressure, check for exterior damage, leaks or other signs of weaknesses. It is recommended that when inspecting a long hose (under full pressure) a vertical “loop” is formed and that the loop is then rolled along the length of the hose. Special attention must be paid to any indication that the hose connections are beginning to loosen.
With the hose fully extended, release the pressure and inspect for soft spots. Special attention must be paid to the part of the hose that is about 45 cm from the connectors as this area has a special tendency to weaken. This part must be checked for faults by applying pressure around the area in order to discover soft spots, bubbles etc.

5.9 Pressure connectors

Whenever refuelling, all connectors must be checked for leaks. Leaking connectors must be taken out of use. Repairs and adjustments shall be logged and carried out by authorised personnel.

5.10 Filling nozzles

A general inspection of the filling nozzle shall be carried out at each delivery. At any sign of a leak the filling nozzle must be taken out of use. Repairs and adjustments must be logged.

5.11 Receiving fuel and checking the delivery

Before the tanks are filled onshore, they are inspected and approved and a tank inspection certificate is issued by the fuel distributor. The HLO must check that the labelling and traceability between the documents and the tank are in agreement.
Check that the transport certificate for aviation fuel contains the following elements:

- Type, Amount, Batch no., Date, Tank serial number, Specific weight (density), Verification of being free from solid particles and water, the inspector's signature.

The following must be checked when receiving fuel:

- Check that the seal on the manhole, inspection hatches and outlet are unbroken. Also check that all dust covers are in place and intact.
- Check that the tank cradle/tank have their respective approvals. This may be read off the tank data plate.
- Check for damage to hatches and valves. Make a special check of protective hatches and their packing rings.
- Check that the seals are intact and that the type of tank is labelled.

5.11.1 Settling time

- 600 USG (2300 litre) tank: 1,5 hour settling time
- 1000 USG (3800 litre) tank: 2 hours settling time
- Settling time stationary storage tank 1 hour per meter fuel depth

If the sample contains sediments or free water, further 4 litre samples must be taken until the samples no longer contain sediments or free water. The following tests shall be conducted:

- A rotation test (powerfully rotate the sample before the visual check)
- Clear and bright test (visual check)
- Shell Water Detection test.

The criteria for accepting the sample are that it:

- *Passes the clear and bright test*
- *Is free of water*
- *Is free of pollutants*

If one or more of the criteria are not met, a further settling time of one hour per meter tank depth is allowed. Thereafter, all the specified tests must be repeated.
The process shall be repeated until a satisfactory result is achieved, but should a satisfactory result not have been achieved after the fourth settling period, the fuel will not be approved.

The final test results (the results from the last settling periods) should be noted and the receiver's copy of the transport certificate signed.
Both a receipt for the fuel and the results of the tests should be noted on the transport certificate for aviation fuel.

Helicopter fuel should not be used until the fore mentioned procedures have been completed and satisfactory test results have been achieved.

5.11.2 Non-approved fuel

Before fuel that does not meet the requirements regarding purity, specific weight or water detection, is returned it should be given a new settling time before draining and testing the fuel at least three more times.

The equipment/instruments should be checked (a new set should be tried if available) and it should be ensured that the tests are conducted according to the procedures.
Should the test results still be uncertain, another person should conduct the tests by themselves.
Should this test confirm the unsatisfactory or uncertain results, a superior must be informed.

If the fuel and/or the tank cradle do not meet the specified standards, the following should be noted at the bottom of the aviation fuel transport certificate.

- Details regarding the fuel, and /or deficiencies with the tank cradle.
- The name of the installation
- The date
- The signature of the reporter.

The completed original of the certificate should then be returned to the cartridge on the tank cradle.
The label should be placed on the transport tank as is shown below and the following completed on the cargo manifest:

- Non-approved fuel
- From: (the name of the installation).
- To: (to be completed).

5.11.3 Using fuel directly from a transport or storage tank.

Depending on how the plants are designed on the different installations, fuel deliveries may either be transferred from the transport tank to fixed (stationary) tanks, or remain stored in the transport tank by being coupled to the refuelling system.

5.11.4 Fuel in the transport tank

If the transport tank is used for storage an earth cable must be attached to the tank cradle. This must also be attached during the transfer of the contents of the tank to permanent (stationary) storage tanks. The tank is coupled to the pump's manifold system with the aid of a pliable/flexible hose (corrugated steel pipe) that is connected to the coupling on the transport tank. Only one tank at a time shall be connected to the pump's manifold system.

5.11.5 Transferring fuel between the transport and the storage tank

The following tests must be conducted to verify the quality of the fuel when transferring fuel from the transport tank frame to the storage tank, and/or during the transfer of fuel between different storage tanks, including transfer from recirculation/sample tank:

- Visual check
- Water detector test, on a 3,5litre sample taken from the tank frame/tanks drainage point.

Make sure that the tank that is to receive the fuel has sufficient volume to accept the transferred fuel. When transferring from the transport tank:

- Connect the earth cable to the transfer tank
- Connect the transfer hose and open the tank valve
- Start to transfer the fuel, the fuel must be lead and not allowed to fall freely into the tank.
- When the transfer is completed, disconnect the dry connection (hose) and the earth cable.

After the fuel has been transferred:
Conduct a visual check. Allow for a settling time of one hour per meter of fuel in the tank. Take a 3,5litre sample from the tank's drainage point and perform a water detector test. If the sample contains sediments and/or free water, new samples must be taken until the sample is free from sediments/free water. The process must be repeated until satisfactory results are achieved. If the test is still not satisfactory after the fourth settling period, investigations/corrective measures shall be initiated.

5.11.6 Labelling and changing tanks

In order to avoid confusion regarding which tank is in use, signs shall be posted showing the status of the tank(s). The following text shall be used:

- This tank was received on, and has been stored since_____ (date)
- The tank is in use
- The tank is settling
- The tank is empty

NB! Also applies to tanks used for storage/delivery

5.11.7 Old fuel stores

As far as possible super numerous stocks of fuel should not be stored offshore. Stocks should be depleted if longer periods without replenishment are expected.

If fuel has been stored for more than six months after the stated filling date, a four litre drainage sample should be taken in a special container. This should be sent to an approved laboratory for quality control. Should the test show that the fuel meets the required specifications for use, it may then be used in the normal manner.
Old fuel may not be used until the test results are available and approval has been received from the fuel supplier/laboratory.
On the condition that the results are satisfactory the stored fuel may be used, but it must be re-tested every third month.

Fuel that fails to gain approval during these tests shall be returned to shore as “Non-approved fuel”, see Item 5.11.2

5.11.8 Returning transport tanks

Outlets must be sealed before transport tanks are returned to shore. The protective cover over the hose connector must also be checked to ensure that it is in place.

5.12 Fuel delivery/refuelling

5.12.1 Refuelling crew

Refuelling shall be carried out by competent personnel who are well trained in procedures and operating the refuelling system. The crew shall be sufficient to ensure a safe operation, and to be able to react properly in the event of an emergency. The personnel shall be familiar with the location and operation of the emergency stop buttons. The requirements relating to personnel competence are to be found in the Norwegian Oil and Gas Guidelines. The step-by-step duty of each individual member of the helideck crew during take-off and landing is described in enclosure K.

5.12.2 Grounding between the helicopter and the refuelling equipment

The helicopter, the supply unit, the filling nozzle/pressure connector shall be connected in order to lead electricity during the whole of the refuelling operation. This is to ensure that electrical potential (difference in current) does not occur between the units or “earth”(the helideck).
Grounding between the helicopter and the supply unit shall be completed before any hose is connected to the helicopter or any tank cover opened. The grounding must remain connected until all hoses have been disconnected and the tank cover replaced.

NB! The grounding wire shall only be connected to the dedicated grounding connection point or receptacle on the helicopter.

5.12.3 Refuelling procedures (General)

- Refuelling during local heavy thunderstorms is forbidden.

- Hoses must be removed in such a manner that they are not damaged. Twisting or bending the hoses should be avoided. Pressure connectors or filling nozzles shall not be dragged along the ground. Dust caps must be in place as long as pressure connectors/filling nozzles are not in use.
- During refuelling the delivery unit must be checked for leaks, the differential pressure of the filter monitors observed and logged, and the other instruments read off and otherwise kept under observation.
- Spilt fuel is both a fire hazard and a danger to the environment. Hot helicopter engines may be a source of ignition and extra care must be taken during refuelling. Should any spillage occur, all refuelling must be stopped and the necessary measures implemented according to local requirements/routines.
- If there is a suspicion that air have entered the system the following procedure shall be adhered to:
    - Fill the initial 200 litres with the gravity pistol.
    - Or, alternatively, first run 200 litres to the recirculating/sample tank if available.

5.12.4 Refuelling with the helicopter's engines running ("hot" refuelling)

Refuelling the helicopter with the engines running (hot refuelling) is an operation that demands very strict safety requirements. The fuel supply delivery station must be manned in order to operate the unit.

5.12.5 Defueling Helicopter

Defueling shall be done with the same personnel and according to the same safety procedures as for fuelling.

The HLO shall ensure:
- that all returned fuel is of known quality and type (JET A1)
- logging of returned amount of fuel and where it is returned from
- that returned fuel is settled and drained for free water and particles prior to readying the product for new deliverance

Fuel which is defueled through water separator or monitor filter can be delivered without any prior settling and drainage.

5.12.6 Refuelling with Passengers on-board

Refuelling with passengers on-board requires that the Helicopter pilot and HLO/OIM agree, and to follow standard procedures with addition of the following:
- Pilot and HLO shall be present, and in full control of the operation at all times.
- All passengers must be briefed on the operation before fuelling commence.
- Passengers must have seatbelts undone during refuelling procedures.
- Doors on the refuelling side closed.
- Doors on non-refuelling side open.
- Emergency egress route planned, clear and known to all involved in the operation.

- Helicopter Operator procedure in place and known to Helideck crew.
- Deck procedure known to helicopter crew.

5.13 Review over required documentation

The results of all inspections and tests shall be logged on updated documents that are readily available. These shall be kept for a minimum of at least one year. As a minimum they shall contain:

5.13.1 Documentation – Quality control

- Helicopter refuelling log. This form contains the requirements relating to daily sampling/inspection.
- Log for filter and differential pressure and transport log for helicopter fuel is also used.

5.13.2 Documentation – Maintenance

- Logbook in which all work carried out on every unit of the equipment is logged.
- Log for testing of pressure tanks connectors and filling nozzles.
- Log for the inspection and testing of hoses.
- Log for the calibration of volume meter.
- Log for the calibration of pressure manometer.
- Log for tank inspection and cleaning.
- Log for filter equipment – inspection and maintenance
- Log for the filter in the pistol grip nozzle – inspection and replacement.

Documentation relating to the execution of these tasks shall normally be found in the installation's preventive maintenance programme. See enclosure C for relevant forms.

5.13.3 Signature/Filing time

The person doing the job must sign all documentation. Documents relating to daily inspection shall be kept on file for at least 3 months. All documents relating to weekly and monthly inspections shall be kept on file for at least 1 year. Documents relating to inspections that have longer intervals, or relate to non-routine incidents, shall be kept for at least 3 years.

5.13.4 Change of location

The remaining fuel quantity on board shall be logged when the rig is moving to another helicopter base and/or changing helicopter operator. Registered amounts are to be reported in writing to the owner of the fuel as soon as possible and at least 5 days after arrival new location.

6 Special procedures and operations

This chapter covers the special procedures/operations that are used on certain installations, types of helicopter, under special conditions etc. For this reason these are not covered elsewhere in the manual.

6.1 Emergency situations

Actions that are taken must be in compliance with the installation's emergency procedures.

6.1.1 Basic principles.

Teamwork
The crew of the helideck must work together as a team when dealing with emergency situations.
Discuss how to deal with the different emergency situations on the helideck and conduct exercises on the helideck in handling emergency situations. This is to develop quick counter measures, forms of cooperation and efficient actions. Otherwise refer to Enclosure E, Emergency Training.

Reactions in emergency situations
Common sense shall be used when reacting to emergency situations.

Normal train of action:

- Evaluation of the extent of the emergency situation, securing own escape route.
- Calling for assistance/sounding the alarm.

Dealing with the situation by:

- Localising the source
- Extinguishing/eliminating
- Rescuing personnel/reducing risk
- Preventing spreading

Monitoring to prevent re-ignition/repetition.

6.1.2 Fire in the helicopter/on the helicopter deck

First actions

- Immediately stop any refuelling that is taking place.
- Activate the fixed firefighting equipment.
- Sound the alarm
- Don fire protection gear. (The fireguard is already wearing his.)
- Determine the source of the fire(s)

Areas of responsibility

HLO:	Alerting/Notification. Confers with pilot and coordinates actions. If the type of fire allows, confer with pilot before using firefighting equipment.
Heliguard:	Works with fireguard and HLO in fighting fire and reducing risk
Fireguard:	Operates the firefighting equipment.

Fire Teams
In extensive fires the fire teams on the installation will be involved in extinguishing the fire, and will take over the responsibility from the helideck crew.

Rescue
In some cases it will be possible to save the helicopter crew/passengers before the fire becomes too large.

If rescue appears to be possible then this should be attempted, but the firefighting equipment must be used to cover personnel involved in the rescue operation.

Should it be necessary to enter the helicopter cabin in order to save personnel one must:

- Use smoke diving equipment
- Keep as low as possible when entering the cabin
- Stay below smoke and gasses. It is here the largest amounts of oxygen are to be found.

Fire watch
When the fire has been extinguished a fire watch should be maintained at the site so as to avoid re-ignition. The carpet of foam should also be maintained to the extent necessary.

6.1.3 Crash on the helicopter deck

The characteristics of a helicopter crash.
Due to the fact that a helicopter has no wings, the engine(s) and the fuel tanks are positioned in the immediate vicinity of the cabin.

In the event of a crash this means that:

There is a possibility that parts from the rotor blades may be slung around.

It is less likely that the helicopter will remain standing (in a vertical position).

It is easier to drag hoses around a helicopter, and there are far less sheltered areas beneath the fuselage.

The shorter distance to the secondary firefighting equipment increases the advantage/effects. As the cabin, engines and fuel tanks are so close to each other, rapid intervention may be decisive.

If a helicopter crashes on the helideck the fireguard shall:

- Start the fire pumps/sound the alarm
- Cover the helideck with foam
- Extinguish any fire.
- Maintain a sharp lookout for fire. This is especially with regard to spilt fuel that may run down to the lower decks of the installation.

Rescuing passengers and pilots

The helicopters doors and hatches are of a relatively simple construction and there is little probability of them jamming. Should this be the case then they must be forced open.

Should it be necessary to use more force to enter the helicopter, cutting must only take place at specific points e.g. emergency exits and windows.

The rescue equipment listed in Chapter 3 is to be used.

Should a helicopter be lying on its side, those on board must be supported when the seat belts are released.

NB! The helideck crew must have detailed knowledge of the type of helicopter, as described in emergency procedures in Enclosure F.

Choking/stopping the engines shall be carried out when:

- The helicopter is in a normal position and the pilots are put out of action.
- The engines and the rotors are still running.
- Stop the engines with the helicopter's emergency stop handle.
- Be aware that the rotor blades move closer to the deck as rotation speed drops. This may constitute a major hazard to personnel on the deck.
- Do not allow personnel to leave the helicopter until the rotors have stopped.

6.1.4 Crash into the sea

Alerting

Make sure that the radio operator is notified.

The radio operator/control room will carry out further notification in accordance with the installations internal procedures.

The helideck crew shall act in accordance with the installation's emergency procedures manual.

6.1.5 Emergency landing with prior notification

Preparations
If warning has been given that a helicopter is experiencing problems and wishes to land on the helicopter deck, preparations must be made to deal with the situation.

Ensure that the radio operator /control room is informed and that the proper alarm signals have been activated.
The emergency teams are mustered in accordance with the installation's internal procedures.

All of the crew who man the helideck must don fire protection gear.

Put on smoke diving apparatus.

Dry powder equipment
Prepare the fixed powder extinguishing hose for immediate use (See Chapter 3).
Stand in a sheltered area with this equipment at the ready.

6.2 Helicopter deck "Safedeck"

6.2.1 General description

Helicopter decks of the "Safedeck" type have been specially designed to quickly lay a complete layer of foam over the whole surface of the helicopter deck in the event of a fire in the helicopter or a crash on the helicopter deck. The deck may also have a "pop-spray" system.

6.3 Embarking/disembarking from the helicopter in strong wind

6.3.1 General information

The upper limit for ordinary passenger transport is 60 knots wind including gusts

The wind on the helicopter deck may deviate from the given wind measurements.

Due to the surroundings around the helideck upwind or downwind and /or funnel effects may occur together with turbulence. This changes the wind fields radically.
Such local conditions will differ from installation to installation and may also vary with the wind direction.

6.3.2 Risk reducing measures

When a report has been received forecasting winds of more than 50 knots, each installation shall attempt to reduce the passenger's exposure to the wind.
Such appropriate methods may include:

- A careful evaluation when selecting the exit/access to the helideck that is least exposed to the wind.
- The heliguard and fireguard assisting passengers to/from the helicopter.
- Passengers carrying only one piece of luggage so as to have one hand free.
- The heliguard and the fireguard handling all luggage on the helicopter deck.

In such cases it may be necessary to strengthen the manning of the helicopter deck The HLO must continuously evaluate the conditions on the helicopter deck and, after conferring with the pilot, decide how best to ensure the safety of the passengers.
If the HLO decides that the safety of the passengers can no longer be upheld in a sound and proper manner, he must stop helicopter operations on the installation. The Installation Manager, or similar, must be duly informed.

6.4 Refuelling in strong winds

In special situations/emergencies it may be required to refuel the helicopter with wind forces in excess of 60 knots. In such cases, special precautions must be taken.

The pilot will brief the helideck crew regarding any special procedures/ to be followed or precautions to be taken.
The HLO should call upon a qualified person when increasing the manning of the helideck.

6.5 Flights to installations that are normally unmanned

6.5.1 General information

An unmanned installation is in this context an installation with a helideck operational according to regulations, but has no personnel on board when the helicopter lands or takes off from the installation.

Flights to an unmanned installation should be limited to as few as possible and preferably be executed in daylight.
Transit passengers are not allowed in the helicopter.

If there are persons on board the installation, crewing and operations shall be as for a manned installation. Exempted is when a helicopter returns empty to collect a group who has previously been offloaded at the same installation.

When flying to unmanned installations the helideck crew shall consist of at least two qualified heliguards. One of these will become the HLO , the other the Fireguard. Both shall have documented knowledge of the installations helideck and equipment.

Both (the HLO and the Fireguard) shall be wearing approved survival suits during transit to/from the unmanned installation. At the latest, the Fireguard shall put on fire helmet and gloves just before the helicopter approaches the helideck. Both shall disembark the helicopter before any other passengers and take their positions on the helideck.

As is the case with manned installations, control forms and maintenance routines must be available.

If a floating installation movement data (roll, pitch, heave) must be available at the mother-installation according to standard HMS system specifications.

Landing and departure shall be observed from the mother-installation or stby vessel, either visually or by video monitoring of the helideck.

Helideck crew and helicopter shall have radio contact with the mother-installation or stby vessel during the complete helicopter operation.

If there is any danger of gas on the installation, gas detectors with warning lights shall be in operation. A light should be positioned in the limited obstacle sector (150° sector) and have good visibility at approach and at helideck.

During night flying the perimeter lights, red obstacle lights and the approach lights must be switched on.

7 Company Specific Procedures

N/A

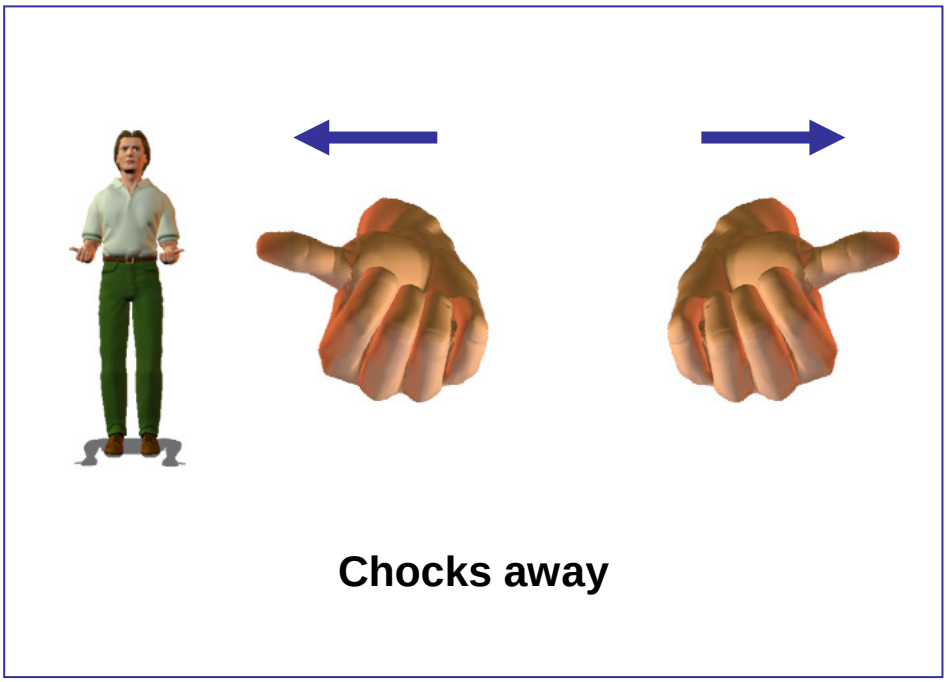
8 Enclosures

A Hand signals
B Helicopter danger zones
C Helifuel forms
D Phraseology
E Emergency training
F1 SuperPuma AS332 & EC225
F2 CHC-HS Sikorsky S-92
F3 NOR Sikorsky S-92
F4 Eurocopter EC155
F5 AgustaWestland AB139
F6 Westland SeaKing
F7 Agusta A109E
G Take-off and landing
H Helicopter shut down
I Guidance to radio communications
J Offshore refuelling systems
K Hot refuelling
L Standard helideck monitoring systems
M Reporting form ground occurrences

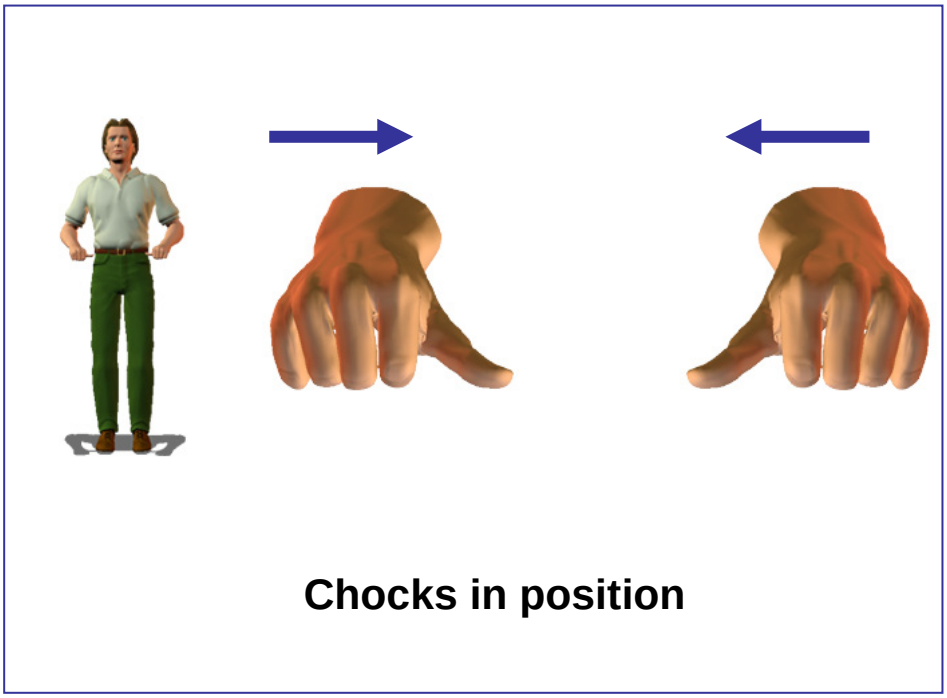
+ writable Helideck report form OLFv1

Hand signals

Handsignal 1

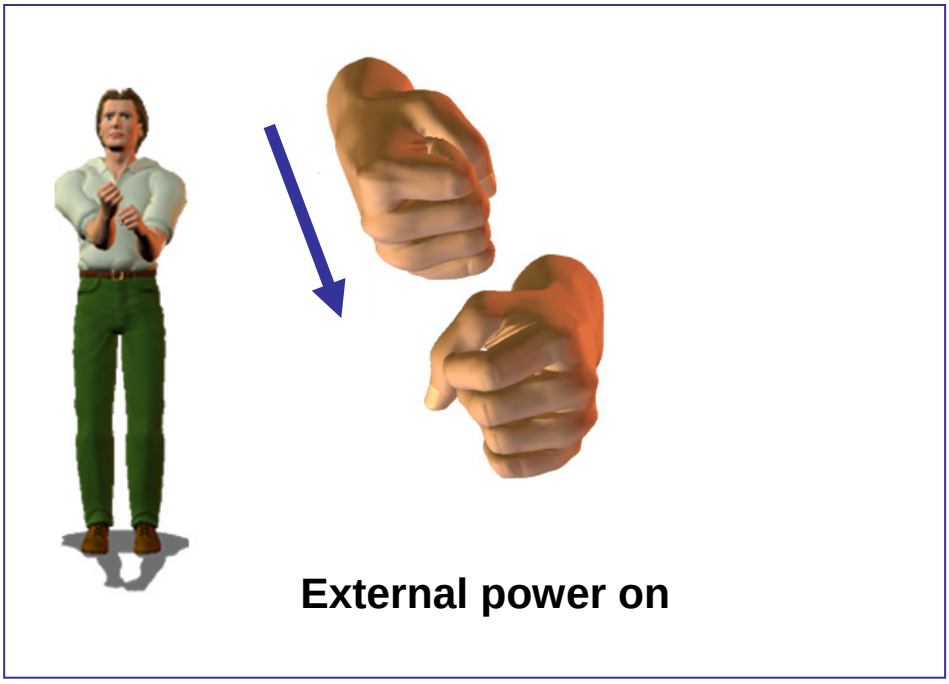


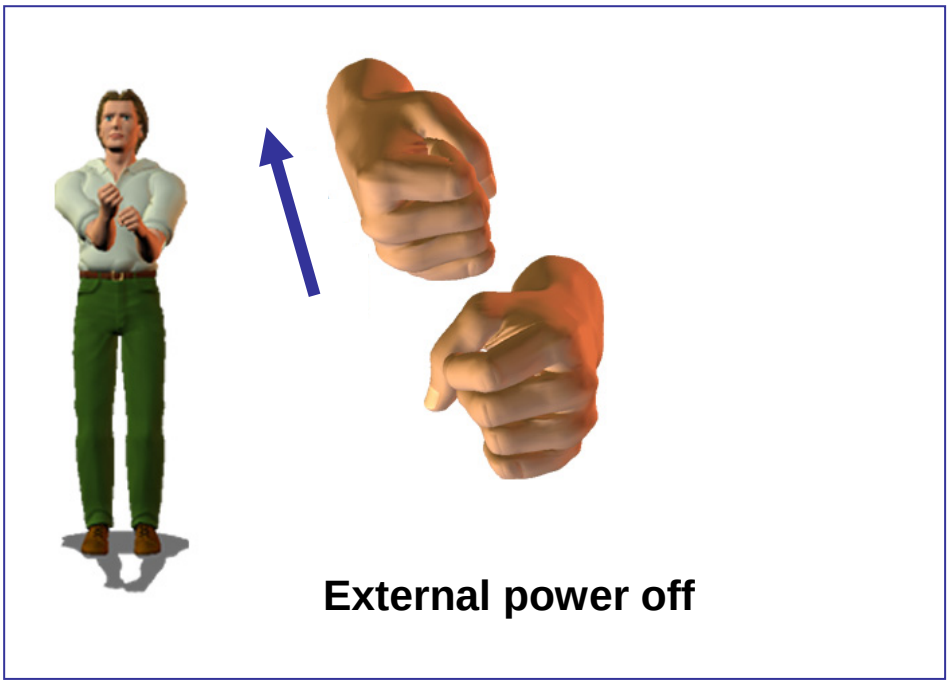
Chocks away



Chocks in position

Handsignal 2





Handsignal 3

Start engine no. 1

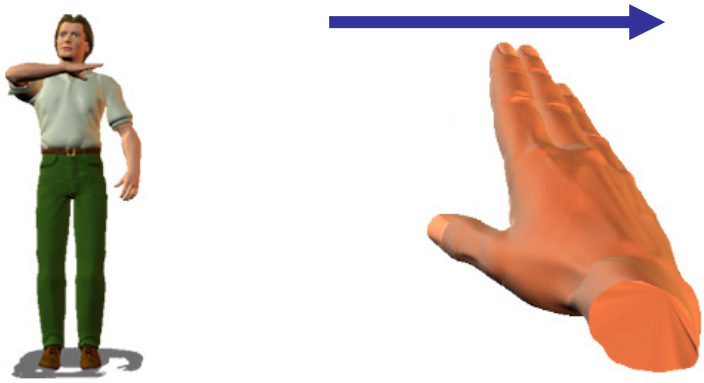
Start engine no. 2

Handsignal 4

Start rotor

OK

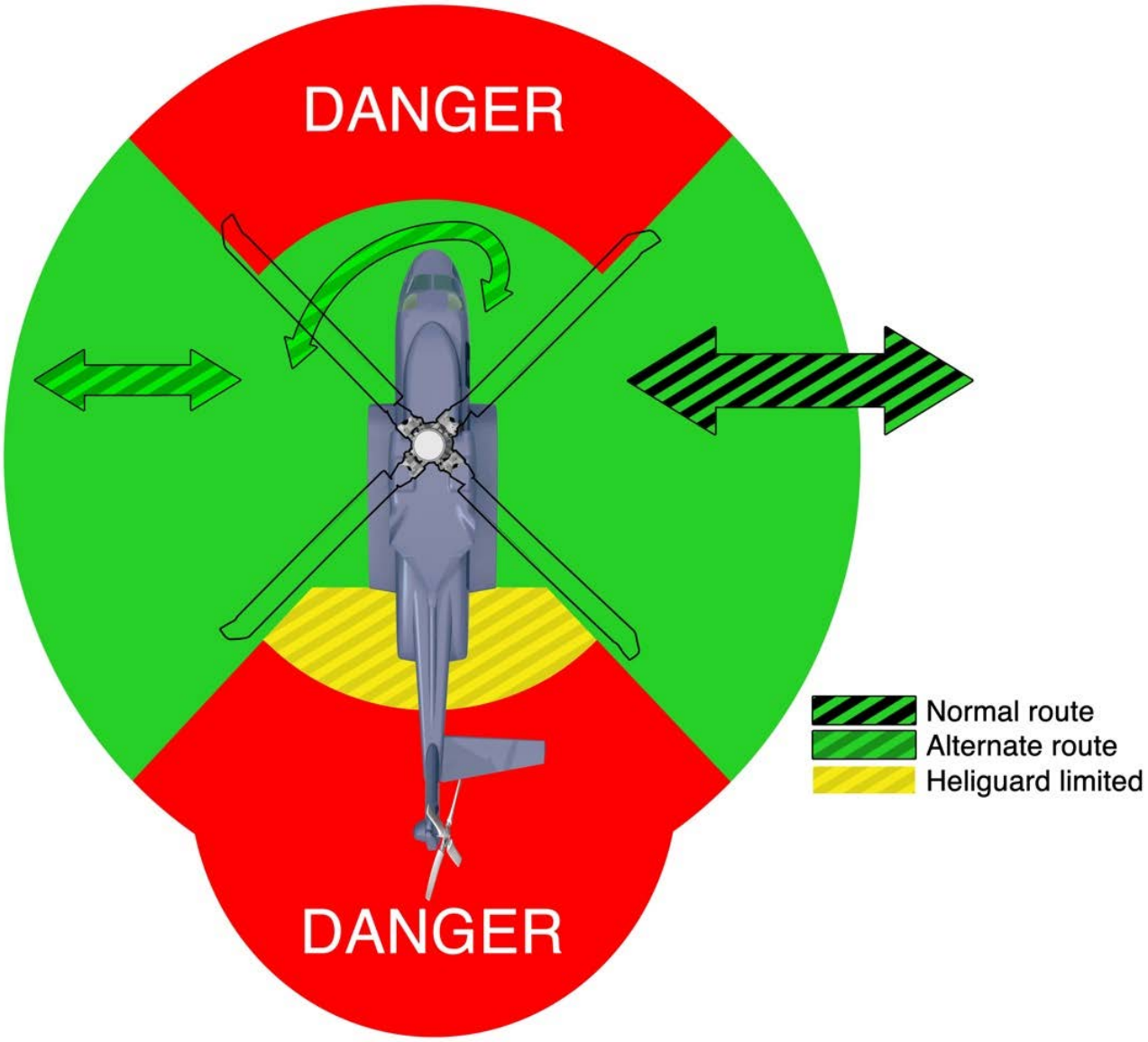
Handsignal 5



Shut down, alternatively stop refuelling.

Helicopter danger zones

Sikorsky S-92

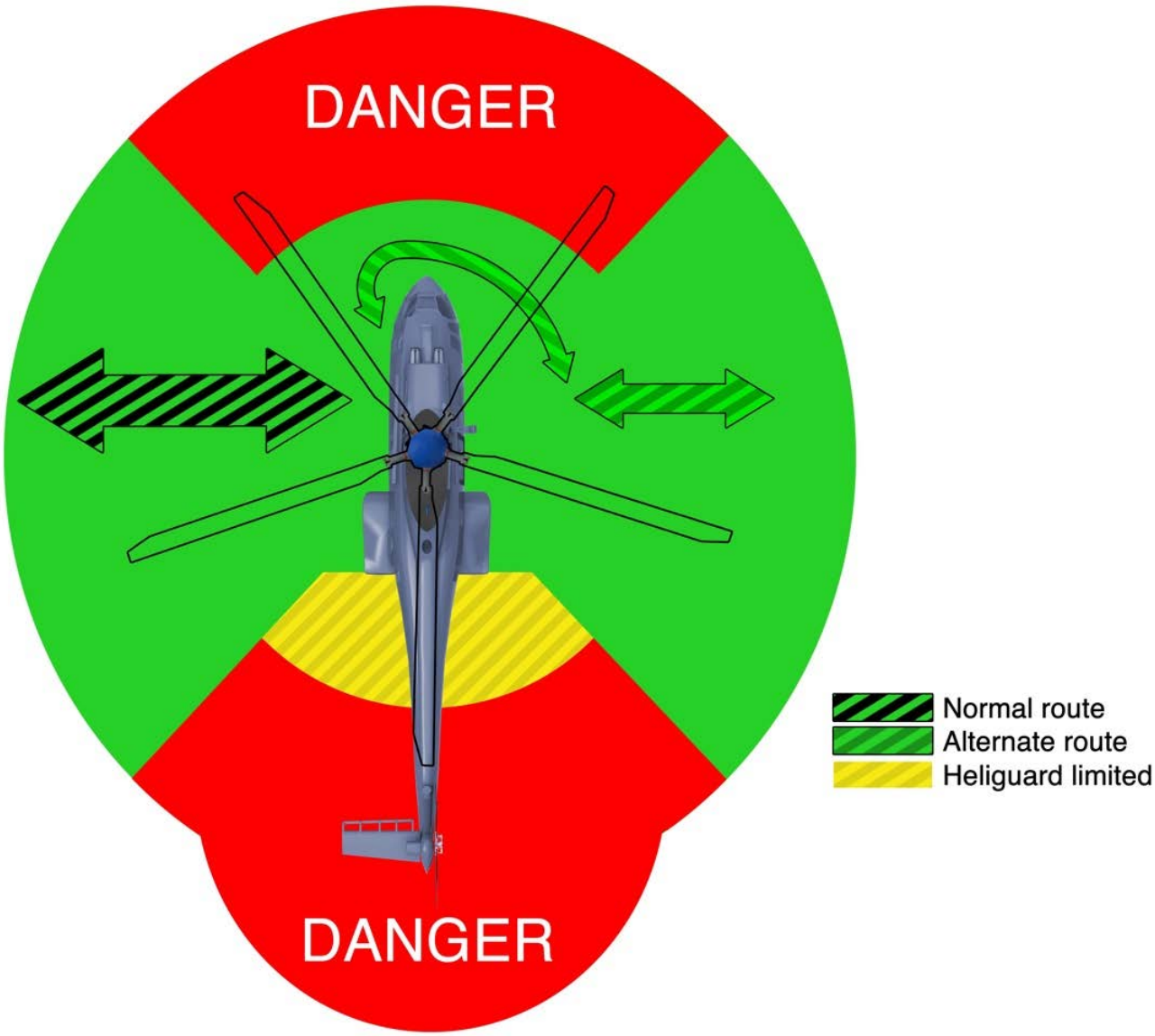


Alternate route to be used only under HLO supervision!

See Enclosure G “alternative access” for procedures.

Helicopter danger zones

Airbus SuperPuma

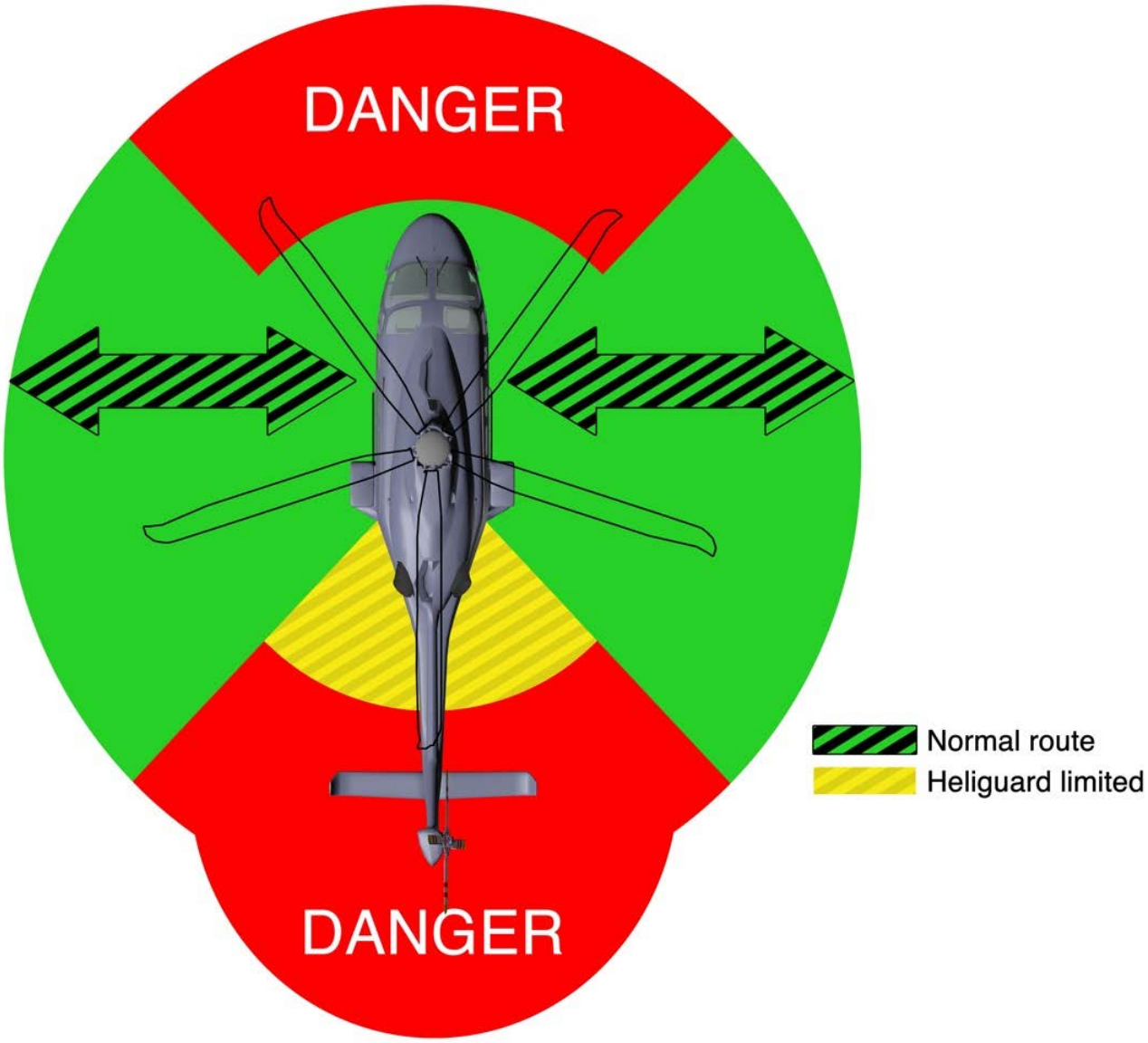


Alternate route to be used only under HLO supervision!

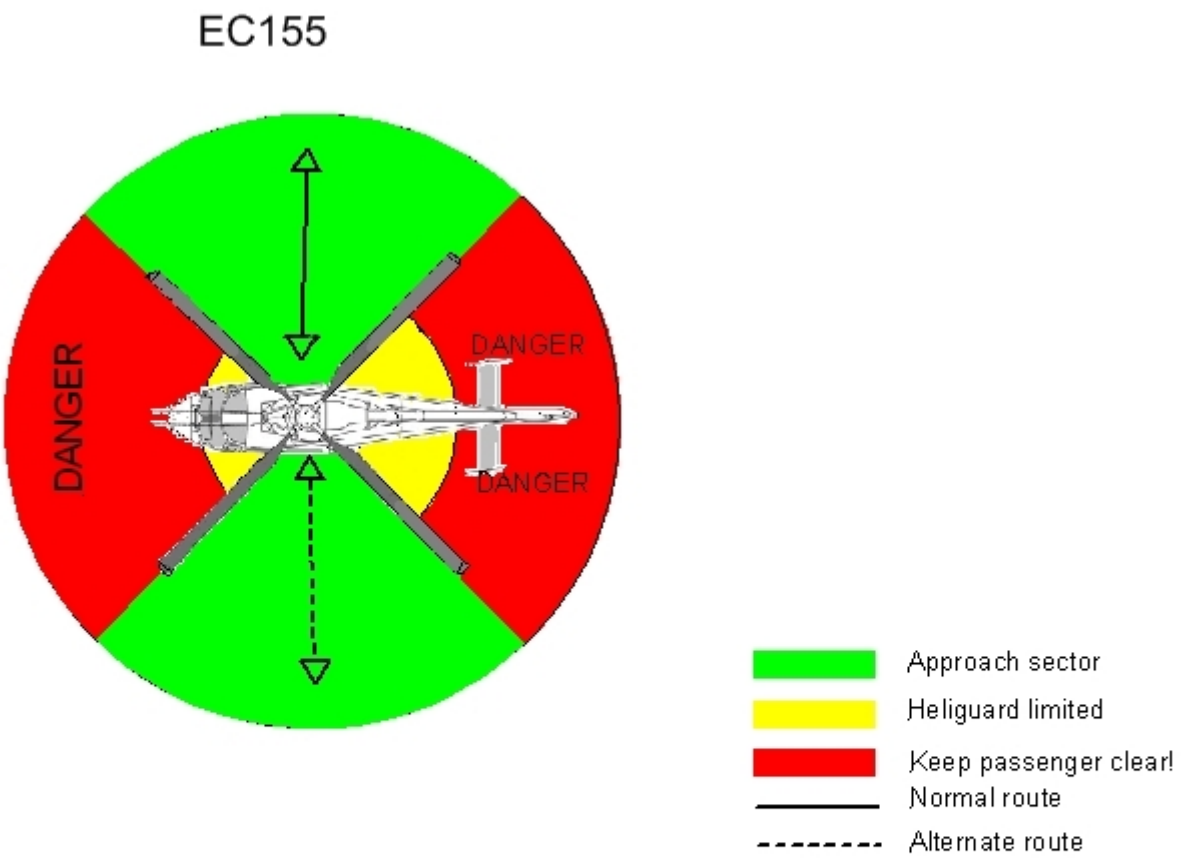
See Enclosure G “alternative access” for procedures.

Helicopter danger zones

AgustaWestland AW139



Helicopter danger zones



Crossing helideck in front of helicopter (in safe distance from main rotor) only with permission from helicopter crew

Filter water separator/filter monitor follow-up log

Installation:_____ Year:_____

Name and type of filter water separator _____

Elements type 1 Number _____ Date installed _____

Elements type 2 Number _____ Date installed _____

Name and type of filter monitor _____

Elements Number _____ Date installed _____

Functional test differential pressure	
Monitor	Separator
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

Psi Bar

Max monitor 22

Max separator 15

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
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Helicopter fuelling log

Rig/Installation: Adressee of this form:

Date:	Flight no.:	Helicopter Company	Registr. Letters (Call sign)	Litres filled	Water sample		Pilots signature	Daily inspection						Total sampled volume per day:	HLO sign.
					Before filling:	After filling:		Water/purity test			Diff. press. filters		Inspection hoses, connectors,, nozzles, earthing cables		
								Tank OK	Separator OK	Monitor OK	Monitor daglig	Separator weekly*			

Hose inspection and test journal

Manufacturer:_____ Hose identification no.:_____

Type of hose:_____ Length:_____

Date of production:_____ Diameter:_____

Hose with connector: Factory installed □ Locally installed□ (mark)

Date taken in use:_____ Location:_____

Date of test	Inspection interval		Test result	Signature
	Monthly	Yearly		

Use one page for each hose that is in use or in storage.

Inspection and cleaning log – fuel tank Jet A-1

Installation:_____

Tank no.:_____ Capacity:_____

Non-corrosive/type of interior surface treatment:_____

Date of inspection:_____

Point of inspection	Signature of inspector
State the approximate volume delivered since last inspection/cleaning	
Describe the condition at the last inspection; water or pollution, the condition of the bottom plates and any surface coating	
Describe the work carried out during cleaning	
Describe any work or modifications. Any change in inclination or drainage point shall be taken into consideration	

Transport log helicopter fuel JET A-1

Installation/vessel:										**Year:**			
Receipt of transport tank										**Return of transport tank**			
Date:	Transp. certificate no.:	Tank no.:	Seals intact?	Drainage samples			Volume received		Sign.	Date:	Returned fuel volume	Sealed	Sign.
				Free of water		Particles	From certificate	Measured					
				Visual	Detector								

Phraseology

In the Air Traffic Services certain words and expressions are used to ease understanding. These are known as standard phraseology. The highest possible use of standard phraseology is recommended.
In this enclosure there follows a list of the English standard phraseology and an explanation in Norwegian.

ABORT ldg/to	Avbryt landing eller avgang. Gjentas 3 ganger dersom en farlig situasjon oppdages.
ACKNOWLEDGE	Bekreft at min melding er mottatt og forstått
AFFIRM	Ja, eller tillatt
APPROVED	Godkjent
BREAK	Indikerer skille mellom meldinger
CANCEL	Annuller siste utsendte klarering
CONFIRM	Bekreft
CORRECTION	Rettelse, jeg har sagt noe feil….
DECK IS CLEAR	Dekket er klart for landing
DISREGARD	Glem, se bort fra
GO AHEAD	Begynn
HOW DO YOU READ	Hvordan hører du meg
I SAY AGAIN	Jeg gjentar
MONITOR	Lytt på frekvensen
NEGATIVE	Nei, ikke tillatt, feil
PASS YOUR MESSAGE	Kom med din melding
READ BACK	Repeter alt eller deler av sendingen
ROGER	Jeg har mottatt meldingen (ikke som svar)
SAY AGAIN	Gjenta alt eller deler av sendingen
SPEAK SLOWER	Snakk langsommere
STANDBY	Vent
VERIFY	Undersøk og bekreft
WILCO	Jeg har forstått og vil handle deretter

Emergency training

Lesson/Exercise No.1

Subject: Crash on helideck

1. Purpose:
To maintain the helideck crew's proficiency in meeting the challenges covered by this subject.

2. Training objectives:
At the end of the exercise the participants will have learnt about the use of fire fighting equipment, of equipment for gaining access to the helicopter, and of treating injured persons and evacuating these, and others, from the helideck.

3. Content:
Using equipment to gain access to the helicopter. Cutting, using jacks, slicing. Cutting seat belts.
Treating injured persons. Crush wounds, fractures, and burns.
The use of available fire fighting equipment

4. Preparation:
Review the exercise scenario with the involved personnel, placing it in relationship to the installation's emergency plans with the main emphasis on the procedures applicable to the helideck crew.
Clear the exercise with management regarding the use of personnel etc.
Inform and instruct all who are to take part in the exercise, simulated injured, and any other personnel.
Make sure that the materials and equipment to be used are ready for use.

5. Implementation:
The HLO will run the exercise and direct the emergency teams based on his evaluation of the accident site and other relevant factors.
Ensure that personnel are rotated through the various positions so that all may experience the different tasks.
Pay special attention to exercising the elements mentioned under sections 2 and 3.

6. Material and equipment:
A small container (simulated helicopter).
Jacks, cutting equipment.
Fire fighting equipment
Communication equipment

7. Follow-up:
Go through the checklist for the helideck.
Return all equipment to the proper place and tidy up.
Carry out an evaluation of the exercise where all elements of importance are noted for use in the transfer of experience and any required documentation.
Note who has taken part in the exercise; file the information for use as documentation in the event of an audit.

8. Estimated duration:
Approximately 2 hours

Lesson/Exercise No.2

Subject: Communication

1. Purpose:
To maintain and develop the helideck crew's proficiency in using the existing available communications equipment and meeting the challenges caused by the loss of traditional communications equipment.

2. Training objectives:
At the end of the lesson/exercise the participants will have learnt about the use of traditional communications equipment, and alternative means of communication based on local conditions.

3. Content:
Training/exercising with available communications equipment.

4. Preparation:
Clear the exercise with management regarding the use of resources.
Go through the installation's emergency plan with main emphasis on the section relating to communication.
Develop the scenario in cooperation with the person responsible for communication onboard the installation and other relevant agencies (control room, crane and deck departments, helicopter pilots etc)
Give thorough instructions to the players.

5. Implementation:
The exercise is conducted as a pure "Table Top" exercise.
For this reason it is important the equipment is put into physical use when simulating during the exercise (that someone really responds to radio calls, and that someone answers the telephone when it rings, and that these are fully briefed on the intentions of the exercise).
Make sure that all persons who could be involved in a real incident participate, helicopter, damage control leader, control room, radio, nurse, first aid teams etc.

6. Material and equipment:
Available communications equipment.

7. Follow up:
Carry out an evaluation of the exercise where all elements of importance are noted for use in the transfer of experience and any required documentation.
Note who has taken part in the exercise; file the information for use as documentation in the event of an audit.

8. Estimation duration:
Approximately 1 hour.

Lesson/Exercise No.3

Subject: Training with the rest of the Emergency Organisation

1. Purpose:
To maintain and develop the helideck crew's proficiency in dealing with emergencies involving the whole of the installation.

2. Training objectives:
At the end of the lesson/exercise the participants will have learnt about, understand, and be able to deal with emergency situations involving other areas on the installation.
For example, Fire, gas and oil leaks, evacuation of the installation or other scenarios based on local conditions.

3. Contents:
With available means and knowledge, take part in and assist the other units of the emergency organisation in dealing with situations described in paragraph 1.

4. Preparations:
Ensure that the HLO and the rest of the helideck crew are involved in developing the exercise scenario.

5. Implementation:
Participate and take an active part in the installation's emergency exercises.

6. Materials and equipment:
All the available emergency equipment that the situation may require.

7. Follow-up:
Take part in the exercise evaluation.
Note who has taken part in the exercise.

8. Estimated duration:
1 – 2 hours depending on the extent of the scenario.

Lesson/Exercise No.4

Subject: Behaviour on the helideck

1. Purpose:
To ensure that all traffic on the helideck is conducted in a safe and proper manner, with emphasis both on one's own and the passenger's behaviour.

2. Training objectives:
At the end of the lesson the participants will have learnt about correct traffic movement and behaviour on the helideck.

3. Contents:
Information on and training in correct traffic and movement based on the limitations/possibilities as dictated by helicopter gangways, exits and other local conditions. Special attention shall be paid to limitations caused by wind and weather.

4. Preparations:
Clear the exercise with management regarding the use of resources.
Agree on a scenario with the helicopter crew and other relevant personnel.

5. Implementation:
Give the participants a theoretical briefing on existing guidelines.
Test their reactions to irregular behaviour.
May be run as a live exercise, or may be simulated. (Exercise great caution if run live).

6. Materials and equipment:

7. Follow-up:
Carry out an evaluation of the exercise and document the result. The subject may also be a good input at the installation's safety meetings by "targeting" the passengers in this manner.

8. Estimated duration:
Approximately 1 hour.

Lesson/Exercise No.5

Subject: Response times when alerted – notified of an emergency situation

1.Purpose:
Training the helideck crew in meeting the requirements regarding an acceptable response time in the situations described in the lesson.

2. Training objectives:
At the end of the lesson participants shall be able to meet the required response times and understand the importance of being able to do so.

3. Content:
Training in accordance with the muster plan, finding and donning the equipment necessary to tackle the defined situation.

4. Preparation:
Clear the exercise with management regarding the use of resources.
Agree on the sounding of the muster alarm with the rest of the emergency organisation.

5. Implementation:
May be implemented by specially addressing this field during standard muster exercises on the installation.
Individual muster exercises for the helideck.

6. Materials and equipment:
All the emergency equipment that is required to meet the described emergency situation in a satisfactory manner.

7. Follow-up:
Carry out exercise evaluation, emphasising areas for improvement regarding time used on operations that are necessary to meet the requirements given in paragraph 1.
Carry out an evaluation as to whether the available equipment is properly positioned, and if it is the right equipment with regard to weight, user friendliness etc.
Note who has taken part in the exercise.

8. Estimated duration:
Approximately 1 hour.

Lesson/Exercise No.6

Subject: Medical evacuation under extreme weather conditions

1. Purpose:
Training the helideck crew in dealing with a medical evacuation in extreme weather conditions.

2. Training objectives:
At the end of the lesson participants will have learnt about differ ways of carrying out a medical evacuation. In cooperation the remainder of the emergency organisation, be able to take part in evaluation and implementation if a litter/basket must be hoisted from a location other than the helideck.

3. Content:
The use of equipment for medical transportation.
Coordination and communication with the remainder of the emergency organisation.

4. Preparation:
Clear the exercise with management regarding the use of resources.
Review the scenario with the involved parties, place special emphasis on individual safety during the exercise.

5. Implementation:
The exercise is conducted by training in stretcher transportation from different areas on the installation.
Mapping the installation in order to chart alternative hoisting zones should the helideck, for any reason, be inaccessible.

6. Materials and equipment:
Stretcher, litter, communications equipment, cranes.

7. Follow-up:
Carry out an evaluation of the exercise with all involved parties.
Evaluate whether the equipment is suitable and correctly placed.
Note who has taken part in the exercise.

8. Estimated duration:
Approximately 1 hour.

Lesson/Exercise No.7

Subject: Governing documentation

1. Purpose:
To maintain the knowledge of the documentation that governs helicopter operations.
To ensure that changes and updates in the governing documents are made known to relevant personnel in a systematic and proper manner.

2. Training objectives:
At the end of the lesson the participants will have learnt about the at all times available applicable governing documentation.

3. Content:
Study the available documents.

4. Preparation:
Provide updated documents where these are available.

5. Implementation:
Ensure a thorough review of the governing documentation.
Group work followed by a presentation of the results.

6. Materials and equipment:
Governing documentation.

7. Follow-up:
Carry out an evaluation of the lesson.
Note who has taken part in the lesson.

8. Estimated duration:
Approximately 1,5 hours.

Lesson/Exercise No.8

Subject: Life support and First Aid

1. Purpose:
To maintain the helideck crew's knowledge of life support and first aid.

2. Training objectives:
At the end of the lesson the participants should be able to carry out life support and first aid.

3. Content:
To be developed by the installation nurse.

4. Preparation:

5. Implementation:

6. Materials and equipment:

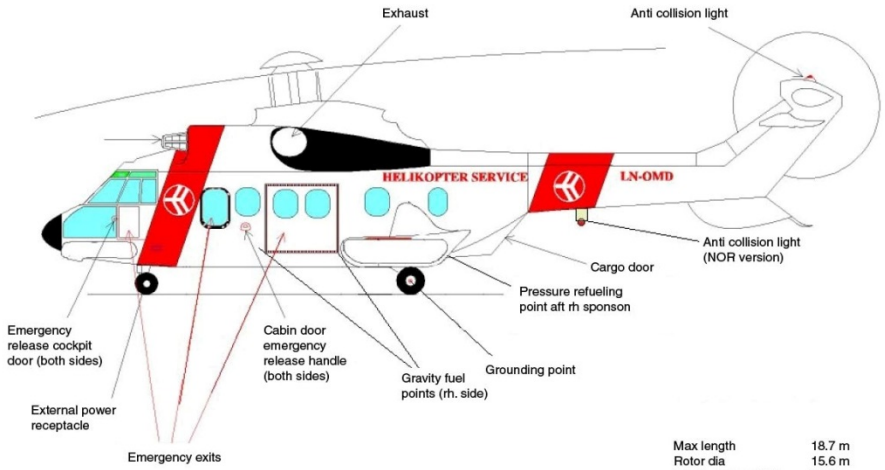
7. Follow-up:

8. Estimated duration:

Airbus SuperPuma L/L1

Super Puma AS 332 L/L1

SUPER PUMA AS 332 L/L1

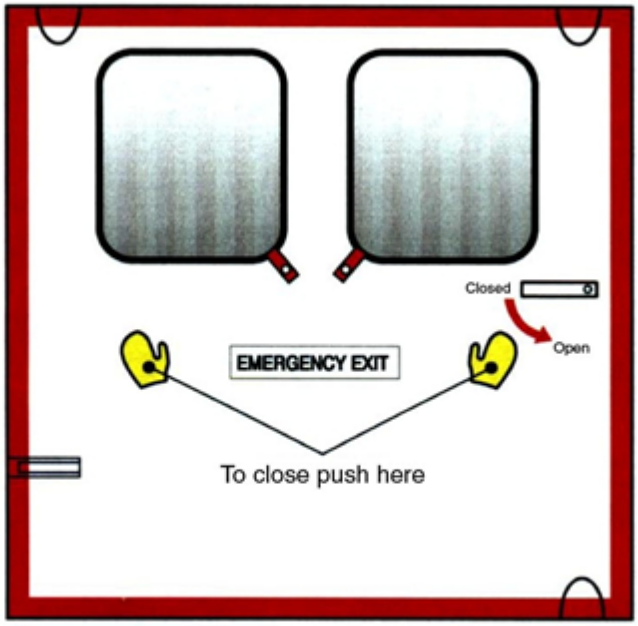


Max length	18.7 m
Rotor dia	15.6 m
Landing gear width	3.38 m
Landing gear length	5.25 m
Max weight	8600 kg
Seat capacity	19

Operation of cabin doors

Super Puma

Procedure for opening and closing of cabin doors



Open cabin door:

Pull the handle out and turn down to open position.
The door shall be fully released from the door frame.
Move the door forward to be "locked in open position".

Close cabin door:

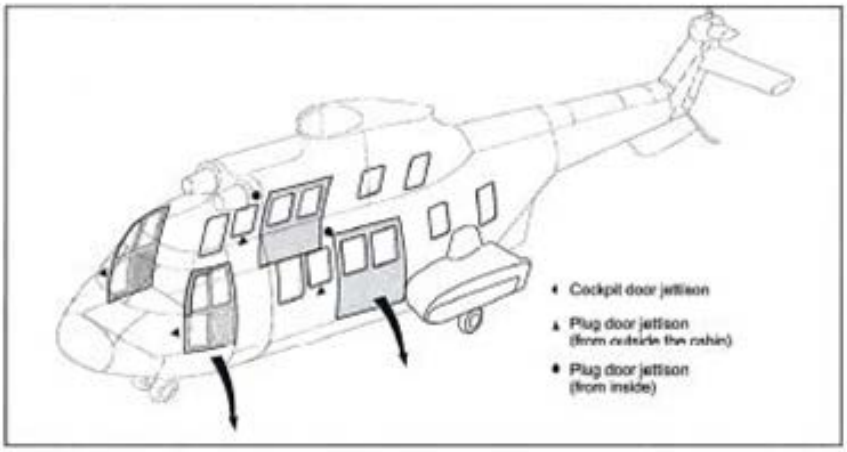
Rotate the door handle downwards and the door will release from "locked in open position".
Lead the door to stop in aft position.
Push the door into the door frame and the door handle automatically moves to mid position.
Rotate the door handle to closed position.

Lights in the cockpit indicates if the cabin doors are open.

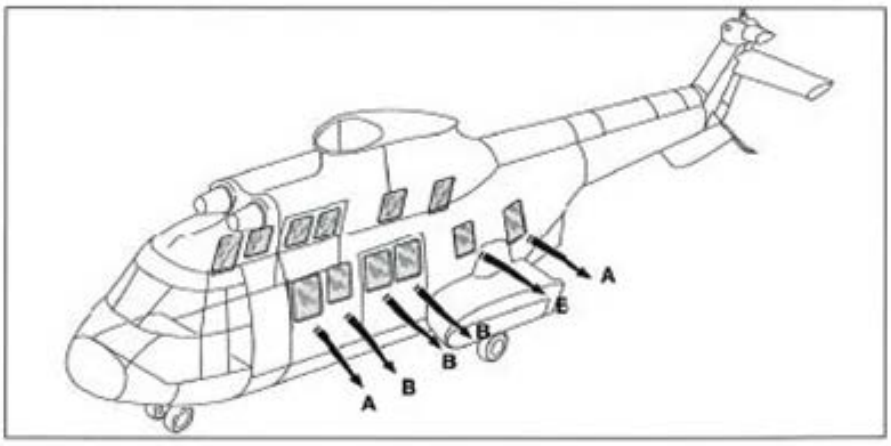
Emergency exits

Opening of the Cockpit Emergency Exit: Turn the Emergency release handle **in front** of the cockpit door downwards until the door releases from the hinges and falls free.(see fig.)

Opening of the Cabin Emergency Exit: Pull the handle in front of the cabin door until the door releases from the hinge tracks and falls free.(see fig)



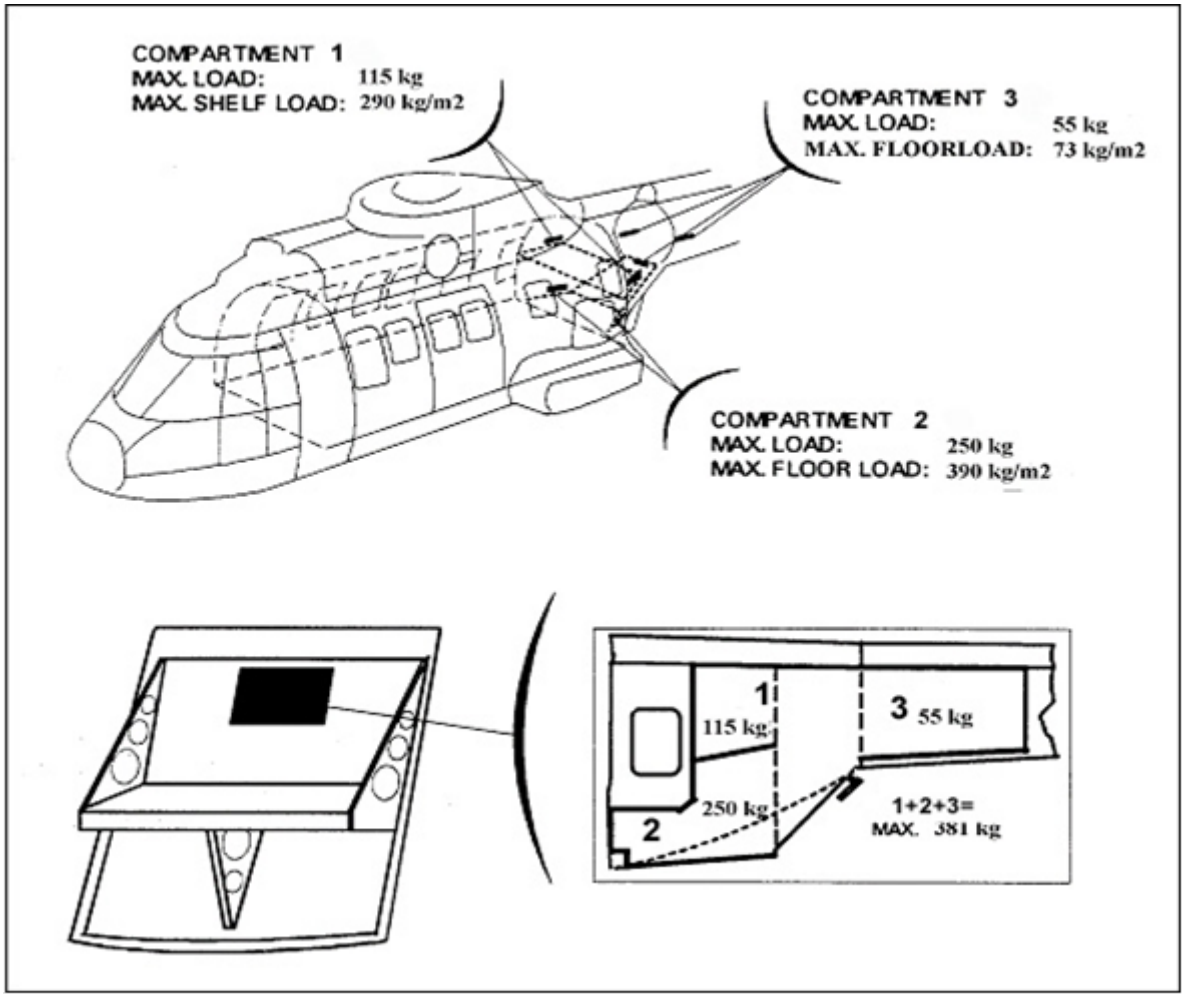
Main emergency exit doors



A: 4 x "type 4" emergency exits
B: 8 x normal windows

Window jettison

Cargo Compartment



Sikorsky S-92A- all versions

S-92A overview

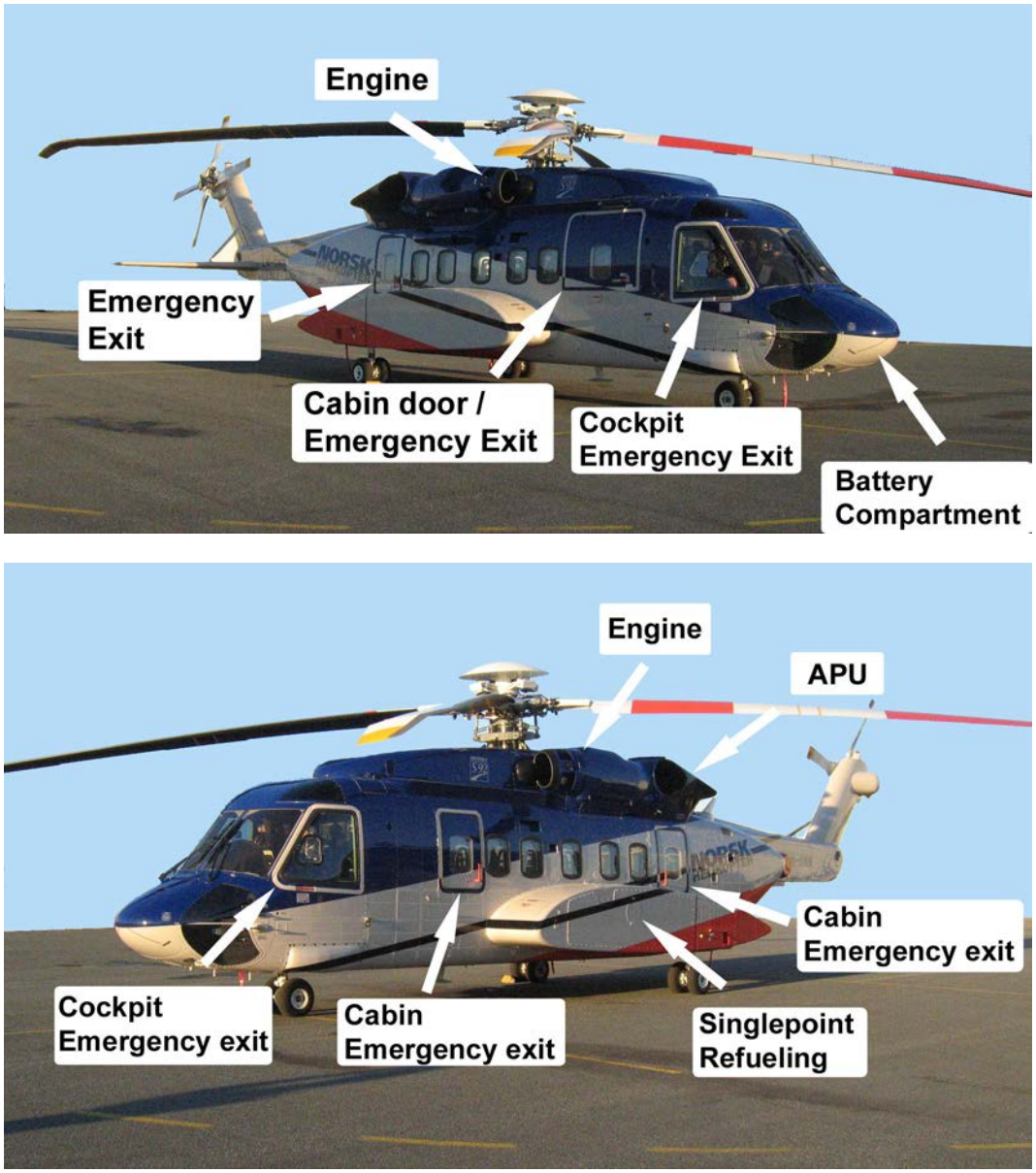


Fig. S-92A overview

General

The S-92A is a twin turbine engine helicopter with a main rotor and a tail rotor. The cabin has 19 passenger seats and position for two pilots in the cockpit. Entrance to the cabin is on the right hand side of the fuselage via a door in front of the sponson. The cockpit is accessed from the cabin.
The access to the cargo compartment is via a ramp door facing aft under the tail section, and has no opening to the cabin.
The two engines and a turbine Auxiliary Power Unit (APU) are located on the upper part of the helicopter. A battery is located in the nose section.
The aircraft has four cabin and two cockpit emergency exits. All exits can be opened from the outside.

Cabin Doors

Cabin door

The cabin has one access door which consists of one upper and one lower part. The upper door comes in two variants; a clamshell door which opens upwards and a sliding door that opens by sliding aft. The lower door opens downwards and functions as stair to the cabin when opened**.** (“Airstairdoor”)

Upper cabin door - Clamshell

To open the Clamshell door;

- Rotate handle from locked to open position and pull door open. The opening will be aided by gas struts.
- Secure the door in the fully open position by operating the locking levers on the gas struts

To close the Clamshell door;

NB! The lower airstair door must be closed first, before the upper Clamshell door!

- Unlock both upper door struts by depressing the locking levers.
- Pull the door down and keep the door handle in the open position while firmly closing the upper door.
- Turn the handle to the lock position and ensure the lock pins are engaged.

Fig. upper cabin door – clamshell

*Upper cabin door – **Sliding***

To open the Sliding door;

- Rotate handle from locked to open position until the door releases.
- Grasp the forward edge of the door and slide aft until it locks in the fully open position.

NB! Do not use the handle to slide the door!

Fig. Upper cabin door – Sliding

To close the Sliding door;

NB! The lower airstair door must be closed first, before the upper Sliding door is locked!

- Release the Open Lock for the upper sliding door by pulling the red toggle located in the forward lower edge of the door. See fig.
- Take hold of the forward edge of the door and slide the door forward with the handle in the OPEN position.
- When the door is approximately half closed, check that the exterior handle is still in the OPEN position, place two hands on the door on either side of the window and push the door firmly forward and inward into the closed position.
- Check that the door is fully closed at the forward and aft edges and turn the handle clockwise to the LOCK position.

  NB! Do not use the exterior handle to pull the door and do not move the handle from the OPEN position until the door is fully closed!

Fig. Locking Toggle Sliding door

Lower cabin door – "Airstair door"

NB! The upper door MUST be open prior to opening and closing of the lower door. The door opens downwards and dampers will help restricting the door movement.

To open the lower cabin door;

- Ensure the upper door is open.
- Rotate handle from locked to open position and lower the door.

To close the lower cabin door;

- Ensure the upper door is open.
- Check that the internal operating handle in the edge of the door is in the stowed position and that the lock bolts at the forward and rearward edges of the door are fully retracted.
- Take hold of the lower edge of the door and raise it until the forward suspension cable is folded down against the door (the door will be approximately horizontal) and press the cable into the retention clip on the inside of the door panel.
- The handrail will be stowed automatically as the door is closed.
- Raise the door to the vertical position and check that the exterior handle is in the OPEN position.
- Hold the door by the upper edge with two hands placed at the forward and aft edges and push the door firmly into the closed position. Rotate handle to locked position.

Fig. Lower Cabin door – "airstair"

Emergency exits

Cabin Emergency exits

The cabin has three emergency exits in addition to the normal exit. The three cabin emergency exits are not hinged to the aircraft. When operating the handle, the emergency exit will be forced out on the bottom and then slide out of the frame on the top.

WARNING:

SUPPORT HATCH DURING PROCEDURE. IF YOU DO NOT DO THIS, HATCH CAN FALL AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

To open the emergency exit;

- Rotate handle towards open position and remove the emergency exit.

Fig. cabin emergency exit

Cockpit emergency exits

The two cockpit emergency exits are not hinged to the aircraft. When operating the handle, the emergency exit will be forced out on the bottom and then slide out of the frame on the top.

WARNING:

SUPPORT HATCH DURING PROCEDURE. IF YOU DO NOT DO THIS, HATCH CAN FALL AND CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

To open the emergency exit;

- Push red button to release handle.
- Rotate handle towards open position and remove the emergency exit.

Fig. Cockpit emergency exit

Push-out Cabin windows

The cabin windows in the fuselage are of a “push-out” type. The windows are not designed to be opened from outside.

Grounding points

The helicopter shall be electrically connected to earth during refuelling. Only approved connectors shall be used in the dedicated Ground Receptacles in the fuselage.

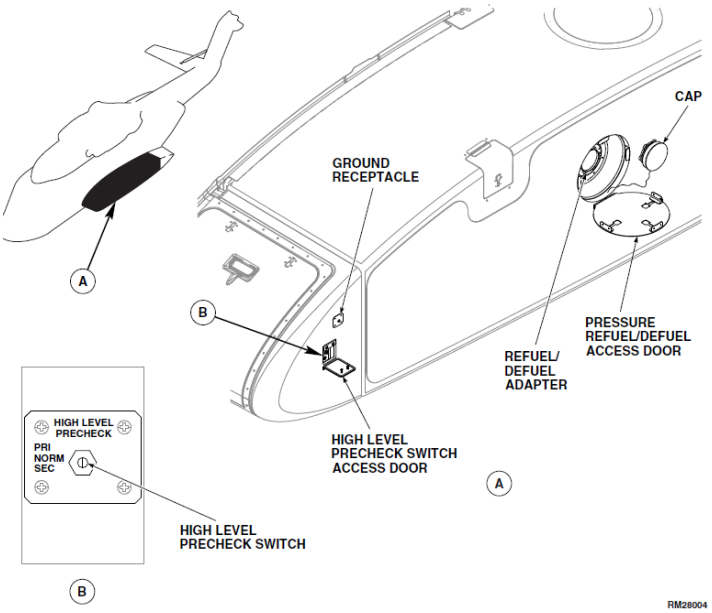


Fig. Ground receptacle point

Engine and APU firefighting

The engine and APU compartments are protected through the onboard fire extinguishing system.

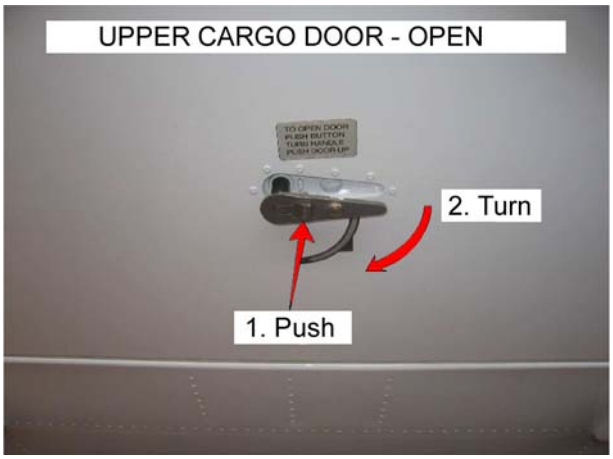
Cargo compartment

The cargo area of the Sikorsky S-92A is located in the aft section of the helicopter fuselage. Access to the area is made through an upper cargo door and a cargo ramp. The upper door has to be opened / closed manually, while the ramp lowering / raising is hydraulic and controlled by a toggle switch on the Ramp control panel, located on the right hand inside wall of the cargo compartment. The control panel also holds switches for interior and exterior lighting and a receptacle to connect to the helicopters intercom system.

Upper cargo door is opened in the following steps:

- Push the door handle centre button to release the handle form its recessed position.
- Turn the handle clockwise and leave handle in open position.
- Push and hold the door in upper position.
- Turn handle counter clockwise to locked position.
- Push handle into the recess by pushing the handle ends.

WARNING: A protruding handle may cause injuries to personnel during loading and unloading of the cargo area.



Upper cargo door

Cargo ramp is lowered in the following step:

WARNING: Cargo ramp should **not** be lowered all the way to the surface, as this might cause resonance in the helicopter.

- Toggle and hold the switch marked [RAMP] on the [RAMP CONTROL PANEL] from centre position and downwards to [LOWER] position until the ramp is approx. 4 - 8 inches above the surface, then release.

Ramp control panel

Cargo area lighting is turned ON in the following steps:

- Toggle the switch labelled [BAGGAGE] on the [RAMP CONTROL PANEL] upwards to [ON] position to light up the internal cargo area.
- Toggle the switch labelled [CARGO] on the [RAMP CONTROL PANEL] upwards to [ON] position to light up the external cargo area.

Close the cargo area.

After loading the cargo perform the following steps:

- Close cargo net snap latches and tighten cargo net.
- Verify that the weight is within limits.

To close the cargo area a two-step process has to be performed. First the cargo ramp has to be raised and then the upper cargo door has to be closed.

Cargo ramp is raised in the following steps:

WARNING: Check that no foreign objects or personnel interfere with ramp closing.

- Toggle and hold switch labelled [RAMP] on the [RAMP CONTROL PANEL] upwards to [RAISE] position until the ramp is fully closed, then release.

Cargo area lighting is turned OFF in the following steps:

- Toggle the switch labelled [BAGGAGE] on the [RAMP CONTROL PANEL] downwards to [OFF] position to turn off the internal cargo area light.
- Toggle the switch labelled [CARGO] on the [RAMP CONTROL PANEL] downwards to [OFF] position to turn off the external cargo area light.

Upper cargo door is closed in the following steps:

- Push the door handle centre button to release the handle form its recessed position.
- Support the door and turn the handle clockwise and leave handle in open position.

  NOTE: The upper cargo door is equipped with dampers to reduce door closing speed.

- Pull upper door to rest on the ramp and turn handle counter clockwise to closed position.
- Push handle into the recess by pushing the handle ends.
- Check area and notify the crew that loading is complete and that area is clear.

There are two types of cargo storage arrangement in use!

Type 1. Compartment with one shelf and one bin

The cargo compartment is equipped with one shelf on the cabin bulkhead and a storage bin on the ramp. Each is divided in two compartments by a cargo net.

The following limitations apply, and shall under no circumstances be exceeded:

Shelf (Room 1 + 2):	136 kg (300 lbs)
Bin (Room 3 + 4):	404 kg (890 lbs)
Shelf + Bin	**404 kg (890 lbs)**

Total weight of cargo in the bin and on the shelf <u>combined</u> shall not exceed 404 kg (890 lbs)!

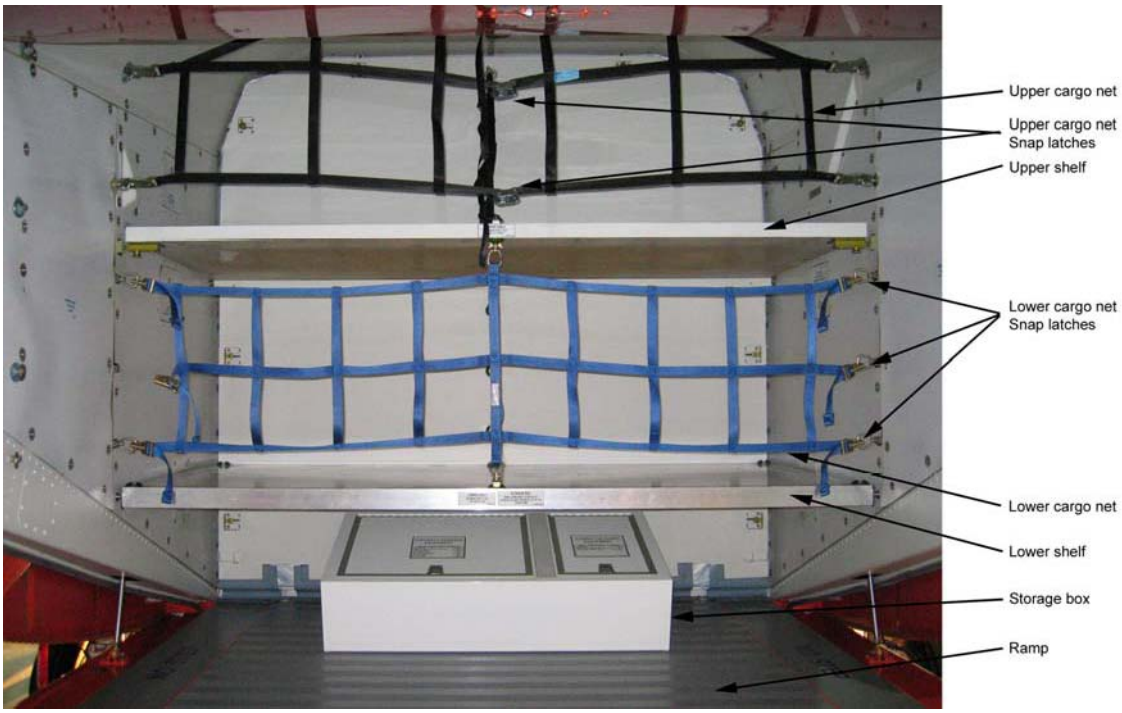
The baggage volume shall not exceed the height of the ”fence” on the ramp to avoid crushing when the ramp is moved to upper position, see dotted line in picture.

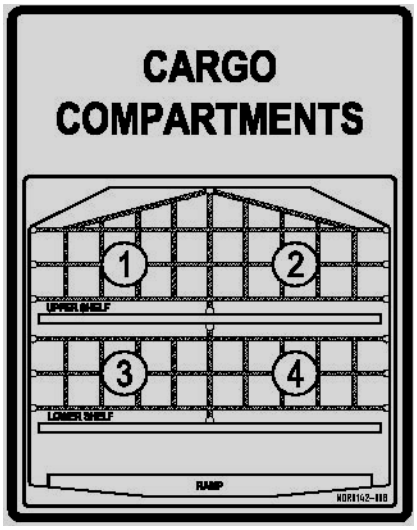
Type 2. Compartment with two shelves

This type of cargo arrangement consists of two shelves, one upper and one lower. Each shelf is divided into two compartments by a cargo net with snap latches. The compartments are named 1, 2, 3, and 4.
In addition to the shelves, a cargo storage box is installed on the ramp. This box is divided into two compartments. One is for the aircraft parking and mooring equipment and the other for cargo related equipment, such as cargo attachment rings and jack straps. Each of these compartments is labelled with a decal describing the compartment contents.
The storage box must always be installed when the lower shelf is installed.

When cargo is loaded directly onto the ramp, the lower shelf and storage box must be removed and the cargo secured to the ramp.

Decals are also installed on the shelves and above the ramp control panel. These decals describe the cargo compartment areas and weight limitations.





Cargo compartment decal

The following weight limitations applies and must not in any circumstance be exceeded:

Upper shelf total (Area 1 + 2):	136kg (300 lbs)
Lower shelf total (Area 3 + 4):	317kg (700 lbs)
Cargo ramp:	453kg (1000 lbs)
1+2+3+4+Ramp <u>combined</u>	**453kg (1000 lbs)**

Total weight loaded on the ramp, upper and lower shelves <u>combined</u> must not to exceed 453kg (1000 lbs)!

CAUTION:

Please note that the Sikorsky S-92A rotor downwash is very strong! Comparable to hurricane force winds.

During take-off and landing it is very important that loose items located on or in close proximity to the helicopter deck is secured in a proper way. Luggage and cargo stored in trolleys must be secured with cargo nets.
Personnel should also be aware of residual strong downwash when embarking and disembarking the helicopter. A pair of glasses and other “loose items” might come loose in these conditions if not secured properly.

Please contact the crew if additional information is required.


PH-SHO

DanCopter EC 155 B1

The EC 155 helicopter can be handled from either side, as there are luggage compartment doors on both sides. Therefore handling of passengers and cargo on the platforms should be performed from the side most convenient to the helideck crew unless something else has been agreed. If the helideck crew has never received any instructions of how to operate the doors, please inform the pilots and ask for assistance. One of the pilots will show you how to operate the doors.

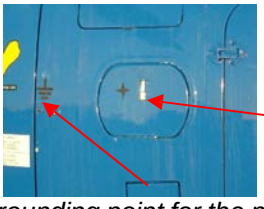
When opening the luggage compartment door, the light switches automatically on and vice versa.

First thing is to unload all luggage on the helideck. Close the luggage compartment door before the cabin door is opened. The passengers will leave their PLB in the aircraft, take their luggage, follow the directions from the helideck crew and leave the helideck as directed. When embarking passengers the procedure is vice versa.

When refueling all passengers will normally have to leave the helicopter and all doors must be closed. This gravity refueling servicing is performed entirely on the left hand side. Initially the helicopter must be ”grounded” with a grounding wire at the main wheel as illustrated below. Secondly the grounding wire from the pistol handle must be ”grounded” to the grounding point just left of the fuel caps also illustrated. Remove fuel cap(s) and distribute the fuel in the rear or forward tank as agreed with the pilots. When refuelling is done, close and secure the fuel caps, remove the pistol handle grounding and wind up the fuel hose. Finally remove the grounding wire from the main wheel and the passengers can board the helicopter again.

The battery is positioned on the left hand side of the helicopter just forward of the pilot pedals as illustrated.

”Ground” the helicopter to this grounding point with the grounding wire.



Grounding point for the pistol.

Opening of the fuel caps.

The battery is positioned on the left hand side of the helicopter just forward of the pilot pedals behind this shield.

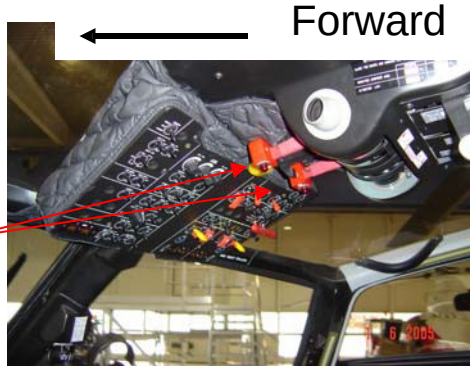
DanCopter A/S DanCopter Allé 2, DK – 6705 Esbjerg

Crash chart EC 155 B1

1. Access to cockpit
Pull locking handle

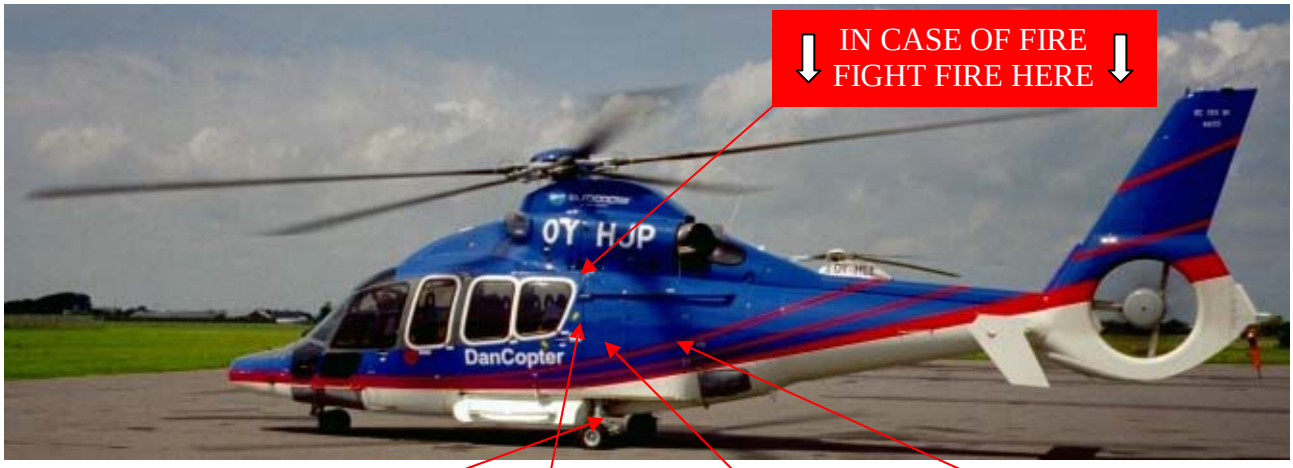
2. Emergency cut-off handles will cut off engines and close fuel valves. Both handles must be pulled rearwards (Overhead panel)

Forward



3. Access to cabin
Pull locking handle

EC 155B1
FIRE ACCESS PANEL
SAME ON THE OTHER SIDE

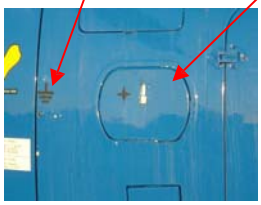


Grounding point for ground wire.

Grounding point for fuel hose.

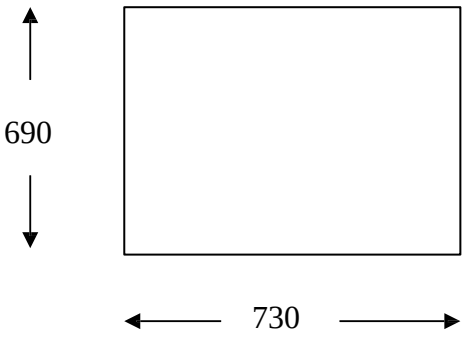
Fuel caps positioned only left hand side.

Luggage compartment.

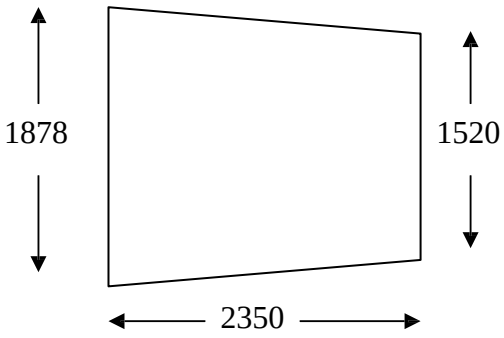


Luggage compartment

Size of the door in mm



Size of the floor



AgustaWestland AW139

AW139 in the offshore configuration

Access

The cabin is accessed via sliding doors on both sides

Operator

Blueway Offshore Norge AS – Bygdøy allé 2 – Postboks 573
Sentrum – 0101 Oslo – Norge
Tel: +47 6712 5400 – Fax: +47 6712 5401 – E-mail:
info@bluewayoffshore.no - Organisationsnr: 994 104 586

Cargo

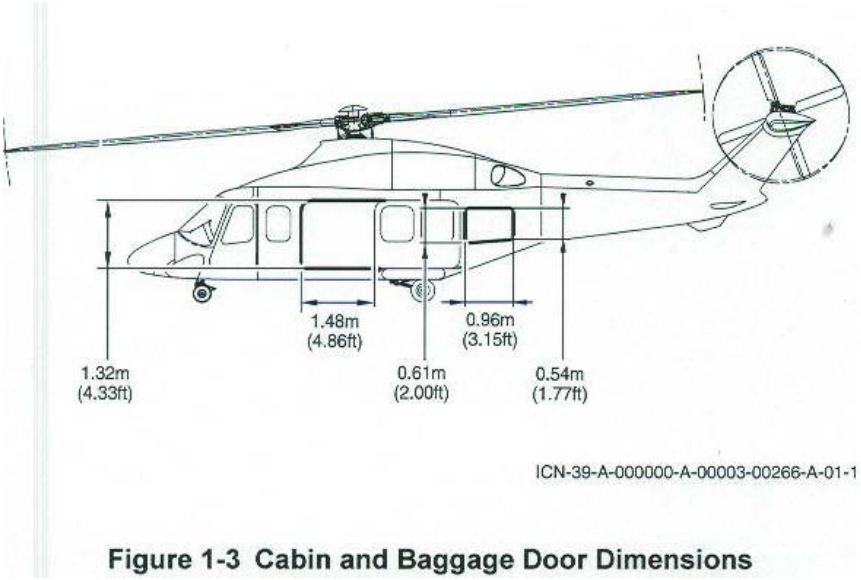
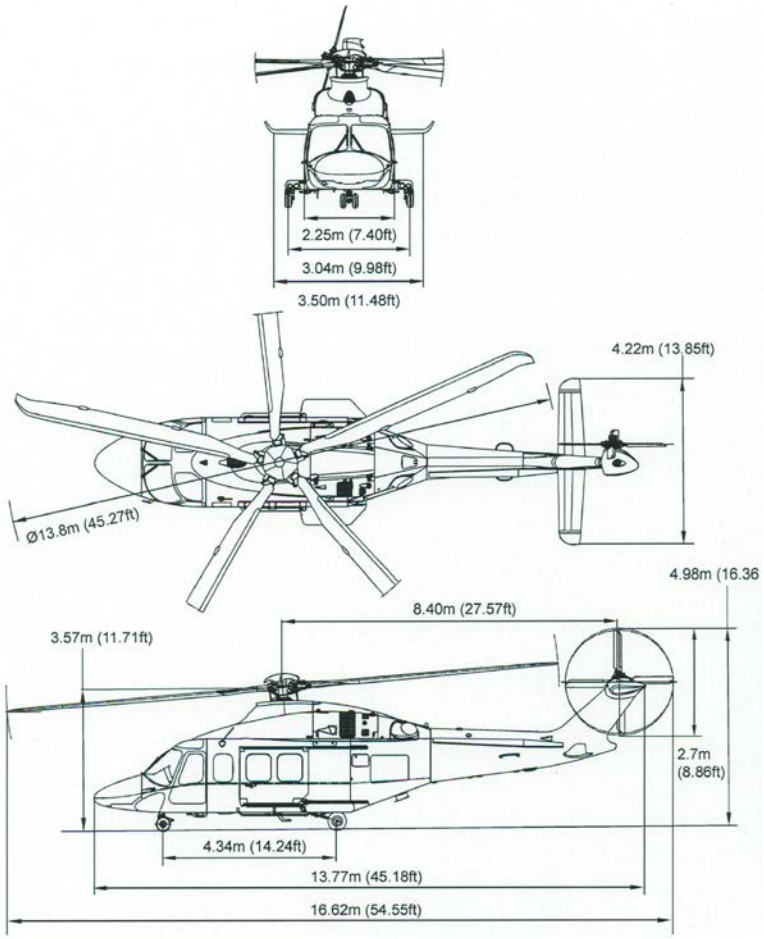


Figure 1-3 Cabin and Baggage Door Dimensions

The cargo compartment has access via one door on each side of the fuselage.

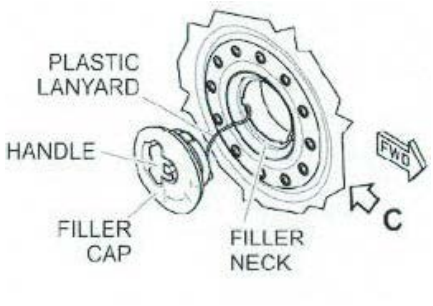
Dimensions



Refuelling

Refuelling on right hand side of helicopter. Gravity refuelling only.

After grounding the helicopter and the fuel nozzle - flip out handle and turn the cap in the direction shown on the cap. When closing the fuel cap – turn cap in direction shown on the cap and flip in handle. Note that the handle can only be flipped in if the cap is properly closed.



Emergency

EMERGENCY EXITS

Figure 3-3 , Figure 3-4 and Figure 3-5 show the positions of the aircraft entrances and exits.

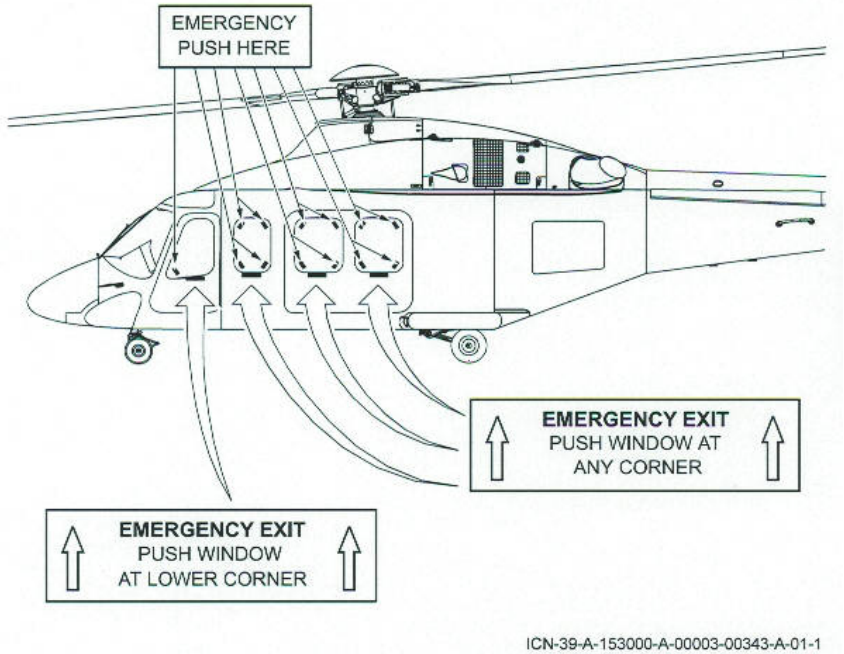


Figure 3-3 External Markings and Placards

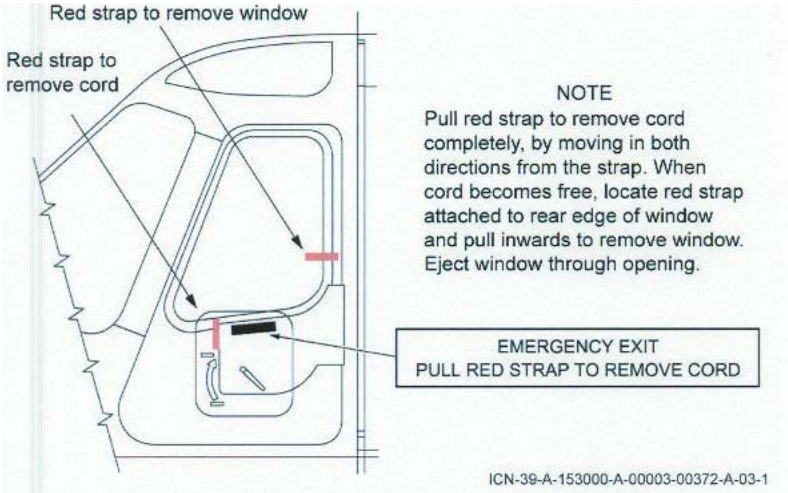


Figure 3-4 Internal Markings and Placards

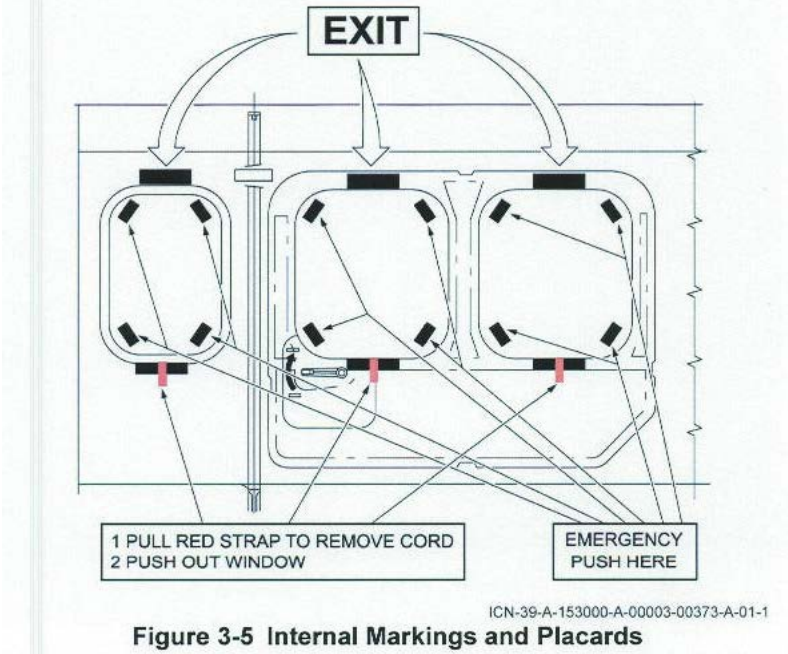
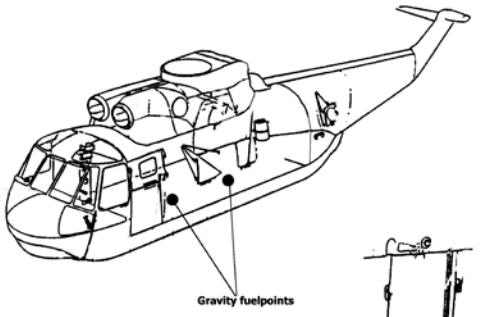
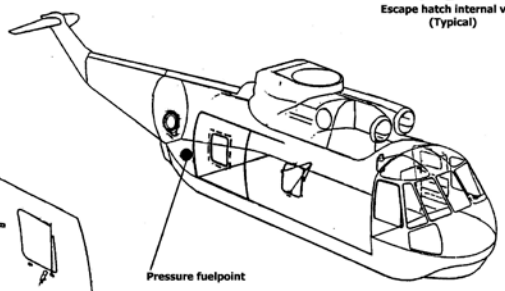
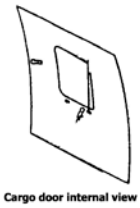


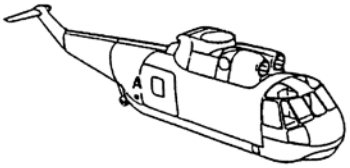
Figure 3-5 Internal Markings and Placards

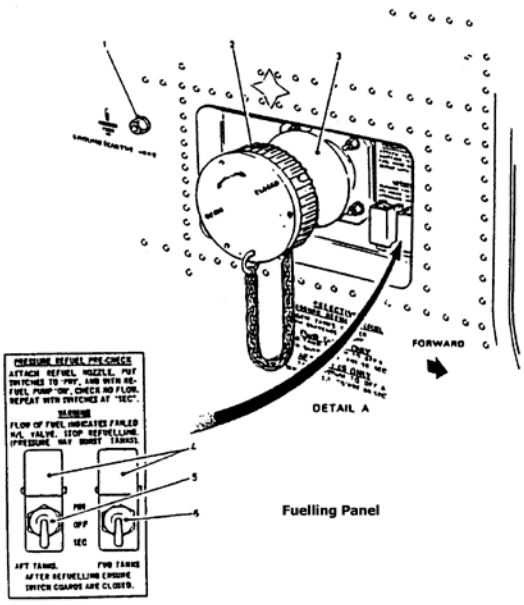
WESTLAND SEA KING











Agusta A109E

EKSOS

LUFTINNTAK

ANTIKOLLISJONSLYS

GROUND HERE

GRAVITY FUELING

FLOATATION

DØR HANDTAK -begge sider

BAGGASJE ROM

Maksimum lengde	13,04m
Rotor diameter	11,00m
Understells bredde	2,15m
Understells lengde	3,54m
Høyde under flat rotor	3,10m

Maks totalvekt	2850 kg
Antall seter i kabin (offshore)	5
Maks last i lasterom	150 kg

Crash Chart of Agusta A109E

Emergency shut-off : Lift plastic covers and press buttons

To open passenger door either side of helicopter : Lift latch and slide rearwards

To open pilot door either side of helicopter : Lift latch and open door

Agusta A109E :

- D – value .....…….....13,04 meters
- Height under level rotor…….3,10 meters
- Rotor diameter……11,0 meters

Handling the helicopter during take off and landing

This enclosure contains a step-by-step description of the most general operations on the helideck for a helideck crew consisting of 3 persons.

- HLO (Helicopter Landing Officer) In charge of helideck
- Heliguard
- Fireguard

The HLO is the heliguards and fireguards superior. Task allocation between Heliguard and Fireguard should be adapted to local conditions to ensure safe and efficient operations. Work tasks in addition to this may be given as required.
The HLO shall not have other duties in the same period as the Helideck shall be manned (20 minutes before landing to 15 minutes after departure)

The described operations are based on the assumption that there are exit stairways from the helideck. Where this is not the case, the installation will use approved alternative departure routes from the helideck.

The principle behind this procedure is, through standardisation and by relieving the HLOs of as many tasks as possible, trying to achieve optimal safety levels across the companies on the Norwegian Continental Shelf.

The helicopter companies emphasize that during helicopter operations the HLO shall have a full overview of the helideck area, be in visual contact with the pilot and be able to run/control the operations in such a manner that any potential danger is registered and effectively eliminated.

Apart from what is laid down in this procedure, if the HLO has to leave his position, the pilot must be informed.

Helicopter arrival
From: When the Heliguard receives notification from the radio/communications officer that a helicopter is expected.
To: Until the helicopter is steady on the deck with rotors moving and chocks in place.

Operations: Well in advance of the arrival of the helicopter

HLO	HELIGUARD AND FIREGUARD
1. Verify the arrival time of the helicopter 30 minutes before the estimated time of arrival. 2. Meet at the helideck at least 20 minutes before arrival 3. Verify that any stand-by vessel close by is informed of the arrival of the helicopter, and that no vessel is located within 500 meters in the 180 degree zone, or if higher than the helideck, in the 210 degree zone. 4. Inform the Helicopter of any vessels within 1000 meters. Gather information on the arriving helicopter. This includes: estimated time of arrival, location and amount of cargo, number of passengers and any fuel requirements. In difficult weather conditions/special cargo, evaluate the need for, and requisition, extra personnel. 5. Make sure that the daily inspection of the helideck and refuelling plant has been completed with a satisfactory result. 6. Furthermore, check that the helicopter landing area is cleared of obstacles. 7. Brief and, if necessary, allocate tasks to the Heliguard and the Fireguard.	1. Meet at least 15 minutes before arrival time. 2. Prepare the cargo that is to be sent. 3. Check and prepare fire-fighting equipment. 4. Receive the manifest and information on number of arriving and departing passengers. 5. Don the necessary clothing and portable VHF.

Operation: 5 minutes before the estimated time of arrival of the helicopter.

HLO	HELIGUARD	FIREGUARD
1. Make sure that the crane drivers are informed. 2. Monitor radio communication between the helicopter pilot and the installation (or HFIS) 3. Make sure that the passengers are ready and remain in a safe zone without access to the helideck. Physical barriers shall be used.	1. Stand in a safe position in visual contact with the HLO	1. Make sure that the fire cannon are aimed and adjusted.

Operation: Immediately prior to the helicopter landing, and during landing.

HLO	HELIGUARD	FIREGUARD
1. Make sure that cranes have stopped operating. Peripheral crane operations may be permitted but the pilot must be informed. 2. Notify the pilot on VHF that the helicopter deck is cleared for landing and give warning of seaspray if this has been observed on/over the helideck. In especially difficult weather conditions ask the pilot to notify the passengers. 3. Take up a safe position by the most suitable stairway, primarily on the upwind side, with a view over the helideck. 4. Continuously monitor and immediately report any abnormal situation **NB!** Check that the undercarriage is down.	1. Stand in a safe position in visual contact with the HLO	1. Stand at the upwind fire post or alternatively at the remote control unit. Stand at full readiness with the switch for the alarm systems within reach.

Operation: After landing

HLO	HELIGUARD	FIREGUARD
1. After the anti-collision lights have been switched off, signal to the heliguard that entry to the helideck is now allowed. 2. Can take a set of wheelchocks and place these in position, and receive/deliver the manifest from/to the pilot. 3. Within the safe zone for the rotor, take up a position that ensures eye contact with the pilot and a full view of the helideck.	1. On receiving a signal from the HLO take wheelchocks and place these in position (both sides shall have chocks)	1. Serve at the fire post until the chocks are in place on both sides.

Helicopter on the helideck

From: When the helicopter stands on the helideck with rotor engaged and chocks in place.

To: When the helicopter is loaded with passengers and cargo, and the helideck is cleared.

Operation: Disembarking and unloading

HLO	HELIGUARD AND FIREGUARD
1. Remain in the best position for eye contact with the pilot and a total overview of the helideck. 2. When the helicopter has its rotor engaged, all personnel movement shall primarily take place at a 90° angle to the longitudinal axis of the helicopter and thereafter outside the rotor disk. (See enclosure B).	1. Install any required railings at the exit 2. Open baggage compartment hatches; unload baggage and cargo 3. Place any baggage outside the passenger door or together with the cargo on the baggage trolley. 4. Open appropriate cabin doors and let out passengers who will carry their baggage to the exit stairway as directed (NB! Only one cabin door must be opened so that loose objects cannot be blown out of the helicopter. Make sure that the passengers keep a tight hold on any light objects).

Operation: Embarking and Loading

HLO	HELIGUARD AND FIREGUARD
1. Check that the heliguard is ready to receive the passengers, and then signal to the fireguard that the passengers may now enter the helideck. 2. Direct/signal to the passengers what is the safe (outside the rotor disk) embarking route up to the heliguard. 3. Remain in the best position for eye contact with the pilot and a full view of the helideck.	1. When signalled by the HLO, collect the boarding cards and show the way to the helicopter. Signal to the HLO that the numbers tally. 2. Lead the passengers safely in to the helicopter and direct the placing of baggage. NOTE: In high winds be aware of light baggage/cargo. 3. Stow baggage and shut cargo compartment hatches. 4. Ensure that all passengers have fastened their seat belts. 5. Close the cabindoor. 6. NB! Cabin cargo should be loaded and secured before the passengers are taken onboard. When loading Super Puma inform the pilot of the total load in cargo compartment #3.

Helicopter departure

From: The HLO clears the helicopter deck.

To: Until 2 minutes after departure.

Operation: Preparing for take off

HLO	HELIGUARD	FIREGUARD
1. Signal to the heliguard to remove the chocks on the left hand side. Remove the chocks on the right hand side. 2. When the helideck is clear and the fireguard is in position, give a "thumbs up " signal to the pilots. 3. Monitor the take off and radio communication, and immediately report any abnormal situation 4. Make sure that nobody leaves their position until 2 minutes after take off. Make sure that everyone remains in readiness for another 15 minutes or until the helicopter has landed at another installation.	1. At the signal from the HLO, remove the chocks from the left hand side. 2. Do not leave position until two minutes after take off. Listen on VHF in the event of a possible return of the helicopter to the installation. 3. Maintain state of readiness as directed by the HLO.	1. Don full fire protective clothing. 2. Take up position at upwind fire post, alternatively at the remote control unit. 3. Do not leave position until two minutes after take off; listen on VHF in the event of a possible return of the helicopter to the installation. 4. Maintain state of readiness as directed by HLO.

Alternative access

Procedures for alternative disembarking and embarking with guidance of the helideck crew.

This procedure shall be used if the normal procedure with access to the helideck on the same side as the helicopter entrance can not be used.

Operation: Disembarking around the nose S-92A/SuperPuma

HLO	HELIGUARD AND FIREGUARD
1. Move from the side of the helicopter to the front of the nose inside the rotor tip (approx 1m from the nose) keeping eye contact with the pilots and both sides of the helicopter. 2. Direct passengers from the fire-/heliguard standing at the entrance door towards the baggage and/or the fire-/heliguard standing at the edge of the helideck.(See enclosure B, safe access)	1. Open cargo doors and unload baggage and cargo placing the baggage 90˚ to the helicopter on the opposite side of the entrance door or on the baggage trolley. 2. One fire-/heliguard opens the cabin door and direct passengers towards the HLO standing in front of the nose. 3. The other fire-/heliguard takes position by the baggage at the edge of the helideck to direct the passengers to the closest exit

Operation: Embarking around the nose of S-92A/SuperPuma

HLO	HELIGUARD AND FIREGUARD
1. Take position in front of the nose inside the rotor tip (approx. 1m from the nose) Keeping eye contact with the pilots and both sides of the helicopter. 2. Check that one fire-/heliguard is in position by the entrance door, ready to receive the passengers, and then signal to the fire-/heliguard that he may now let the passengers enter the helideck. 3. Direct/signal to the passengers what is the safe route between him and the nose of the helicopter, and direct them towards the heliguard by the entrance door. 4. Move back to normal position on the helideck outside the rotordisk keeping eye contact with the pilots and full view of the helideck.	1. One fire-/heliguard takes position by the entrance door of the helicopter. 2. The other fire-/heliguard takes position by the stairway in use. 3. When signalled by the HLO, the person by the stairway collects the boarding cards, and directs passengers towards the HLO. 4. The fire/heliguard positioned outside the cabin door directs where the luggage should be left, and directs the passengers into the helicopter.

Helicopter shut down/start up

From: The helicopter is on the deck; the passengers have left both the helicopter and the helideck, and the anti collision lights have been switched on again.

To: The rotor has stopped and the anti collision lights have been switched off again.

Operation: Preparation

HLO	HELIGUARD	FIREGUARD
Stand in the safe zone with a full view of the helideck and with the wind at his back.	Stand in the safe zone by the access stairs.	Maintain firewatch

Operation: Shut down

HLO	HELIGUARD	FIREGUARD
1. When the rotor has stopped and the anti collision lights have been switched off, the helideck may be entered. 2. The HLO will get help to tie down the rotor blades and secure the helicopter as required.	When requested by the HLO, assist in tying down the rotor blades and securing the helicopter.	When requested by the HLO, assist in tying down the rotor blades and securing the helicopter.

Helicopter start up

From: The helicopter is on the deck with the pilots onboard and the anti collision lights on

To: The helicopter has both engines running, the rotor turning, the anti collision lights off and the helicopter is ready to take onboard both passengers and cargo.

Operation: Preparation

HLO	HELIGUARD	FIREGUARD
1. Keep eye contact with the pilot and maintain full view of the helideck. 2. During start up there should be no passengers onboard the helicopter, apart from when the pilot so wishes.	Takes up position by the access stairs so as to have a clear view of the helideck	The fireguard stands beside the relevant fire post/remote control unit wearing all fire protection gear

Operation: Start engines

HLO	HELIGUARD	FIREGUARD
Stand in front of the helicopter in the safe zone. Assist fireguard whenever necessary.		Take up position on the indicated side of the helicopter to observe the engine startup. (When moving, after no.1 engine has started and the rotors are turning, the fireguard must stay outside the rotor disk when proceeding to the next engine.) In the event of a fire in or under the helicopter, alert the pilot/HLO by the portable VHF radio, or by giving the signal ”Shut down”. Start to extinguish the fire.

Operation: Final stage of start up, embarking passengers and loading/ take off without passengers.

HLO	HELIGUARD	FIREGUARD
1. On the signal from the pilot (anti collision lights off), commence boarding passengers and loading cargo, remove chocks 2. When the Heliguard is ready, the HLO will give the signal to the fireguard that boarding can start.	1. Take up position and give sign to the HLO that boarding may start	1. Proceeds to the access stairs to await signal from HLO regarding boarding the passengers

Guidance communications for Radio operator

Exchange of Logistic information

Approximately 20 minutes prior to estimated time of arrival (ETA), the helicopter crew will establish contact with Radio or Bridge for update/exchange of:

- Position. Also heading and speed, if relevant
- Weather update
- Movements of the Helideck, if relevant
- Return load
- Obstructions in the vicinity (within 500 meter) in the approach- and departure/missed approach sectors
- Need for refuelling

The installation should have dispatched a Helideck Report to the Helicopter base, one hour prior to estimated time of departure (ETD) from shore. This report is carried on board by the helicopter crew. It is only necessary to update any changes.

Position

The position shall always be given in Latitude and Longitude in the following format: N dd mm,mm E ddd mm,mm
d = degrees
m = minutes and decimals of minutes
Heading of the installation is given in degrees (magnetic north)
Speed is given in knots

Weather conditions

If the weather is better than 10 km visibility and ceiling above 1000 ft, one can refer to the earlier shipped Helideck Report. The wind direction, wind speed and QNH shall always be given to the helicopter crew.
If the visibility and/or ceiling are less then the values given above, the helicopter crew shall be updated in the following format:

- Wind direction; given in degrees
- Wind speed, including gust; given in knots
- Visibility given in meters or km
- Clouds or Ceiling (FEW/BKN/OVC); given in feet above sea level
- Actual temperature; given in degrees Celsius
- Dew point (temperature), if available; given in degrees Celsius
- QNH; given in HektoPascal
- Other information of interest to the helicopter crew like shower activity, snow on the helideck, etc.

Movement of the Helideck

If the Helideck is moving less than +/- 1 degree, (less than 1 to any direction from the horizontal plane), and the vertical movements (heave) is less than 2 meters, the Helideck is defined as not moving. In this case there is no need to forward these details to the Helicopter crew.

For installations with HMS (Helideck Monitoring System), it should be adequate to announce: “We have a GREEN deck on the HMS”, unless that the Helicopter Crew is requesting the details.

Return load
This is given in the following format (approx.20 min. before landing):

For each departure
Number of passengers(pax)/ Weight of passengers/ Weight of baggage/ Weight of cargo/ Total weight.

Example:

- Helibus 123 your return load will be:
- From Balder you will be lifting with 14 pax / Pax weight 1359kg / Baggage 140kg / Cargo 12kg / Total weight 1511kg
- From Ringhorne you will be lifting with 16 pax / Pax weight 1578kg / Baggage 164kg / Cargo 8kg / Total weight 1750kg
- From Jotun A you will be lifting with 18pax / Pax weight 1795kg / Baggage 198kg / No cargo / Total weight 1993kg

Obstructions in the vicinity (within 500 meters) in the approach- and departure/missed approach sectors
The reason for the need of this information:

1. To verify that obstruction free sectors according to CAA-N regulations in BSL D 5-1, ch. V – obstructions, are obtained
2. To give the Helicopter Crew better situational awareness under marginal weather conditions

Need for refuelling while on deck
This information is exchanged in this phase to give the HLO adequate time to prepare the helideck for refuelling, if the Helicopter Crew requires so upon landing.

Example of communication:

Helicopter: Seaway Falcon, this is Helibus / Norsk 123.
Installation: Helibus / Norsk 123 this is Seaway Falcon.
Helicopter: We are on our way, and have an ETA (Estimated Time of Arrival) of 23, (23 minutes past the hour).
Installation: You will be here at 23. Are you ready to receive the details?
Helicopter: We are ready. Go ahead.
Installation: Our position is N 59 31,35 E 006 46,55 (comma pronounced “decimal”)
We have a heading of 300 degrees
Our speed is 5 knots
The weather in the area:
Wind from 270 degrees 25 knots, gusting 35 knots
Visibility 3 km
We have Broken (BKN) at 800 feet
Temperature 8 degrees
Dew Point 5 degrees

QNH 989 Hectopascal
A shower has just passed through the area
The HMS is showing GREEN deck
Return load:
You will be lifting with 19pax / Pax weight 1895kg / baggage 100kg / Cargo 100kg / Total weight 2005kg.
We have one fishing vessel 500 meters south of us, heading South. There are no other vessels in the area.
Do you require fuel upon arrival?

Helicopter: We received all your details. We copied a QNH of 989. And negative refuel.

Installation: We copied negative refuel.

Changes in weather conditions

If the weather changes, visibility, ceiling, the movements of the helideck, or other details of interest to the Helicopter Crew, this must be forwarded over the radio with no delay.

Specification for offshore refueling systems

This specification is applicable for all fixed and floating installations operating on the Norwegian shelf. Specific class requirements from the Norwegian Civil Aviation Administration (NCAA - BSL D 5-1), the Norwegian Maritime Directorate (NMD), Norwegian Petroleum Directorate (NPD), Class (BV, ABS, DnV & Lloyds) and UK regulations CAP 437 latest revision must be complied with.

This specification is based on the requirements made by the Norwegian Offshore Helicopter Operators for offshore helicopter refuelling systems and the approval of the refuelling systems will be done by them.

General information

No threaded connections are accepted in all wetted parts. Exceptions are the connection to the 30m fuel hose, nozzles, dry break coupling, gauges, air eliminators, sample valves, instruments & instrument fittings.
A complete system description and specific operation procedure shall be available to the operator.

Materials:

All pipework (Norsok AS20) and accessories shall be of stainless steel or mild steel protected internally by lining with approved epoxy material. No copper alloys, cadmium plating, galvanised steel or plastic materials is permitted. The use of copper containing materials for other components in contact with the fuel shall be minimised and no zinc or alloy materials containing more than 5% zinc or cadmium shall be used.

No flow in the process line shall exceed maximum 7 m/s.
Grade marking: All units must be marked in accordance with API requirements.

Design Criteria

- Norwegian Maritime Directorate (NMD).
- Norwegian Petroleum Directorate (NPD).
- Class requirements shall be followed all vessels (except fixed installations).
- Norsok standards
- CAP 437
- Transportable tanks: DnV 2.7-1 & IMO / IMDG requirements. They shall also conform to the “dangerous goods Code Type 1 or 2”
- Storage and recycle tanks: TBK, ASME VIII and BS5500 Categories I, II, III,
- Filter water separators according to API/IP 1581 Specification and qualification procedures for aviation jet fuel separators, latest edition.
- Aviation fuel filter monitors according to API/IP 1583 Specification and qualification procedures for aviation fuel filter monitors with absorbent type elements, latest edition.
- Refuelling hose type C, grade 2, semi-conducting, meeting the latest edition of API 1529 or BS/EN 1361.
- Vessel movements, wind and explosion loads must be taken into consideration during construction of the system.

Helicopter refuelling system

The following subsections describe the scope for these rules and regulations.

Laydown area for transit tanks

Laydown skid

The drip tray shall be sized to hold 100% of the content of one tank.

The laydown skid must be equipped with a 2” or preferably 3” drain connection.

To protect the deluge system/pump unit from damage during tank handling a guide/ buffer frame is recommended welded to the base of the skid.

Transportable tanks should be properly sea-fastened on moving vessels.

A valve shall be mounted on the Jet A-1 outlet point (skid edge).

A convoluted stainless steel suction hose with a 2.5” dry break coupling shall be used to connect the transit tanks to the pump unit. Other end should be sized to fit the pump unit inlet flange (ANSI 150lbs).

The base frame shall be bonded from two different locations.

Deluge system

A Deluge system shall be installed according to design criteria.

A calculation report (hydraulic calculation) for the deluge system shall be available upon the surveyor’s request.

Fire detection: Acc. to class requirements or Oil companies specification.

Transit tanks

Transit tanks shall be constructed to satisfy DnV 2.7-1 & IMO / IMDG requirements. They shall also conform to the “dangerous goods Code Type 1 or 2”.

Transit tanks shall have a suitable dipstick, preferably of fibreglass material.

Tanks should preferably be of stainless steel or lined with a suitable fuel resistant epoxy lining.

The tank outlet valve on the tank in operation shall be capable of remote closure from the helideck (dispenser unit). Operation preferably by pneumatic operated tank valve or alternatively by remote closure by wire.

In order to allow 4L sample jars to be used, the sample point should be designed with sufficient access (250mm), space and height to accommodate the standard 4 litre sample jar. The sample line from tanks shall be minimum 3/4”

The outlet/fill connection shall be flanged with a 3” internal valve terminating to a 2.5” self-sealing coupler with dust cap. The tank outlet shall be at least 150mm higher than the lowest point of the tank.

The drain connection shall be equipped with minimum 1.5” internal valve terminating in a plugged ball valve preferably 1”. The plug shall be installed on the end to prevent the ingress of dirt and moisture.

The stainless 2.5” emergency pressure/vacuum relief valve should be fitted with weatherproof anti-flash cowl.

Tanks not in use

Tank shall only be located in defined safe area during settling and transfer to the static tank. The selected tank shall only be connected during the transfer of Jet A-1.

Tanks installed on the laydown skid

Tanks in use shall have protective deluge system according to class requirements, NMD or minimum 10 l/m2/min.

Tank in operation shall be bonded by use of the bonding clip.

Static storage tanks

Stationary tanks shall be constructed to suitable standards (eg. ASME VIII and BS5500 Categories I, II, III). The tank shall slope 1 on 30. The sump shall be fitted with a 3/4" minimum sample line which has both a ball valve and a self closing ball valve at the sample point.

The outlet should either be by floating suction or from a stack pipe, which extends at least 150mm above the lowest point of the tank. If a floating suction (stainless) is embodied a bonded wire pull assembly should be fitted to the top of the tank. The suction floating is strongly recommended, and shall be used when possible.

Make sure the drain point on the stationary tanks on mobile units (e.g. rigs / FPSO's) are able to drain the tank sump varying on the vessels movements / position.

Automatic closure valves to the delivery and suction inlet should be capable of operation from both helideck (dispenser unit) and from another point, which is at a safe distance from the tank.

The tank shell must be properly bonded.

Each chamber to be equipped with 500mm quick release hinged manhole to allow physical access.

Dipstick or a sight glass/content gauge to determine the tank content.

A closed circuit sampler connected to the sample point is recommended.

A combined pressure/vacuum relief valve must be installed on each closed chamber of the tank.

Pumping module

A 60 mesh Y-strainer shall be installed in front of the fuel pumps.

The twin pump unit shall be air driven alternatively electrically, equipped with a positive displacement vane pump or centrifugal pump with a head and flowrate suited to the particular installation. For larger helicopter types it might be advisable to use larger capacity units. The pump unit should be constructed to meet EX zone 1. The pumps shall be equipped with internal relief valves or alternatively with a common external relief valve. The relief valve outlet should be routed to the pump suction side.

The pump unit shall be connected to only one tank.

Check valves must be installed on the discharge side of each pump.

An emergency stop valve (for pneumatic driven systems) or emergency stop panel (electric driven) shall be installed.

Block/ball valves should as a minimum be installed on the pump unit inlet and outlet flange.

A pressure gauge must be installed on the pump discharge side.

A device for automatic pump stop at a pre set time after start and during emptying the tank shall be installed on the system.

Filter Water / Separator

A filter water separator according to the API/IP 1581 specification, latest edition, sized to suit the pump capacity should be installed either in the pump unit or in the dispensing unit.

The Filter / Water separator shall also be fitted with:

- A differential pressure gauge for monitoring the conditions of the elements
- An air eliminator which automatically vents any air entering the vessel
- A pressure relief valve
- A closed circuit sampler connected to the sample point is recommended
- A self closing valve on the ½" (minimum) drain connection

Dispensing module

The product/flowmeter

The product/flowmeter must be sized to suit the flow rate and the counter must be resetable.

Nozzles

Fuel delivery to aircraft must be available both by gravity and pressure refuelling.
Both types of nozzles must be provided with bonding cables and dust caps to prevent the ingress of water and dirt.

Gravity: The gravity nozzle shall be fitted with minimum a stainless 60 mesh strainer, and a bonding wire and clip. A separate short length of hose (2-3m) fitted with an adapter (to fit the pressure nozzle) and with the gravity nozzle attached is recommended

Pressure: The pressure nozzle shall be fitted to the hose end pressure control unit. The nozzle shall be equipped with a surge controller rated to maximum 35 PSI. The nozzle must be equipped with a minimum 60 mesh stainless steel cone strainer, bonding wire and clip

Hose reel & fuel hose

A fire safe/antistatic ball valve shall be installed in front of the hose reel. The 30m 1.5" delivery hose should be of an approved semi conducting type to API 1529 or BS EN 1361 (BS3158) type C semi conducting. Clamp type couplings must be used at hose terminations.

Fuel filter monitor

A fuel filter monitor conforming to the API/IP 1583 Specification and qualification procedures for aviation fuel filter monitors with absorbent type elements, latest edition,

shall be installed. This unit is designed to absorb any water still present in the fuel and to cut off the flow of fuel once a certain amount of water has been exceeded.

The fuel filter monitor shall also be equipped with:

- A differential pressure gauge for monitoring the conditions of the elements
- An air eliminator which automatically vents any air entering the vessel
- A pressure relief valve
- A closed circuit sampler connected to the sample point
- A self closing valve on the ½" (minimum) drain connection

Bonding equipment

A ground indicator, approved for the purpose, shall be installed to restrict the pumps being operated until the ground indicator has approved the continuity. A spring loaded bonding cable reel sized for 30m cable and bonding clip shall be installed. A yellow Ex zone 2 lamp installed outside on top of the dispensing cabinet will indicate when the helicopter is properly bonded.

Recycle module (not a requirement)

The recycle tank shall have a slope of minimum 1 on 30. The tank shall be equipped with an inspection hatch in order to clean the tank properly. The tank shall be designed according to TBK, ASME, BS or other appropriate code. The same rules apply for this unit as for the pump and dispensing unit. If a pump is included it shall be of a flanged, positive displacement vane type pump or centrifugal pump.

Revisions

Revisions of this document are done on an "as necessary basis". Proposals for revisions must be forwarded to OLF and the Norwegian Offshore Helicopter Operators for comments and advice.

Procedure for refuelling helicopter with rotor running.

Refuelling with passengers onboard is acceptable provided a mutual agreement between the pilot and the HLO, and shall take into account the demands described in para. 5.12.6 in addition to standard procedures as described in this enclosure.

HLO	HELIGUARD	FIREGUARD
1. Remains in position with a full view of the helideck. When the Fireguard has connected the earthing cable and has taken up his position (beside the HLO) the Fireguard will assume responsibility for safety on the helideck. 2. The HLO and the pilot will then go to the refuelling cabinet and check the fuel sample. 3. Verify that the earthing light is lit, the counter is set to zero, and that the fuel hose is connected to the helicopter. 4. On the signal from the Fireguard, the HLO will push the button to start refuelling.	1. Waits until all passengers have left the helideck and then pulls out the fuel hose. When the Fireguard has connected the earthing cable, the heliguard will earth and connect the fuel hose to the helicopter and open the connector valve. 2. Stays in position at helicopter refuelling point.	1. Pulls out earthing cable and earths helicopter. 2. Take up position (next to HLO) in front of the helicopter with a clear view of the pilot inside the helicopter, of the heliguard and the refuelling cabinet. Portable powder extinguisher must be available on the helideck. 3. The Fireguard will now assume responsibility for safety on the helideck. 4. On the signal from the pilot the fireguard will signal to the HLO that fuelling can commence.

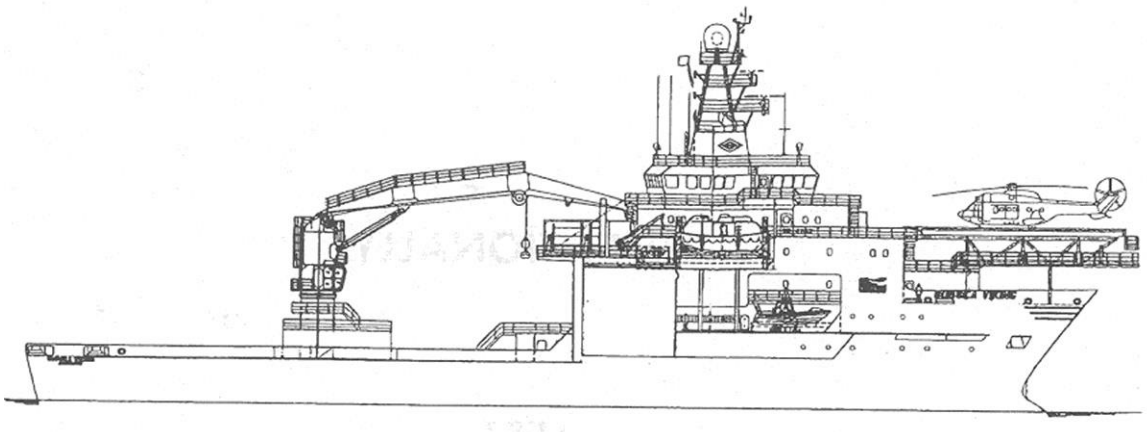
Finishing refuelling

HLO	HELIGUARD	FIREGUARD
1. On the signal from the fireguard, the HLO will stop refuelling from the refuelling cabinet. 2. The HLO will take a new fuel sample. This will be checked by the pilot, who will then sign the fuel log. 3. The HLO will proceed to the helideck; take up his position next to the Fireguard, and re-assume responsibility for safety on the helideck. 4. When the heliguard is ready, the HLO will signal to the fireguard to start boarding.	1. When signalled by the Fireguard to stop refuelling, closes the connector valve on the fuel hose. 2. The fuel hose and earthing are disconnected and the hose rolled up on the drum.	1. On the signal from the pilot to stop refuelling, the Fireguard will immediately signal to the HLO and the Heliguard, stop refuelling. 2. Remain in position until the HLO is in position and may re-assume responsibility for safety on the helideck. 3. Disconnect earthing cable and roll it up on its drum.

NB! Some helicopters have integrated automatic fuel shut off systems.

Standard Measuring Equipment
for
Helideck Monitoring System (HMS)
and
Weather Data

Norwegian Oil and Gas
Bristow Helicopters Norway
CHC Helikopter Service
Norsk Helikopter Service
Blueway Offshore Norge



Contents

1. Purpose and intentions

The purpose of this document is to ensure uniformity of readings/registration of helideck movement and weather conditions.
These standards are valid on NCS as mandated by the NOG helideck manual managed in agreement between NOG and the Helicopter operators.
Further intentions are to establish National and International standards based on contents of this document.

2. Definitions

Moving helidecks
A helideck mounted on a floating unit such as a Vessel, Floating Production Unit, Semi-Submersible Rig or floating Jack Up Rig and other helidecks shall be considered to be an unstable/moving landing area if the pitch or roll exceeds 1 degree either side of the vertical and if the vertical movement of the helideck exceeds 2 meters and / or if the heave rate exceeds 0.3 m/ second.

Helideck Inclination
Is the angle between the absolute horizon and the plane of the helideck.

Average heave rate
Is the average speed of the helideck between the top and the bottom of a wave movement curve.

Significant heave rate
The average of the highest one-third of heave rate amplitudes recorded in the previous 20 minutes. The significant heave rate should be updated continuously, using a moving 20-minute window.

3. Classification of helidecks

There is no official classification method available for this purpose. The proposed classification contains three categories based on the actual floating unit's size, configuration and motion characteristics. Limitations are defined by helideck pitch, roll and inclination and by helideck heave rate. A prime requirement is that the installations have measuring and monitoring equipment installed, and functional, in accordance with this document. Those installations which would normally fall into Category 1 or 2, but which either do not have the appropriate measuring or monitoring equipment installed, or whose equipment is inoperative, are automatically downgraded by one category (e.g. a Category 1 deck with inoperative equipment becomes a Category 2 deck). The category will be entered on the individual vessel/rig information plate in the North Sea Airway Manual or rig plate and the Company Helideck Limitation List (HLL).

Category 1: Semi-submersibles including floating jack ups and all large vessels including FPSOs and tankers.

Category 2: Small vessels, e.g. DSVs and seismic vessels, with a helideck that offers good visual cues. This would normally be a stern or amidships deck offering a view of the structure of the vessel through at least 90° (assuming the vessel is steaming approximately into wind).

Category 3: Small vessels with poor visual cues, such as a bow deck or a deck mounted above the bridge superstructure with the landing direction facing forwards (bow deck) or abeam (high deck).

NOTE: Small vessels will be categorized 2 or 3 on inspection and their helideck documentation will reflect this (except that small vessels with amidships decks will always be Category 2).

In addition, aircraft are divided into two types – heavy and medium. The heavy types are the AS332 series, EC225, AW189 and S92. The medium types are the EC155, EC175, AW139, S76 series, and Bell 525.

Note! This does not constitute a helideck approval for a specific helicopter type on a specific helideck.

4. Operational Limitations

The classification is defined in the table.

AIRCRAFT CATEGORY	HELIDECK CATEGORY											
		1				2				3			
		P/R	INC	H/R	H/A	P/R	INC	H/R	H/A	P/R	INC	H/R	H/A
HEAVY	DAY	±3	3.5	1.3	5.0	±2	2.5	1.0	3.0	±2	2.5	1.0	3.0
	NT	±2 (*)	2,5 (*)	1.0	4.0	±2	2.5	0.5	1.5	±1	1.5	0.5	1.5
MEDIUM	DAY	±4	4.5	1.3	5.0	±3	3.5	1.0	3.0	±3	3.5	1.0	3.0
	NT	±3	3.5	1.0	4.0	±2	2.5	0.5	1.5	±1.5	2.0	0.5	1.5

Key:
P/R = Pitch and Roll (deg);
INC = Helideck inclination (deg);
H/R = Heave Rate (m/s);
(*) Semi Submersibles Category 1 helidecks is at night limited to P/R: +/- 3.0º and inclination: +/-3.5º.

Notes:
a) Category 3 vessels (Bow mounted helideck) operating with the helideck downwind are automatically upgraded to Category 2.
b) Category 2 vessels (Stern helideck) operating with the helideck upwind are automatically downgraded to Category 3.
c) Vessels with Midships helidecks are normally Category 2.
d) Where Heave rate is available and within limits, Heave amplitude is for information only, and is not part of the calculations regarding helideck availability.
e) The table above is not applicable for operations to and from single point mooring buoys (SPMs). These are considered fixed installations. Limitations are given on Helideck Information Plate.

f) Night landing on Category 2 and 3 helidecks that are moving position (for example seismic or towing) should be avoided. If night landings are unavoidable the following applies:

- Minimum weather requirement is visibility of 5000 meter.
- The ship shall be maneuvered out of wind by 30 degrees to improve visual cues in the landing.
- Further risk mitigation may be imposed by the helicopter operator.

5. Principles

Basic requirements are contained in:

- Norwegian Requirements in BSL D 5-1.8.2.

The measuring equipment shall provide sufficient information to the operator to complete all sections of the standard " Helideck Report", provided for by the helicopter operators.

Measuring equipment sensors for helideck movement, wind and weather data shall be located in optimum positions in order to provide relevant information relating to the helideck.

All information shall be numerically displayed in relevant locations on the vessel or rig for easy communication with helicopters in flight and the helicopter land base operations. The system shall facilitate transmittal of electronic data to the helicopter land base operation, which in turn can eliminate the need for a separate Helideck Report to be submitted.

6. Accuracy of measurements

The monitoring system (sensors and data programs) shall be checked and verified for correctness on the system field location in accordance with the manufacturer's procedures. A verification report showing the correctness of the system shall be provided to both the owner of the installation and to the helicopter operators, after first installation.

The accuracy of the system shall be checked and verified whenever deemed necessary, but at least once every 3 years. A verification report shall be issued and distributed as described above, after each periodic control.

The dynamic accuracy of the data produced by the Helideck Monitoring System concerning motion shall be:

Pitch / Roll / Inclination: <± 0.1° RMS (Root Mean Square) in the range 0 to 3,5° and Heave Rate: < ± 0.1 m/s RMS (Root Mean Square) in the range 0 to 1.3 m/s

The accuracy concerning the meteorological data shall be in compliance with NORSOK N-002 Collection of Metocean Data and NORSOK C-004 Helicopter deck on offshore installations.

7. Measuring helideck motion

Maximum Pitch

The equipment shall be capable of measuring helideck pitch in degrees up and down from zero, with zero being the absolute horizontal level. It shall be possible to read the historic maximum angles over the past 20 minutes, direct and, if possible, graphically. The graphical presentation shall cover 20 minutes of data and alternatively 3 hours for trend determination. The graph and the associated maximum value over the last 20 minutes shall be updated at least at 1 minute intervals. In maritime terms maximum pitch consists of trim + pitch.

Maximum Roll

The equipment shall be capable of measuring helideck roll in degrees right/starboard and left/port, with zero being the absolute horizontal level. It shall be possible to read the historic maximum angles over the past 20 minutes, direct and, if possible, graphically. The graphical presentation shall cover 20 minutes of data and include 3 hours for trend determination. The graph and the associated maximum value over the last 20 minutes shall be updated at least at 1 minute intervals. In maritime terms maximum roll consists of list + roll.

Maximum Helideck Inclination

The equipment shall be capable of measuring the maximum helideck inclination in degrees to the absolute horizon over the past 20 minutes, direct and, if possible, graphically. The graphical presentation shall cover 20 minutes of data and alternatively 3 hours for trend determination. The graph and the associated maximum value over the last 20 minutes shall be updated at least at 1 minute intervals.

Maximum Heave (Vertical Movement)

The equipment shall be capable of measuring vertical helideck movement from top to bottom, with readings in meters. The maximum heave (total vertical movement) of the helideck is the maximum top to bottom value in one cycle (one movement curve) over the past 20 minutes.

It shall be possible to read the historic maximum value over the past 20 minutes direct and graphically. The graphical presentation shall cover 20 minutes of data and alternatively 3 hours for trend determination. The graph and the associated maximum value over the last 20 minutes shall be updated at least at 1 minute intervals.

Heave Period

The equipment shall be capable of measuring the time between helideck movement summits in seconds (i.e. based on a wave curve the measurement starts and ends in the zero up crossing point). The graphical presentation shall cover 20 minutes of data and alternatively 3 hours for trend determination. The graph and the associated maximum value over the last 20 minutes shall be updated at least at 1 minute intervals.

Significant Heave Rate

The equipment shall be capable of measuring the vertical movement rate of the helideck in meters per second.

The significant heave rate measured shall be the average of the highest one-third of heave rate amplitudes recorded in the previous 20 minutes. The significant heave rate should be updated continuously, using a moving 20-minute window. The Significant Heave Rate value is calculated directly from the heave rate in accordance with the following formula:

2 x heave rate RMS.

It shall be possible to read the historic maximum value for the past 20 minutes direct and graphically. The graphical presentation shall cover 20 minutes of data and alternatively 3 hours for trend determination. The graph and the associated maximum value over the last 20 minutes shall be updated at least at 1 minute intervals.

Traffic light on display

The “traffic light” on the display indicates when one of the parameters above has reached a threshold. As long as all the measured parameters are within limits it should show a green light, and when a limit is passed it should show a red light.

8. Heading of Helideck/Vessel

The heading of the helideck and the vessel shall be stated in degrees relative to magnetic North.

9. Weather data

Data for this section may be assessed by the use of other equipment than the HMS system, but must be of a standard that has a possibility to deliver data to the HMS system (Ref. Chap. 6, Norsok standards N-002 and C-004).

Wind Direction

Wind direction shall be stated in degrees relative to magnetic North.
Displayed wind direction shall have the options to show real time wind direction, 2-minute mean wind direction and 10-minute mean wind direction.

Wind Speed

Wind speed shall be stated in knots.
Displayed wind shall be configurable to show real time wind, 2-minute mean wind with gusts exceeding ten knots of the mean wind, and 10-minute mean wind with gusts exceeding 10 knots for 3 seconds or more of the mean 10 minute wind.

Visibility

Horizontal visibility shall be stated in meters.

Temperature/Dewpoint

Temperature/dew point temperature shall be stated in degrees Celsius.

Air Pressure

Air pressure shall be stated in hPa as QNH, meaning; altitude adjusted for height and temperature relative to Mean Sea Level.

Cloud

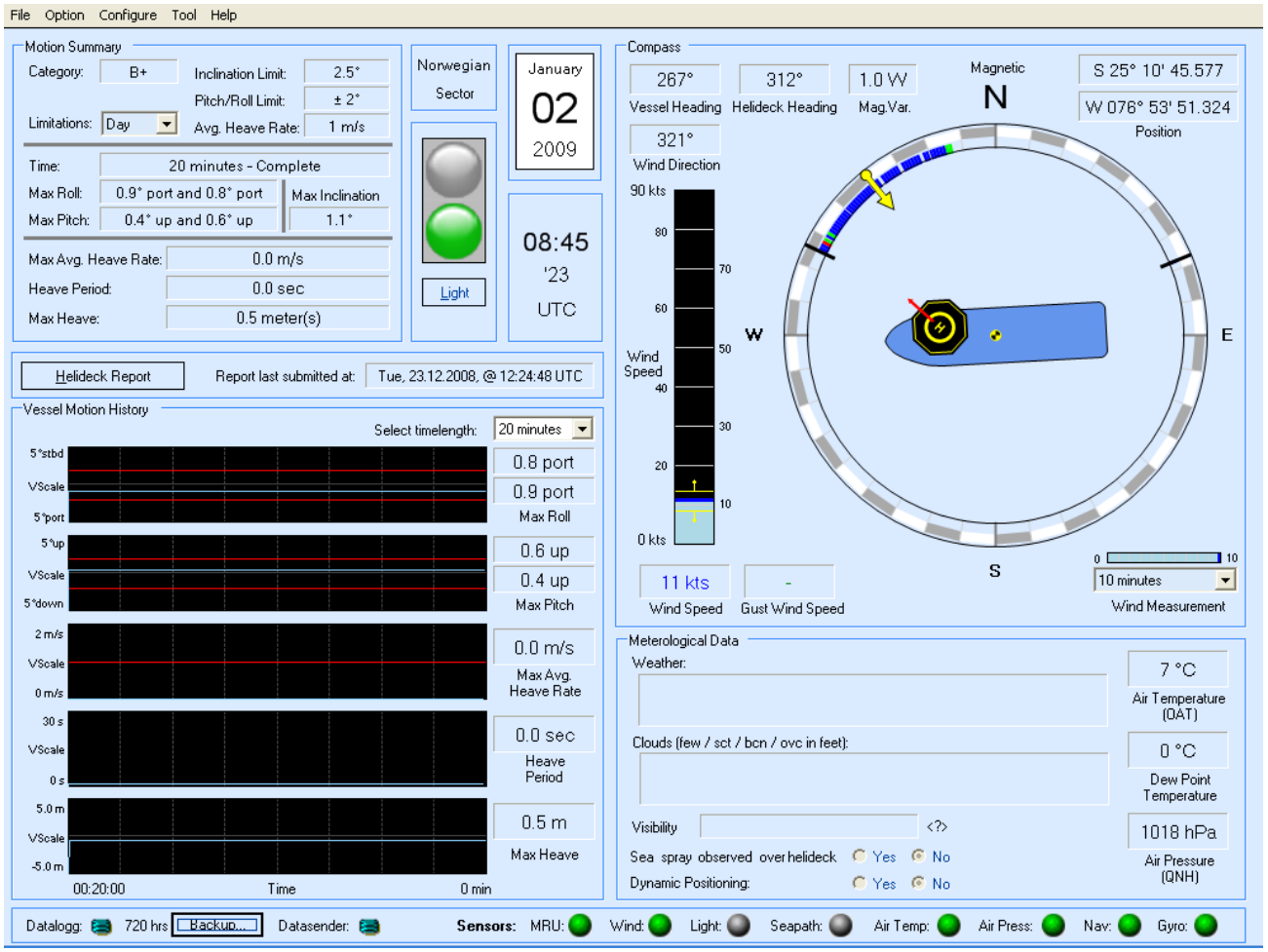
Cloud shall be stated as few/scattered/broken/overcast (FEW/SCT/BKN/OVC) in feet above the sea surface.

Logging system

The system should be able to log all data for 30 days. The historic data should be available by configuring the date and time to the period of interest.

10. Helideck Movement and Weather data display

Data Display layouts shall be approved by the Helicopter Operators. A typical layout is attached:



11. Logistics Information display

Data Display layouts shall be approved by the Helicopter Operators. The layout shall as a minimum include all data from the *Standard Helideck report* used on the NCS (OLFver1) that is not already covered by the *Helideck Movement and Weather data display.*

12. Standard Helideck Report used on the Norwegian Continental shelf.

HELIDECK REPORT		Installation: Email: Tel:
Date:	Time (UTC):	Position:
Dynamic positioning: ○ Yes ◉ No		NDB: kHz
Accurate monitoring equipment: ○ Yes ◉ No		VHF: mHz

LOG INFO				
Flight number:	Helifuel available: ○ Yes ◉ No		Fuel quantity:	Litres
Return load:	Passengers		Luggage (incl. In total):	kg
Total weight:	kg		Cargo (incl. In total):	kg
Routing:	1	2	3	4

The helideck is inspected according to OLF helideck manual. Nonconformities will appear under Remarks.

Remarks:

NAME OF HLO

WEATHER OBSERVATION					
WIND	Height:	Distance:	Direction:	Velocity:	Gust (2 min):
Helideck:	M	M		kn	kn
Area (derrick):	M	M		kn	kn
Visibility: M			QNH: hPa	Helideck heading:	Vessel heading:
Temperature: Degrees C		Dewpoint:	Clouds (few / sct / bcn / ovc in feet):		
Other relevant weather info(fog banks, rapid changes, etc):					
Sea spray observed over helideck: ○ Yes ○ No					

HELIDECK MOVEMENT 20 MIN. INTERVAL				INSTALLATION CATEGORY:
MAX PITCH AND ROLL IN DEG. WITH REF. TO HORIZON				Max heave (top to bottom): M
Pitch up	Pitch down	Roll port	Roll starboard	Heave Period (if available): Sec.
Max Helideck Inclination:				Max heave rate (if available): m/s

OLF ver.1

13. List of known motion measurement equipment manufacturers

Automasjon og Data AS Nikkelveien 14, N-4313 Sandnes Norway	Fugro Oceanor AS Luramyrvn 29, N-4313 Sandnes Norway	Fugro GEOS Veurse Achterweg 10 2264 SG Leidschendam the Netherlands
Kongsberg Seatex AS Pirsenteret, N-7462 Trondheim, Norway	Miros AS Solbråveien 32, P.O. Box 364, N-1372 Asker, Norway	Muir Matheson Aberlan House, Woodburn Road, Blackburn Industrial Estate, Aberdeen, AB21 ORX, UK
Nessco Discovery Drive Arnhall Business Park, Westhill Aberdeenshire, AB32 6FG UK	Parker Maritime AS Heiamyra 1, N-4031 Stavanger Norway	Samsung Heavy Industries Power & Control Systems Division 493 Banweol_Dong, Hwasung-City, Gyeonggi-Do, Korea
ShoreConnection International AS N-5397 Bekkjarvik, Norway	SMC Ship Motion Control BMW Building, Area 2A 203 Rue D'Argens GZR1368 Gzira Malta	Ulstein Group ASA P.O. Box 158 N-6067 Ulsteinvik, Norway

Bristow **Reporting form ground occurences** CHC

Place: Date: Time:

Occurrence categories

Operations of the aircraft	**Tick off category**
Collision between aircraft and other object on the helideck	☐
Security	
Attack on aircraft such as bomb threat or hijacking	☐
Difficulties in handling intoxicated, violent or unmanageable passengers	☐
Discovery of a nonregistered passenger.	☐
Incorrect procedures on the helideck, unintentional persons/passengers on the helideck	☐
Systems	
Leakage of hydraulic fluids, fuel, oil or other liquids that can cause a risk of fire or a possibility of dangerous pollution of the aircraft, it's systems or equipment, or a danger to persons on board.	☐
Helideck installation	
Helideck blocked by aircraft, vehicle, birds or other objects that could lead to a dangerous or potentially dangerous situation.	☐
Errors or defects in the markings of infringements or dangers in the helideck safe landing area that leads to a dangerous situation.	☐
Errors in, considerable functional error in or deficiency on the helideck lighting	☐
Considerable spill of fuel during fuelling	☐
Fuelling of wrong amount of fuel which can seriously influence the aircrafts range, performance, center of gravity or structural strength	☐
Handling of passengers, luggage and cargo	
Considerable pollution of the aircraft, it's systems and equipment caused by freight, luggage or cargo	☐
Erroneous loading of passengers, luggage or cargo that may cause a considerable impact on the aircrafts weight and/or balance	☐
Wrong loading of baggage or cargo (including carry on baggage) that may imply a danger for the aircraft, it's equipment or persons on board, or that may obstruct emergency evacuation	☐
Wrong loading of cargo containers or other major cargo units	☐
Carriage of, or attempts to carriage of dangerous goods not in accordance with rules and regulations, including wrong markings or package of dangerous goods	☐
Ground handling and service on the aircraft	
Filling of wrong type fuel or other important fluids (including oxygen and drinking water)	☐
Discovery of open inspection panels/doors, missing fuel cap etc.	☐

History of the event

Name:	Occupation:

Instructions:
Fill in form, scan or E-mail to operations centre of the involved helicopteroperator. Report to be forwarded ASAP and within 72 hours.

HELIDECK REPORT

	Installation:
	Email:
	Tel:
Date:	Time (UTC):
Position:	
Dynamic positioning: ◯ Yes ◉ No	NDB: kHz
Accurate monitoring equipment: ◯ Yes ◉ No	VHF: mHz

LOG INFO

Flight number:	Helifuel available: ◯ Yes ◉ No	Fuel quantity: Litres	
Return load: Passengers		Luggage (incl. In total): kg	
Total weight: kg		Cargo (incl. In total): kg	

Routing:	1	2	3	4

The helideck is inspected according to OLF helideck manual. Nonconformities will appear under Remarks.

Remarks:

NAME OF HLO

WEATHER OBSERVATION

WIND	Height::	Distance:	Direction:	Velocity:	Gust (2 min):
Helideck:	M	M		kn	kn
Area (derrick):	M	M		kn	kn

Visibility: M	QNH: hPa	Helideck heading:	Vessel heading:
Temperature: Degrees C	Dewpoint:	Clouds (few / sct / bcn / ovc in feet):	

Other relevant weather info(fog banks, rapid changes, etc):

Sea spray observed over helideck: ◯ Yes ◯ No

HELIDECK MOVEMENT 20 MIN. INTERVAL

INSTALLATION CATEGORY:

MAX PITCH AND ROLL IN DEG. WITH REF. TO HORIZON				Max heave (top to bottom): M
Pitch up	Pitch down	Roll port	Roll starboard	Heave Period (if available): Sec.
Max Helideck Inclination:				Max heave rate (if available): m/s