Shell Aircraft
Shell Group Requirements for Aircraft Operations (SGRAO)

Facility Requirements

Version 3.1
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Restricted

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FAC 01.01 Applicable Helideck Design Standards

MANDATORY REQUIREMENTS

The facility / vessel Duty Holder is Accountable for Requirements 1-3:

1. Apply the following design standards, in order of precedence, to Company new build, owned, operated and contracted offshore helidecks:
   a. CAP 437 – Standards for Offshore Helicopter Landing Areas;
   b. UK HSE Helideck Design Guidelines;
   c. Shell Design and Engineering Practices.
2. Supplement Requirement 1 standards with the following paper and standards for specific design aspects or types of vessel/platform.
   a. CAA Paper 2008/03 – Helideck Design Considerations – Environmental Effects;
   b. For Mobile Offshore Drilling Units (MODU) – International Maritime Organisation's (IMO) Code for Construction and Equipment of Mobile Offshore Drilling Units;
   c. For shipboard helidecks such as tankers and seismic vessels – International Chamber of Shipping's (ICS) Guide to Helicopter/Ship operations.
3. The standards and paper listed in this FAC are complimentary and shall not to be applied in isolation. Where a conflict between the standards is identified, consult with the Group Technical Authority (GTA) for Air Transport.

Note:

The Duty Holder is the Operator in the case of a fixed installation (including fixed production and storage units); and the Owner in the case of a mobile installation.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-3

General

1. Consult with the Business Technical Authority (TA) for Air Transport or responsible Shell Aircraft advisor and, if an aviation fuel system will be installed, Shell Aviation early in the installation / vessel design stage.
2. Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.

Local National Regulations

3. Where a conflict between Company standards and National Regulation is identified, consult with the Business TA for Air Transport or responsible Shell Aircraft advisor.
    a. Apply National Regulations for helidecks when more stringent than Company requirements.

Contracted Helidecks

4. Contracted helidecks shall meet Company standards, or operational restrictions and remedial improvements shall be undertaken to mitigate the risk of operations to ALARP.
    a. Where the contracted helideck design fails to meet Company standards, an ALARP demonstration shall be formally documented and specifically address any design shortfalls.
    b. If the Business TA for Air Transport considers that the mitigated design shortfalls add risk to the operation, the Contract Holder shall request a Control Framework Exception.

Legacy Helidecks

5. Legacy helidecks designed prior to 2005, to a value less than 1D or otherwise differing from Company requirements in the listed design standards, and those that may, in future, be inherited through acquisition and/or joint venture, may be approved subject to GTA for Air Transport agreement of a documented ALARP demonstration, covering operational restrictions and remedial improvements, specifically addressing CAP 437 design shortfalls.
    a. If the GTA for Air Transport considers that the mitigated design shortfalls add risk to the operation, responsible Company Manager shall request a Control Framework Exception.

Miscellaneous

6. The API RP2L shall not be used as a helideck design standard unless required by regulation and agreed with the GTA for Air Transport.
7. This FAC does not apply for helidecks that have been taken out of service either permanently or for the duration of contracted or subcontracted service.
    a. Helidecks taken out of service shall be marked as closed in line with CAP 437 and may not be used as a landing site, including for Medevac or emergency flights.
    b. Helidecks taken out of service may be considered for use as hoisting points or external lift staging areas if clearances allow. Consult the Business TA for Air Transport or responsible Shell Aircraft Advisor for these uses and appropriate marking scheme.

ADDITIONAL GUIDANCE

- Relevant national governing documents are listed in FAC 01.01.1 “National Governing Standards for Helideck Design”.
- When National Regulation requirements are less stringent than Company standards, the Business should request approval from the National Regulator to use of Company standards. If the National Regulator requires the use of a less stringent requirement and if the difference is considered to add risk to the operation by the Business TA for Air Transport, the additional risk level should be communicated to Business leaders.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. Design and Engineering Manual DEM 1 – Application of Technical Standards
3. DEP 37.19.00.12 – Offshore Topside Structures
4. DEP 80.00.10.12 – Layout of Offshore Facilities
5. DEP 80.47.10.12 – Water-based Fire Protection Systems for Offshore
6. DEP 33.80.00.30 – Navigational Aids for Fixed Offshore Platforms
7. FAC 01.01.1 National Governing Standards for Helideck Design

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
2. UK CAA Paper 2008/03 - Helideck Design Considerations – Environmental Effects
3. UK HSE Offshore Helideck Design Guidelines
4. ICAO Annex 14 Volume II – Heliports
5. ISO 19900:2002 – General requirements for offshore structures – Part 3
6. ISO 19901-3:2011 – Topside Structures

RELATED INCIDENT

- NTSB Accident Report CHI07FA069 "Helicopter struck platform flare boom" 12th February 2007
- NTSB Accident Report DFW05FA040 "Helicopter struck obstruction on helideck" 17th December 2004
- NTSB Accident Report CHI03FA056 "Helicopter strikes piping during landing" 16th January 2003
- IADC Safety Alert 12-20 "HELIDECK OBSTRUCTION HAZARD: MARKING AND NOTIFICATION" August 2012

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Do all helidecks meet the design requirements defined in Shell Design Engineering Requirements, the UK HSE Helideck Design Guide, CAP 437 and Shell Aviation Helicopter Offshore Refuelling Systems Technical Standards?
2. What process is in place to ensure the requirements above are addressed at the design stage?

3. Has Shell Aircraft or the Business TA for Air Transport been consulted during the design stage?
4. Have all helidecks been inspected and approved by Shell Aircraft prior to use.
5. Have all helideck aviation fuel installations been inspected and approved by Shell Aviation.

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual.
2. Process Safety – Shell HSSE & SP Control Framework - Design and Engineering Manual DEM 1 – Application of Technical Standards.
3. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only).
4. EP2005-0263 legacy documents (withdrawn, ref only).
5. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
6. UK CAA Paper 2008/03 - Helideck Design Considerations – Environmental Effects.
7. ICAO Annex 14 Volume II – Heliports.
8. UK HSE Offshore Helideck Design Guidelines.
9. Oil & Gas UK Joint Industry Guidance on Helideck Perimeter Safety Nets – Issue 2 March 2008.

FAC 01.01.1 National Governing Documents for Helideck Design

Area	Document	Link
Australia	CAAP 92-4(0) Guidelines for the development and operation of off-shore helicopter landing sites including vessels	CAAP 92-4(0)
Brazil	NORMAM-27/DPC Maritime Authority Standards for Approval of Helidecks Installed on Vessels and Offshore Platforms (English language version)	NORMAM 27
Canada	Transport Canada Guidelines Respecting Helicopter Facilities On Ships TP4414E	TP4414E
Malaysia	Airport Standards Directive 904 Standards For Helidecks 2nd Edition – 21st April 2013	ASD 904
Netherlands	UK CAA CAP 437 – Standards for Offshore Landing Areas	CAP 437
	NOGEPA H&S Guideline 14 - Helideck procedures manual (English language version)	NOGEPA H&S Guideline 14
Norway	NORSOK STANDARD C-004 Helicopter deck on offshore installations	NORSOK C-004
	NORSOK STANDARD S-001 Technical Safety	NORSOK S-001
UK	UK CAA CAP 437 – Standards for Offshore Landing Areas	CAP 437
	UK CAA Paper 2008/03 - Helideck Design Considerations – Environmental Effects	CAA 2008/3
	UK HSE Helideck Design Guidelines	UK HSE Helideck
	OGUK Guidelines for the Management of Aviation Operations	OGUK Guidelines
United States	CFR Reference Index	Index
	30 CFR Mineral Resources	30 CFR
	33 CFR Navigation And Navigable Waters	33 CFR
	46 CFR Shipping	46 CFR

	46 CFR MODU Supplements: USCG Class Society Alternate Compliance Program (ACP)	ABS Supplement DNV Supplement Lloyds Supplement
	FAA Obstruction Marking And Lighting AC 70/7460-1K	AC 70/7460-1K
	HSAC Helideck Design Guidelines (New Builds)	RP 2016-1
	HSAC Legacy Helideck Design and Marking Guidelines	RP 2016-2

FAC 01.02 Define Helideck Requirements

Shell Aircraft	
Shell Group Requirements for Aircraft Operations	Restricted
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MANDATORY REQUIREMENTS

None

MEANS OF COMPLIANCE

None

ADDITIONAL GUIDANCE

The facility/vessel Duty Holder should consider the following:

1. Operational design considerations should include:
    a. The largest size/weight helicopter anticipated for use throughout the life of the installation/vessel.
    b. The requirement for a helicopter fuelling capability.
    c. The requirement for a parking area or second helideck or restricted concurrent operations with a disabled helicopter on the helideck.
    d. Prevailing weather conditions.
2. Helideck design should be driven by operational requirements. Operational design decisions should be made in conjunction with the DCAF Operating Phase Logistics Manager and Business Technical Authority (TA) for Air Transport and endorsed by the DCAF Operating Phase Asset Manager or Wells Delivery Manager.

Helicopter Size

Helicopter size and weight determines the physical dimensions of the helideck, the structural design of the helideck, the helideck marking plan, and the helideck clearance requirements. Consideration should be given to the size of possible future aircraft anticipated through the life of the platform/vessel.

A decision to construct a helideck for a smaller helicopter will restrict flexibility in future helicopter fleet composition and may lead to additional operational expense that outstrips the savings in helideck construction

Business TA for Air Transport or the responsible Shell Aircraft advisor should be consulted when determining current and future design helicopter size. Helicopter maximum gross weights typically grow by at least 10% over the life of the aircraft type. Helidecks should be designed to accommodate this aircraft gross weight increase, and the helideck design certification should state

the specific maximum weight capacity for the expected aircraft type, rather than simply stating that the helideck was designed for the helicopter type. Example: The helideck was designed to accept an AW-139 with a maximum gross weight of 7.0t.

Helideck size and clearance requirements defined in the SGRAO (BP) are for single main rotor helicopters. Tandem rotor helicopters or tilt rotor aircraft are not in common use and their helideck size and clearance requirements should be addressed on a case-by-case basis.

Helicopter Refuelling Capability

Helidecks without a helicopter refuelling capability may require servicing helicopters to operate with round-trip fuel, which will reduce the available aircraft payload and increase operational expense and risk exposure.

The requirement for a helicopter refuelling capability may be eliminated after considering payload requirements, distance offshore, offshore alternate requirements, and the needs of other Business facilities. For mobile facilities and where fixed installations are operating without other access to aviation fuel at some distance offshore, then it is strongly recommended to provide a helicopter refuelling capability.

A decision to not install a helicopter refuelling capability should be endorsed by the DCAF Operating Phase Asset Manager or Wells Delivery Manager.

Parking Area or Second Helideck

A helideck without a parking area or the size and clearances to conduct restricted concurrent operations with a disabled helicopter on the helideck, is vulnerable to extended helideck unavailability when a helicopter is disabled on the helideck. These type helidecks may restrict the facility's ability to conduct Medevac and other emergency flights.

This limitation should be clearly stated in the facility MER plan as a condition under which the required MER response time cannot be met, unless required MER response time can be met by vessel transfer to a nearby facility.

A decision to construct or operate a helideck without a parking area or the size and clearances to conduct restricted concurrent operations with a disabled helicopter on the helideck, should be endorsed by the DCAF Operating Phase Asset Manager or Wells Delivery Manager.

Where a helicopter is expected to be routinely based offshore consideration should be given to providing a protective aircraft hangar in conjunction with the parking area.

Prevailing Weather and Sea Conditions

For fixed platforms, the orientation of the helideck should be such that the helicopter will always be able to take-off and land into the direction of the prevailing wind.

For vessels, location of the helideck on the stern, centre, or bow makes a difference in operability at different levels of vessel motion. Sea state exposure and predicted vessel motion response should be considered when siting the helideck.

Other prevailing weather conditions to be considered in the design are cold weather (ice and snow), its impact on helideck equipment, and capability to clear the helideck for flight operations.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 01.01 Applicable Helideck Design Standards
3. Design and Engineering Manual DEM 1 – Application of Technical Standards
4. DEP 37.19.00.12 – Offshore Topside Structures
5. DEP 80.00.10.12 – Layout of Offshore Facilities
6. DEP 80.47.10.12 – Water-based Fire Protection Systems for Offshore
7. DEP 33.80.00.30 – Navigational Aids for Fixed Offshore Platforms

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 1.01 MC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
2. UK CAA Paper 2008/03 - Helideck Design Considerations – Environmental Effects
3. UK HSE Offshore Helideck Design Guidelines
4. ICAO Annex 14 part 2 – Heliports
5. ISO 19900:2002 – General requirements for offshore structures – Part 3
6. ISO 19901-3:2011 – Topside Structures

RELATED INCIDENT

No illustration at the moment.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

Have the size/weight of the largest anticipated aircraft type, helicopter refuel capability, requirement for parking area/second helideck and prevailing weather conditions been considered in the design of the helideck?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

FAC 01.03 Helideck Physical Characteristics

MANDATORY REQUIREMENTS

The facility/vessel Duty Holder is Accountable for Requirements 1-3:

1. Helidecks shall be a minimum size of 1 D for the largest helicopter type that the facility might reasonably be expected to accommodate both when commissioned and into the future and shall have a stated dynamic and static weight bearing capacity appropriate to the heaviest type of helicopter that can be expected to operate to/from that facility.
2. Helidecks with a parking area:
    a. Shall have a 1/3 D value buffer area between the perimeter line of the landing area and the limit line for the parking area, based on the largest D value of the helicopters anticipated to use the helideck.
    b. Parking area shall be large enough to accommodate the rotor diameter (RD) of the helicopter in both dimensions and the overall length of the helicopter in at least one dimension.
    c. Where it is intended that helicopters hover taxi into the parking area, standard obstacle free zones and clearances shall be applied to the parking area.
3. Helidecks shall meet CAP 437 requirements for the following additional physical characteristics:
    a. Obstacle clearance sectors
    b. Helideck surface and drainage characteristics, including helideck nets.
    c. Helicopter tie down points.
    d. Perimeter netting
    e. Access/egress routes

Notes:

1. The Duty Holder is the Operator in the case of a fixed installation (including fixed production and storage units); and the Owner in the case of a mobile installation.
2. In this FAC, “D” is the overall length of a single rotor helicopter type taken from the foremost point of the tip path plane of the main rotor disc when turning to the rearmost point of the tip path plane of the tail rotor.
3. Tandem rotor helicopters or tilt rotor aircraft are not in common use and their helideck size and clearance requirements should be addressed on a case-by-case basis.

4. See FAC 1.01 Applicable Helideck Design Standards for applicable helideck design standards and FAC 1.02 Define Helideck Requirements for operational design considerations and FAC 1.04 Helideck Environmental Effects Analysis for the effects of turbulence and increased temperatures from exhausts on the installation.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-3

1. Helideck Size:
    a. The helideck landing area principal dimension (diameter or length/width if a square) shall be a minimum size of dimension “D”.
    b. Helidecks mounted on the bow of FPSOs may require larger than normal diameters, up to 1.5 D, due to pitch, roll, and heave considerations. Advice should be sought from the responsible Shell Aircraft advisor before completing design on FPSO helidecks.
    c. Norway requires a minimum of 1.25D for all mobile helidecks to aid with visual references and this can be considered as a safety enhancement for all new Company helidecks.
    d. Operations to helidecks less than 1 “D”:
        i. Operation of helicopters that exceed helideck design “D” value to an undersized helideck requires an HSSE & SP Control Framework Exception from the Air Transport Manual. The Exception request may be approved if;
            1. There is a significant specific operational requirement; and
            2. The helideck was designed prior to 1st January 2005; and
            3. After completion of a survey and evaluation of the helideck which includes, but is not be limited to: obstacle clearance, environmental, construction, configuration and helicopter performance class considerations; and
            4. Operational restrictions and/or controls are then to defined where necessary as part of the ALARP demonstration.
        ii. Operations to helidecks of less than 0.83D or RD, normally unmanned jacket facilities, the survey would have to show a full 360° obstacle clearance out to 1000m.
2. Parking Areas:
    a. Size helideck parking areas to contain a parked helicopter without any part of the helicopter extending across the parking area limit line, and with the landing gear no closer than 3 feet / 1 meter from the edge of the helideck.
    b. Consider the method of moving the helicopter to parking. For larger types a mechanical handler will be required. For smaller types, movement by pushing may be possible. Skid equipped helicopters will normally hover taxi to parking.
        i. Develop a movement plan to ensure that sufficient space is available to manoeuvre the helicopter into parking position prior to completing helideck and parking area design. Refer to FAC 4.19 Helideck Aircraft Maintenance Recovery Operations for helicopter movement requirements.
        ii. Physically confirming the movement plan using an aircraft on the Aircraft Operator’s ramp will ensure that the aircraft turning radius will support movement on the planned path.
    c. Apply 1/3 “D” obstacle free distance at every point along the planned helicopter path from the landing area to the parking area if the aircraft is planned to hover into parking.

i. Obstacles in the clearance area shall be no taller than 10 inches / 25 CM.

ii. Obstacles on the movement path are prohibited.

iii. Aircraft that hover taxi into parking shall not plan to back into parking position. They may hover turn on a spot if a 1/3 “D” obstacle clearance is maintained.

d. Helideck tie down points shall be provided in parking areas, and a sufficient number should be provided to secure any helicopter that may use the parking area.

e. For US regulated offshore areas, CAP 437 helideck markings may be amended in accordance with the HSAC RP 2016-1 and RP 2016-2.

3. Helideck Loading:

a. Determine the dynamic and static load bearing requirements stated in the CAP-437 for the heaviest aircraft anticipated for use, should be determined during the operational design decisions (See FAC 1.02 Define Helideck Requirements).

b. Helidecks intended for use as cargo staging areas (i.e. flare tip staging for helicopter flare tip replacements) should take into account the static load of the anticipated staged cargo when computing dynamic and static load bearing capacity of the helideck.

c. Consideration should also be given in the design to other types of loading such as personnel, snow, freight, and fuelling equipment.

d. Helidecks with parking areas or designed for restricted concurrent operations with a disabled helicopter on the helideck shall be designed to support the static load of a parked helicopter and the dynamic load of a landing helicopter.

e. For some specific helicopter types, OEM studies, endorsed by regulators, have been completed to justify operating to existing helidecks that do not meet the load bearing requirements. Application to apply these studies to Company helidecks should be made to Shell Aircraft.

4. Airflow beneath helideck:

a. The structure should facilitate a smooth airflow across the helideck as far as practicable.

b. Placement of the helideck directly on a deck or roof structure should result in mitigation through operational limitations.

5. Helideck Nets:

a. Tautly-stretched helideck netting should be provided to aid the security of helicopters with wheeled undercarriages in adverse weather conditions as defined in CAP 437 Chapter 3 Section 7.3 to 7.8.

b. Helideck landing nets shall not be used on helidecks where skid equipped aircraft operate without a risk analysis, special procedures to prevent landing gear snags, concurrence from the Business Technical Authority for Air Transport and concurrence from the helicopter operator.

6. Helicopter Tie-down Points:

a. Helidecks with parking areas and helidecks intended for restricted concurrent operations with a disabled helicopter on the helideck shall have sufficient helicopter tie-down points at the intended parking locations to ensure that the disabled helicopter will not be dislodged during the approach of the recovery or emergency aircraft.

7. Perimeter Netting:
    a. Oil and Gas UK (OGUK) Guidelines for the Management of Aviation Operations Addendum C6 is the primary Company reference.
    b. The perimeter safety net system should be designed so that it is divided into manageable sections that can be easily retracted or lifted inboard (hinged or removable) to permit maintenance and panel replacement from the helideck surface, without requiring working at height or scaffolding.
    c. The preferred material for helideck perimeter safety netting is Frictape or stainless-steel netting (Helimesh).
    d. Vinyl (PVC) coated fencing should be replaced upon first sign of corrosion. It is a poor choice for perimeter netting and should not be used for new build helidecks, in particular because it is not designed as a lifesaving product and it may prove difficult to certify for this use.
    e. Polypropylene netting can deteriorate without significant visual indication and is prohibited.
    f. The business should obtain a manufacturer's or structural engineer's certification that the perimeter net material and attachment design are suitable for lifesaving use and meet the requirements of CAA CAP 437 and OGUK Guidelines.
    g. Refer to FAC 6.01 Helideck Planned Maintenance for annual testing requirements.
8. Helideck Access:
    a. There shall be a minimum of 2 access/egress routes to the helideck and where shown by evacuation, escape and rescue analysis a third escape route may be required.
    b. Escape routes should not infringe the falling 5:1 gradient.
    c. Designers should ensure that in the event of one of the helideck exits being blocked during an emergency the helideck crew can quickly move underneath the helideck to the 2nd/3rd exit. In the event this cannot be achieved then the design team should consult the Operating Phase Asset Manager.
    d. To restrict unauthorised entry to the helideck, each access stairs shall have either frangible "no access" chains or removable barriers fitted with a suitable warning notice.
    e. Each access point shall also have a notice board with the following information prominently displayed:
        i. Personnel are not permitted on the flight helideck when helicopters are landing or taking off;
        ii. Personnel shall approach the helicopter as directed by the helideck crew and in view of the pilot;
        iii. Personnel shall not approach the helicopter when the anti-collision light is flashing. When the Rotorcraft Flight Manual restricts extinguishing the anti-collision light for a particular helicopter when the rotors are turning, the Business will provide a different signal to indicate the helicopter is ready to accept passengers.
9. Miscellaneous equipment:
    a. Provide the following additional equipment:

i. Helideck team identifying vests marked with the reflective letters identifying the individual role (e.g. HLO or HDA);
ii. Chocks and tie-down strops;
iii. Calibrated scales for baggage and freight weighing;
iv. Helideck "landing prohibited" signal banner as described in CAP 437 Chapter 4 Section 2.10;
v. Equipment for clearing the landing area of snow, ice and other debris (where required by environmental conditions); and
vi. If helicopter shutdowns are planned, a suitable power source for starting helicopters should be available.

Additional Guidance:

Helideck Size

- Operation of specific helicopter types to less that 1D helidecks and helidecks not meeting the full load certification can be supported by helicopter manufacturer certified studies and data.

Parking Areas

- Current commercial helicopters cannot readily fold main rotor blades, and the parking area should be designed to accommodate helicopters at full rotor diameter. A Company FPSO was delivered in Brazil in 2008 with a parking area sized for helicopters with main rotor blades folded. The parking area remains unusable and the configuration represents a costly design error.
- An existing parking area may be kept in service for use by a smaller helicopter that meets the size requirements above if its use is restricted to that size helicopter or smaller, and if this restriction is clearly marked on the parking area.
- An undersized parking area may provide sufficient area to use as a push off area for a disabled helicopter allowing a restricted landing by the recovery helicopter on the landing area. Refer to FAC 4.19 Helideck Aircraft Maintenance Recovery Operations.
- For helidecks regulated by the US Coast Guard (USCG), if operations plan to hover taxi aircraft to parking, the USCG engineers may consider the parking area a landing area and require that it meet US Code of Federal Regulation Part 46 design requirements for landing areas in both size and load bearing.

Airflow beneath helideck

- It is important that the air gap beneath the helideck is not obstructed by stores, equipment, debris, etc.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. Design and Engineering Manual DEM 1 – Application of Technical Standards
3. DEP 37.19.00.12 – Offshore Topside Structures
4. DEP 80.00.10.12 – Layout of Offshore Facilities

Terms in green are included in the SGRAO Glossary.

5. FAC 1.01 Applicable Helideck Design Standards
6. FAC 1.02 Define Helideck Requirements
7. FAC 1.04 Helideck Environmental Effects Analysis
8. FAC 4.19 Helideck Aircraft Maintenance Recovery Operations
9. FAC 6.01 Helideck and Helideck System Maintenance

External:

1. ISO 19900:2002 – General requirements for offshore structures – Part 3
2. ISO 19901-3:2011 – Topside Structures
3. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 MC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
4. UK CAA Paper 2008/03 - Helideck Design Considerations – Environmental Effects
5. ICAO Annex 14 Volume II – Heliports
6. UK HSE Offshore Helideck Design Guidelines
7. HSAC RP 2016-1 Helideck Design Guidelines (New Builds)
8. HSAC RP 2016-2 Legacy Helideck Design and Marking Guidelines
9. OGUK Guidelines for the Management of Aviation Operations

NOTE:

The API RP2L shall not be used as the helideck design basis unless required by regulation and agreed with Shell Aircraft

RELATED INCIDENT

- NTSB Accident Report CHI07FA069 Helicopter struck platform flare boom 12th February 2007
- NTSB Accident Report DFW05FA040 Helicopter struck obstruction on helideck 17th December 2004
- NTSB Accident Report CHI03FA056 Helicopter strikes piping during landing 16th January 2003
- IADC Safety Alert 12-20 HELIDECK OBSTRUCTION HAZARD: MARKING AND NOTIFICATION August 2012
- UKOAA Safety Alert HSSE/HSE/SA/2005-0001 Failure of Helideck Perimeter Netting 7th September 2005
- AAIB Report on the Sikorsky S-61N accident, G-BEWL at Brent Spar
- AAIB Report of SA365N Dauphin, G-BKXD manoeuvring to land on an offshore helideck, the helicopter's Fenestron tail fairing struck the guardrails of a helideck mounted crane

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Is the helideck a minimum of 1 D size for the type of aircraft being operated?
2. Does the stated dynamic and static weight bearing class of the helideck match the heaviest type of helicopter to be operated to it?
3. Does the helideck parking area have the required clearances and are they clearly marked?
4. Do the helideck obstacle clearances, helideck surface, tie-down points, perimeter netting and access points meet the design requirements of CAP437 and the OGUK Guidelines?

Terms in green are included in the SGRAO Glossary.

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. Process Safety – Shell HSSE & SP Control Framework - Design and Engineering Manual DEM 1 – Application of Technical Standards
3. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
4. EP2005-0263 legacy documents (withdrawn, ref only)
5. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 MC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
6. UK CAA Paper 2008/03 - Helideck Design Considerations – Environmental Effects
7. ICAO Annex 14 Volume II – Heliports
8. UK HSE Offshore Helideck Design Guide

NOTE:

The API RP2L shall not be used as the helideck design basis unless required by regulation and agreed with Shell Aircraft.

FAC 01.04 Helideck Environmental Effects Analysis

MANDATORY REQUIREMENTS

The facility/vessel Duty Holder is Accountable for Requirements 1-3:

1. All new-build offshore helidecks, modifications to existing topside arrangements that could potentially have an effect on the environmental conditions around an existing helideck, or helidecks where operational experience has highlighted potential airflow or thermal problems, shall be subject to:
   a. Appropriate wind tunnel testing or Computational Fluid Dynamics (CFD) studies to establish the wind environment in which helicopters will be expected to operate;
   b. A survey of ambient temperature rise due to hot gas emissions based on a Gaussian dispersion model and supported by wind tunnel tests or CFD studies; and
   c. A cold gas emission diffusion study, regarding lower flammable limit concentration in the flight path area.
2. Contracted helidecks shall be certified by the owner to be free from adverse turbulence, hot gas emission, and cold gas emission effects.

Note:

The Duty Holder is the Operator in the case of a fixed installation (including fixed production and storage units); and the Owner in the case of a mobile installation.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-2

1. Helideck Environmental Studies:
   a. Apply the UK CAA CAP 437 Chapter 3, the UK HSE Offshore Helideck Design Guide, and CAA paper 2008/03 Helideck Design Considerations – Environmental Effects at the earliest possible stage of the design process.
   b. Include the Business Technical Authority (TA) for Air Transport or the responsible Shell Aircraft advisor in Helideck Environmental Study development and review.
   c. Consider environmental effects from;
      i. Structure-induced turbulence;
      ii. Turbulence and thermal effects from gas turbine exhaust, diesel engine exhaust, and large HVAC units; and
      iii. Flammable hydrocarbon cold gas emissions from cold flaring and emergency blow-down systems.

d. Include the Landing Decision Point (LDP) for the helideck design helicopter type(s) in the air volume to be considered for wind environment and ambient temperature assessments. LDP can be over 300 meters / 1000 feet outboard of the helideck edge and well above the helideck elevation. The volume to be explored must include this airspace for the study to be valid. Consult with the Aircraft Operator to determine the LDP distance from the helideck.

e. Historic wind and air temperature data for the planned installation location shall be determined for use in Helideck Environmental Studies. When determining the different location wind speeds, wind directions, and ambient temperatures to use in studies, select representative prevailing conditions that include:

    i. Wind directions and speeds that produce worst case turbulence from structures as well as hot gas emissions.
    ii. Temperature points that include both high and low ambient air temperatures. Air temperature rise from facility hot gas emissions can be critical across the ambient temperature range.

f. Special situations:

    i. For combined operations (a mobile platform or vessel temporarily operating in close proximity to another installation), Environmental Studies should examine both the study facility alone and the expected combined operation.
    ii. For multiple platform configurations (two or more bridge-linked fixed platforms in close proximity), Environmental Studies should be applied for the complex as a whole.
    iii. For installations with multiple helidecks, apply the study to each helideck.
    iv. For installations that are free to weathervane and align with the prevailing wind such as nose turreted Floating Production and Storage and Offloading vessels (FPSO), it is acceptable to consider a limited wind environment relative to the vessel centreline. Consider the potential effects of local ocean currents on vessel heading relative to ambient wind, which may increase the range of relative winds to apply in the study.

g. Environmental studies for existing facilities and vessels should be supplemented with pilot observations and aircraft Flight Data Monitoring (FDM) and Health and Usage Monitoring (HUMS) data.

h. Operational restrictions should be applied for the following assessment results. Refer to FAC 4.11 Helideck Simultaneous Operations (SIMOPS) Hazards when determining restrictions:

    i. For wind environment airflow assessments, a limit on the standard deviation of the vertical airflow velocity of 1.75 m/s should not be exceeded.
    ii. For ambient temperature assessments, when the results of modelling and/or testing indicate that there may be a rise of air temperature of more than 2°C (averaged over a three-second time interval).
    iii. The maximum permissible concentration of hydrocarbon gas within the helicopter operating area is 10% Lower Flammable Limit (LFL). Concentrations above 10% LFL have the potential to cause helicopter engines to surge and/or flame out with the consequent risk to the helicopter and its passengers

2. Contracted helidecks:
    a. Consider potential environmental hazards and their effect on aviation operations when contracting for rigs and vessels.
    b. Review rig and vessel Environmental Studies during the contracting process. If the owner has not conducted an Environmental Study, one should be commissioned and reviewed prior to mobilization for long duration or high flight exposure rig and vessel contracts. Consult with the Business TA for Air Transport or the responsible Shell Aircraft advisor.
    c. Solicit Air Operator observations regarding environmental hazards from operators that have previously flown to the contracted rig or vessel.
    d. Include the results of environmental studies as a consideration when planning the rig north orientation of Mobile Offshore Drilling Units (MODU).

ADDITIONAL GUIDANCE

- Adverse environmental effects cause both safety and operational degradation. The primary means of mitigating environmental threats are restricting or prohibiting flights under certain conditions, and restricting aircraft payload. This can lead to operational interruptions, lack of Medevac cover, and increased support cost.
- Consider the effect of air temperature rise on aircraft single engine (OEI) capability. It may be necessary to compute OEI power available during flight planning taking into account helideck environment temperature rise (i.e. add known temperature rise to ambient air temperature for the computation), and limit payload accordingly to ensure single engine accountability.
- As a potential source of ignition for flammable gas, the helicopter can pose a risk to the installation. It is considered unlikely that routine 'cold flaring' will present any significant risk, but the operation of emergency blow-down systems should be assumed to result in excessive gas concentrations. Installation operators should have in place a management system which ensures that all helicopters in the vicinity of any such releases are immediately advised to stay clear.
- Application of the Cooper Harper rating scale for helideck approach, landing, take off, and departure tasks may improve the value of pilot observations. Introduction of the Cooper Harper rating scale for this use will require some pilot familiarization for consistent results.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. Design and Engineering Manual DEM 1 – Application of Technical Standards
3. DEP 37.19.00.12 – Offshore Topside Structures
4. DEP 80.00.10.12 – Layout of Offshore Facilities
5. FAC 04.11 Helideck Simultaneous Operations (SIMOPS) Hazards

Terms in green are included in the SGRAO Glossary.

External:

1. UK CAA CAP-437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
2. UK HSE Offshore Helideck Design Guidelines
3. UK CAA Paper 2008/03 - Helideck Design Considerations – Environmental Effects
4. Hierarchical task analysis (HTA) and the Modified Cooper Harper rating scale
   4.1 Example Modified Cooper Harper scale
5. US BSEE Study of Effects Combustible Gas on Helicopter Operations – Preliminary
6. Texas A and M University - Analysis of the Effects Of Methane Ingestion On Turboshaft Engines - Preliminary

RELATED INCIDENT

BSEE Safety Alert 311 "Methane Venting Hazard to Helicopter Operations" 1st May 2014

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Have environmental studies been performed for wind turbulence, ambient temperature rise and cold gas emissions on all new-build offshore helidecks, modifications to existing topside arrangements that could potentially have an effect on the environmental conditions around an existing helideck, or helidecks where operational experience has highlighted potential airflow or thermal problems.
2. Have operational limitations been documented in the installation/vessel MOPO where the design criteria have been exceeded and communicated to relevant aircraft operators.

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)
2. UK CAA CAP-437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
3. UK HSE Offshore Helideck Design Guidelines
4. UK CAA Paper 2008/03 - Helideck Design Considerations – Environmental Effects

FAC 01.05 Helideck Marking and Lighting

MANDATORY REQUIREMENTS

The facility/vessel Duty Holder is Accountable for Requirements 1-6:

1. Helideck markings shall meet the requirements of CAP 437 but may be modified to meet specific requirements of local regulation when required.
2. Helideck perimeter and flood lighting shall meet the requirements of CAP 437 but may be modified to meet specific requirements of local regulation when required.
3. For new build helidecks the aiming circle and "H" lighting scheme defined in CAP 437 Chapter 4 and Appendix C shall be applied.
4. Fixed obstacles on the installation which present a hazard to helicopters shall be made readily visible from the air, both by day and night, using the marking and lighting requirements defined in CAP 437.
5. Closed helidecks shall be visually marked with a prohibited landing marking. For temporarily closed helidecks a removable banner shall be used. Permanently closed helidecks shall have a painted marking applied.
6. A wind direction indicator (windsock) shall be provided and located to indicate the free stream wind conditions at the installation/vessel location. The windsock shall be illuminated for night operations.

Note:

The Duty Holder is the operator in the case of a fixed installation (including fixed production and storage units); and the owner in the case of a mobile installation.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-6

1. Helideck Marking:

   1.1 For US regulated offshore areas, CAP 437 helideck markings may be amended in accordance with the HSAC RP 2016-1 and RP 2016-2.

   1.2 Where CAP437 deck marking requirements are modified due to other local regulation, the responsible Shell Technical Authority – Air Transport (TA1) shall be informed and differences communicated to helicopter operators.

   1.3 The CAP 437 requirement for green helideck perimeter lights has not yet been adopted for all countries and modification may be required for mobile installations moving between countries.

Terms in green are included in the SGRAO Glossary.

2. Lighted Aiming Circle and Landing “H”:

    2.1 Due to retrofit difficulties, the aiming circle and “H” lighting scheme is not required for helidecks built before 2014 but is recommended as a significant enhancement to pilot visual cues, particularly for operating areas with significant night flying, and should be considered during installation/vessel modification.

3. Obstacle Marking:

    3.1 Fixed obstacles requiring marking include crane booms, drilling rig towers, flare booms and jack up legs.

    3.2 See FAC 01.11 “Crane Requirements” for crane specific marking requirements and guidance.

4. Closed Helideck Marking

    4.1 Each helideck equipped facility or vessel shall have on board and ready for use a “landing prohibited” signal banner as described in CAP 437 Chapter 4 Section 2.10, which shall be deployed onto temporarily closed helidecks.

    4.2 Permanently closed helidecks should have a painted white “X” applied, centred on the landing area, oriented corner to corner, the legs 1 meter (3 feet) wide, and the legs extending out past the landing circle marking. The landing “H” and circle should be painted over with a dark paint prior to the white cross being applied. Ensure that sufficient non-skip material is applied to prevent a personnel slip hazard.

5. Windsocks:

    5.1 The windsock shall be in line of sight of the pilot during landing, take-off, and when sitting on the helideck, and should be positioned to represent wind speed and direction at the helideck.

    5.2 A second windsock should be considered and positioned to indicate a specific difference between the local wind over the helideck and the free stream wind.

    5.3 When illuminating a windsock by spot lighting, avoid positioning the spotlight(s) in a way that could blind the pilot during landing and take-off.

ADDITIONAL GUIDANCE

Flare boom tip obstacle lights may be difficult to keep in service due to the heat from flaring, and spot lighting the boom tip may be an alternative. However, care must be taken to ensure that the spotlights will not blind pilots operating to the facility at night.

LINKS (FOR DOWNLOAD)

Shell:

1. HSSE & SP Control Framework - Air Transport Manual
2. Design and Engineering Manual DEM 1 – Application of Technical Standards

Terms in green are included in the SGRAO Glossary.

3. FAC 01.11 Crane Requirements

External:

1. ISO 19900:2002 – General requirements for offshore structures – Part 3
2. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
3. ICAO Annex 14 Volume II – Heliports
4. UK HSE Helideck Design Guidelines
5. HSAC RP 2016-1 Helideck Design Guidelines (New Builds)
6. HSAC RP 2016-2 Legacy Helideck Design and Marking Guidelines

NOTE:

The API RP2L shall not be used as the helideck marking basis unless required by regulation and agreed with Shell Aircraft

RELATED INCIDENT

- NTSB Accident Report CHI07FA069 Helicopter struck platform flare boom 12th February 2007
- NTSB Accident Report DFW05FA040 Helicopter struck obstruction on helideck 17th December 2004
- NTSB Accident Report CHI03FA056 Degraded windsock causes hard landing
- IADC Safety alert 12-20 "helideck obstruction hazard: marking and notification" august 2012

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Do the helideck markings meet the requirements of CAP 437 or other Shell Aircraft approved schemes.
2. Does the helideck lighting meet the requirements of CAP 437?
3. For new build helidecks, has the aiming circle and "H" lighting been installed?
4. Are fixed obstacles that present a hazard to helicopters conspicuously marked for day and night in accordance with CAP 437?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

Terms in green are included in the SGRAO Glossary.

FAC 01.06 Helideck Weather and Motion Monitoring Systems

MANDATORY REQUIREMENTS

The facility/vessel Duty Holder is Accountable for Requirements 1-8:

1. All installations and vessels shall have a means to accurately measure, record and indicate meteorological data. Required reporting elements are:
   a. Wind speed and direction (including average speed and gusts, and variations in direction);
   b. Air temperature and Dew Point temperature; and
   c. QNH and, where applicable, QFE.
2. All installations, and large vessels as defined in CAP 437 Appendix E "Additional Guidance Relating to the Provision of Meteorological Information from Offshore Installations", shall have a means to accurately measure, record and indicate meteorological data.
   a. Cloud amount and height of base (Above Mean Sea Level (AMSL);
   b. Visibility;
   c. Present weather, including presence and extent of precipitation; and
   d. Local lightning activity.
3. Measurements shall be reported in the form and units in use in the operating area.
4. CAP 437 Appendix E shall be referenced unless superseded by national regulation.
5. All floating installations and vessels shall have a means of monitoring, recording and indicating the following helideck motion criteria that shall be recorded by the installation/vessels helideck motion system (HMS):
   a. Pitch (Fore/Aft);
   b. Roll (Lateral);
   c. Heave (Vertical) – Including heave period, maximum heave and Significant Heave Rate (SHR); and
   d. Helideck inclination angle between the absolute horizon and the plane of the helideck.
6. Deck motion measuring equipment shall be attached to the underside of the helideck or compensated by software to give helideck readings.
7. All meteorological and motion sensing equipment shall be maintained and calibrated in accordance with manufacturers recommendations.

Terms in green are included in the SGRAO Glossary.

8. Where meteorological data is obtained through observation rather than automated systems, installation/vessel managers shall ensure that a competent person is employed to make accurate observations and readings.

Note:

The Duty Holder is the operator in the case of a fixed installation (including fixed production.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-8

1. Automated weather monitoring and recording systems should be fitted for all new build helidecks and are strongly recommended for in service helidecks.
    a. Aviation certified weather systems licensed or approved by the National Regulator are preferred.
        - National regulators may be reluctant to certify wind direction systems on mobile platforms and vessels, but GPS technology can enable accurate wind direction readings in these installations. Consult with the Business Technical Authority for Air Transport.
    b. Non-aviation systems may be substituted as long as measurement resolution is equivalent to those given in CAP-437 Appendix E. National regulation for use of non-aviation weather systems for terminal operations and filing shall be observed. This use may affect approach and departure weather minima.
    c. Weather system readout should be located adjacent to the primary facility air band VHF radio set. Repeater panels may be provided at other locations.
    d. System output should be continuously broadcast via air band radio to provide an Automatic Terminal Information Service (ATIS) capability and should also be available by telephone dial-up computer voice modem and/or internet webpage reporting. In all cases reports should be updated at the frequency required by the National Regulator, or at least once every minute for radio and telephone, and at least once every 20 minutes for internet.
        - Radio reporting provides information for aircraft in flight; telephone and internet for flight planning and ground-based control stations. Both services are necessary.
    e. Where a fixed installation is within 10 nautical miles of another installation that is equipped with an automated means of ascertaining the meteorological information listed above, and which also makes this information routinely available to others, a manual means of verifying and updating the visual elements of observation, i.e. cloud amount and height of base, visibility and present weather, may be used.
2. Installations and vessels are strongly encouraged to supply meteorological information and weather report forms produced from the automated sensors to web-based systems that are operated by the National Weather Service or on behalf of helicopter operators or local industry bodies. These systems enable helicopter operators, installation duty holders and others to access the latest weather information in real time.
3. Contingency meteorological observing equipment providing manual measurements of air temperature, wind speed and direction and pressure should be provided in case of the failure or unavailability of the automated sensors.

4. The primary anemometer is to be positioned in an unrestricted air flow using one or more anemometers as necessary to provide accurate 360o measurements. A second anemometer system, located at a suitable height and position, can give useful information on wind velocity at hover height over the helideck in the event of turbulent or disturbed air flows over the helideck. Alternately a handheld anemometer may be used.
5. An indication of wind speed and direction should also be provided visually to the pilot by the provision of a wind sock coloured to give maximum contrast with the background and illuminated for night flying.
6. Barometers with internal aneroid capsules shall not be in pressurised spaces. Barometric gauges with external sensors may be placed in pressurized spaces if the associated sensor is in an unpressurized area.
7. The HMS should be capable of integrating sensors for measuring helideck movement, wind and weather and should be able to transmit this data electronically to the helicopter operation centre.
    a. Where an integrated HMS is not available, separate measuring systems may be used if the facility / vessel can demonstrate that complete timely reporting compliant with CAP 437 Appendix E is possible.
8. The HMS should have a colour indication display to indicate whether the helideck is “in limits” for flight operations. The HMS should also include a Traffic light display, ideally on the helideck and visible to the helicopter pilot.
9. Weather and motion monitoring systems should be considered safety critical equipment (See FAC 04.01 “Manage Helideck Risk”) and be included as recurrent items in the installation/vessels planned maintenance system (See FAC 06.01 “Helideck and Helideck System Maintenance”). Unserviceability of the systems should also be reflected in the MOPO or equivalent operational limitations document.

ADDITIONAL GUIDANCE

- Competence for Meteorological Observers is addressed in CAP 746. Other state regulators may produce similar guidance.
- See FAC 01.05 “Helideck Marking and Lighting” for windsock requirements.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. Design and Engineering Manual DEM 1 – Application of Technical Standards
3. DEP 37.19.00.12 – Offshore Topside Structures
4. FAC 01.05 Helideck Marking and Lighting
5. FAC 04.01 Manage Helideck Risk
6. FAC 06.01 Helideck and Helideck System Maintenance

Terms in green are included in the SGRAO Glossary.

External:

1. ISO 19900:2002 – General requirements for offshore structures – Part 3
2. ISO 19901-3:2011 – Topside Structures
3. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
4. UK CAA Paper 2008/03 - Helideck Design Considerations – Environmental Effects
5. ICAO Annex 14 Volume II – Heliports
6. UK HSE Offshore Helideck Design Guidelines
7. CAP 746- Requirements for Meteorological Observations at Aerodromes

RELATED INCIDENT

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Is the installation/vessel equipped with the required meteorological and motion sensing equipment?
2. Is the meteorological and motion sensing equipment inspected, maintained and calibrated in accordance with the manufacturers recommendations and included in the planned maintenance system?
3. Is the meteorological and motion sensing defined as safety critical equipment and reflected in the MOPO or equivalent document?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 01.07 Helideck Communication Equipment Requirements

MANDATORY REQUIREMENTS

The facility/vessel Duty Holder is Accountable for Requirement 1:

1. All helideck equipped installations/vessels shall be equipped with:
   a. A fixed air-band VHF radio set, capable of receiving and transmitting on allocated frequencies for helicopter traffic and logistics use. The equipment shall be approved/registered in accordance with national regulations.
   b. A portable VHF air-band radio and headset (including holster and belt) for use by the HLO.

Note:

The Duty Holder is the operator in the case of a fixed installation (including fixed production and storage units); and the owner in the case of a mobile installation.

ADDITIONAL GUIDANCE

- Intrinsically safe portable air band radios may be difficult to source. Where area classification requires intrinsically safe radios, the provision of portable air-band VHF radio for use by the HLO is still mandatory. Facilities / vessels shall establish operational controls to define the locations where the radio may be safely used, which shall include the helideck and vicinity.
- A back-up fixed VHF set is highly recommended to provide redundancy in case of unserviceability of the primary radio set.
- Integrated headset/helmet combinations are preferred for helideck team use.
- Additional portable air-band VHF radios and headsets (possibly set to receive only) should also be considered for HDAs. These can improve helideck safety, as the HLO can communicate more effectively with his team, especially at night when hand signals are less visible.
- Platform / rig radios should also be provided to the helideck team for coordination with facility personnel.
- Consider installing a Non-Directional Beacon (NDB) or other navigational aids to enable helicopters to safely approach the installation/vessel in conditions of low cloud and/or poor visibility. Consult with the planned Air Operator to determine if this navigational aid will provide value.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

Terms in green are included in the SGRAO Glossary.

1. HSSE & SP Control Framework - Air Transport Manual
2. Design and Engineering Manual DEM 1 – Application of Technical Standards
3. DEP 37.19.00.12 – Offshore Topside Structures
4. DEP 33.80.00.30 – Navigational Aids for Fixed Offshore Platforms

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.

RELATED INCIDENT

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Is the installation equipped with a serviceable air-band VHF radio?
2. Is the HLO equipped with a portable air-band radio and headset and has consideration been given to equipping HDAs with portable radios?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 01.08 Helideck Emergency Equipment

Shell Aircraft Shell Group Requirements for Aircraft Operations Facility Requirements	Restricted Version 3.1 – June 2019

MANDATORY REQUIREMENTS

The facility / vessel Duty Holder is Accountable for Requirement 1:

1. Provide firefighting, crash rescue equipment, and PPE to the scales expressed in UK CAA CAP 437; including the response time, quantities, and application rates of firefighting media specified.
    a. Additional firefighting capability and crash rescue equipment shall be provided where required by local regulation or based on hazard analysis, but the capability shall not be less than that specified in CAP 437.
    b. The primary helideck firefighting system shall be firefighting foam.
    c. If activation of the helideck firefighting system is remote from the helideck, the activation mechanism shall be in a position to give the activator a clear view of the helideck and constant communication with the HLO.

Note:

The Duty Holder is the operator in the case of a fixed installation (including fixed production and storage units); and the owner in the case of a mobile installation

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. The preferred system for continuously attended (manned) new build facilities is a passive fire-retarding helideck equipped with a Deck Integrated Fire Fighting System (DIFFS).
2. Where manual fire monitors are installed at least two are required, positioned so that at least one can be effective considering predominant wind direction.
3. Where oscillating fire monitors or ring main spray systems are installed, the design shall provide required foam application to the entire helideck landing area, which may require additional foam production capacity. Alternately, hand-controlled foam branch pipes as described in CAP 437 Chapter 5 section 2.9 shall be provided.
4. Compressed Air Foam System (CAFS) are acceptable for retrofit on facilities without adequate fire main pressure to the helideck, and for Normally Unattended Installations (NUI). Reference CAP 437 Appendix B for these systems.
    a. The lack of fire main water to the helideck for cooling and protection may degrade the ability to fight a fire, and to conduct rescue after the fire is controlled; and

b. The CAFS should be equipped with hand lines for use in areas where the system applicators cannot reach or are ineffective.

5. The primary firefighting system for a NUI should be capable of automatic operation in case of a post-crash fire on the helideck when the installation is unattended. Alternatively, the system should be capable of remote activation from an attended facility responsible for monitoring the NUI helideck video system during aircraft operations.
6. The lance applicator on at least one CO2 extinguisher should be of sufficient length to reach the engine inlet and exhaust stack of the largest helicopter servicing the facility when sitting upright on its landing gear.
7. There should be at least two rescue ladders provided, both long enough to climb onto, and then down into, the largest helicopter servicing the facility when turned on its side.
8. Provide a means to recover non-ambulatory survivors from overturned helicopters without causing further injury.

ADDITIONAL GUIDANCE

- Hand held CAFS extinguishers, while not addressed in CAP 437, are effective for foaming smaller fuel spills without the need to activate the primary firefighting system, as well as for spot firefighting and providing post-fire security/control through additional foam application.
- Consult with the Business Technical Authority (TA) for Air Transport and Air Operator Contract Holder to determine any post-incident precautions required for the helicopters servicing the installation, such as disarming stored energy devices (e.g. Automatically Deployable Emergency Locator Transmitter – ADELT launchers) or protection from the release of composite fibres during a fire.
- Where receipt of survivors at the platform/vessel from a helicopter ditching while awaiting transport to shore is a Credible Scenario, it may be necessary to provide warming clothing or gear for the survivors who may suffer from hyperthermia and shock. Ad hoc use of facility bedding may be adequate, or sweat suits or blankets may be stored for use in a waterproof container with other rescue equipment. Medical advice in the planning process will inform preparations.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 (“should” statements) shall be taken as requirements for Company use.
2. ICAO Annex 14 Volume II – Heliports
3. UK HSE Offshore Helideck Design Guidelines

Terms in green are included in the SGRAO Glossary.

RELATED INCIDENT

No illustration at the moment.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Is firefighting, crash rescue equipment, and PPE provided to the scales expressed in UK CAA CAP 437; including the response time, quantities, and application rates of firefighting media specified for each helideck equipped manned facility / vessel?
2. Is additional firefighting capability and crash rescue equipment provided where required by local regulation or based on hazard analysis?
3. Is the primary helideck firefighting system a firefighting foam application system on each helideck equipped manned facility / vessel?
4. Where the activation control for the primary helideck firefighting system is remote from the helideck, does the activator have a clear view of the helideck and constant communication with the HLO?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 5 Air Transport / Loss of containment of aviation fuel during storage/refuelling
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 01.09 Offshore Aviation Refuelling Equipment

MANDATORY REQUIREMENT

The facility / vessel Duty Holder is Accountable for Requirement 1:

1. Design aviation fuel systems in accordance with the UK CAA CAP 437 Chapter 7.

Note:

The Duty Holder is the operator in the case of a fixed installation (including fixed production and storage units); and the owner in the case of a mobile installation.

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. Shell Aviation is the Company Subject Matter Expert for matters relating to aviation fuels and fuelling systems and should be consulted in the design of a new system or major system modification.
2. Coordinate a review of proposed aviation fuel system design by Shell Aviation with the Business Technical Authority (TA) for Air Transport or with the responsible Shell Aircraft advisor if no Business TA for Air Transport is assigned.

ADDITIONAL GUIDANCE

None

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 2 Appendix 10: Aircraft Refuelling
3. Shell Aviation Airport Operations Manual
4. Shell Aviation Maintenance Manual
5. Shell Aviation Quality Assurance Manual

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use. - Chapter 7 and 8
2. UK HSE Helideck Design Guidelines – Section 11.7
3. OGUK Guidelines for the Management of Aviation Operations - Part C: Helideck Operations
4. OLF Helideck Manual

Template:

Shell Aircraft Helideck Inspection Checklist

RELATED INCIDENT

- AAIB 7-2002 Helicopter damaged - loss of power contaminated fuel
- NTSB Accident Report NYC95GA060 Helicopter fatal crash from fuel contamination
- NTSB Accident Report LAX05LA176 Helicopter accident caused by contaminated fuel

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Was the aviation fuel system designed in accordance with the CAA CAP 437 Chapter 7?
2. Did Shell Aviation review the proposed aviation fuel system design with the Business Technical Authority (TA) for Air Transport or with the responsible Shell Aircraft advisor if no Business TA for Air Transport was assigned?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 5 Air Transport / Loss of containment of aviation fuel during storage/refuelling
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 01.10 Offshore Helicopter Hoist Operation (HHO) Area Selection and Marking

Shell Aircraft	
Shell Group Requirements for Aircraft Operations	Restricted
Facility Requirements	Version 3.1 – June 2019

MANDATORY REQUIREMENTS

The facility/vessel Duty Holder is Accountable for Requirements 1-4:

1. Equip mobile facilities/vessels anticipating HHO with necessary equipment to measure and report vessel movements;
2. Mark designated hoisting areas in accordance with the UK CAA CAP 437 and the International Chamber of Shipping Guide to Helicopter/Ship Operations (ICS Guide);
3. Remove obstructions with the potential to interfere with safe hoisting where possible, and those obstructions that cannot be removed shall be marked and lit in accordance with the CAP 437 and ICS Guide; and
4. Illuminate the hoisting area, mustering area, and windsock or wind pennant when conducting night hoisting.

Note:

1. Company references to hoisting with a helicopter winch are aligning with the European Aviation Safety Agency (EASA) terms “Helicopter Hoist Operation (HHO)” and “Hoisting”. They are equivalent to the use of the term “Winching” by some aviation organizations, and in the CAP 437 and ICS Guide.
2. HHO areas on offshore facilities or vessel are controlled by this FAC.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-4

1. Where it is impractical to provide a landing area for helicopters and where sufficient clearances exist, facilities/vessels should select and designate helicopter hoisting areas in accordance with the International Chamber of Shipping “Guide to Helicopter/Ship Operations” (ICS Guide).
2. Selecting Helicopter Hoisting Areas:
    a. Review the UK CAA CAP 437 Chapter 10 section 1 in addition to the ICS Guide when selecting hoisting areas;
    b. Select primary and where possible alternate hoisting areas, sized for the largest hoist capable helicopter available in the area of operations;

i. The primary hoisting area may be the facility/vessel helideck or landing spot if installed/designated and sufficient clearances exist for the anticipated size HHO helicopter. In this case, selection of an alternate hoisting area provides flexibility if the helideck is unusable for both landing and HHO;

ii. For vessels conducting world-wide operations, identify hoisting areas compatible with S-92/EC 225/S-61 helicopters, or the larger EH-101 helicopter if possible.

iii. If the vessel cannot support large helicopter HHO, then identify the largest helicopter types that can safely hoist to the available hoisting areas. Consult with Shell Aircraft as necessary.

This restriction should be communicated to HHO helicopter providers;

c. Lighting for the hoisting area, the mustering area, and the wind pennant or wind sock should be capable of being supplied from the main and emergency power sources, and lighting should be located that it is not directed, or reflected by the facility's/vessel's structure or the sea towards the helicopter;

d. Mark obstructions such as masts in the vicinity of the hoisting area by painting in a contrasting colour and illuminating with floodlights or other accepted lighting supplied from the main and emergency power sources. Care should be taken to prevent blinding helicopter pilots with glare from lighting.

e. Where a designated hoisting area cannot be provided, an emergency hoisting area should be identified and documented in accordance with the ICS Guide section 7.3.

i. Facilities/vessels without a designated hoisting area should not conduct non-emergency HHO;

See FAC 04.13 Offshore Helicopter Hoist Operations for definition of allowed emergency offshore helicopter HHO;

ii. The emergency hoisting area should be near the side of the facility/vessel so that the manoeuvring zone extends over the facility's/vessel's side. For vessels, the port side is preferred to enable the pilot in the command seat to conduct the hoist;

iii. The emergency hoisting area should be located;

1. Where turbulence will be minimal;
2. Unaffected by flue gases;
3. Readily accessible and as clear of accommodation spaces as is practicable;
4. Where there is a clear flight path along the facility's/vessel's side; and
5. Where capable of being illuminated by downward facing floodlights.

f. Where neither a designated or emergency hoisting area can be provided, consider emergency Hoisting from a rescue boat or lifeboat as described in the ICS Guide section 7.3. Facility/vessel procedures will need to be modified accordingly;

3. Marking Hoisting Areas:

a. Helidecks and vessel helicopter Landing Areas also used as hoisting areas shall be marked for their primary use as a helideck or landing area; and

b. Emergency hoisting areas should not be permanently marked.

4. Additional recommended equipment:
    a. Weather reporting equipment able to provide the data listed in the ICS Guide section 4.5.g should be provided;
    b. Other provisions listed in the ICS Guide section 4.5 should be provided;
    c. Firefighting appliances and rescue equipment listed in the ICS Guide section 4.7 should be provided on vessels with designated and emergency hoisting areas; and
    d. A VHF air band radio should be provided in the facility control room or vessel bridge/radio room. Alternatively, portable VHF air band radios may be substituted.

ADDITIONAL GUIDANCE

- Wind turbine Hoisting Areas and platforms should be designed and marked in accordance with the CAP 437 chapter 10 section 2.
- Flare tip work platforms on flare tips where tip replacement may be conducted by helicopter underslung lift should be designed to provide sufficient clearances for helicopter lifting and sufficient safe space for the work team on the flare boom. Reference to CAP 437 chapter 10 Section 2 will be helpful.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.13 Offshore Helicopter Hoist Operations

External:

1. ICS Guide to Helicopter-Ship Operations
2. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 MC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.

RELATED INCIDENT

- AAIB Bulletin No: 5/2005 During HHO, rotors struck the mast - 15 September 2004
- CA 8010 Fatal injury during HHO – 3 September 2005

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Are mobile facilities/vessels anticipating HHO equipped with necessary equipment to measure and report vessel movements?
2. Are designated hoisting areas marked in accordance with the UK CAA CAP 437 and the International Chamber of Shipping Guide to Helicopter/Ship Operations (ICS Guide)?
3. Are obstructions with the potential to interfere with safe hoisting marked and lit in accordance with the UK CAA CAP 437 and ICS Guide?

Terms in green are included in the SGRAO Glossary.

This document is not controlled when printed. See the Change Log for version control information.
Shell International (c)

4. Are the hoisting area, mustering area, and windsock or wind pennant illuminated when conducting night hoisting?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 10 Air Transport (RW) / Loss of control of load suspended from helicopter

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. ICS Guide to Helicopter/Ship Operations (2008)
3. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 MC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
4. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
5. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 01.11 Offshore Crane Requirements

Shell Aircraft Shell Group Requirements for Aircraft Operations Facility Requirements	Restricted Version 3.1 – June 2019

MANDATORY REQUIREMENTS

The facility/vessel Duty Holder is Accountable for Requirement 1:

1. Cranes on all vessels/ installations equipped with helidecks:
    a. Equip each crane with a rotating beacon or High Intensity Strobe Light (HISL), which automatically illuminates when the crane is in operation;
    b. Design cranes to allow the operator a maximum view of the helideck area with wide-angle mirrors to eliminate blind spots;
    c. Paint the crane boom tips, headache balls, and hooks a high visibility colour, such as international orange;
    d. Paint the crane boom a high visibility colour and pattern of alternating bands as specified in the CAP-437, or mark as required by the local regulator; and
    e. All cranes and their location shall be noted in the pilot's facility guide.

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. Use beacons/HISL and high visibility paint schemes that comply with national regulation for marking aviation obstructions. When using HISL to indicate that a crane is operating, ensure that the strobe light will not blind pilots operating to the helideck.
2. Small cranes that cannot reach into the helideck Obstacle Free Sector (OFS) or the restricted portion of the Limited Obstacle Sector (LOS), and which cannot endanger a helicopter circling the installation, may be exempted from the requirements in this FAC with the concurrence of the local Business Technical Authority (TA) for Air Transport and the helicopter Operator servicing the facility. These cranes and their location shall still be noted in the pilot's facility guide.
3. Modular crane booms made up of unequal length sections may be marked through painting individual sections a solid colour, as long as the boom is assembled with alternating coloured sections, and there is sufficient contrast for conspicuity. This will prevent repeated repainting as crane booms are made up.

ADDITIONAL GUIDANCE

- Consider providing a crane which can reach into the centre of the helideck landing area and lift off a disabled helicopter at the expected landing weight for transfer to a vessel for

transport ashore, in accordance with FAC 04.19 “Helideck Aircraft Maintenance Recovery Operations”

- At night, identify cranes that cannot be cradled while not in operation with lit obstruction lights or spot lights.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.19 Helideck Aircraft Maintenance Recovery Operations

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 (“should” statements) shall be taken as requirements for Company use.
2. UK HSE Helideck Design Guidelines

RELATED INCIDENT

- NTSB Accident Report MIA08WA181 Helicopter struck crane

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Is each crane equipped with a rotating beacon or High Intensity Strobe Light (HISL), which automatically illuminates when the crane is in operation?
2. Does the crane provide a field of view to the operator with no blind spots?
3. Are the crane boom tips, headache balls, and hooks painted a high visibility colour, such as international orange?
4. Is the crane boom painted with a high visibility colour and pattern?
5. Are all cranes and their location noted in the helicopter pilot’s facility guide?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

Terms in green are included in the SGRAO Glossary.

FAC 01.12 Normally Unattended Installation (NUI) Physical Characteristics and Equipment

MANDATORY REQUIREMENTS

The facility/vessel Duty Holder is Accountable for Requirement 1:

1. Design and deliver NUI helidecks compliant with FAC 01.01 through 01.08, 01.10, 01.11, and 04.19, modified as shown in the Acceptable Means of Compliance section below, and in addition, provide the following NUI specific systems;
    a. Automatic or remote controls for helideck lighting;
    b. Status light systems; and
    c. Remotely operated helideck video system for remote NUI.

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. Means of compliance for requirements, modifications to requirements from referenced FAC, and additional recommendations;
    a. FAC 01.05 Helideck Marking and Lighting;
        i. Automatic or remote controls for helideck lighting;
            1. For night operations, helideck lighting, including windsock illumination shall remain permanently on or be controlled by a light sensitive switch with a manual override facility operable locally and/or from an appropriate manned installation or shore base;
        ii. Status light systems;
            1. NUIs shall be equipped with automatic status light systems to indicate to helicopter pilots when a hazardous condition exists on the installation;
            2. NUI status light systems shall be capable of being switched off or reset remotely from a manned installation or shore base.
        iii. Additional recommendations;
            1. In addition to aiming circle and “H” lighting, helideck floodlighting should be installed as discussed in CAP 437 Chapter 4 Section 3.5 Note 2
            2. For night flights, the main structure or legs of the NUI should be floodlit to improve pilot depth perception during approach. Avoid directing these lights such that they blind the pilots.

b. FAC 01.06 Helideck Weather Systems and Vessel Motion Monitoring Systems;
   i. Modification to FAC 01.06;
      1. NUIs located close to a manned facility (within 10 NM) require no weather measuring equipment, provided that weather patterns do not generally differ from the manned installation; otherwise
      2. Weather equipment providing the following automatically relayed information shall be provided;
         a. Wind speed and direction across the helideck;
         b. Outside air temperature;
         c. Barometric pressure (QFE/QNH);
   ii. Additional recommendation;
      1. Where weather equipment is required, cloud base and visibility measuring equipment should be provided;

c. FAC 01.07 Helideck Communication Equipment Requirements;
   i. Remotely operated helideck video system;
      1. A remotely operated helideck video system shall be provided for all NUI more than 40 miles from a manned platform or heliport, unless helicopter operations will be prohibited without a standby vessel on station;
   ii. Modification to FAC 01.07;
      1. Where there is no staffed control room on the NUI, a fixed air-band VHF radio set is not required;
      2. As a minimum, a portable VHF air-band radio and headset (including holster and belt) shall be provided for the HLO;
   iii. Additional recommendation;
      1. A remotely operated helideck video system should be provided for all NUIs.

d. FAC 01.08 Helideck Emergency Equipment;
   i. Modification to FAC 01.08;
      1. Unless more capability is required by local regulation, the minimum firefighting equipment provided shall be;
         a. A 45kg or larger dry-powder fire extinguisher with a hose attachment that can deliver media to all parts of the safe landing area;
         b. A 22.5kg or larger carbon dioxide fire extinguisher with a hose attachment and engine applicator nozzle that can deliver media to all parts of the safe landing area;
      2. A helideck firefighting foam system/unit should be provided.
         a. Systems defined in CAP 437 Chapter 5, and further described in CAP 437 Appendix D, are preferred;
         b. A portable foam unit with a minimum capacity of 90 liters with an aspirated branch fitted is acceptable;
      3. Unless more capability is required by local regulation, the minimum emergency equipment provided shall be;
         a. Rescue equipment defined in CAP 437 Chapter 5 Section 7;

b. Two sets of fireman's equipment as described in OGUK Guidelines for the Management of Aviation Operations Section C5 Subsection 6.2.5;

ii. Additional recommendation;

1. NUIs should be designed and equipped with firefighting and emergency equipment to the full scale specified in CAP 437;

e. FAC 01.10 Offshore Helicopter Hoist Operation (HHO) Area Selection and Marking;

i. Additional recommendation;

1. Where hoist capable helicopters are available in the operating area, a designated and marked helicopter hoisting area should be provided for emergencies if;

a. No helideck is installed; or

b. The helideck is not large enough to conduct concurrent maintenance recovery landings as described in FAC 04.19;

ADDITIONAL GUIDANCE

- Where bird activity warrants, bird exclusion devices and a means to remove guano from the helideck should be provided, as discussed in OGUK Guidelines for the Management of Aviation Operations Section C5.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 01.01 Applicable Helideck Design Standards
3. FAC 01.02 Define Helideck Requirements
4. FAC 01.03 Helideck Physical Characteristics
5. FAC 01.04 Helideck Environmental Effects Analysis
6. FAC 01.05 Helideck Marking and Lighting
7. FAC 01.06 Helideck Weather Systems and Vessel Motion Monitoring Systems
8. FAC 01.07 Helideck Communication Equipment Requirements
9. FAC 01.08 Helideck Emergency Equipment
10. FAC 01.10 Offshore Helicopter Hoist Operation (HHO) Area Selection and Marking
11. FAC 01.11 Crane Requirements
12. FAC 04.19 Helideck Aircraft Maintenance Recovery Operations

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 MC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.

Terms in green are included in the SGRAO Glossary.

2. UK HSE Helideck Design Guidelines
3. OGUK Guidelines for the Management of Aviation Operations

Template:

Shell Aircraft Helideck Inspection Checklist

RELATED INCIDENT

No illustration at the moment.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Is the NUI helideck designed and compliant with FAC 01.01 through 01.08, 01.10, 01.11, and 04.19, modified as shown in the Acceptable Means of Compliance section of FAC 01.12?
2. Is NUI helideck lighting, including windsock illumination permanently on or controlled by a light sensitive switch with a manual override facility operable locally and/or from an appropriate manned installation or shore base?
3. Are all NUI equipped with automatic status light systems to indicate to helicopter pilots when a hazardous condition exists on the installation?
4. Are NUI status light systems capable of being switched off or reset remotely from a manned installation or shore base?
5. Is a remotely operated helideck video system installed on all NUI more than 40 miles from a manned platform or heliport, unless helicopter operations will be prohibited without a standby vessel on station?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 03.01 Flight Scheduling

Shell Aircraft	
Shell Group Requirements for Aircraft Operations	Restricted
Facility Requirements	Version 3.1 – June 2019

MANDATORY REQUIREMENTS

The Service Provider is Accountable for Requirement 1:

1. Implement a flight scheduling process to meet Shell programme requirements and communicate them to the Aircraft Operator.

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. The flight scheduling process.
   a. Flights are programmed with adequate lead time to allow the Aircraft Operator to effectively plan for scheduled Aircraft maintenance.
   b. A process is in place to accommodate Last Minute Changes to the schedule, passenger or cargo requirements.
   c. Passenger travel (offshore etc.) is authorised by a nominated supervisor.
   d. Information is provided to scheduled passengers on the limits to baggage weight and size and all restricted/prohibited items.
   e. A risk assessment is conducted by the Aircraft Operator before the carriage of any external loads and is accepted by the relevant Shell Technical Authority - Air Transport (TA1).
   f. An up-to-date list of approved helidecks, heliports and/or aerodromes is available to, and used by the schedulers or planners, and includes any operational restrictions in place at those locations.

ADDITIONAL GUIDANCE

- Where overlapping responsibilities exist at a passenger processing facility, an interface document should be developed, implemented and the interfaces audited to ensure the delivery of the service is in accordance with company and national regulatory requirements.
- Where there is a shared agreement in place, the management of delays and which company has priority when flights re-commence needs to be agreed with sharing partners and documented.

LINKS (FOR DOWNLOAD)

Shell:

1. HSSE & SP Control Framework - Air Transport Manual.
2. HSSE & SP Control Framework – Managing Risk Manual.
3. HSSE & SP Control Framework – Personal Safety Manual-Business Travel.

External:

RELATED INCIDENT

CORRESPONDING SELF-ASSESSMENT QUESTIONS

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

Bowtie 02 Air Transport (RW) / Loss of control during landing/take-off.

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 03.02 Passenger Handling Areas

MANDATORY REQUIREMENTS

The Service Provider is Accountable for Requirements 1-5:

1. Provide passenger and cargo handling facilities appropriate to the scale and duration of the Air Transport operation.
2. Designate clearly-defined secure holding areas for both incoming and outgoing passengers and cargo.
3. Conduct and document facility risk assessments (RA) on the passenger and cargo handling facilities for Health and Security.
4. Develop and implement a passenger and cargo handling facilities Medical Emergency Response (MER) plan.
5. Provide information about aircraft safety and local procedures in designated passenger waiting areas.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-5

1. The Service Provider obtains the agreement of the relevant Shell Technical Authority – Air Transport (TA1) on the range of facilities to be provided prior to the commencement of flights.
2. Secure holding areas for both incoming and outgoing passengers and cargo.
   a. Passengers and cargo enter the secure holding area after completion of the passenger screening and security process (FAC 03.05).
   b. Passengers leaving a secure holding area undergo security screening again prior to re-entering the holding area.

2 Facility health and security risk assessments are conducted in conjunction with relevant Shell Technical Authority – Air Transport (TA1):

   a. Security screening personnel are trained on the operation of screening equipment as mandated by National Regulation or Service Provider's security plan;
   b. Emergency exits are available and easily identified with appropriate security provisions for both landside and airside exits:
   c. Heath Risk Assessment (HRA) is carried out to determine level of cover required on site.

3 No further requirements

4 Information is provided in several ways, either as:

d. Written and graphical material (posters and handouts);

e. Computer monitor screens;

f. Announcements using a public-address system.

ADDITIONAL GUIDANCE

- The designated passenger waiting area may serve as a viewing room for video safety briefings and provide an area to weigh and manifest all outgoing passengers, baggage and cargo.

LINKS (FOR DOWNLOAD)

Shell:

1. HSSE & SP Control Framework - Air Transport Manual.
2. HSSE & SP Control Framework – Managing Risk Manual.
3. SGRAO AOR FOP 07.06 Passenger Marshalling Areas.

External:

RELATED INCIDENT

CORRESPONDING SELF-ASSESSMENT QUESTIONS

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 01 Air Transport (FW) / Loss of control during landing/take-off
- Bowtie 02 Air Transport (RW) / Loss of control during landing/take-off

IOGP REPORT 590 AMG DIFFERENCES

No differences

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 03.03 Passenger Weight and Size

MANDATORY REQUIREMENTS

The Service Provider is Accountable for Requirements 1-5:

1. Use actual passenger weight values (including hand-carried baggage, personal survival equipment and personal belongings) for all helicopters and for aeroplanes having a seating capacity of 19 or fewer seats.
2. Document control procedures for the use of standard passenger and baggage weights on aeroplanes having a maximum seating capacity of 20 or above.
3. On offshore helicopters passengers are seated no more than one seat from an emergency exit or push out window.
4. Prohibit the carriage of passengers on offshore helicopters who are unable to pass through the exit window while dressed in the necessary flight equipment (survival suits, lifejacket etc.).
5. Prohibit the use of seat harnesses/seat belt extensions, unless certified by the aircraft manufacturer.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-5

1. Weighing:
   a. Passenger weight is determined prior to boarding using calibrated scales.
      - A procedure is in place for situations where calibrated scales are temporarily unavailable.
   b. All checked baggage is manifested using actual weights.
   c. When standard passenger weights are used on aeroplanes, actual weights are surveyed routinely to check that the use of standard weights provides a safety margin over actual weights. When a survey shows an inadequate safety margin, either actual weights are used, or a realistic factor is applied to the standard weight.
2. No further requirements.
3. No further requirements.
4. Processes are in place to determine if a passenger cannot fit through an exit window, or other seating mitigations are required. Typically these are:
   a. Window templates are available that are representative of the actual push-out windows on the helicopter type in use and these are applied to any passenger assessed as being

close to, or over the size of the available emergency exit. Some types may require a range of templates that will determine specific seat rows for passengers of different size. Passengers that are unable to pass through the template, when dressed in flight equipment (survival suits, lifejacket etc) are refused permission to fly[1].

b. XBR passenger measurements and XBR seat identification process.

5. No further requirements.

ADDITIONAL GUIDANCE

The following standard weights are used for offshore helicopter passengers, when calibrated scales are temporarily unavailable, if authorised by the National Aviation Authority (NAA):

- Males 98kg Female 80kg;
- Hand baggage carried in the passenger cabin of aeroplanes at 6kg per passenger, otherwise at actual weight;
- The weight of survival suits as actual weight or as 7kg per passenger; and
- The weight of lifejacket as actual weight or as 3kg per passenger[2].

LINKS (FOR DOWNLOAD)

Shell:

1. SGRAO Business Unit Requirements OPS 01.02 Passenger Requirements

External:

RELATED INCIDENT

CORRESPONDING SELF-ASSESSMENT QUESTIONS

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

IOGP REPORT 590 AMG DIFFERENCES

R590 differentiates the use of actual or standard weights by aircraft weight (5,700kg) and not by the number of seats.

[1] Providing this does not contravene National law.

[2] Not required if already included as aircraft equipment in the aircraft dry operating weight.

Terms in green are included in the SGRAO Glossary.

FAC 03.04 Manifests

MANDATORY REQUIREMENTS

The Service Provider is Accountable for Requirements 1-3:

1. Raise and complete passenger manifests for each flight.
2. Verify actual passenger names against the manifest.
3. Revise the manifest for any changes in passenger and cargo details prior to departure.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-3

1. Passenger manifests.
   a. A passenger manifest records as a minimum:
      - Aircraft registration;
      - Flight number;
      - Date of Flight;
      - Destination;
      - Passenger name;
      - Company affiliation;
      - Passenger actual weight[1];
      - Baggage weight for each passenger[2];
      - Weight of any cargo;
      - Authorised Dangerous Goods/Hazardous Materials;
      - Any additional National Aviation Authority (NAA) requirements.
   b. Manifests are closed for changes and passed to the Flight Crew with adequate time to complete calculations of fuel loads, aircraft performance and centre of gravity.

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[1] Where standard weights can be used this requirement is met with providing a breakdown of Males / Females and Children.

[2] Where standard weights can be used this requirement is met with providing the number of bags.

c. Manifests are signed by a crew member to confirm acceptance of the document.

d. The contents of each piece of cargo is verified by its packing list or by visual inspection of the cargo itself.

e. A minimum of three copies are made:

- One to be filed and left at point of departure;
- One for use by the crew in-flight;
- One to be left at destination.

2. Pilots and/or designated personnel check actual passenger names against the original booking to verify that only authorised passengers are carried.
3. The Pilot-in-Command communicates any last-minute changes to a responsible party with instructions to retain a copy of the altered manifest until the flight has been completed.
4. Dangerous Goods/Hazardous Material cargo are properly packaged and accompanied by the Dangerous Goods/Hazardous Material paperwork required by the NAA.

ADDITIONAL GUIDANCE

- An accurate manifest retained at the point of departure provides important information for an effective response to an aircraft emergency.

LINKS (FOR DOWNLOAD)

Shell:

External:

RELATED INCIDENT

CORRESPONDING SELF-ASSESSMENT QUESTIONS

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

TBC

IOGP REPORT 590 AMG DIFFERENCES

No differences.

FAC 03.05 Passenger Screening and Security

Shell Aircraft	
Shell Group Requirements for Aircraft Operations	Restricted
Facility Requirements	Version 3.1 - June 2019

MANDATORY REQUIREMENTS

The Service Provider is Accountable for Requirements 1-3:

1. Implement a screening process for passengers, baggage and cargo, both out and inbound.
2. Conduct drug and alcohol screening using trained personnel in accordance with National regulations and Company requirements.
3. Implement site security controls and procedures appropriate to the assessed security risks.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-3

1. The passenger, baggage and cargo screening process covers both outbound and inbound flights (e.g.: both onshore and offshore screening is conducted).

   1.1 Passengers present a locally-approved form of photo identification.

   1.2 Restricted items:

   - Weapons and other prohibited items are not carried on aircraft.
   - Items that must be carried in checked baggage, are controlled.
   - Undeclared Dangerous Goods are identified and removed or correctly consigned – see FAC 03.06.
   - Additional items restricted by the Shell Business Unit are screened and removed - see Guidance.

   1.3 Dangerous Goods training is provided at a level determined by the assigned task.

   - Persons processing and manifesting Dangerous Goods for Air Transport receive training in accordance with national regulation.
   - Persons handling baggage receive Dangerous Goods awareness training at a minimum.

   1.4 For offshore helicopters:

   - Passenger emergency and survival training is checked for all flights.
   - Passengers who are not appropriately trained to travel offshore by air are refused carriage unless a waiver is given. A log of all waivers given is kept and the process is subjected to internal or self-assurance checks.

- Non-HUET trained passengers travelling with a waiver are identified visually to ensure they are not be seated between an emergency exit and a passenger in date for HUET training.
- Enhanced health and security screening procedures are in use, including checking that passengers have a valid medical certificate (if applicable).
- The use of plastic bags as baggage containers is prohibited.
- Carry-on baggage is not permitted in the helicopter passenger cabin.

2. Drug and alcohol screening.

   2.1 Personnel under the influence of alcohol or drugs are not allowed to board aircraft.

   2.2 Procedures for handling passengers who were denied boarding for a failed Drug and/or Alcohol screening are in use.

3. Security

   3.1 Security personnel used for passenger, baggage and cargo screening, meet training requirements as mandated by Shell, NAA or Service Provider's security plan.

   3.2 Security screening process can identify and remove prohibited items and undeclared dangerous goods, - See Guidance.

   3.3 Site controls and physical infrastructure to manage the airside/landside division (ICAO Annex 17) and to prevent unauthorised personnel accessing airside locations and other restricted areas.

   3.4 Use security screening equipment e.g. walk-through metal detectors, hand wands and X-ray equipment for passenger, baggage and cargo screening appropriate to the security risk assessment.

ADDITIONAL GUIDANCE

Enhanced screening should be based on an elevated risk level for risks identified in the Security Plan and aligned with the National regulations as well as local company specific requirements.

Security screening equipment should be fit for purpose in terms of average expected size of passengers, baggage and cargo.

Where possible, authorised security staff should then carry out a thorough search of personal baggage in the presence of the passenger, before moving it to the loading area. Body searches should be made when the flight is called for boarding and prior to the issue of immersion suits (offshore flights).

Each BU should develop a tailored list of items prohibited for carriage on aircraft or to offshore installations, which should be shown to each passenger, items listed below should be considered:

- Adhesives;
- Aerosols;
- Alcohol of any kind (offshore flights);
- Canned drinks of any kind;
- Cigarette lighters;

- Drugs (save on prescription) See Note 1;
- Explosives, fireworks;
- Firearms/Ammunition;
- Flammable gas or liquid, Tear Gas, CS Gas;
- Magnetic materials;
- Matches of any kind (offshore flights);
- Oils and greases;
- Paints and solvents;
- Poisons, weed killers, pesticides and insecticides;
- Radio-active materials;
- Radio, cassette and disc players, unless batteries are removed;
- Weapons - including knives with a blade longer than 3" See Note 2;
- Wet Batteries;
- Wet Fish.

Note 1:

Prescription drugs may have to be surrendered at check-in for safe-hand carriage, record and re-issue on installation; with a similar procedure for passengers returning onshore.

Note 2:

Knives which are tools of trade (e.g. chefs and divers) maybe declared at check-in and should not to be carried in hand carried bags on the aircraft.

LINKS (FOR DOWNLOAD)

Shell:

1. HSSE & SP Control Framework - Air Transport Manual
2. HSSE & SP Control Framework – Managing Risk Manual
3. HSSE & SP Control Framework – Personal Safety Manual-Business Travel
4. SGRAO Business Unit Requirements OPS 01.02 Passenger Requirements
5. SGRAO Business Unit Requirements OPS 02.01 Health
6. SGRAO Business Unit Requirements SUP 04.01 Security

External:

RELATED INCIDENT

CORRESPONDING SELF-ASSESSMENT QUESTIONS

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

IOGP REPORT 590 AMG DIFFERENCES

FAC 03.06 Passenger, Baggage and Cargo Handling

MANDATORY REQUIREMENTS

The Service provider is Accountable for Requirements 1-5:

1. Develop and implement procedures to prevent injury to passengers and to those personnel managing the handling of passengers, baggage and cargo.
2. Apply controls to limit the hazard presented by certain types of cargo and baggage.
3. Develop and implement procedures to prevent damage to aircraft from baggage and cargo handling on the ground and any inflight hazard associated with the stowage of cargo and baggage.
4. Train and authorise personnel to secure and remove baggage and cargo.
5. Carry dangerous goods in accordance with ICAO Annex 18 "Safe Transport of Dangerous Goods by Air" or IATA Dangerous Goods Regulations[1], or other National Aviation Authority (NAA) requirements that regulate the air transportation of Dangerous Goods.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-5

1. All passengers are escorted to and from the aircraft when operating on an aerodrome or heliport apron area by personnel trained on the danger areas for the specific aircraft type.
2. Prevent hazards to aircraft from baggage and cargo handling includes:
    a. Passengers are seated, and baggage and cargo are loaded in accordance with the aircraft weight and balance limits.
    b. Baggage and cargo is loaded in accordance with the aircraft floor loading, baggage/cabin compartment weight, and baggage ramp/door limits.
    c. Approved baggage and cargo restraints are used to secure these items where required.
    d. Aircraft loading/handling equipment is fit for purpose and approved by the aircraft operator.
3. The policy on items restricted for carriage by air is documented and communicated to check-in staff and passengers. The policy:
    a. Prohibits carry-on baggage in helicopters.

[1] Specific National Aviation Authority (NAA) regulations may also apply.

b. Directs all carry-on baggage in aeroplanes to be stowed allowing clear access to emergency exits.

c. Prohibits mixing of passengers and baggage or cargo in the passenger cabin on helicopters.

d. Ensures that any checked-in baggage and cargo carried in the passenger compartment on aeroplanes is:

- Adequately secured using approved cargo nets, or tie-down straps;
- Does not obstruct normal or emergency exits, and all exits remain available for use by passengers;
- Approved by the Company.

4. Only authorised and suitably trained personnel load, secure and/or remove cargo and baggage

5. Dangerous goods.

a. Are only carried by air when the Aircraft Operator has obtained written permission, approval or an exemption from the National Aviation Authority (NAA).

b. The Aircraft Operator documents procedures for all aspects of transporting dangerous goods.

c. A Notice to Captain (NOTOC) and/or shippers declaration for dangerous good is issued whenever dangerous goods or other special items are loaded onto the aircraft.

ADDITIONAL GUIDANCE

- Passengers seated at an emergency exit in aircraft should be physically able and willing to operate the exits when instructed by aircrew in the event of an emergency.

LINKS (FOR DOWNLOAD)

Shell:

1. HSSE & SP Control Framework - Air Transport Manual
2. HSSE & SP Control Framework – Managing Risk Manual
3. HSSE & SP Control Framework – Competence Manual

External:

RELATED INCIDENT

1. Air Cargo 747-400 BCF Crash at Bagram, Afghanistan April 29, 2013

CORRESPONDING SELF-ASSESSMENT QUESTIONS

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 01 Air Transport (FW) / Loss of control during landing/take-off
- Bowtie 02 Air Transport (RW) / Loss of control during landing/take-off

IOGP REPORT 590 AMG DIFFERENCES

590 does not prohibit the use of plastic bags.

590 does not prohibit carry-on luggage in helicopters.

FAC 04.01 Manage Helideck Risk

MANDATORY REQUIREMENTS

The OIM / Vessel Master is Accountable for requirements 1-7:

1. The facility SMS / HSE Case shall address all aspects of helicopter operations on offshore installations, Mobile Offshore Drilling Units (MODU) and vessels.
   a. All helideck activities shall be adequately controlled and recorded within the management system.
   b. Procedures shall be developed to confirm that activities remain appropriate, are being properly implemented and remain in accordance with Company policy.
   c. Responsibilities shall be assigned, and a custodian identified to ensure that aviation procedures are updated at prescribed intervals.
2. Identify and implement Controls and Recovery Measures for RAM red and yellow 5A and 5B aviation hazard Top Events in the facility HSE Case Hazards and Effects Register AND in bow-tie or equivalent analyses, documented in the facility HSE Case, or equivalent document.
3. Identify and implement Controls and Recovery Measures for the RAM yellow area aviation hazard in the facility HSE Case *Hazards and Effects Register*, or equivalent document.
4. Address conditions and activities posing aviation hazards in the facility HSE Case, and define and control them through the facility Manual of Permitted Operations (MOPO), or equivalent document:
5. Identify Safety Critical Elements/Equipment (SCE) serving as critical Controls and Recovery Measures for aviation hazards, and mitigate their degraded function through the facility MOPO, or equivalent document.
6. Identify Safety Critical Roles (SCR) responsible for maintaining critical Controls and Recovery Measures for aviation hazards, and establish minimum staffing levels for these roles documented in the facility HSE Case, or equivalent document.
7. For Normally Unattended Installations (NUIs):
   a. Parent facility HSE Cases covering NUIs shall include each NUI in mandatory requirements 1 through 6 above, or they shall be addressed separately for each NUI.
   b. Facility HSE Cases and their MOPO (or equivalent document) shall document how individual exposure to NUI helicopter operations is managed to ALARP.

Note:

The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirements 1 through 7. The alternate designee and their duties should be clearly identified.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-7

1. When addressing “all aspects of helicopter operations” the following should be considered:
    a. Routine crew change and cargo flights;
    b. Emergency flights such as Medevac and platform evacuation;
    c. Visits by Government and third-party helicopters with facility landing rights; and
    d. Specialized operations such as helicopter hoist operations (HHO), external load delivery and pickup, and flare-tip replacement.
2. When considering RAM red and yellow 5A and 5B aviation hazard Top Events involving aviation operations at or in the vicinity of the facility, review the following for relevance:
    a. Helicopter accident on the helideck;
    b. Helicopter fire on the helideck;
    c. Helicopter ditching near the installation or vessel;
    d. Fuel or oil spillage on the helideck (from fuelling activity or aircraft incident);
    e. Unannounced or wrong deck landings by aircraft experiencing an in-flight emergency or by disoriented pilots;
    f. Aircraft overload due to improper weighing and manifesting;
    g. Contaminated fuel loaded into helicopter; and
    h. Other Top Events determined through Hazard Analysis.
3. When considering RAM yellow area aviation hazards for inclusion in the facility HSE Case Hazards and Effects Register, review the following for relevance unless hazard analysis places the hazard in RAM red and yellow 5A and 5B. In this latter case manage under requirement 2 above:
    a. Helideck passenger handling and movement including the individual threat from:
        i. Adverse weather and vessel motion;
        ii. Helicopter blades and hazard areas;
    b. Helicopter hoist operations (HHO) (if helicopter hoisting to or from the facility is anticipated in normal or emergency situations);
    c. Rotor downwash and blown objects for both aircraft Foreign Object Damage (FOD) and facility personnel injury;
    d. Falls from the helideck or on associated stairs and access points;
    e. Dropped objects, static discharge, and snagged pendant during external operations; and
    f. Other aviation hazards determined through Hazard Analysis.
4. Analyse the following conditions posing aviation hazards for relevance and inclusion in the facility Manual of Permitted Operations (MOPO) or equivalent document:
    a. External influences section:
        i. Adverse weather including ceiling, visibility, wind, convective activity (lightning, wind shear, hail), and icing; and
        ii. Adverse sea states prohibiting rescue of ditching survivors.
    b. Concurrent operations section:
        i. Combined operations of vessels in the helideck 5:1 clearance zone creating obstacles, turbulence, or hot/cold gas emission;
        ii. Crane – helicopter operations;

iii. Multi-helicopter operations on offshore helidecks (multiple helicopters on a single helideck);
iv. Perforating operations;
v. Presence of Hydrogen Sulphide (H2S) gas (where applicable);
vi. Turbulence and hot exhaust gas emissions from facility structure, flaring, and machinery;
vii. Flammable cold gas venting;
viii. Emergency hydrocarbon gas release;
ix. (Vessels and MODUs) Facility motion exceeding helicopter operating limits;
x. (DP vessels) Adverse vessel movement during DP malfunction or drive off; and
xi. Other conditions and activities posing aviation hazards determined through Hazard Analysis.

5. Analyse the following elements for designation as Safety Critical Elements/Equipment and inclusion in the facility MOPO impaired systems section, or equivalent document:
   a. Weather reporting equipment including wind speed and direction (steady and gusting), outside air temperature, barometric pressure, visibility (where equipped with a visiometer), and cloud base (where equipped with a ceiliometer);
   b. Helideck windsock(s);
   c. Helideck emergency equipment;
   d. Helideck firefighting systems;
   e. Helideck status lights;
   f. (Night and low visibility operations) Helideck lighting;
   g. (Vessels and MODUs) Vessel motion sensing & reporting equipment;
   h. (Normally Unattended Installations (NUIs)) Remote sensing, video, and control systems including lighting, status lights, and emergency release systems;
   i. VHF Airband radios;
   j. Helideck perimeter netting;
   k. Helideck landing net (when fitted);
   l. Facility Fast Rescue Craft or Standby Vessel (when identified as a means of ditching survivor recovery in the facility ERP); and
   m. Other elements determined through Hazard Analysis.
6. Analyse and assess the following roles for designation as Safety Critical Roles:
   a. Helideck Landing Officers (HLOs);
   b. Facility/vessel Emergency Response Team and/or Fire Team;
   c. Radio Operator;
   d. Offshore logistics coordinators conducting weighing and aircraft manifesting;
   e. Storemen/Materials Controllers responsible for the shipment and acceptance of dangerous goods by air; and
   f. Other roles determined through Hazard Analysis.
7. Ensure the Controls and Recovery Measures for RAM red and yellow 5A and 5B aviation hazard Top Events and RAM yellow area aviation hazards are fully explored for each NUI, taking into

account its distance from the parent facility and the ability to adequately respond with existing personnel and equipment at the NUI prior to external support arriving. Consider the following items for NUIs:

a. The maximum number of personnel to be transported by helicopter to a NUI;
b. The minimum number and type of Safety Critical personnel required to safely handle the helicopter on the NUI helideck;
c. (Where a parent facility has more than one NUI) If a helicopter can safely "bus-stop" passengers to two or more NUIs in a single round trip flight, exposing some passengers to multiple NUI landings;
d. (Where the NUI helideck is less than 1D for the helicopter) Passenger movement on undersized helidecks;
e. Allowance for night NUI helicopter operations and specific Controls and Recovery Measures for these operations;
f. Extended personnel presence on NUIs (beyond 24 hours) requiring routine support and crew change flights; and
g. Personnel health hazards and flight hazards posed by bird guano accumulation.

ADDITIONAL GUIDANCE

- A decision by the OIM/ Vessel Master to curtail offshore flights because of adverse conditions takes precedence in the event that the helicopter operator/ aircraft captain advises that the weather is still within Flight Operations Manual limits. Similarly, the helicopter operator/ aircraft captain retains the prerogative to suspend routine flying if conditions are judged to be unsafe, regardless of whether Flight Operations Manual limits have been reached.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. HSSE & SP Control Framework - Managing Risk Manual
3. SGRAO FAC 4 series - Helideck Operations

External:

1. OGUK Guidelines for the Management of Aviation Operations - Part C: Helideck Operations
2. ICS Guide to Helicopter-Ship Operations
3. HCA Helideck Limitations List (HLL) Parts A
4. HCA Helideck Limitations List (HLL) Part C
5. BSEE Notice to Lessees and Operators (NTL) Temporary Helideck Closures 2011-N08
6. BSEE Safety Alert No. 311 Methane Venting Hazard to Helicopter Operations
7. HSAC Recommended Practices:
   - RP 2004-7 Helideck Hazards
   - RP 2004-5 Night Offshore Helicopter Flights
   - RP 94-1 Helicopter Rapid Refueling Procedures (HRR)

Terms in green are included in the SGRAO Glossary.

- RP 93-3 Multiple Helicopter Operations on Offshore Helidecks
- RP 92-4 Gas Venting Helideck / Heliport Operational Hazard Warning(s) / Procedures
- RP 92-3 Hydrogen Sulfide Gas, Helideck/Heliport Operational Hazard Warning(s)/Procedure(s)
- RP 92-2 Perforating Operations, Helideck / Heliport Operational Hazard Warning(s)/Procedure(s)
- RP 92-1 Helideck / Heliport Operational Hazard Warning(s) Procedures
- RP 89-1 Crane - Helicopter Operational Procedures
- RP 88-1 Passenger Management On And About Heliport Facilities

RELATED INCIDENT

- AAIB 5-2005 During a winching operation rotors struck the mast
- AAIB Report of SA365N Dauphin, G-BKXD struck the guardrails of a helideck mounted crane
- AAIB Report on the Sikorsky S-61N accident, G-BEWL at Brent Spar
- AAIB West Navion Accident 3-2004_G-BKZE
- CAA West Navion Followup F29-2004
- IADC Safety Alert 12-20 Helideck Obstruction Hazard: Marking and Notification
- NTSB Accident Report CEN11LA252 Methane ingestion accident
- NTSB Accident Report CHI03FA056 Degraded windsock causes hard landing
- NTSB Accident Report CHI07FA069 Helicopter struck platform flare boom
- NTSB Accident Report DFW05FA040 Helicopter struck obstruction on helideck
- NTSB Accident Report FTW02FA099 Aircraft takes off with tie down installed
- NTSB Accident Report MIA08WA181 Helicopter struck crane
- NTSB Safety Recommendation A-14-069-070

UKOOA Safety Alert HSSE/HSE/SA/2005-0001 Failure of Helideck Perimeter Netting 7th September 2005

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Are all relevant helicopter operations addressed in the installation/vessel HSE Case?
2. Have RAM Red, Yellow 5A & 5B hazards been identified and documented in the hazard register and bow ties, with relevant controls and recovery measures?
3. Have other RAM Yellow hazards been identified and documented in the hazard register, with relevant controls and recovery measures?
4. Have the conditions and activities posing aviation hazards been addressed in the MOPO or equivalent document?
5. Have safety critical equipment (SCE) and roles (SCR) been identified from the documented hazard controls, with measures in place to maintain their effectiveness?

Have NUI's associated with the platform been addressed in an HSE case

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 5 Air Transport / Loss of containment of aviation fuel during storage/refuelling
- Bowtie 10 Air Transport (RW) / Loss of control of load suspended from helicopter
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

1. HSSE & SP Control Framework - Managing Risk Manual
2. HSSE & SP Control Framework - Air Transport Manual
3. Shell Group Requirements for Aircraft Operations (SGRAO) Part 1
4. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
5. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.02 Helideck Manning Requirements

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for requirements 1-3:

1. The minimum number of fully trained Helideck Team members, with an in-date assessment, on board a helideck equipped installation or vessel is 2 HLOs and 3 HDAs.
2. The minimum helideck team to attend helicopter arrivals and departures:
   a. On manned installations with manual monitor helideck fire system, HLO+3 HDAs.
   b. On manned installations with automatic helideck fire systems:
      i. HLO+3 HDAs for helicopter landing/take off with 15 or more aircraft occupants, including pilots.
      ii. HLO+2 HDAs for helicopter landing/take off with fewer than 15 aircraft occupants, including pilots.
   c. On Normally Unattended Installations (NUIs):
      i. HLO+2 HDAs for helicopter landing/take off with 15 or more occupants, including pilots.
      ii. HLO+1 HDA on NUIs for helicopter landing/take off less than 15 occupants, including pilots.
   d. During refuelling operations:
      i. HLO+3 HDAs, unless;
      ii. HLO handheld dead man switch is provided in place of the pump operator, then HLO+2 HDAs is allowed if;
         1. Helicopter is shut down and between flights with no passengers present on helideck, or;
         2. On manned installations with automatic helideck fire systems and helicopter landing/take off with fewer than 15 aircraft occupants, including pilots.
3. Helideck Manning less than these minimums requires an Air Transport Manual HSSE & SP Control Framework Exception.

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirements 1 through 3. The alternate designee and their duties should be clearly identified.
2. These requirements are particularly sensitive to national legislation/regulation in some countries (e.g. UK). Where national requirement is more stringent, it shall take precedence over Company requirements.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-3

1. Refer to "Helideck Team Manning and Duties Matrix" in deciding the minimum manning for a particular helideck.
   - A single Helideck Team may provide cover for day operations and infrequent night emergency helicopter operations.
   - If a regular day and night helideck capability is required and the time from first flight to last flight exceeds the local maximum working day, a day and night helideck team of 2 HLOs and 3 HDAs each should be provided.
   - Helideck Team members under training or yet to be assessed, cannot be counted to meet the minimum on board Helideck Team requirement
   - Where an HLO and HDA(s) regularly leave the primary location to work at another facility, such as a NUI, the total number of Helideck Team members in the work shift should be increased accordingly.
   - Additional HDAs may be required to expeditiously remove bags and freight from the helideck during inclement weather, or to provide additional passenger handling capability during high winds. If this is anticipated the number of HDAs on board should be increased accordingly.
2. Refer to "Helideck Team Manning and Duties Matrix" for individual duties based on operating mode and helideck equipment.
   - If the HLO on deck is a responding Medic, then one HDA on deck must be HLO trained and assessed and ready to supervise emergency response in case the Medic reverts to emergency medical duties.
   - If the Helideck Team on deck includes a responding Medic, then a qualified Helideck Team member replacement should be present at the helideck or nearby and ready to report to the helideck immediately for emergency operations, in case the Medic reverts to emergency medical duties.
   - Additional HDAs may be required to expeditiously remove bags and freight from the helideck during inclement weather, or to provide additional passenger handling capability during high winds.
   - The HLO / HDA(s) returning to the primary helideck from a NUI cannot be counted as part of the receiving Helideck Team.
   - To reduce the need to carry additional helideck crewmembers to NUIs, staff who regularly work on NUIs should be trained as HDAs and may be assessed solely to conduct NUI

operations. If solely assessed for NUI operations, they cannot serve as HDA on the primary installation or vessel helideck.

3. Reductions from stated Minimum Helideck Manning requirements will in all cases require Control Framework exceptions including:
   - A lesser number of Helideck Team members required by national regulation or common local practice.
   - A lesser number of Helideck Team members due to a reduced emergency response philosophy.

ADDITIONAL GUIDANCE

- The second HLO on shift provides a backup in case of illness or non-availability of the first HLO.
- Providing a large number of HLOs and HDAs on board will increase Competence Management workload and may be counter-productive. In any case, all rostered Helideck Team members must be trained and assessed for their Helideck Role in accordance with OMA 04-03 “Offshore Aviation Role Competence - HLO - HDA - Emergency Response”.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.02.1 Helideck Team Manning & Duties Matrix
3. FAC 04.03 Offshore Aviation Role Competence - HLO - HDA - Emergency Response

External:

1. ICAO Annex 14 Vol II - Heliports
2. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 MC 2 - Recommendations in UK CAA CAP 437 (“should” statements) shall be taken as requirements for Company use.
3. UK HSE Offshore Helideck Design Guidelines
4. OGUK Guidelines for the Management of Aviation Operations

RELATED INCIDENT

No illustration at the moment.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Does the on-board compliment of trained HLOs and HDAs match the Helideck manning requirements?
2. Are the primary day roles of the helideck staff complimentary to the helideck normal and emergency roles and if not are additional staff trained?

Terms in green are included in the SGRAO Glossary.

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Shell International (c)

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.02.1 Helideck Manning Requirements Helideck Team Manning and Duties Matrix

Helideck Team Manning and Duties Matrix

Aircraft POB Inc. pilots	Manual Fire Monitor System			Automatic Fire System – Oscillating, Ring type, DIFFS, etc.			Normally Unmanned	Helicopter Refuelling w/ Pax Onboard
		Normal Duties	Emergency Duties		Normal Duties	Emergency Duties		
>= 19	HLO	Supervise	Supervise + rescue	HLO	Supervise	Supervise + rescue	Minimum HLO + HDA2	In all cases: HLO - supervise HDA1 - pump start/stop HDA2 - nozzle start/stop HDA3 - fire guard
	HDA1	Man Fire Monitor / Assist helideck duties[1]	Man Fire Monitor[2]	HDA1	Man fire system switch[3] / Assist helideck duties	Activate fire system[4] + rescue		
	HDA2	Assist helideck duties	Fire extinguisher + rescue	HDA2	Assist helideck duties	Fire extinguisher + rescue		
	HDA3	Assist helideck duties	Rescue	HDA3	Assist helideck duties	Rescue		
15-18	HLO	Supervise	Supervise + rescue	HLO	Supervise	Supervise + rescue		
	HDA1	Man Fire Monitor / Assist helideck duties[1]	Man Fire Monitor[2]	HDA1	Man fire system switch[3] / Assist helideck duties	Activate fire system[4] + rescue		
	HDA2	Assist helideck duties	Fire extinguisher + rescue	HDA2	Assist helideck duties	Fire extinguisher + rescue		
	HDA3	Assist helideck duties	Rescue	HDA3	N/A	Rescue		
6-14	HLO	Supervise	Supervise + rescue	HLO	Supervise	Supervise + rescue	Minimum HLO + HDA1	Without dead man switch: HLO - supervise HDA1 - pump start/stop HDA2 - nozzle start/stop HDA3 - fire guard With dead man switch[5]: HLO - supervise & pump start/stop HDA1 - nozzle start/stop HDA2 - fire guard
	HDA1	Man Fire Monitor / Assist helideck duties[1]	Man Fire Monitor[2]	HDA1	Man fire system switch[3] / Assist helideck duties	Activate fire system[4] + rescue		
	HDA2	Assist helideck duties	Fire extinguisher + rescue	HDA2	Assist helideck duties	Fire extinguisher + rescue		
	HDA3	Assist helideck duties	Rescue					
<= 6	HLO	Supervise	Supervise + rescue	HLO	Supervise	Supervise + rescue		
	HDA1	Man Fire Monitor / Assist helideck duties[1]	Man Fire Monitor[2]	HDA1	Man fire system switch[3] / Assist helideck duties	Activate fire system[4] + rescue		
	HDA2	Assist helideck duties	Fire extinguisher + rescue	HDA2	Assist helideck duties	Fire extinguisher + rescue		
	HDA3	Assist helideck duties	Rescue					

Terms in green are included in the SGRAO Glossary.

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Notes:

1. HDA1 mans the upwind fire monitor during landing and takeoff, and at other times based on local risk assessment. If HDA1 assists in helideck duties he/she shall stay in position to quickly return to the fire monitor, and shall not leave the helideck area while the helicopter is operating.
2. HDA1 continuously mans the upwind fire monitor when fire-fighting, unless that position threatened by fire, and until it is certain that there is no possibility of the fire re-igniting. This may exclude him/her from participating in the rescue process.
3. If the fire system switch is remote from the helideck in the control room, and an uninterrupted view of the helideck and constant communication with the HLO is maintained by control room personnel, an HDA does not need to man the fire system switch. HDA1 normal duty is assist helideck duties.
4. If the fire system switch is manned in the control room in accordance with Note 1, HDA1 emergency duty is rescue.
5. In accordance with conditions in FAC 04-02 Helideck Manning Requirements.

Considerations:

1. If the Helideck Team on deck includes a responding Medic, then a qualified Helideck Team member replacement should be present at the helideck or nearby, and ready to report to the helideck immediately for emergency operations in case the Medic reverts to emergency medical duties.
2. If the HLO on deck is a responding Medic, then one HDA on deck must be HLO trained and assessed and ready to supervise emergency response in case the Medic reverts to emergency medical duties.
3. Additional HDAs may be required to expeditiously remove bags and freight from the helideck during inclement weather, or to provide additional passenger handling capability during high winds.
4. HLO / HDA(s) returning to the primary helideck from a NUI cannot be counted as part of the primary helideck receiving Helideck Team.

FAC 04.03 Helideck Manning Requirements - Minimally-Manned Facilities

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for requirements 1-3:

1. The minimum number of fully trained Helideck Team members, with an in-date assessment, on board a minimally-manned helideck equipped installation is 1 HLO and 1 HDA.
2. The minimum helideck team to attend helicopter arrivals and departures:
   a. On minimally-manned installations with automatic helideck fire systems:
      - HLO+ HDA for helicopter landing/take off with 8 or fewer aircraft occupants, including pilots.
   b. During refuelling operations with HLO handheld dead man switch provided:
      - HLO +Pilot +HDA only if helicopter is shut down and between flights with no passengers present on helideck.
3. Operations under this document's manning scheme for aircraft with 9 or more occupants, with manual fire fighting systems, or with other differences requires an Air Transport Manual HSSE & SP Control Framework Exception. Refer to FAC 04.03.1 Helideck Team Manning and Duties Matrix – Minimally-Manned Facility.

Note:

1. Minimally-manned facilities are defined as facilities with at least 3 and no more than 20 facility POB assigned and helicopter landings and departures are consistently attended by a helideck team. These facilities are differentiated from NUIs where unattended helicopter landings and departures are regularly conducted during manning and demanning flights.
2. Helideck Manning specified in FAC 04.02 Helideck Manning Requirements shall be provided when a facility, even temporarily, can do so and the requirements laid out in that document are followed.
3. The facility Duty Holder may designate another Accountable/Responsible party for requirements 1 through 3. The alternate designee and their duties shall be clearly identified. The Duty Holder is the Operator in the case of a fixed installation (including fixed production and storage units); and the Owner in the case of a mobile installation.
4. These requirements are particularly sensitive to national legislation/regulation in some countries (e.g. UK). National requirements shall be observed when more stringent than Company requirements.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-3

1. Helideck Team members under training or yet to be assessed, are not counted to meet the minimum on board Helideck Team requirement.
2. Refer to “Helideck Team Manning and Duties Matrix – Minimally-Manned Facility” for individual duties.
3. No further requirements.

ADDITIONAL GUIDANCE

- Helideck operations conducted in accordance with this document do not provide the same level of operational control and emergency response as those conducted with full helideck manning, and the level of Major Hazard Risk to people and asset is increased. Business leaders are made aware of this increased Risk as required by SGRAO MAN 01.01 Leadership and Commitment.
- The helideck procedures requirements laid out in FAC 04.07 General Helideck Procedures are applied on Minimally-Manned Facilities utilising this document’s manning scheme.
- It may not be possible to meet all requirements of FAC 04.09 Offshore Emergency Response under this manning scheme, such as the provision of a competent covering back-up team. However, all credible scenarios developed through the Business Emergency Response Review and addressed in accordance with FAC 04.09 Offshore Emergency Response are included in Emergency Response Plans for minimally-manned facilities, including a plan for passenger rescue in case of helicopter fire on helideck with the facility POB on hand at the time of incident. That plan ensures the safety of the facility personnel that may now be in a “rescuer role” and limits response to what is possible considering their capability and available equipment. (Refer to the requirements for rescue team protection in FAC 04.09 Offshore Emergency Response).
- Weather limits are established to ensure that flight operations are cancelled when high winds or inclement weather render passenger and baggage handling unsafe.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. MAN 01.01 Leadership and Commitment
3. FAC 04.02 Helideck Manning Requirements
4. FAC 04.02.1 Helideck Team Manning & Duties Matrix
5. FAC 04.03.1 Helideck Team Manning and Duties Matrix – Minimally-Manned Facility
6. FAC 04.07 General Helideck Procedures
7. FAC 04.09 Offshore Emergency Response

External:

1. ICAO Annex 14 Vol II - Heliports

Terms in green are included in the SGRAO Glossary.

2. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 04.01 MC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
3. UK HSE Offshore Helideck Design Guidelines
4. OGUK Guidelines for the Management of Aviation Operations

RELATED INCIDENT

No illustration at the moment.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Does the on-board compliment of trained HLOs and HDAs match the Helideck manning requirements?
2. Are the primary day roles of the helideck staff complimentary to the helideck normal and emergency roles and if not are additional staff trained?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.03.1 Helideck Team Manning and Duties Matrix – Minimally Manned Facility

Helideck Team Manning and Duties Matrix

Aircraft POB Inc. pilots	Automatic Fire System – Oscillating, Ring type, DIFFS, etc.			Helicopter Refuelling w/ Pax Onboard	Helicopter Refuelling Pax Offloaded & Off Helideck Aircraft Shutdown[1]
		Normal Duties	Emergency Duties	PROHIBITED	With dead man switch HLO - supervise & pump start/stop Pilot - nozzle start/stop HDA - fire guard
>= 9	PROHIBITED				
<= 8	HLO	Supervise	Supervise + rescue		
	HDA	Man fire system switch Assist helideck duties	Activate fire system + rescue		

Notes:

1. Aircraft shutdown only if requirements of FAC 04.19 “Helideck Aircraft Maintenance Recovery Operations” can be met.

Considerations:

1. Cancel flight operations in case of high winds or inclement weather when passenger and baggage handling is unsafe.

FAC 04.04 Offshore Aviation Role Competence

MANDATORY REQUIREMENTS

Group Technical Authority (GTA) Air Transport is Responsible for requirement 1:

1. Establish criteria for HLO and Helideck Team Member training.

Shell Technical Authority – Air Transport (TA1) is Responsible for requirements 2-3:

2. Endorse HLO and Helideck Team Member (HDA / Fire fighter) training courses for use by Company businesses.
3. Endorse personnel delegated to conduct HLO and Helideck Team Member competency assessment.

The OIM/Vessel Master is Accountable for requirements for applying the HSSE & SP Competence Manual to aviation role competence, and requirements 4-6:

4. Formally appoint HLO and Helideck Team Members;
5. Ensure completion of HLO and Helideck Team Member training prior to initial appointment to act independently in role.
6. Ensure completion of required HLO and Helideck Team Member Refresher Training.

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirements 4-6. The alternate designee and their duties should be clearly identified.

MEANS OF COMPLIANCE FOR REQUIREMENTS 4-6

The OIM/Vessel Master shall:

1. Comply with the HLO and HDA Competence Framework shown in FAC 04.04.1 “Offshore Aviation Role Competence - HLO and HDA Competence Framework”.
2. Document OPITO course equivalence with the Business Technical Authority (TA) – Air Transport or the responsible Shell Aircraft advisor prior to directing personnel to training.

3. Achieving HLO/HDA competence through OPITO training or documented equivalence:
   a. Completion of the entire OPITO HLO/HDA training syllabi from initial training including prerequisites through workplace experience and competence assessment, meets Company requirements; and
   b. Completion of the entire OPITO HLO/HDA further training syllabi including competence assessment meets Company recurrent requirements.
4. Maintain competence records:
   a. Maintain HLO/HDA training and competence records in an auditable form, including training certificates, offshore familiarisation training records, and competence assessment records.
5. Assure the competence of Contractors acting as HLO / HDA on Company Owned/Operated Facilities and Vessels:
   a. Contractor staff achieves competence as HLO/HDA using the same process as Company staff, including training course requirements, familiarisation training, competence assessment, and record keeping; and
   b. Employees of Contractor companies that do not have the necessary internal processes to assure the competence of HLO/HDA in accordance with this FAC shall be competence assured by the Company business, or they shall not serve as HLO/HDA while on Company contract.
6. Assure the competence of covering back-up team for helicopter operations emergency response:
   a. To maintain a fireguard when a rescue team makes an approach to a helicopter to conduct a rescue;
   b. To perform aviation related Emergency Response in accordance with FAC 04.09 Offshore Emergency Response and local procedures;
   c. Covering back-up team should receive familiarisation training for helicopters flying to the facility/vessel in accordance with FAC 04.09 Offshore Emergency Response; and
   d. Covering back-up team should participate in appropriate training exercises in accordance with FAC 04.06 Helideck Team Drills and FAC 04.09 Offshore Emergency Response.
7. Provide and maintain written descriptions of the duties and responsibilities of all individuals assigned to helicopter operations and related emergency duties.
8. Provide information and instructions relating to helideck roles including:
   a. Shell Group Requirements for Aircraft Operations - Helideck Management sections;
   b. International Air Transport Association (IATA) / Local Dangerous Goods Regulations, together with any procedures necessary for handling Dangerous Goods on that specific installation; and
   c. Safety posters for all types of helicopter using the helideck.

ADDITIONAL GUIDANCE

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- The HLO Competence Assessment may be conducted by an experienced HLO assigned by the OIM/Vessel Master; or drawn from a pool of designated experienced HLOs for a business, asset, or operating cluster; or performed by a specialist assessor provided by the business directly or through contract.
- The HDA Competence Assessment should be conducted by an experienced facility HLO assigned by the OIM/Vessel Master.
- Where Helideck Roles are designated Safety Critical Roles (SCR), apply local SCR assurance processes as required.
- Where Helideck Role Holders are designated Front Line Barrier Managers (FLBM), comply with HSSE & SP Control Framework Competence Specification Part 1: Frontline Barrier Management Positions, in addition to requirements in this FAC. Refer to "Guidance on Qualified Assessors for FLBM" for assessor requirements.
- Recording FLBM assessments outside of SOU (normally for contractor staff) requires a Control Framework Exception from the HSSE & SP Competence Manual. Refer to the Competence Specification Part 1: Frontline Barrier Management Positions.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework Competence Manual
   a. Competence Specification Part 1: Frontline Barrier Management Positions
2. HSSE & SP Control Framework Contractor HSSE Management Manual
3. HSSE & SP Control Framework - Air Transport Manual
4. SGRAO SUP 01.01 Offshore Helideck Assessment
5. SGRAO FAC 1 series - Helideck Design & Build
6. SGRAO CON series - Contracted Helidecks
7. SGRAO FAC 4 series - Helideck Operations
8. SGRAO FAC 6 series - Manage Helideck Facilities
9. FAC 04.04.1 Offshore Aviation Role Competence - HLO and HDA Competence Framework
10. FAC 04.06 Helideck Team Drills
11. FAC 04.09 Offshore Emergency Response

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
2. OGUK Guidelines for the Management of Aviation Operations - Part C: Helideck Operations
3. OPITO Offshore Helicopter Landing Officer (HLO) Training and Competence Standard-Pre 01 Jan 2018
4. OPITO Offshore Helideck Assistant (HDA) Training and Competence Standard- Pre 01 Jan 2018
5. OPITO Helideck Operations Initial Training Standard- Post 01 Jan 2018
6. OPITO Helicopter Landing Officer (HLO) Workplace Competence Assessment Standard- Post 01 Jan 2018
7. Guidelines for Mutual Recognition of Specialised Safety and Emergency Response Training

RELATED INCIDENT

- IADC Safety Alert 12-20 HELIDECK OBSTRUCTION HAZARD: MARKING AND NOTIFICATION August 2012
- NTSB Accident Report FTW02FA099 Aircraft takes off with tie down installed

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Have all HLOs and HDA's completed the required competency and assessment.
2. Have all emergency team members received aircraft familiarisation training and completed training drills?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

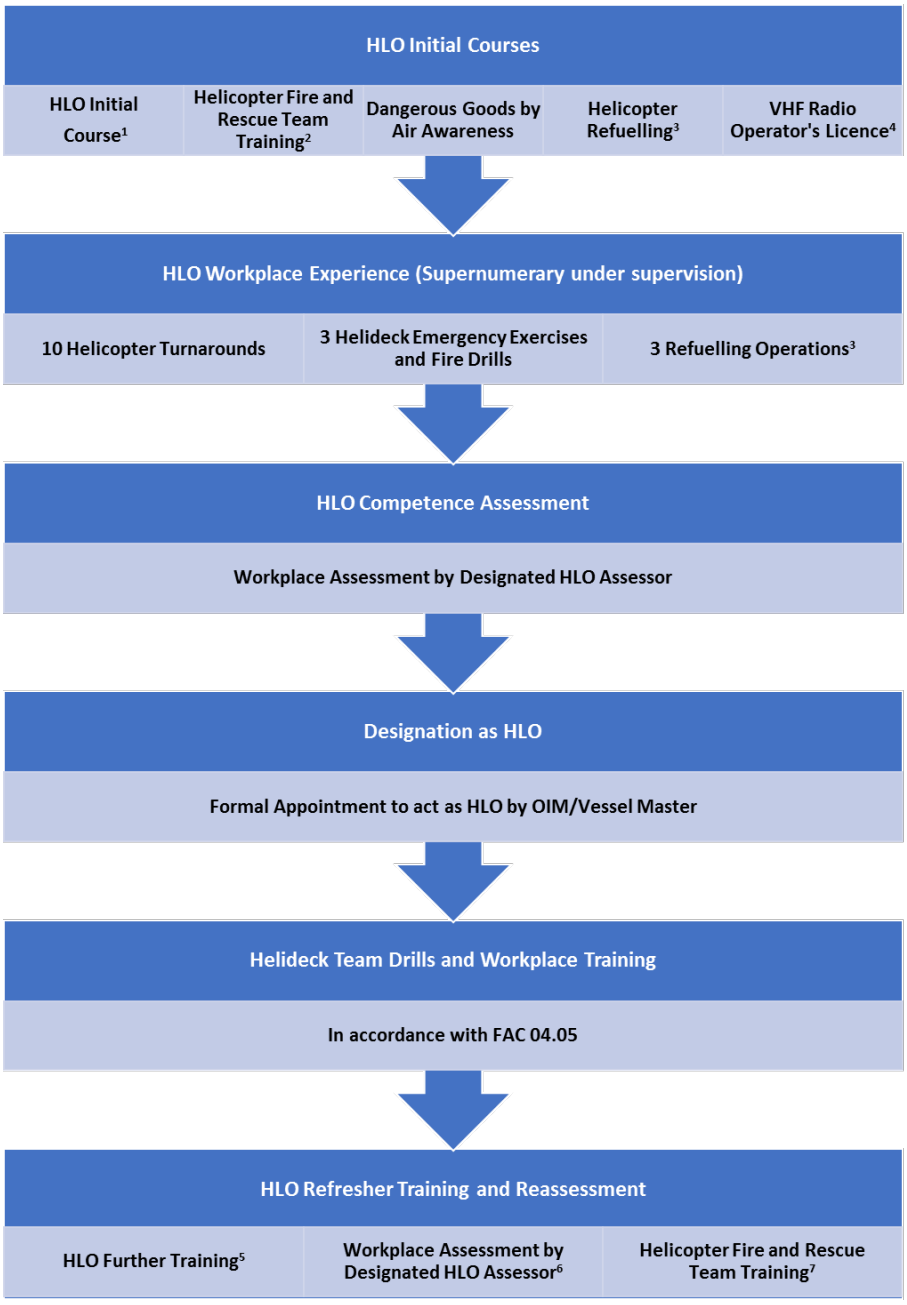
IOGP REPORT 590 AMG DIFFERENCES

1. HSSE & SP Control Framework - Air Transport Manual
2. HSSE & SP Control Framework - Contractor HSSE Management Manual
3. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
4. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.04.1 Offshore Aviation Role Competence HLO / HDA Competence Framework

HLO and HDA Competence Framework.

Note changes for training conducted after 01 Jan 2018



Terms in green are included in the SGRAO Glossary.

All elements required:

1. OPITO Initial HLO, or OPITO equivalent. Note: For training conducted post 01 Jan 2018 OPITO Helideck Operations Initial Training replaces HLO Initial Course.

2. OPITO HERTM & HERTL (preferred) or OPITO equivalent.

3. If installation has an aviation refuelling capability.

4. Where required by National regulator.

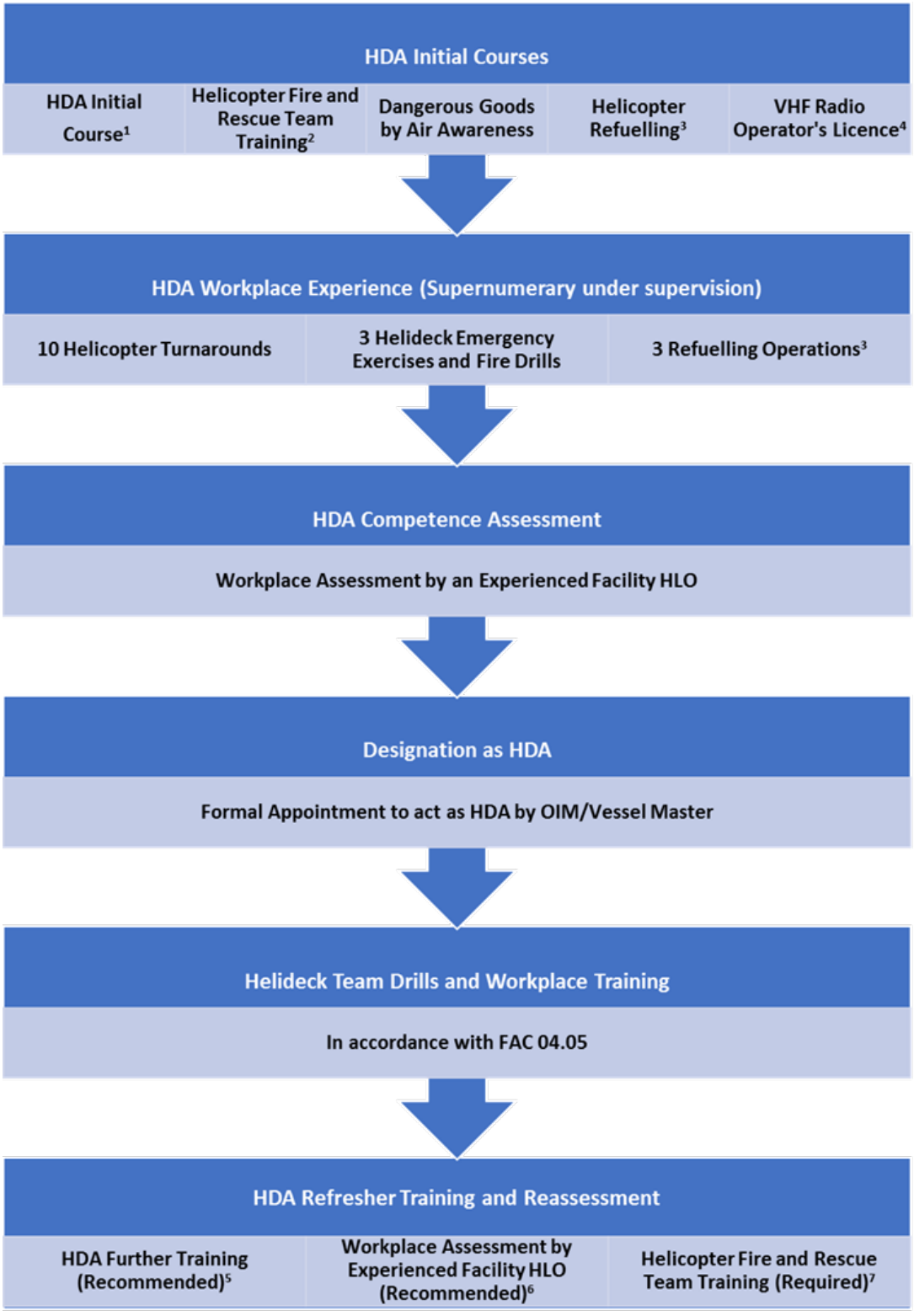
5. OPITO further HLO training or repeat initial HLO course. 2-year recurrency. For training conducted post 01 Jan 2018, OPITO HERTL can be carried out for 2-year recurrency. Note: Helideck Operations Initial Training which replaced HLO Initial Course does not expire.

6. 2-year recurrency.

7. OPITO further HLO training (preferred) or repeat OPITO HERTM & HERTL or OPITO equivalent course. Maximum 3-year recurrency. OPITO further HLO training maximum recurrency is 2 years or the initial training courses must be repeated. For training conducted post 01 Jan 2018, OPITO HERTL can be carried out for 2-year recurrency. Note: Helideck Operations Initial Training which replaced HLO Initial Course does not expire

HDA Competence Framework

Note changes for training conducted after 01 Jan 2018



Elements required unless marked as recommended:

Terms in green are included in the SGRAO Glossary.

1. OPITO Initial HDA, or OPITO equivalent. For training conducted post 01 Jan 2018 OPITO Helideck Operations Initial Training replaces Initial HDA Training.

2. OPITO HERTM or OPITO equivalent.

3. If installation has an aviation refuelling capability.

4. Where required by National regulator, and where HDA are VHF radio operators.

5. (Recommended) OPITO further HDA training or repeat initial HDA course. 2-year recurrency. For training conducted post 01 Jan 2018, OPITO HERTM can be carried out for 2-year recurrency. Note: Helideck Operations Initial Training which replaced HDA Initial Course does not expire.

6. (Recommended) 2-year recurrency.

7. OPITO further HDA training (preferred) or repeat OPITO HERTM or OPITO equivalent course. Maximum 3-year recurrency. OPITO further HDA training maximum recurrency is 2 years or the initial training course must be repeated. For training conducted post 01 Jan 2018, OPITO HERTM can be carried out for 2-year recurrency. Note: Helideck Operations Initial Training which replaced HDA Initial Course does not expire.

FAC 04.05 Offshore Aviation Role Competence – Supporting Roles

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for applying the HSSE & SP Competence manual to aviation role competence, and requirements 1 through 8:

1. Radio Operators:
   a. Are licensed or authorised to operate VHF radios on aeronautical frequencies in accordance with national regulations.
   b. Are competent to perform relevant normal and emergency procedures for aviation operations.
2. Refuelling personnel (if not also assigned as HLO/HDA):
   a. Are provided helicopter type specific fuel system and refuelling procedures training, coordinated with local helicopter operators.
3. Persons conducting aircraft manifesting:
   a. Are competent to accurately collect payload weights and prepare aircraft manifests using local systems and procedures.
   b. Are trained to recognize and properly process declared and undeclared dangerous goods submitted for shipment by air.
4. Persons responsible for the shipment/consignment and acceptance of dangerous goods by air (e.g. Store men/Materials Controller):
   a. Are certified in accordance with national regulation; and
   b. Are trained to recognize, prepare, package, label/placard, document, and properly handle declared and undeclared dangerous goods submitted for shipment by air.
5. Persons providing offshore aviation weather observations:
   a. Are certified in accordance with national regulation; and
   b. Are trained in the use of facility vessel weather instrumentation and the conduct of visual observations.
6. Persons supporting helicopter hoist operations shall be made competent in accordance with FAC 04.13 “Offshore Helicopter Hoist Operation (HHO)”.
7. Persons supporting external load operations shall be made competent in accordance with FAC 04.17 “Offshore External Load Operations”.
8. Ensure all offshore staff participate in regular helicopter operations safety awareness reinforcement sessions.

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirements 1 through 8. The alternate designee and their duties should be clearly identified.
2. Company references to hoisting with a helicopter winch are aligning with the European Aviation Safety Agency (EASA) terms “Helicopter Hoist Operation (HHO)” and “Hoisting”. They are equivalent to the use of the term “Winching” by some aviation organizations, and in the CAP 437 and ICS Guide.

ADDITIONAL GUIDANCE

- Assess aviation supporting role holder Competence in accordance with local requirement and procedure.
- Refuelling training for offshore personnel is available through Shell Aviation which can be used as a training resource.
- See UK CAA CAP 437 for additional guidance for persons providing offshore aviation weather observations.
- Safety awareness reinforcement sessions for offshore staff regarding helicopter operations should address recent incidents and near misses (Learning from Incidents) and other aviation hazard focus areas and may be included in regular facility/vessel HSSE meetings or other forums.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework Competence Manual
    1. Competence Specification Part 1: Frontline Barrier Management Positions
2. HSSE & SP Control Framework Contractor HSSE Management Manual
3. HSSE & SP Control Framework - Air Transport Manual
4. Shell Group Requirements for Aircraft Operations Business Processes
5. FAC 04.13 Offshore Helicopter Hoist Operations (HHO)
6. FAC 04.17 Offshore External Load Operations

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 (“should” statements) shall be taken as requirements for Company use.
2. OGUK Guidelines for the Management of Aviation Operations - Part C: Helideck Operations

Terms in green are included in the SGRAO Glossary.
This Document is not controlled when printed. See the Change log for version control information.

RELATED INCIDENT

- AAIB 7-2002 Helicopter damaged - loss of power contaminated fuel
- NTSB Accident Report NYC95GA060 Helicopter fatal crash from fuel contamination
- NTSB Accident Report LAX05LA176 Helicopter accident caused by contaminated fuel
- US FAA Hazardous Materials Safety - Summary of 171 cargo-baggage battery incidents
- AAIB Bulletin No: 5/2005 During HHO, rotors struck the mast - 15 September 2004
- CA 8010 Fatal injury during HHO – 3 September 2005
- PMI/SAI Report Helicopter accident during external load operations - 4 September 2013
- US NTSB - Links to 18 fatal accidents during external load operations - 10 year history

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Are Radio Operators licensed or authorised to operate radios on aeronautical frequencies in accordance with national regulations (where applicable)?
2. Are Radio Operators competent to perform relevant normal and emergency procedures for aviation operations?
3. Are Refuelling personnel provided helicopter type specific fuel system and refuelling procedures training, coordinated with local helicopter operators?
4. Are persons conducting aircraft manifesting competent to accurately collect payload weights and prepare aircraft manifests using local systems and procedures?
5. Are persons conducting aircraft manifesting trained to recognize and properly process declared and undeclared dangerous goods submitted for shipment by air?
6. (e.g. Store men/Materials Controller):
7. Are persons responsible for the shipment/consignment and acceptance of dangerous goods by air certified in accordance with national regulation?
8. Are persons responsible for the shipment/consignment and acceptance of dangerous goods by air trained to recognize, prepare, package, label/placard, document, and properly handle declared and undeclared dangerous goods submitted for shipment by air

9. Are persons providing offshore aviation weather observations certified in accordance with national regulation?
10. Are persons providing offshore aviation weather observations trained in the use of facility vessel weather instrumentation and the conduct of visual observations?
11. Are persons supporting helicopter hoist operations competent in accordance with FAC 04.13 “Offshore Helicopter Hoist Operation (HHO)”?
12. Are persons supporting external load operations competent in accordance with FAC 04.17 “Offshore External Load Operations”?
13. Do all offshore staff participate in regular helicopter operations safety awareness reinforcement sessions?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 5 Air Transport / Loss of containment of aviation fuel during storage/refuelling
- Bowtie 10 Air Transport (RW) / Loss of control of load suspended from helicopter
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.06 Helideck Team Exercises

MANDATORY REQUIREMENTS

The facility/vessel Duty Holder is Accountable for Requirement 1:

1. Completion of monthly (or once per rotation if less frequent) helideck team exercises, covering the operation of normal and emergency equipment and procedures.

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirement 1. The alternate designee and their duties should be clearly identified.

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. Helideck team exercises:
   a. Are specific to helideck team operations, and supplement facility level exercises described in FAC 4.09 “Offshore Emergency Response”; and
   b. Include all assigned helideck team members (HLO/HDA) and other personnel where appropriate.
   c. Required annual exercises (see additional guidance below for OPITO alignment):
      i. Normal Operations:
         1. Preparing helideck for helideck operations; and
         2. Passenger/freight handling.
      ii. Emergency Incident Scenarios for the following Credible Scenarios:
         1. Helicopter accident on the helideck (without fire);
         2. Helicopter fire on the helideck;
         3. Helicopter ditching in rescue range of the facility or vessel; and
         4. Fuel or oil spill on the helideck with operating helicopter on helideck.
         5. Any exercises or exercises required by regulation.
   d. Additional scenarios may be developed to fill out the remainder of the year’s exercise schedule, and should be based on other Credible Scenarios identified in the Emergency Response Review and operational focus areas. See the linked Americas-Air Transport OPS0081 document for examples.

e. Both Normal and Emergency equipment should be utilized. Equipment used should be inspected and appropriate repairs initiated prior to returning to ready locations.

2. Exercise documentation shall include:
   a. An annual helideck team training exercise plan; and
   b. Exercise records showing participation by each assigned HLO /HDA, which shall be retained for 2 years and which will be audited during annual helideck inspection.

ADDITIONAL GUIDANCE

- Where an OPITO compliant or aligned HLO/HDA Workplace Competence program is in place, the OPITO Units/Elements may be used where applicable as the basis for related helideck team exercises.
- See the linked UA documents for plan and documentation examples.

RELATED INCIDENT

No illustration at the moment.

LINKS AND TEMPLATES (FOR DOWNLOAD)

Associated Processes:

Company:

1. FAC 04.04 Offshore Aviation Role Competence - HLO - HDA - Emergency Response
2. FAC 04.05 Offshore Aviation Role Competence - Aviation Supporting Roles
3. FAC 04.09 Offshore Emergency Response
4. AAT OPS0081-PR06 Monthly Helideck Team Drills

External:

1. OPITO Offshore Helicopter Landing Officer (HLO) Training and Competence Standard
2. OPITO Offshore Helideck Assistant (HDA) Training and Competence Standard

CORRESPONDING SELF-ASSESSMENT QUESTIONS

Do all helideck personnel complete monthly helideck training exercises, covering normal and emergency procedures?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

Bowtie 5 Air Transport / Loss of containment of aviation fuel during storage/refuelling
Bowtie 10 Air Transport (RW) / Loss of control of load suspended from helicopter
Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

SOURCES OF MANDATORY REQUIREMENTS

1. HSSE & SP Control Framework Air Transport Manual

Terms in green are included in the SGRAO Glossary.

2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.07 General Helideck Procedures

Shell Aircraft	
Shell Group Requirements for Aircraft Operations	Restricted
Facility Requirements	Version 3.1 – June 2019

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for Requirements 1 and 2:

1. Site specific procedures for normal Helideck Operations are published and available to facility/vessel personnel. The facility/vessel shall have procedures:
    a. For a Daily Helideck and Helideck Equipment Readiness Inspection to confirm that the facility/vessel activities, structures, and equipment affecting normal and emergency Helideck operations are safe, available, and in working order. The inspection shall be done each day, unless the helideck is closed with a broadcast Notice to Airmen (NOTAM) and a helideck closure banner.
        i. The Daily inspection shall include:
            1. Hazards to aircraft and personnel;
            2. Helideck Team equipment; and
            3. Helideck and associated systems.
    b. For a Weekly Helideck and Helideck Equipment Readiness Inspection to confirm that the facility/vessel structures and equipment affecting normal and emergency Helideck operations are available, and in working order.
    c. To prepare and review flight manifests in sufficient time for the Helicopter Operator to conduct flight planning, and for completion of all activities required by regulation. These procedures shall include interface with the Helicopter Provider.
    d. To determine and provide Helideck Team manning for each arriving and departing flight in accordance with FAC 04.02 “Helideck Manning Requirements”. These procedures shall ensure that:
        i. Helideck operations are not conducted with fewer than the required number Helideck Team members; and
        ii. Additional HDAs are added when required by operations or special conditions.
    e. For the OIM/Vessel Master or designated delegate, to review planned flight activity considering facility/vessel activity, the availability of Safety Critical Role holders / Helideck Team members, deficiencies in Safety Critical Elements (Equipment), and environmental conditions. Flight activity will be cancelled or modified as necessary.
    f. To transmit weather and sea state information reports to the Helicopter Provider prior to flight crew planning. Vessels shall also include vessel motion and location information.

g. To halt flight activities when conditions will preclude safe helideck operations.

h. To process outbound passengers, baggage, and cargo. These procedures shall ensure that:

   i. Passengers are properly identified and their names recorded on the final flight manifest;

   ii. Passengers are properly trained in case of helicopter emergency, and are seated next to suitable helicopter emergency exits;

   iii. Passengers receive and properly wear necessary PPE;

   iv. Passengers receive a Shell compliant safety briefing prior to departure;

   v. Passenger, baggage, and cargo actual weights are recorded on the final flight manifest;

   vi. Baggage and cargo will not damage the aircraft, will not injure handling personnel, and will not present a hazard in flight;

   vii. Regulatory customs, security, immigration, and Dangerous Goods requirements are met; and

   viii. Prohibited items are not introduced into the aircraft by passengers on their person, in baggage, or as cargo.

i. To ensure that the Pilot of a departing flight is provided an accurate manifest including any required Dangerous Goods documentation.

j. To ensure that the Helideck Team is properly dressed, equipped, and briefed prior to conducting Helideck operations. Helideck Team manning shall be confirmed and communications operationally checked.

k. To ensure that Crane Operators and Standby Vessels are notified of planned and actual helicopter operations.

l. To check for hazards to aircraft and personnel immediately prior to each Helideck operation, and then continuously until Helideck operations are completed.

m. To manage radio communications and safely coordinate operations between vessel/facility personnel, the helicopter Pilot, and standby vessels and rescue assets. Procedures shall ensure:

   i. Necessary radio communications are recorded or logged;

   ii. Overdue aircraft are identified and a continuous flight watch is maintained from helicopter check-in, until transfer of radio flight following to a follow-on agency after helicopter departure;

   iii. Current conditions, hazards, and flight information are communicated to the helicopter Pilot;

   iv. Activities are coordinated on the facility/vessel, and with Standby vessels and rescue assets; and

   v. Radio communications are standardized to prevent misinterpretation.

n. To detail Helideck operations in order to:

i. Prevent injury to the Helideck Team, baggage and cargo handlers, and passengers;

ii. Prevent damage to the aircraft, and helideck and equipment;

iii. Efficiently receive, unload, load, and launch the helicopter; and

iv. Ensure the safety of operations at all times.

o. To safely manage Helideck operations during inclement weather.

p. To promptly identify and report Helideck and Flight Incidents and Near Misses.

2. Provide abbreviated Helideck Operations checklists aligned with the facility's published procedures to persons filling Helideck Roles, and ensure that those checklists are used as a reference for operations.

Note:

The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirements 1 and 2. The alternate designee and their duties should be clearly identified.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-2

1. Each facility / vessel should prepare site specific procedures. FAC 04.07.1 "General Helideck Procedures - Templates for Site Specific Helideck Normal Procedures" is provided as a best practice example.

   a. To ensure that operational risk is not increased when modifying the provided template, consult with the responsible Business Technical Authority (TA) – Air Transport, or responsible Shell Aircraft advisor.

   b. Business TA – Air Transport should review facility/platform procedures to ensure an appropriate level of standardization. Where appropriate, Business TA – Air Transport should consider issuing local templates to assist in standardization.

   c. Use FAC 04.07.3 "General Helideck Procedures - Weekly Helideck Equipment Checklist" as a template to develop a local weekly inspection document.

2. Refer to FAC 04.07.2 "General Helideck Procedures - Development of Abbreviated Helideck Operations Checklists" for an example of checklist development.

ADDITIONAL GUIDANCE

N/A

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.07.2 General Helideck Procedures - Development of Abbreviated Helideck Operations Checklists

Terms in green are included in the SGRAO Glossary.

3. FAC 04.08 Normally Unattended Installation (NUI) Procedures
4. FAC 04.09 Offshore Emergency Response
5. FAC 04.10 Offshore Refuelling Procedures
6. FAC 06.03 Helideck Fuel System Maintenance and Quality Sampling

External:

1. OGUK Guidelines for the Management of Aviation Operations - Part C: Helideck Operations
2. OLF Helideck Manual

Template:

1. FAC 04.07.1 General Helideck Procedures - Templates for Site Specific Helideck Normal Procedures
2. FAC 04.07.3 General Helideck Procedures - Weekly Helideck Equipment Checklist

RELATED INCIDENT

- NTSB Accident Report DFW05FA040 Helicopter struck obstruction on helideck
- NTSB Accident Report FTW02FA099 Aircraft takes off with tie down installed

CORRESPONDING SELF-ASSESSMENT QUESTIONS

Have local helideck procedures been developed and made readily available and do they cover the minimum requirements stated in FAC 04.07?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

REPLACE THIS SHEET WITH FACILITY / VESSEL TITLE PAGE

Templates for Site Specific Helideck Procedures

- These templates provide best practice procedures for common normal Helideck Operations.
- The templates should be reviewed by facility / vessel leaders and experienced HLOs to customize them for local use.
- Facilities / vessels should insert "**WARNING**" and "**CAUTION**" notes where appropriate to indicate hazards to users. THE PRE-LOADED WARNING AND CAUTION BOXES ARE WORD TABLES.
  - **WARNING** and **CAUTION** notes are in **bold-faced red and boxed** for conspicuity.
    - **WARNING**: An operating procedure, practice, or condition, etc., that may result in injury or death if not carefully observed or followed.
    - **CAUTION**: An operating procedure, practice, or condition, etc., that may result in damage to equipment if not carefully observed or followed.

WARNING

Template content should not be modified in a way that increases operational risk. Consult with the responsible Shell Technical Authority (TA) - Aircraft, or Shell Aircraft International (SAI).

- Procedures may be modified to make the overall procedure site specific.
- In some cases, sample choices separated by double slashes "//" are provided for consideration, or PLACEHOLDERS have been inserted to enter local information. Items that may not be universal are also highlighted for deletion if not applicable. Remove the highlighting once these sections have been finalized.
  - E.g. Select either facility // vessel. Delete the other word, the double slash, and remove highlighting.
  - E.g. Replace the phrase AUTHORIZED PERSON with the role of the person responsible for the task or step. Remove highlighting.
- Explanatory notes for writers are also highlighted, and **should be removed prior to publication**.
- Additional procedures for local requirements should be developed and added.
- Templates not applicable to the facility / vessel should be deleted.
- The site specific procedures should be published using local templates and should be clearly marked identifying it for the using facility / vessel.
- Once published it should be entered into a version control system so that out-of-date versions can be destroyed when changes are made.

Table of Contents

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Daily Activities

Daily Helideck and Helideck Equipment Readiness Inspection

These checks shall be made each day whether or not helicopter flights are scheduled, unless the helideck is closed, to ensure that the helideck is safe for emergency or unexpected arrivals, and so hazards are identified and corrected.

It is best practice to complete these checks prior to the Daily Flight Operations Review.

1. AUTHORIZED PERSON shall check:
    a. Helideck Team equipment:
        i. Test Helideck Team mobile airband radios and other relevant radio equipment;
        ii. Check Helideck Team PPE, breathing apparatus, and identifying vests ready for use; and
        iii. OTHER LOCAL EQUIPMENT TO BE CHECKED.
    b. Passenger pathways and access point hazard walk:
        i. Check for slip, trip, fall, and dropped object hazards;
        ii. Check for work activity posing a hazard to passengers in transit; and
        iii. Check handrails for integrity and the proper operation of folding handrails
        iv. Check that frangible chain and warning sign is in place restricting access to helideck at access points.
    c. Area adjacent to Helideck:
        i. Check the area around the helideck for objects that could be dislodged or blown by helicopter downwash, causing a personnel hazard;
            1. Personnel lifting devices, wood and plastic boxes, container lids, and sheets of plywood are particularly vulnerable and must be secured;
        ii. Check for ongoing work incompatible with helicopter operations; and
        iii. OTHER LOCAL CONSIDERATIONS.
    d. Helideck:
        i. Check that the helideck is clear of unapproved equipment or supplies, obstructions, gas or flammable substances, loose articles, ice, snow, or other hazards;
        ii. Check 210 degree Obstacle Free Sector (OFS) and 150 Limited Obstacle Sector (LOS) for infringements. Check the 180 degree 5:1//3:1 falling gradient sector for intrusions and loitering vessels;
        iii. Check the landing net for security, tension and condition, if fitted;
        iv. Check the perimeter safety net for security and condition;
        v. Check fire and crash equipment;
            1. Check fire equipment is secured with quick-release lashings and is ready to deploy. Check fire extinguisher gauges;
            2. Check crash boxes for tampering and missing items;
            3. Check that helideck ladders are present;

vi. Check helideck perimeter lights, floodlights, hazard lights, and status // wave off lights for operation;
vii. Check that access point frangible chains // barriers are in place to restrict helideck access; and
viii. OTHER LOCAL EQUIPMENT TO BE CHECKED.

2. AUTHORIZED PERSON shall record inspection completion and results in DAILY INSPECTION LOG IN HELITEAM ROOM // SAP // ETC.
3. AUTHORIZED PERSON shall report hazards, shortages, or unserviceability and the action needed to replace/rectify them to the OIM // AUTHORIZED PERSON.

Draft Flight Manifest Confirmation

This task needs to be completed early enough to allow for no-fly list checks, immigration clearance, and Helicopter Provider initial flight planning. In some cases it may need to be done the day prior to the flight.

Check inbound flights to facility // vessel no later than TIME AND DAY:

1. AUTHORIZED PERSON receives inbound manifest from Helicopter Operator/onshore logistics.
2. Confirm all passengers have:
    a. Current security clearance//TWIC//USCG clearance letter//etc;
        i. Resolve deficiencies with OIM//Facility Security Officer//AUTHORIZED PERSON; and
    b. Current HUET//BOSIET//other required training;
        i. Resolve deficiencies with OIM // AUTHORIZED PERSON.
3. Review inbound cargo for:
    a. Cargo requiring special handling due to weight or size. Notify duty HLO as necessary; and
    b. Dangerous goods transport by air compliance. Notify AUTHORIZED PERSON as necessary.
4. AUTHORIZED PERSON confirms/adjusts inbound manifest with Helicopter Operator//onshore logistics.

Check outbound flights from facility // vessel no later than TIME AND DAY:

1. AUTHORIZED PERSON prepares draft flight manifest, with passenger names and ELECTRONIC SYSTEM NAME identifier, and passenger, baggage, and cargo weights.
    a. Draft manifest/entry may use previously recorded passenger body weights and estimated baggage and cargo weights for Helicopter Provider initial planning.
    b. Actual Passenger, Baggage, and Cargo weights measured with calibrated scale(s) shall be witnessed and entered on the final flight manifest // in ELECTRONIC SYSTEM NAME during flight check-in and provided to the Pilot.
    c. Confirm planned payload does not exceed projected maximum flight payload.
    d. Ensure sufficient number of seats available for planned oversized passengers. Indicate oversized passengers and their assigned seats on manifest.
2. AUTHORIZED PERSON notes passengers requiring immigration clearance on manifest.
3. AUTHORIZED PERSON notes outbound cargo requiring customs clearance.
4. AUTHORIZED PERSON notes outbound cargo containing Dangerous Goods.
5. AUTHORIZED PERSON confirms passengers have current HUET qualifications.
    a. If passenger HUET is out of date, execute local variance procedure // notify OIM for resolution // contact onshore logistics for assistance.

6. AUTHORIZED PERSON transmits draft flight manifest and Dangerous Goods documentation to Helicopter Provider and onshore logistics, and confirms receipt.
7. AUTHORIZED PERSON adjusts draft manifest as necessary based on feedback from Helicopter Provider, noting maximum payload weight for use during final manifest preparation.

Confirm helideck manning:

1. AUTHORIZED PERSON review
    a. Adding extra HDA(s) to manage passenger baggage in inclement weather will help protect baggage. Passengers shall not assist in baggage loading and unloading, and if no additional HDAs are added, baggage shall be lined up on the helideck for subsequent handling regardless of the weather.
2. AUTHORIZED PERSON communicate Helideck Team manning requirement for the day's activity to duty HLO.

Daily Flight Operations Review, and OIM // AUTHORIZED PERSON Flight Schedule Authorization

On flight days, conduct Flight Operations Review no later than TIME prior to start of planned flight operations // at NAME OF MEETING.

1. OIM // AUTHORIZED PERSON and duty HLO review with OTHER PERSONS REQUIRED TO PARTICIPATE:
    a. Active facility // vessel Notices to Airmen (NOTAMs);
    b. The results of the Daily Helideck and Helideck Equipment Readiness Inspection;
    c. The facility // vessel activity plan of the day against Manual of Permitted Operations (MOPO) Simultaneous Operations (SIMOPS) flight limitations. Particularly consider:
        i. Support vessel operations in the helideck 180 degree 5:1//3:1 falling gradient sector;
        ii. Conflicting crane activity that cannot be interrupted for helicopter operations; and
        iii. OTHER LOCAL CONDITIONS TO BE CHECKED.
    d. Weather and sea condition forecast, vessel motion, flaring, and cold gas release against MOPO Environmental Conditions flight limitations;
    e. Facility // vessel degraded systems against MOPO Degraded Systems flight limitations;
    f. Work activity not addressed in MOPO that could affect helicopter safety, particularly work activity in the vicinity of the helideck;
    g. NUI helideck and installation status (for scheduled NUI support flights); and
    h. Helideck Team (HLO/HDA) readiness and availability vs. Helideck Team size requirements vs. non-Helideck work assignments:
        i. Review planned inbound and outbound aircraft “persons on board” count (including Pilots and cabin crew) and determines number of HDAs required to assist HLO through reference to the “Helideck Team Manning and Duties Matrix”;
        ii. Helideck Team manning shortfalls require flight cancellation, or where appropriate reduction of passengers on board the arriving and departing flights; and
        iii. Consider additional HDAs for inclement weather such as high winds or rain;
            1. See “Inclement Weather Helideck Operations” section.
2. OIM // AUTHORIZED PERSON authorizes, reschedules, or cancel planned flight activity.
3. OIM // AUTHORIZED PERSON assigns actions to address hazards or degraded systems conflicting with flight operations.
4. OIM // AUTHORIZED PERSON initiates or updates NOTAMs for any hazards or periods of helideck closure.

5. AUTHORIZED PERSON communicates any decision to modify flight activity or impose restrictions to the helicopter operator and onshore logistics as soon as possible.
6. AUTHORIZED PERSON communicates planned flight operations to crane operator(s) and standby vessels.

Weather, Sea State, Vessel Motion, and Location Reporting to Helicopter Provider

1. No later than TIME each flight day, transmit Weather, Vessel Motion, and Location Report to Helicopter Provider and onshore logistics IF REQUESTED BY ONSHORE LOGISTICS.
2. ENTER LOCAL PROCEDURES AND FORMAT AGREED WITH THE HELICOPTER PROVIDER TO TRANSMIT REPORT. IF THERE IS NO LOCAL PROCESS, REFER TO CAA CAP 437 APPENDIX E SECTION 3 FOR AN ACCEPTABLE TEMPLATE.

Shell International (c)

Helicopter arrival and departure activities

OIM // AUTHORIZED PERSON Final Review and Flight Confirmation with Helicopter Provider

If the OIM delegates this task, it is best practice to assign the review to a single role for consistency and ownership.

Complete procedure no later than 1 hour prior to helicopter launch from shore.

1. OIM // AUTHORIZED PERSON review current conditions against those considered during the Daily Flight Operations Review:
    a. Are the weather, sea state, vessel motion, and flaring/cold gas release status as expected?
    b. Are Simultaneous Operations (SIMOPS) as expected?
    c. Are there Degraded Systems not previously considered, or have Degraded System statuses changed?
    d. Are there any work activities that could conflict with flight operations that were not previously considered?
    e. Are required facility // vessel personnel available and read to conduct helideck operations?
    f. Are the required number of Helideck Team members available, referencing the "Helideck Team Manning and Duties Matrix"?
        i. Helideck Team manning shortfalls require flight cancellation or where appropriate reduction of passengers on board the arriving and departing flights; and
        ii. Consider assigning extra HDA(s) to manage passenger baggage in inclement weather such as high winds or rain;
            1. See "Inclement Weather Helideck Operations" section.
2. OIM // AUTHORIZED PERSON authorize, reschedule, or cancel planned flight.
3. AUTHORIZED PERSON:
    a. Communicate any decision to modify flight activity or impose restrictions to the helicopter operator and onshore logistics as soon as possible.
    b. If flight will proceed as planned, transmit updated Weather, Sea State, Vessel Motion, and Location Report to helicopter operator.

Departing Passenger and Baggage Check-In and Flight Preparation

1. Passengers check in at LOCATION no later than TIME before scheduled flight departure.
2. AUTHORIZED PERSON will identify any first time visitors at check-in and ensure they understand the facility // vessel departure procedures, including:
    a. Room checkout and return of muster card;
    b. Flight boarding pass use;
    c. Safety briefing location and time;
    d. What can and cannot be carried in the helicopter cabin, and what to do with items that cannot be carried onboard the aircraft;
    e. Where and when to don exposure suits and life jackets;
    f. Boarding muster location and time; and
    g. Passenger responsibilities for delivering baggage to the helideck (where and when to pick up, where to drop).
3. AUTHORIZED PERSON shall confirm passenger name against flight manifest and issue boarding pass.
    a. Last minute passenger changes require OIM's approval // require AUTHORIZED PERSON'S approval // are prohibited.
4. Passengers shall be required to declare any Dangerous Goods in their baggage, and baggage shall be inspected to ensure no undeclared Dangerous Goods are present.
    a. ENTER OR REFER TO LOCAL PROCEDURE FOR DANGEROUS GOODS DECLARATION, PACKING, MARKING, AND DOCUMENTATION.
    b. Magnets / magnetized items & radioactive items, tools, instruments, and samples that exceed regulatory magnetic flux / radiation emission aviation shipping limits shall not be shipped by air.
    c. Magnets and magnetized items with an unknown magnetic flux level shall not be shipped by air.
    d. Radioactive items, tools, instruments, and samples with an unknown radiation emission level shall not be shipped by air.
5. Passenger and baggage weighing measured on calibrated scale(s) shall be witnessed at check-in by AUTHORIZED PERSON. AUTHORIZED PERSON will enter the bag count and weights on the manifest // in ELECTRONIC SYSTEM.
    a. Unwitnessed weights, estimated weights, and weights from uncalibrated scales shall not be used.
    b. Baggage exceeding the size and weight limits in the "Overweight / Special Handling Baggage and Cargo" section shall be rejected for shipment by air.
    c. If total manifest payload weight exceeds maximum payload planning weight obtained previously from Helicopter Provider, notify OIM//AUTHORIZED PERSON for resolution.
        i. Execute "Excess Baggage Offshore" procedure if required.
6. AUTHORIZED PERSON will identify oversized passengers.

   a. AUTHORIZED PERSON will indicate oversized passengers and their assigned seats on manifest.
   b. AUTHORIZED PERSON will provide oversized passengers METHOD OF IDENTIFICATION SUCH AS TAGS OR ARMBANDS.
7. Passenger baggage shall be tagged with destination, witnessed weight, passenger's name, and priority in accordance with the "Excess Baggage Offshore" procedure, as well as any special tags for;
   a. Declared fragile items; and
   b. Overweight bags (weighing more than NUMBER pounds//kilograms).
8. Passenger baggage shall be secured in LOCATION immediately after weigh-in.
   a. If a passenger must access their baggage after segregation, the baggage shall be reweighed and the weight checked against the prepared manifest.
9. Passenger pre-flight video briefing will be shown in LOCATION at TIME prior to scheduled flight departure.
10. AUTHORIZED PERSON will also brief outgoing passengers of any hazardous conditions or special considerations during loading including:
    a. High wind procedures;
    b. Slip, trip, or fall hazards; and
    c. Hazardous work on pathways or in the helideck area.
11. AUTHORIZED PERSON will ensure that passengers do not carry any prohibited items into the aircraft cabin such as hats, mobile phones, other electronic devices, or newspapers.

Departing Cargo Acceptance and Preparation

1. Departing cargo shall be delivered to LOCATION no later than TIME before scheduled flight departure.
2. Shipper shall declare the cargo contents. AUTHORIZED PERSON shall inspect all cargo for Dangerous Goods:
    a. ENTER OR REFER TO LOCAL PROCEDURE FOR DANGEROUS GOODS DECLARATION, PACKING, MARKING, AND DOCUMENTATION.
    b. Magnets / magnetized items & radioactive items, tools, instruments, and samples that exceed regulatory magnetic flux / radiation emission aviation shipping limits shall not be shipped by air.
    c. Magnets and magnetized items with an unknown magnetic flux level shall not be shipped by air.
    d. Radioactive items, tools, instruments, and samples with an unknown radiation emission level shall not be shipped by air.
3. Down hole tools shall not be shipped by air unless they are documented to be within magnetic flux and radiation emission shipping limits. ENTER LOCAL PROCEDURE FOR CUSTOMS CLEARANCE IF APPLICABLE.
4. AUTHORIZED PERSON shall:
    a. Check cargo for proper packaging;
    b. Check cargo to ensure it does not exceed size limits – refer to “Overweight / Special Handling Baggage and Cargo” section;
    c. Weigh cargo using a calibrated scale to verify actual packaged weight and determine that it does not exceed maximum handling weight limit – refer to “Overweight / Special Handling Baggage and Cargo” section;
    d. Measure/determine the resting area of the cargo container and divide packaged cargo weight by packaging floor contact area to determine floor load. Ensure the cargo does not exceed the aircraft floor load limit – refer to “Overweight / Special Handling Baggage and Cargo” section;
    e. Enter cargo weights on the manifest // in ELECTRONIC SYSTEM.
5. AUTHORIZED PERSON will tag cargo:
    a. With destination and actual verified packaged weight; and
    b. Special handling tags for fragility, weight, or size.
6. AUTHORIZED PERSON will notify the duty HLO of cargo requiring special handling.
7. Outbound cargo shall be segregated in LOCATION, and will be delivered to the helideck staging area, clear of the helideck landing area, by AUTHORIZED PERSON no later than TIME before scheduled flight departure.

Review of Outbound Flight Manifest

1. AUTHORIZED PERSON shall:
    a. Check that the manifest shows accurate passenger, bag numbers and weights, and cargo weights;
    b. Print NUMBER copies of the final manifest from ELECTRONIC SYSTEM;
    c. Ensure the manifest is legible and that there are sufficient copies to provide a record for every sector of the flight;
    d. Where required, sign and certify the manifest; and
    e. Ensure that Dangerous Goods documentation is attached to the Pilot's copy of the manifest.
2. AUTHORIZED PERSON shall communicate the final number of outbound passengers and combined baggage and cargo weight to Radio Operator for communication to Pilot during aircraft check-in.
3. AUTHORIZED PERSON shall retain a copy of the final manifest and provide the outbound flight documentation to the duty HLO to deliver to the Pilot.

Muster and Brief Helideck Team

1. HLO shall muster the Helideck Team at LOCATION no later than TIME before scheduled flight arrival. Helideck Team should be mustered and briefed prior to Radio Operator establishing listening watch.
2. HLO shall ensure that the number of HDAs required are present, referencing the "Helideck Team Manning and Duties Matrix" against the inbound and outbound flight manifests:
    a. HLO shall not reduce the number of HDAs on duty below the minimum set in the "Helideck Team Manning and Duties Matrix". Stop work if necessary and obtain the required number of Helideck Team members; and
    b. Consider adding extra HDA(s) in inclement weather such as high winds and rain. See "Inclement Weather Helideck Operations" section;
        i. Muster additional support as required.
        ii. Ensure late arrivals are properly dressed, equipped, and briefed.
3. HLO shall inspect Helideck Team to ensure all team members are properly dressed, and have their required equipment, PPE, and identifying vests.
    a. HLO may elect to instruct the HDAs to set their air band radios to receive only.
4. HLO shall assign and review individual duties for the helideck evolution.
5. HLO shall brief expected operations including number of passengers, bags, and cargo inbound and outbound.
6. HLO shall review operation hazards and any special considerations.
    a. Check team for safety concerns.
7. HLO will conduct a radio check with:
    a. HDAs (via air band);
    b. Radio room (via air band);
    c. Crane Operators (via Radio Operator // facility radio // air band);
        i. Confirm planned helicopter ETA with Crane Operator and check crane activity status; and
    d. Standby Vessels (via Radio Operator // facility radio // air band);
        i. Confirm planned helicopter ETA with Standby vessels, and check vessel response readiness.

Helideck Pre-Arrival Checks

1. HLO shall check // confirm that the assigned HDAs have checked:
    a. Flaring status;
    b. Fire main pressure ready (if applicable), and helideck foam system ready;
    c. Fire extinguishers ready to deploy (lashings released as necessary);
    d. Helideck clear of obstructions, obstructions, gas or flammable substances, loose articles, ice, snow, or other hazards;
    e. 210 degree OFS and 150 degree LOS free of infringements. Visually confirm crane activity clear of approach and departure paths;
    f. 180 degree 5:1//3:1 falling gradient sector free of intrusions and loitering vessels;
    g. Perimeter safety net ready;
    h. Landing net ready;
    i. Helideck folding handrails down and ready;
    j. Wheel chocks and tie-downs positioned and ready;
    k. Helideck perimeter lights, floodlights, TD/PM lighting and hazard lights “ON” (for night and low visibility conditions);
    l. Other lights on that would blind Pilots “OFF” (for night and low visibility conditions);
    m. Helideck status lights “OFF” // Manual status lights “ON” // Wave Off lights “OFF”;
    n. Access point frangible chains // barriers in place to restrict closed access points;
    o. Fuelling system ready for use (if fueling anticipated);
    p. Outbound baggage and cargo staged in an area clear of the helideck landing area. It is//may be permissible to stage baggage and cargo in the helideck parking area if properly tied down;

WARNING

Staging cargo or baggage in the landing area prior to helicopter arrival presents an obstruction to the landing helicopter and is prohibited.

    q. Passenger pathways clear with no hazards present.
    r. OTHER LOCAL HAZARDS TO BE CHECKED.

WARNING

HLO shall immediately address any hazardous conditions and where necessary request that the Radio Operator instruct the inbound helicopter to loiter until corrective action is complete.

Flight Check-In Procedures

The Helicopter Landing Officer (HLO) and Radio Operator may act only in an advisory capacity; they shall not assume the role or authority of an Air Traffic Controller.

1. Radio Operator:
    a. Establishes a listening watch on the appropriate radio frequency no less than TIME normally 30 minutes prior to helicopter Expected Time of Arrival (ETA).
        i. If the helicopter does not land within 5 minutes of the ETA, Radio Operator initiates alerting action in accordance with emergency procedures.
    b. Upon establishing listening watch:
        i. Log all radio communications with:
            1. Passing aircraft including position and destination as appropriate;
            2. Safety standby vessels, along with confirmation messages received from the vessels;
            3. Arriving aircraft including:
                a. Check-in time and location;
                b. Landing time;
        ii. Confirm standby vessel readiness;
        iii. Confirm Helideck Team readiness;
        iv. Confirm position of any other vessels within the 500-metre zone of the installation;
        v. Check current wind conditions against wind turbulence hazard table // facility information plate;
        vi. Check for any other facility activity that would affect helideck operations such as flaring, cold gas venting, crane operations, vessels in 180 degree 5:1//3:1 falling gradient sector or within 500 metres of facility, work activity or temporary obstructions near helideck, drilling operations, or perforating operations; and
        vii. Listen for other aircraft operating in the area (e.g. any aircraft using the same air band frequency). Confirm location and operations by radio as appropriate.

WARNING

HLO shall immediately address any hazardous conditions and where necessary instruct the inbound helicopter to loiter until corrective action is complete.

    c. When contacted by inbound helicopter, Radio operator shall:
        i. Confirm helicopter ETA and direction of arrival;

ii. Pass the current installation weather and motion, outbound passenger count and destinations, outbound baggage and cargo count, and total outbound payload weight;
iii. Pass any special conditions or facility hazards that would affect helicopter operations. (Wind turbulence hazard, flaring, vessels in 180 degree 5:1//3:1 falling gradient sector, etc.);
iv. Pass information on other aircraft known to be operating in the area;
v. Receive inbound passenger count and baggage/cargo information; and
vi. Confirm helicopter fuelling requirements.

d. Radio Operator shall then:
i. Confirm helicopter ETA and direction of arrival with helideck team. Pass inbound passenger count and baggage/cargo information, and helicopter fuelling requirements;
ii. Pass any special conditions or facility hazards that would affect helicopter operations;
iii. Alert Crane Operator with helicopter ETA;
iv. Alert standby vessels and any other vessels within the 500-metre zone of the installation with helicopter ETA;
v. Make general announcement to facility of helicopter ETA and caution to secure loose gear, doors, and hatches; and
vi. Advise the Drilling Supervisor of helicopter ETA so that drilling crews can take necessary precautions.

On drilling rigs during drilling operations where wind conditions may cause drilling mud or other liquids to blow over the helideck, drilling crews should take precautions to prevent helideck contamination.

e. Once in contact with the inbound helicopter, the Radio Operator shall:
i. Maintain two-way communications with the helicopter flight crew, and helideck team during flight and helideck operations;
ii. Intervene if any radio communications are missed and repeat them for action; and
iii. If the helicopter does not land within 5 minutes of the ETA, and two-way communications are lost, Radio Operator initiate alerting action in accordance with emergency procedures.

Communication Handoff to HLO (5 to 10 Minutes to Landing)

The Helicopter Landing Officer (HLO) and Radio Operator may act only in an advisory capacity; they shall not assume the role or authority of an Air Traffic Controller.

1. HLO:
   a. Confirms visual contact with the inbound helicopter to Radio Operator. Radio Operator hands over communications with the inbound helicopter to the HLO.
   b. Contacts Crane Driver to confirm crane status and instruct Crane Drivers to stop the crane in a safe position if it is operating.
   c. Rechecks the status of the installation gas flare visually // by radio with AUTHORIZED PERSON.
   d. Confirms that no cold gas is being vented by radio with AUTHORIZED PERSON.
   e. Checks helideck status lights "OFF" // Manual status lights "ON" // Wave Off lights "OFF".
   f. Checks helideck wind speed and direction with hand held anemometer.

WARNING

HLO shall immediately address any hazardous conditions and where necessary instruct the inbound helicopter to loiter until corrective action is complete.

   g. When called on the radio by the Pilot, confirms helideck winds, confirms landing gear is down and that the helideck is available for landing // there is a "Green Deck" for landing.
   h. Turns manual status lights OFF.
   i. Directs HDA(s) to restrict access to the helideck and ensure return load is ready and refuelling system is prepared for use (if applicable).
   j. Directs HDA(s) to assume assigned positions:
      i. Fireman in a protected position adjacent to the upwind fire monitor // close to the foam system activation mechanism;
         1. HDA1 mans the upwind fire monitor during landing and takeoff, and at other times based on local risk assessment. If HDA1 assists in helideck duties he/she shall stay in position to quickly return to the fire monitor, and shall not leave the helideck area while the helicopter is operating
      ii. One HDA in a protected position at the alternate access point to control access;
      iii. Other HDAs in a protected position at the main access point; and
   k. HLO maintains direct visual contact with the helicopter.

2. Radio Operator maintains a listening watch after Communication Handoff until Helicopter Departure.

During Helicopter Approach to Landing (Immediately Prior to Landing)

1. When the helicopter is on final approach, HLO shall:
   a. Advise the Pilot of any significant change of weather conditions, such a change in wind speed or direction;
   b. Make a final check for surrounding hazards (crane operations, conflicting aircraft, unauthorized person on helideck, etc.);
   c. Check that the helicopter landing gear are extended (if applicable);
   d. Note if helicopter anti-collision light is on (for after landing actions); and
   e. Position himself/herself in a protected position with only head visible above the helideck surface until the helicopter has landed.

WARNING

HLO shall immediately notify the helicopter of any hazardous conditions and if necessary instruct the helicopter to "Wave Off" by radio and visual signal.

1. On radio - ① state call sign, ② say "Wave Off", ③ give reason.
   a. Example: "Shell 1, Wave Off, person on helideck".
2. Turn helideck wave off/ manual status lights ON.
3. Give visual wave off signal from a protected position.

WARNING

Waving off close in to the helideck can be hazardous. Wave off calls shall only be made for significant hazards. Wave off calls should be made as early as possible.

Following Helicopter Landing

WARNING

While the aircraft is turning on deck, either the HLO or the Radio Operator shall inform the Pilot of any significant changes in environmental conditions, particularly wind speed and relative wind direction, pitch/roll/heave exceeding limits, or loss of DP/heading control.

1. Radio operator sends an arrival message to the helicopter operator using the agreed format.
2. When the aircraft has landed, the anti-collision light(s) have been switched off, and the Pilot has given the "thumbs up" sign, HLO:
    a. Checks for helideck hazards and checks the aircraft for leaks and other malfunctions, notifying the Pilot by radio as required;
    b. Checks by radio if Pilots are shutting down aircraft with passengers on board. If so:
        i. STOP – GO TO "*Engine Shutdown on the Helideck"* procedure; otherwise
    c. Directs HDA(s) to insert wheel chocks on wheeled aircraft;
    d. Checks that passengers are still seated with seatbelts fastened;
    e. Exchanges inbound and outbound manifests with Pilot;
    f. Confirms helideck activities with Pilot including overweight / special cargo loading, inbound and outbound Dangerous Goods handling, refuelling; and
    g. Checks if either Pilot needs to exit the aircraft.

WARNING

The helideck shall be clear of all people prior to a Pilot exiting a turning aircraft. Passengers in the aircraft must remain seated with seatbelt fastened. If the Pilot bumps the controls the aircraft could overturn or the main rotor could dip excessively.

WARNING

A Pilot shall remain in the cockpit while the aircraft is operating.

Do not allow the Pilot of a single-piloted helicopter to exit the aircraft with engines or rotors running / turning.

When a single Pilot is present in the helicopter with rotors running, watch for Pilot distraction and stop operations if the Pilot's attention is not focused on helideck operations.

Arriving Passenger / Cargo Transfer - Rotors Running

WARNING

While the aircraft is turning on deck, either the HLO or the Radio Operator shall inform the Pilot of any significant changes in environmental conditions, particularly wind speed and relative wind direction, pitch/roll/heave exceeding limits, or loss of DP/heading control.

WARNING

Gusting winds and vessel motion can cause rotor disk instability and rotor blade dip. Monitor rotor disk stability and ensure all personnel remain clear of the rotor disc area when the rotor disk is not stable.

1. HLO ensures that:
   a. Passengers remain strapped in until the 'Fasten Seat Belt' sign is switched OFF; and
   b. Passengers wear survival suits, lifejackets and ear protection while on the helideck;
      i. Passengers shall not remove or exchange lifejackets on the helideck or inside the helicopter.
2. HLO directs:
   a. HDAs to unload and position baggage for passenger unloading;
      i. Baggage should be positioned in the direction of the active access point, in a row on the helideck next to the aircraft main door, bearing in mind the helicopter's safety zones;

CAUTION

Where helideck movement is approaching the pitch, roll and/or heave limits, the helicopter doors shall be kept closed during the periods the helicopter is waiting to embark and disembark passengers.

   b. HDAs to unload passengers.
      i. HDAs assume positions at:
         1. Helicopter door (HDA1 or 2);
            a. HDA1 mans the upwind fire monitor during landing and takeoff, and at other times based on local risk assessment. If HDA1 assists in helideck duties he/she shall stay in position to quickly return to the fire monitor, and shall not leave the helideck area while the helicopter is operating
         2. Baggage pickup area (HDA1 or 2); and
         3. Active access point (HDA3).

NOTE: If operating with only two HDAs, the helicopter door and baggage pickup area will be covered by a single HDA.

ii. HDA1 or 2 assists passengers to safely disembark helicopter – depart at a right angle to the helicopter fuselage unless directed otherwise by the HLO or Pilot;
iii. HDA1 or 2 assists passengers in recovering their baggage and ensures all passengers have a free hand available for handrails;
    1. Long items shall be carried horizontally when on the helideck. Items over two metres in length shall be handled by two persons, one at each end;
    2. Check excess baggage to identify baggage that should not have been offloaded. Reload as necessary;
    3. Ensure any excess baggage intended for the facility//vessel is removed from helideck prior to outbound passenger loading;

NOTE: Adding extra HDA(s) to distribute passenger baggage in inclement weather will help protect baggage. Passengers shall not assist in baggage unloading, and if no additional HDAs are added, baggage shall be lined up on the helideck for subsequent loading regardless of the weather.

iv. HDA3 to escort the passengers to LOCATION clear of the helideck;
v. HDA3 supervises lifejacket and ear defender exchange between arriving and departing passengers; and
vi. HDA3 ensures that surplus lifejackets and ear defenders are returned to the helicopter;
    1. Spare lifejackets and ear defenders shall be securely stowed on a spare seat by means of the seatbelt, placed in the baggage compartment in a bag or in a bag that is securely fastened by seatbelt on a spare seat.

c. HDA1 and 2//AUTHORIZED PERSON(S) unload any freight.
    i. Arriving freight shall be removed from helideck to LOCATION by AUTHORIZED PERSON(S) prior to outbound passenger loading.

Engine Shutdown on the Helideck

WARNING

While the aircraft is turning on deck, either the HLO or the Radio Operator shall inform the Pilot of any significant changes in environmental conditions, particularly wind speed and relative wind direction, pitch/roll/heave exceeding limits, or loss of DP/heading control.

WARNING

Ensure all personnel remain clear of the rotor disc area during engine start / rotor engagement. Rotor blades can dip causing fatal injury.

CAUTION

Notify the bridge prior to helicopter shutdown. Vessels should not change heading significantly during shutdown. Wind direction changes during low RPM operations can damage the helicopter.

Where helideck movement is approaching the pitch, roll and/or heave limits, the helicopter doors shall be kept closed during the periods the helicopter is waiting to embark and disembark passengers.

Shutdown with passengers on board aircraft:

1. Helideck Team remains in protected positions.
2. HLO:
    a. Ensures CO_2 fire extinguishers are ready in case of engine fire;
    b. Gives Pilot visual 'Clear to Shutdown' signal. Anti-collision light should be on;
    c. When the rotors have stopped and the anti-collision light has been switched off, and on clearance from the Pilot:
        i. Directs HDA(s) to insert wheel chocks on wheeled aircraft;
        ii. Directs HDA(s) to unload passengers, baggage, and cargo in safe fashion;
            1. HDA(s) ensures that all passengers have a free hand available for handrails;
                a. Ensure any excess baggage is removed from helideck prior to outbound passenger loading;
            2. HDA escorts passengers to LOCATION and recovers life jackets and ear defenders, returning them to the helicopter and securing them;
            3. Arriving freight shall be removed from helideck to LOCATION by AUTHORIZED PERSON(S) prior to outbound passenger loading;
        iii. Exchanges inbound and outbound manifests with Pilot;
        iv. Confirms helideck activities with Pilot including refuelling; and

v. Directs HDA(s) to assist Pilot(s) to tie down aircraft/blades and fit engine blanks and covers, if required.

Shutdown with passengers disembarked:

1. HLO:
   a. Completes "Arriving Passenger / Cargo Transfer - Rotors Running" procedure except for cargo unloading;
   b. Clears the helideck of passengers and baggage;
   c. Ensures CO_2 fire extinguishers are ready in case of engine fire;
   d. Directs HDAs to move to protected positions;
   e. Moves to a protected position;
   f. Gives Pilot visual "Clear to Shutdown" signal. Anti-collision light should be on;
   g. When the rotors have stopped and the anti-collision light has been switched off, and on clearance from the Pilot:
      i. Exchanges inbound and outbound manifests with Pilot;
      ii. Confirms helideck activities with Pilot including refuelling;
      iii. Directs HDA(s) to unload cargo; IF NOT DONE DURING STEP 1.
         1. Arriving freight shall be removed from helideck to LOCATION by AUTHORIZED PERSON(S) prior to outbound passenger loading; and
      iv. Directs HDA(s) to assist Pilot(s) to tie down aircraft/blades and fit engine blanks and covers if required.

Engine Start/Rotor Engagement

WARNING

While the aircraft is turning on deck, either the HLO or the Radio Operator shall inform the Pilot of any significant changes in environmental conditions, particularly wind speed and relative wind direction, pitch/roll/heave exceeding limits, or loss of DP/heading control.

WARNING

Ensure all personnel remain clear of the rotor disc area during engine start / rotor engagement. Rotor blades can dip causing fatal injury.

CAUTION

Notify the bridge prior to helicopter start. Vessels should not change heading significantly during start. Wind direction changes during low RPM operations can damage the helicopter.

Where helideck movement is approaching the pitch, roll and/or heave limits, the helicopter doors shall be kept closed during the periods the helicopter is waiting to embark and disembark passengers.

1. HLO:
   a. If passengers are loaded;
      i. Checks passengers are correctly seated (including oversized passengers) with seat belts properly fastened , lifejackets donned and survival suits done up for takeoff;
      ii. Checks passenger count against the manifest before securing the cabin door; and
      iii. Checks for helideck hazards (loose items, obstructions, crane activity, etc.) and checks the aircraft for leaks, and all panels and doors secure including baggage and fuel door.
   b. Check that CO_2 fire extinguishers are ready in case of engine fire.
   c. Upon request from Pilot, direct HDA(s) to connect the external power plug/cable to the 28v DC aircraft point.
   d. Ensure all non-helideck personnel are clear of the helideck and that the anti-collision light is switched ON.
   e. On the Pilot's request, give "Clear for Engine Start/ Rotor Engaged" signal.
   f. After engine start, upon request from Pilot, and when the anti-collision light is switched OFF, direct HDA(s) to remove the external power plug/cable (if connected) and stow properly.

Departing Passenger / Cargo Transfer - Rotors Running or Stopped

WARNING

While the aircraft is turning on deck, either the HLO or the Radio Operator shall inform the Pilot of any significant changes in environmental conditions, particularly wind speed and relative wind direction, pitch/roll/heave exceeding limits, or loss of DP/heading control.

WARNING

Gusting winds and vessel motion can cause rotor disk instability and rotor blade dip. Monitor rotor disk stability and ensure all personnel remain clear of the rotor disc area when the rotor disk is not stable.

CAUTION

Where helideck movement is approaching the pitch, roll and/or heave limits, the helicopter doors shall be kept closed during the periods the helicopter is waiting to embark and disembark passengers.

1. HLO ensures that:
   a. Passengers wear survival suits, lifejackets and ear protection while on the helideck;
      i. Passengers shall not don lifejackets on the helideck or inside the helicopter.
2. HLO directs:
   a. Departing freight be moved to helideck by HDAs//AUTHORIZED PERSON(S) prior to outbound passenger loading.
      1. Long items shall be carried horizontally when on the helideck. Items over two metres in length shall be handled by two persons, one at each end;
   b. HDAs//AUTHORIZED PERSON(S) to load freight.
   c. HDAs to load passengers.
      i. HDAs on helideck assume positions at:
         1. Helicopter door (HDA1 or 2); and
            a. HDA1 mans the upwind fire monitor during landing and takeoff, and at other times based on local risk assessment. If HDA1 assists in helideck duties he/she shall stay in position to quickly return to the fire monitor, and shall not leave the helideck area while the helicopter is operating
         2. Baggage drop off area (HDA1 or 2).

NOTE: If operating with only two HDAs, the helicopter door and baggage drop off area will be covered by a single HDA.

ii. HDA3 collects outbound passengers at LOCATION.
iii. HDA3 confirms passenger identities by name against manifest//by collecting boarding tags.
iv. HDA3 confirms passenger PPE is donned properly; survival suits, lifejackets and ear protection.
v. HDA3 escorts passengers to outbound baggage pickup area;
vi. HDA3 ensures that all passengers have a free hand available for handrails;
    1. Note any excess baggage that cannot be carried to helideck in first run;
vii. HDA3 escorts the passengers from the baggage pickup area to the helideck;
    1. Approach the helicopter at a right angle to the helicopter fuselage unless directed otherwise by the HLO or Pilot;
    2. Long items shall be carried horizontally when on the helideck. Items over two metres in length shall be handled by two persons, one at each end;
    3. Ensure any excess baggage left in the baggage pickup area is delivered to the helideck;
viii. HDA1 or 2 to supervise passenger baggage drop on helideck;
    1. Baggage should be positioned in a row on the helideck next to the aircraft main door, bearing in mind the helicopter's safety zones;

NOTE: Adding extra HDA(s) to directly load passenger baggage in inclement weather will help protect baggage. Passengers shall not assist in baggage loading, and if no additional HDAs are added, baggage shall be lined up on the helideck for subsequent loading regardless of the weather.

ix. HDA1 or 2 directs passengers to seats and ensures that seats located next to the main access doors are occupied last;
    1. HDA1 or 2 ensures oversized passengers are seated in their assigned seats as indicted on the manifest; and
x. HDA1 or 2 ensures passengers are correctly seated with seatbelts properly fastened , lifejackets donned and survival suits done up for takeoff.

d. HDA 1 or 2 and HDA3 load baggage while passengers are being seated.

3. HLO:
    a. Checks passengers are correctly seated (including oversized passengers) with seat belts properly fastened , lifejackets donned and survival suits done up for takeoff;
    b. Checks passenger count against the manifest before securing the cabin door;
    c. Checks all outbound baggage and cargo has been loaded and all inbound baggage and cargo has been removed from the helideck; and
    d. Checks for helideck hazards (loose items, obstructions, crane activity, etc.) and checks the aircraft for leaks, and all panels and doors secure including baggage and fuel door.

Prepare the Helicopter and Helideck for Departure

WARNING

While the aircraft is turning on deck, either the HLO or the Radio Operator shall inform the Pilot of any significant changes in environmental conditions, particularly wind speed and relative wind direction, pitch/roll/heave exceeding limits, or loss of DP/heading control.

1. Radio Operator:
   a. Copies and reads back flight plan and load details with Pilot;
   b. Confirms standby vessel readiness;
   c. For very short flights, contacts destination installation just prior to helicopter departure and maintain contacted until touchdown on the next helideck

WARNING

Failure to identify and correct hazards prior to helicopter departure may result in the death of aircraft occupants.

2. HLO:
   a. Ensures Pilot makes pre-departure call to Radio Operator
   b. Directs HDA(s) to remove chocks (if in place) on instruction from the Pilot.
   c. Rechecks for helideck hazards (attached aircraft tie down chains or straps, loose items, obstructions, crane activity, etc.) and rechecks the aircraft for leaks, and all panels and doors secure including baggage and fuel door and ensure anti-collision light is on).
   d. Directs HDA(s) to assume assigned positions:
      i. Fireman in a protected position adjacent to the upwind fire monitor // close to the foam system activation mechanism;
      ii. Other HDAs in a protected position;
   e. Scans for conflicting aircraft and makes a final check for hazards;
   f. Positions himself/herself in a protected position with only head visible above the helideck surface until the helicopter has departed; and
   g. Gives Pilot the visual 'Green Deck for Take-off' signal (thumbs up).

Helicopter Departure

WARNING

While the aircraft is turning on deck, either the HLO or the Radio Operator shall inform the Pilot of any significant changes in environmental conditions, particularly wind speed and relative wind direction, pitch/roll/heave exceeding limits, or loss of DP/heading control.

WARNING

Failure to identify and correct hazards during helicopter departure may result in the death of aircraft occupants.

The Helicopter Landing Officer (HLO) and Radio Operator may act only in an advisory capacity; they shall not assume the role or authority of an Air Traffic Controller.

1. HLO:
   a. Checks that aircraft operations are normal during helicopter lift off and in the hover prior to departure (no leaks, no panels and doors open, skids not caught in helideck net, etc.).
      i. Immediately advise Pilot of anything unusual.
2. Radio Operator:
   a. Acknowledge the Pilot's "Lifting Call" and takes over radio communications with the Pilot.
   b. Contacts destination installation/vessel immediately following departure of the helicopter, and communicate flight details such as persons onboard and estimated time of arrival;
   c. Sends a departure message to the helicopter operator using the agreed format;
   d. Logs departing time, destination, and who took over radio contact with the helicopter from the facility;
   e. Maintains a listening watch until Pilot advises two-way communications with another agency, and flight watch has been transferred to that agency; and
   f. If the helicopter does not check off frequency within TIME of departure, initiates alerting action in accordance with emergency procedures.

Securing the Helideck after Helicopter Departure

1. HLO:
   a. Check helideck surface for any contamination, debris, damage, oil, fuel etc.;
   b. Turns helideck wave off lights OFF//manually operated helideck status lights ON.
   c. Directs HDA(s) to:
      i. Stow all helideck equipment;
      ii. Secure firefighting equipment; and
   d. Debriefs Helideck Team to identify abnormal operations and opportunities for improvement.

Arriving Passenger and Cargo Activities

Arriving Passenger and Baggage Processing

1. AUTHORIZED PERSON meets arriving passengers at LOCATION.
2. AUTHORIZED PERSON confirms passenger's names against arriving flight manifest.
    a. Report any misdirected passengers (passengers who should not have disembarked) to Radio Operator and HLO so that flight can be held and misdirected passenger(s) returned to aircraft with their baggage.
3. AUTHORIZED PERSON escorts arriving passengers to LOCATION for intake briefing; and
    a. Debrief passengers to identify safety concerns from flight and facility//vessel arrival;
    b. Report safety issues to AUTHORIZED PERSON.
4. AUTHORIZED PERSON identifies any first time visitors; and
    a. Conducts first time intake briefing.

Arriving Cargo Processing

1. AUTHORIZED PERSON delivers arriving cargo to LOCATION.
2. AUTHORIZED PERSON inspects cargo to confirm recipient and contents, and the presence of undeclared Dangerous Goods.
    a. Immediately report undeclared Dangerous Goods to AUTHORIZED PERSON;
    b. Report misdirected cargo (cargo which should not have been offloaded at facility//vessel) to AUTHORIZED PERSON;
        i. Stow misdirected cargo at LOCATION; and
    c. Contact cargo recipient for pickup.

Weekly activities

Weekly Helideck and Helideck Equipment Readiness Inspection

1. AUTHORIZED PERSON carries out weekly checks using the facility//vessel Weekly Helideck Equipment Checklist. Use FAC 04.07.3 General Helideck Procedures - Weekly Helideck Equipment Checklist as a template to develop a local document.
    a. Document the results of the inspection in the NAME system//in the NAME log//by retention of completed checklists in the LOCATION.
    b. Report any shortages or unserviceability and the action needed to replace/rectify them to the OIM//Vessel Master//AUTHORIZED PERSON.
    c. Report any defects in aviation refuelling equipment to the OIM//Vessel Master//AUTHORIZED PERSON.
2. AUTHORIZED PERSON notifies onshore logistics if any shortage or unserviceability will affect the facility's//vessel's ability to conduct helicopter operations, or if any helideck Safety Critical Element (SCE) is unserviceable.

Other Activities

Standard Weather/ Message Lists

The following message lists provide a preferred order for operational information.

Weather (specify unit of measurement where appropriate)

- Location (vessels on the move);
- Heading (vessels on the move);
- Speed (vessels on the move);
- Time (vessels on the move);
- Wind direction, steady speed, maximum gust speed;
- Visibility in KM//Statute Miles;
- Cloud coverage and ceiling height in meters//feet;
- Temperature in degrees centigrade;
- Barometer setting//QFE//QNH;
- Pitch in degrees up/down;
- Roll in degrees left/right;
- Heave in meters//feet;
- Lightning direction and distance in KM//Statute Miles relative to facility//vessel; and
- Significant Weather (thunderstorms, rain, fog, hail, snow, ice, spray on helideck, etc.).

Flight watch (from helicopter to next agency to take the flight watch)

- Range to destination;
- Altitude;
- Person on Board (POB);
- Endurance; and
- ETA at destination.

Departure message (from helicopter on deck)

- Flight Level;
- TOR Time on Route;
- POB;
- Endurance;
- Pax Number;
- Pax Weight;
- Baggage;
- Freight; and
- Fuel.

Inclement Weather Helideck Operations

In high wind conditions, the following provisions apply:

1. When wind speed reaches ENTER FIRST LIMIT knots (steady or gusting) Normally 45, reference MOPO:
    a. Assess whether passengers can move safely to the helideck, and on the helideck.
    b. Consider splitting passengers into more manageable groups;
        i. Consider adding additional HDAs.
    c. Baggage shall not be left on the deck unattended;
        i. Baggage and light freight shall be off loaded and taken well clear of the rotor disc to a safe location (preferably below helideck level) for reclaim; and
    d. The helicopter will be unable to shut down. Procedures that require the helicopter to shut down are prohibited.
2. When gusts reach ENTER MAX GUSTING LIMIT knots Normally 60, reference MOPO inform the Offshore Installation Manager (OIM) and consider whether helideck operations can proceed.
3. With a steady wind speed of ENTER MAX STEADY LIMIT knots Normally 60, reference MOPO or above, close the helideck for normal operations.

In case of significant rainfall:

1. Adding extra HDA(s) to directly load passenger baggage in inclement weather will help protect baggage. Passengers shall not assist in baggage loading, and if no additional HDAs are added, baggage shall be lined up on the helideck for subsequent loading regardless of the weather.

Reporting Helideck and Flight Incidents and Near Misses

1. Helideck and Flight Incidents and Near Misses shall be entered in the NAME system//reported to AUTHORIZED PERSON;
    a. Fountain reports shall be tagged with an appropriate Air Transport Activity Type.
2. Incidents or Near Misses involving the Helicopter Provider shall be reported to the Shell Contract Holder for the Helicopter Provider.
3. RAM setting sessions shall include the Shell Technical Authority – Air Transport.
4. Investigation results and investigation follow-up shall be agreed with the Shell Technical Authority – Air Transport.

Excess Baggage Offshore

This is a procedure in use in certain parts of Shell when the final flight manifest total weight exceeds the forecast helicopter payload. It is included as a guide, but other locations may wish to not separate passengers from their baggage and may remove passengers and their baggage from the flight instead. A new manifest shall be prepared in either case.

1. AUTHORIZED PERSON compares the manifested baggage weight with the maximum load for flight provided by the helicopter operator. If it is likely that the maximum allowable weight will be exceeded, or if there are large items to be carried which might bulk out the baggage compartment:
    a. Prior to the helicopter arriving, AUTHORIZED PERSON shall advise passengers with numerous pieces of baggage that it may not be possible to load all their bags. AUTHORIZED PERSON shall then advise the onshore logistics//helicopter operator and agree a possible alternative for onward shipment. Prioritise the bags and advise passengers to remove essential items (e.g. keys). Ensure the weights of individual bags are recorded;
    b. If a passenger has more than one bag, the bag labels shall indicate the priority order of the items. For example, for a passenger with 3 bags, each item shall be labelled A, B or C. If baggage has to be removed to save weight or space, bag A shall be given the highest priority and bags B and C may be removed and put on a later flight; and
    c. AUTHORIZED PERSON shall advise passengers of alternative arrangements, if their bags cannot be loaded onto the aircraft;
2. During helicopter loading, if it becomes apparent that all the baggage cannot be loaded, request the Pilot to advise passengers. Using the weights recorded above, correct the manifest to reflect the change and inform the Pilot. Print off a new manifest for the Pilot.
3. AUTHORIZED PERSON // Radio Operator shall advise onshore logistics//helicopter operator of the:
    a. Passenger's name and ELECTRONIC SYSTEM NAME identifier system number for those whose baggage has been removed from flight; and
    b. Size, weight and description of baggage.
4. Onshore logistics//helicopter operator shall advise heliport check-in desk or Company Representative accordingly.
5. All unaccompanied baggage shall be checked and manifested as freight, and suitably labelled before being dispatched on an alternative flight.
6. On arrival at the heliport, passengers should contact the check-in desk/Company Representative to receive an update on expected arrival time of baggage.

Overweight / Special Handling Baggage and Cargo

1. Baggage or cargo shall be rejected for air transport if they exceed these limits:
    a. Single items shall not exceed MAX WEIGHT kg//lbs;
    b. Single items shall not exceed MAX SIZE DIMENSIONS HxLxW IN cm//inches; and

Size limits should be the smaller of the maximum size that can be loaded into the aircraft, and the maximum size that is safe to handle when carrying to the helideck.

    c. Single items shall not exceed the aircraft floor load limits of MAX WEIGHT kg//lbs. per cm^2//$inch^2$;

Get aircraft floor load limits for cargo compartment and passenger compartment from the Helicopter Provider. These will vary from aircraft type to aircraft type, and may vary by aircraft side number since some aircraft of the same type can be delivered with different strength floors. It may be necessary to enter these limits in a table rather than as a single limit.

    d. Single items packaged in hard sided containers shall not exceed MAX SIZE DIMENSIONS HxLxW IN cm//inches.

Hard sided containers present a special aircraft damage hazard to aircraft baggage compartments.

WARNING

Exceeding weight and size limits may result in injury to personnel carrying cargo to the helideck, and to aircraft loaders.

CAUTION

Exceeding floor load limits, and hard sided container limits, may result in aircraft damage.

2. Baggage or cargo shall be tagged as “Overweight//Heavy” if it exceeds MAX WEIGHT kg//lbs.
3. When loading and unloading large / heavy freight loads into and out of helicopters offshore, the helicopter shall be shut down, and the loading coordinated with the Pilot-in-command.
4. Cargo that requires craning onto the helideck due to handling limits requires special coordination between the OIM//Vessel Master, the Helicopter Operator, and the Shell Technical Authority – Air Transport to prevent damage to the helicopter shut down on the helideck.
    a. Baggage and cargo shall not be staged in the helideck landing area prior to helicopter arrival. It is//may be permissible to stage baggage and cargo in the helideck parking area if properly tied down.

WARNING

Staging cargo or baggage in the landing area prior to helicopter arrival presents an obstruction to the landing helicopter and is prohibited.

5. Long items shall be carried horizontally when on the helideck. Items over two metres in length shall be handled by two persons, one at each end.
6. Large / heavy freight that requires loading onto a helicopter with a forklift or mini-loader shall only be transported where similar equipment is available at the receiving site and when the air operator has provided prior approval for use of this type equipment for loading the helicopter.

Carrying Freight in the Passenger Cabin with Passengers

1. Carriage of freight or baggage in the passenger cabin with passengers present shall not be permitted without prior agreement between the Shell Technical Authority – Air Transport, the Helicopter Provider, and the OIM//Vessel Master.
    a. The number of passengers shall be minimised and restricted to those associated with the freight;
    b. Freight shall not obstruct any main or emergency exit;
    c. Freight shall be securely tied down to aircraft strong points or enclosed in a tension net; and
    d. The loading arrangement shall be acceptable to the Pilot.

Leakage or Spillage of Dangerous Goods

1. In case of the leakage or spillage of Dangerous Goods while on aircraft the offshore facility shall provide appropriate handling and aircraft decontamination services.
2. The HLO shall notify AUTHORIZED PERSON of the leak / spill, who shall:
    a. Coordinate response and cleanup;
    b. Review the Dangerous Goods MSDS and ensure that appropriate PPE and cleanup materials are used to ensure the safety of the cleanup team; and
    c. Ensure proper disposal of recovered Dangerous Goods and cleanup material.
3. Sand or granular absorbents shall not be used on aircraft.
4. Facility personnel shall consult with air crew during aircraft cleanup to prevent aircraft damage.

Development of Abbreviated Helideck Operations Checklists

- Checklists cannot be developed until a site-specific procedures document has been completed, and must be kept up to date as the procedures document is changed.
- Checklists are a memory aid and should not simply duplicate the entire site-specific procedure.
    - They should include abbreviated WARNING and CAUTION notes.
    - They will not include much, if any, explanatory information.

EXAMPLE

PROCEDURE

Prepare the Helicopter and Helideck for Departure

WARNING

While the aircraft is turning on deck, either the HLO or the Radio Operator shall inform the Pilot of any significant changes in environmental conditions, particularly wind speed and relative wind direction, or loss of heading control.

1. Radio Operator:
    a. Copies and reads back flight plan and load details with Pilot;
    b. Confirms standby vessel readiness;
    c. For very short flights, contacts destination installation just prior to helicopter departure and maintain contacted until touchdown on the next helideck

WARNING

Failure to identify and correct hazards prior to helicopter departure may result in the death of aircraft occupants.

2. HLO:
    a. Ensures Pilot makes pre-departure call to Radio Operator
    b. Directs HDA(s) to remove chocks (if in place) on instruction from the Pilot.
    c. Rechecks for helideck hazards (attached aircraft tie down chains or straps, loose items, obstructions, crane activity, etc.) and rechecks the aircraft for leaks, and all panels and doors secure including baggage and fuel door and ensure anti-collision light is on).
    d. Directs HDA(s) to assume assigned positions:
        i. Fireman in a protected position adjacent to the upwind fire monitor // close to the foam system activation mechanism;
        ii. Other HDAs in a protected position;
    e. Scans for conflicting aircraft and makes a final check for hazards;
    f. Positions himself/herself in a protected position with only head visible above the helideck surface until the helicopter has departed; and
    g. Gives Pilot the visual 'Clear for Take-off' signal (thumbs up).

CHECKLIST

Prepare the Helicopter and Helideck for Departure

WARNING

Inform the Pilot of any significant changes in environmental conditions, or loss of heading control.

1. Radio Operator:
    a. Copy and read back pre-departure message;
    b. Confirm standby vessel;
    c. [SHORT FLIGHTS] Call destination installation and maintain contacted until touchdown.

WARNING

Identify and correct hazards prior to helicopter departure.

2. HLO:
    a. [CHECK] Pilot pre-departure call to Radio Operator;
    b. [PILOT: REMOVE CHOCK SIGNAL] Remove chocks;
    c. Hazards:
        i. Tie downs;
        ii. Loose items;
        iii. Cranes;
        iv. Aircraft leaks, doors, panels;
    d. Team in position;
    e. Other aircraft; and
    f. Safe position & thumbs up.

CUSTOMIZE THIS TEMPLATE TO REFLECT LOCAL EQUIPMENT – THEN DELETE THIS COMMENT

Weekly Helideck Equipment Checklist

Platform:	**Date:**

General	**Yes**	**No**	**Remarks**
1. Helideck clean and free from debris. Drains clear.			
2. Landing net in good condition and correctly tensioned (if applicable).			
3. Deck-edge safety net in good condition.			
4. All helideck perimeter lights and floodlights operational.			
5. Helideck status light system // Helideck waveoff lights operational			
6. Helideck correctly marked and paintwork in good condition.			
7. Ground power unit operational.			
8. Refuelling system operational.			
9. Pump running warning light operational.			
10. Fuel test equipment in adequate supply.			
11. Wheel chocks and tie down strops available.			
12. De-icing equipment and materials available (if applicable).			
Emergency Equipment Box & Contents			
13. Emergency equipment box in good condition.			
14. Felling axe, aircraft type.			
15. Firemen's axe, aircraft type.			
16. Safety knife, aircraft type (for each crew member).			
17. Heavy duty hacksaw c/w six spare blades.			
18. Crow bar (large).			
19. Grab/boat hook.			
20. Lifting Strop, aircraft type.			
21. Pliers side-cutting (tin snips).			
22. Set of assorted screwdrivers.			
23. Adjustable wrench.			
24. Portable safety lamp (two).			

CUSTOMIZE THIS TEMPLATE TO REFLECT LOCAL EQUIPMENT – THEN DELETE THIS COMMENT

25. Bolt cutters.			
26. Two-section ladder.			
27. Fire resistant blanket.			
Fire Fighting Equipment			
28. Nine kg dry powder extinguisher – serviceable.			
29. 45kg dry powder extinguisher, including 100% back-up – serviceable.			
30. 22.5kg CO_2 extinguisher c/w lance including 100% back-up – serviceable.			
31. Fire hydrants – serviceable.			
32. Fire hoses available and in good condition.			
33. Branch/nozzle available and in good condition.			
34. Fire hoses boxes in good condition.			
35. Portable foam making equipment – serviceable.			
36. Portable foam branch c/q on/off control – serviceable.			
37. Self contained breathing apparatus (two) – serviceable.			
38. Self contained breathing apparatus locker in good condition.			
39. Fire fighting suit locker in good condition			
40. Fire fighting suits in good condition (one for each crewmember).			
41. Helmet and visor in good condition (one for each crewmember).			
42. Fire fighting gloves and boots in good condition (one set for each crewmember).			

REFUELLING INSTALLATION (if applicable)			
	List Findings (if any)	Action Taken	Date

CUSTOMIZE THIS TEMPLATE TO REFLECT LOCAL EQUIPMENT – THEN DELETE THIS COMMENT

43. Floating suction arm.			
44. Pressure coupling cone strainer.			
45. Gravity refuel nozzle cone strainer.			
46. Water traps, inline oilers.			
47. Silica gel condition.			
48. Delivery hose inspection (under pressure)			

Hose no.		Soft		Blisters		Crack cuts		Abrasions		Crushing		Permanent Kinks	

All listed items should be visually inspected and checked weekly.

Additional Remarks:	**Helicopter Landing Officer Signature:**
	OIM/Vessel Master Signature:

FAC 04.08 Normally Unattended Installation Procedures

MANDATORY REQUIREMENTS

The OIM is Accountable for Requirement 1:

1. In addition to complying with the requirements of FAC 04.01 through FAC 04.07, FAC 04.09 through FAC 04.13, FAC 04.16, FAC 04.17, and FAC 04.19 for NUI helidecks:
    a. Apply risk management to the specific hazards associated with NUI helicopter operations;
    b. Apply additional NUI manning restrictions to minimise personnel exposure to helicopter hazards;
    c. Apply additional operational controls to NUI flights to manage weather limits, night flying and helideck status and conditions; and
    d. Define specific NUI helicopter emergency procedures and helideck crew training requirements.

Note:

The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirement 1. The alternate designee and their duties should be clearly identified.

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. Manage NUI Helideck Risk;
    a. Document in installation Safety Cases and their Manual of Permitted Operations (MOPO) how individual exposure to NUI helicopter operations is managed to ALARP;
    b. Document the maximum number of personnel to be landed on a NUI in the Installation's Safety Case;
    c. Restrict passengers on a helicopter operating to a NUI to those being transported to or from that specific installation unless local policy allows additional passengers to be carried through NUIs (bus stop flights);
    d. Restrict the minimum number of personnel to be landed on a NUI based on the minimum number of personnel required to safely handle the helicopter on deck and the number of helicopter occupants (including pilots) who may need to be rescued following a helideck accident; and
    e. Prohibit helideck operations on NUI helidecks less than 1 D size for the helicopter operating to the helideck when winds or other conditions prevent landing with the

helicopter door adjacent to an access point and the orientation of the helicopter requires personnel movement through helicopter hazard areas (e.g. in proximity to the tail rotor).

2. NUI Helideck Manning Requirements;

   a. Where passengers are allowed to be carried through NUIs, the Duty Holder shall determine and document the minimum number of HDAs required for each NUI, based on the maximum number of helicopter occupants who may require rescue;

   b. Provide a full helideck team for the departure of the helicopter after the passengers have disembarked and for the arrival of the helicopter prior to de-manning the NUI;

3. NUI Helideck Operational Controls;

   a. Each facility / vessel should prepare site specific procedures for NUI operations. FAC 04.08.1 “NUI Helideck Procedures - Templates for Site Specific NUI Procedures” is provided as a best practice example;

   b. Plan NUI operations for daylight hours unless night operations are specifically sanctioned in the individual installation Safety Case, with appropriate controls in place to mitigate any increased risk;

   c. Do not plan a helicopter shutdown on a NUI unless the requirements of FAC 04.19 “Helideck Aircraft Maintenance Recovery Operations” can be met.

   d. Prior to the departure of a flight to a NUI;

      - Obtain formal approval for the visit from the controlling platform or location;
      - Check NUI for satisfactory condition by remote video or by observation from a vessel;

   e. Maintain uninterrupted radio contact between the helicopter and a person capable of providing weather reports, flight information and SAR alerting when operating to, on, and from a NUI helideck;

   f. Apply the more restrictive weather operating minima from either the helicopter operator’s Flight Operations Manual or the individual installation’s safety case/Adverse Weather Working Policy for routine NUI helicopter operations;

   g. Nominate a person or organisation to monitor the weather and initiate a NUI de-manning flight before poor conditions prevent helicopter operations, whenever personnel are on board a NUI;

   h. HLO on the initial NUI manning flight shall immediately check to ensure that the platform is in a safe condition after disembarking the helicopter, and before the remaining passengers disembark under his/her supervision;

   i. Conduct NUI Daily Helideck and Helideck Equipment Readiness Inspection checks each day when the NUI is manned, whether or not helicopter flights are scheduled to ensure that the helideck is safe for emergency or unexpected arrivals, and so hazards are identified and corrected. A template is provided in FAC 04.08.1 “NUI Helideck Procedures - Templates for Site Specific NUI Procedures”;

   j. Conduct NUI Monthly NUI Helideck and Helideck Equipment Readiness Inspection. Use FAC 04.07.3 “General Helideck Procedures - Weekly Helideck Equipment Checklist” as a basis for the NUI monthly checklist; and

k. For NUI de-manning flights, the HLO responsible for NUI helideck operations shall ensure that all personnel board the helicopter correctly, and then conduct pre-departure checks before boarding;

4. NUI Helideck Emergency Response;

   a. Include procedures for dealing with a helicopter accident on or near the NUI in installation Emergency Response Plans (ERPs) and Procedures;

   b. Night flights to a NUI for medical emergencies, or to resolve problems of an urgent technical nature are allowed, provided that full NUI helideck lighting is available, in accordance with the UK CAA CAP437; and

   c. Modify helideck exercises for those HLOs and HDAs who routinely work on NUIs to provide practice with the equipment they would have available on the NUI in an emergency situation.

ADDITIONAL GUIDANCE

N/A

LINKS (FOR DOWNLOAD)

Associated Processes:

Shell:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.01 Manage Helideck Risk
3. FAC 04.02 Helideck Manning Requirements
4. FAC 04.03 Helideck Manning - Minimally Manned Facilities
5. FAC 04.04 Offshore Aviation Role Competence - HLO - HDA - Emergency Response
6. FAC 04.05 Offshore Aviation Role Competence - Aviation Supporting Roles
7. FAC 04.06 Helideck Team Drills
8. FAC 04.07 General Helideck Procedures
9. FAC 04.09 Offshore Emergency Response
10. FAC 04.11 Helideck SIMOPS Hazards
11. FAC 04.12 Unscheduled Landing Procedure
12. FAC 04.13 Offshore Helicopter Hoist Operations (HHO)
13. FAC 04.14 Cold Weather Helideck Operations
14. FAC 04.17 Offshore External Load Operations
15. FAC 04.18 Offshore Low Hover Operations
16. FAC 04.19 Helideck Aircraft Maintenance Recovery Operations

External:

Terms in green are included in the SGRAO Glossary.

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 MC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
2. OGUK Guidelines for the Management of Aviation Operations - Part C: Helideck Operations

Template:

- FAC 04.07.3 General Helideck Procedures - Weekly Helideck Equipment Checklist
- FAC 04.08.1 NUI Helideck Procedures - Templates for Site Specific NUI Procedures

RELATED INCIDENT

- NTSB Accident Report DFW05FA040 Helicopter struck obstruction on helideck
- NTSB Accident Report FTW02FA099 Aircraft takes off with tie down installed

CORRESPONDING SELF-ASSESSMENT QUESTIONS

- Have the requirements of FAC 04.01 through FAC 04.07, FAC 04.09 through FAC 04.13, FAC 04.16, FAC 04.17, and FAC 04.19 been applied to NUI helidecks?
- Is risk management applied to the specific hazards associated with NUI helicopter operations?
- Are additional NUI manning restrictions applied to minimise personnel exposure to helicopter hazards?
- Are additional operational controls applied to NUI flights to manage weather limits, night flying and helideck status and conditions?
- Are specific NUI helicopter emergency procedures and helideck crew training requirements defined?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework Air Transport Manual.
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only).
3. EP2005-0263 legacy documents (withdrawn, ref only).

REPLACE THIS SHEET WITH FACILITY / VESSEL TITLE PAGE

Templates for NUI Site Specific Helideck Procedures

- These templates provide best practice procedures for common NUI Helideck Operations.
- They supplement and do not duplicate the templates for normal Helideck Operations.
- The templates should be reviewed by facility / vessel leaders and experienced HLOs to customize them for local use.
- Facilities / vessels should insert "**WARNING**" and "**CAUTION**" notes where appropriate to indicate hazards to users. THE PRE-LOADED WARNING AND CAUTION BOXES ARE WORD TABLES.
  - **WARNING** and **CAUTION** notes are in **bold-faced red and boxed** for conspicuity.
    - **WARNING**: An operating procedure, practice, or condition, etc., that may result in injury or death if not carefully observed or followed.
    - **CAUTION**: An operating procedure, practice, or condition, etc., that may result in damage to equipment if not carefully observed or followed.

WARNING

Template content should not be modified in a way that increases operational risk. Consult with the responsible Shell Technical Authority (TA) - Aircraft, or Shell Aircraft International (SAI).

- Procedures may be modified to make the overall procedure site specific.
- In some cases, sample choices separated by double slashes "//" are provided for consideration, or PLACEHOLDERS have been inserted to enter local information. Items that may not be universal are also highlighted for deletion if not applicable. Remove the highlighting once these sections have been finalized.
  - E.g. Select either facility // vessel. Delete the other word, the double slash, and remove highlighting.
  - E.g. Replace the phrase AUTHORIZED PERSON with the role of the person responsible for the task or step. Remove highlighting.
- Explanatory notes for writers are also highlighted, and should be removed prior to publication.
- Additional procedures for local requirements should be developed and added.
- Templates not applicable to the facility / vessel should be deleted.
- The site specific procedures should be published using local templates and should be clearly marked identifying it for the using facility / vessel.
- Once published it should be entered into a version control system so that out-of-date versions can be destroyed when changes are made.

Restricted
Shell International (c)

Table of Contents

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Daily Activities

NUI Helideck Team Pre-Departure Briefing

1. HLO shall brief the members of the team on their roles and duties relative to helicopter operations following arrival at the NUI.
2. HLO shall specify helideck team seating onboard the helicopter, so that they can be first to disembark at the installation.
3. HLO shall ensure that he/she wears clear identification and is in possession of an HLO radio, complete with headset.
    a. Where it is impractical for the HLO to wear a coloured vest over his/her immersion suit and lifejacket, he/she may wear an armband with the letters HLO marked in reflective material.

NUI Arrival Safety Checks

These checks shall be made by the HLO upon arrival immediately after disembarking. Other passengers shall not disembark the helicopter until the check is made.

1. HLO shall check:
   a. Communications with helicopter pilots using portable radio;
   b. Process conditions safe;
   c. Warning systems operational; and
   d. LIST OTHER LOCAL EQUIPMENT TO BE CHECKED.
2. If installation is safe:
   a. HLO advise helicopter pilots to disembark passengers;
   b. Disembark HDA (s);
   c. Prepare helideck; and
   d. Perform “Arriving Passenger / Cargo Transfer - Rotors Running” from the “Helideck Normal Procedures” checklist.
3. If installation is unsafe HLO shall advise the helicopter pilots and board the helicopter for departure.

NUI Daily Helideck and Helideck Equipment Readiness Inspection

These checks shall be made each day when the NUI is manned, by the HLO on the NUI, whether or not helicopter flights are scheduled, unless the helideck is closed, to ensure that the helideck is safe for emergency or unexpected arrivals, and so hazards are identified and corrected.

It is best practice to complete these checks prior to the Daily Flight Operations Review.

1. AUTHORIZED PERSON perform "Daily Helideck and Helideck Equipment Readiness Inspection" from the from the "Helideck Normal Procedures" checklist.
2. Additionally check:
   a. Helideck drains unobstructed;
   b. Chocks and tie down straps/chains present; and
   c. Windsock in good condition and suitably illuminated.
3. AUTHORIZED PERSON shall record inspection completion and results in DAILY INSPECTION LOG IN HELITEAM ROOM // SAP // ETC.
4. AUTHORIZED PERSON shall report hazards, shortages, or unserviceability and the action needed to replace/rectify them to the OIM // AUTHORIZED PERSON.

NUI Flight Manifest Preparation

This task needs to be completed early enough to allow for no-fly list checks, immigration clearance, and Helicopter Provider initial flight planning.

1. AUTHORIZED PERSON on NUI confirms helicopter arrival time and that authorization for flight has been given by the AUTHORIZED PERSON at LOCATION.
2. Confirm estimated number of passengers and baggage/cargo that can be carried and if de-manning is anticipated.
3. AUTHORIZED PERSON on NUI musters passengers and witness weighing of passengers, baggage, and cargo.
    a. Note and tag fragile and overweight/oversize baggage and cargo for special handling.
    b. If passengers did not arrive on NUI by helicopter, check for any first time helicopter travelers.
4. Check baggage and cargo for dangerous goods by questioning and inspection.
5. Provide pre-flight safety briefing and muster time and location for departure to passengers.
6. Communicate person(s) on NUI requiring transport by helicopter to the AUTHORIZED PERSON at LOCATION. Provide;
    a. Name(s);
    b. Witnessed passenger weight;
    c. Witnessed baggage weight and count;
    d. Witnessed cargo weight and count;
    e. Information regarding dangerous goods and overweight/oversize baggage and cargo; and
    f. If baggage or cargo will need to be carried in the passenger cabin.
7. AUTHORIZED PERSON prepare manifest to provide to helicopter pilots.

Helicopter arrival and departure activities

Perform the appropriate actions from the following procedures in the "Facility Helideck Normal Procedures" checklist:

1. Muster and Brief Helideck Team;
2. Helideck Pre-Arrival Checks;
3. Flight Check-In Procedures;
4. Communication Handoff to HLO (5 to 10 Minutes to Landing);
5. During Helicopter Approach to Landing (Immediately Prior to Landing);
6. Arriving Passenger / Cargo Transfer - Rotors Running (if applicable);
7. Engine Shutdown on the Helideck (if applicable);
8. Engine Start/Rotor Engagement (if applicable);
9. Departing Passenger / Cargo Transfer - Rotors Running or Stopped (if applicable);

If NUI will continue to be manned:

10. Prepare the Helicopter and Helideck for Departure;
11. Helicopter Departure;
12. Securing the Helideck after Helicopter Departure.

If NUI is being de-manned perform the "Prepare the Helicopter and NUI for De-manning" Procedure.

Perform the following procedures in the "Facility Helideck Normal Procedures" checklist as situations dictate:

1. Inclement Weather Helideck Operations;
2. Reporting Helideck and Flight Incidents and Near Misses; and
3. Carrying Freight in the Passenger Cabin with Passengers.

Prepare for NUI De-manning

WARNING

While the aircraft is turning on deck, either the HLO or the Radio Operator shall inform the Pilot of any significant changes in environmental conditions, particularly wind speed and relative wind direction, pitch/roll/heave exceeding limits, or loss of DP/heading control.

1. HLO:
   a. Confirm flight plan and load details with Pilot;
   b. Confirms standby vessel readiness (if available).

WARNING

Failure to identify and correct hazards prior to helicopter departure may result in the death of aircraft occupants.

2. HLO:
   a. Directs HDA(s) to remove chocks (if in place) on instruction from the Pilot.
   b. Direct HDA(s) to stow helideck equipment.
   c. Check;
      i. Bird exclusion devices are switched on;
      ii. All equipment (fire extinguishers, firefighting clothing, chocks etc) positioned on the helideck and surrounding areas is correctly stored and secured;
      iii. For helideck hazards (attached aircraft tie down chains or straps, loose items, obstructions, etc.) and helicopter for leaks, and all panels and doors secure including baggage and fuel door and ensure anti-collision light is on).
   d. Direct HDA(s) to board aircraft, and then board the helicopter last.
   e. Advise pilot when ready for departure.

Monthly activities

Monthly NUI Helideck and Helideck Equipment Readiness Inspection

1. AUTHORIZED PERSON carries out checks using the facility Monthly Helideck Equipment Checklist. Use OMA 6-06.3 Weekly Helideck Equipment Checklist as a basis for the Monthly Checklist for NUI.
    a. Document the results of the inspection in the NAME system//in the NAME log//by retention of completed checklists in the LOCATION.
    b. Report any shortages or unserviceability and the action needed to replace/rectify them to the OIM//Vessel Master//AUTHORIZED PERSON.
    c. Report any defects in aviation refuelling equipment to the OIM//Vessel Master//AUTHORIZED PERSON.
2. AUTHORIZED PERSON notifies onshore logistics if any shortage or unserviceability will affect the NUI's ability to conduct helicopter operations, or if any helideck Safety Critical Element (SCE) is unserviceable.

FAC 04.09 Offshore Emergency Response

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for Requirements 1-3:

1. Manned helideck equipped facilities/vessels shall provide:
   a. An emergency response capability at the helideck during helicopter landing, on-deck operations, and take off, in compliance with FAC 04.02 "Helideck Manning Requirements";
   b. An initial fire fighting capability at the helideck during helicopter landing, deck operations, and take off, in compliance with FAC 04.02 "Helideck Manning Requirements", to provide a protected environment for helicopter occupants in case of fire;
   c. A competent rescue team to recover surviving personnel from a helicopter accident on the facility; and
   d. A competent covering back-up team to ensure a protected environment for the rescue team during rescue operations.
2. Manned helideck equipped facility/vessel Emergency Response Plans and Procedures shall address the following Credible Scenarios:
   a. Helicopter accident on the facility/vessel;
   b. Helicopter fire on the helideck;
   c. Helicopter ditching in rescue range of the facility or vessel;
   d. Helicopter ditching beyond local rescue range, overdue aircraft, and loss of contact with an aircraft;
   e. Fuel or oil spillage on the helideck; and
   f. Other Credible Scenarios identified in the Emergency Response Review involving helideck / helicopter operations. A list of potential Credible scenarios is provided in SGRAO BUR SUP 01.01 Emergency Response to Aircraft Incidents.
3. Manned helideck equipped facility/vessel Emergency Response Plans and Procedures shall include:
   a. The helideck team in the list of emergency response personnel;
   b. Action lists for emergency scenarios that involve helicopters for offshore incident command staff, helideck team (HLO/HDAs/Fire watch), radio operator, rescue and fire-

fighting teams, and control room personnel (where applicable). Additionally, action lists for bridge personnel on mobile facilities and vessels;

c. Communications procedures to alert approaching aircraft of unsafe conditions at the facility; and

d. Requirements for emergency exercises.

Note:

The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirements 1 through 3. The alternate designee and their duties should be clearly identified.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-3

1. Capabilities:

   a. In almost all cases, the helideck team on duty will provide the bulk of the initial emergency response capability for helideck emergencies.

      - Manual fire monitors shall be manned continuously during helicopter operations and when fire-fighting, except that the personnel manning the fire monitors may take cover during actual helicopter landing or take-off.
      - Fire monitor operators shall not leave their stations during fire fighting until it is certain that there is no possibility of the fire re-igniting. This may exclude them from participating in other emergency response activities.
      - The person(s) manning the activation switch/mechanism for automatic oscillating/ring-type fire suppression shall maintain an uninterrupted view of the helideck and constant communication with the HLO.

   b. A facility “burn down” philosophy put in place to prevent injury during fire fighting does not relieve the operating business from the responsibility to put in place adequate fire fighting capability to rescue survivors from an aircraft fire on a manned facility.

      - If an aircraft fire is allowed to fully develop it may be impossible to control until it burns out. In accordance with the ICAO Annex 14 Volume 2, initial fire fighting response should be available immediately.
      - In accordance with CAA CAP 437 the operational goal is to control a fire to a level which allows rescue within 30 seconds of the start of foam production, which should begin no later than 15 seconds after foam system activation.
      - Initial fire fighting response shall not be delayed awaiting the direction of the facility incident commander or other management. The HLO, and any persons with control over the helideck fire fighting system such as control room personnel, shall be trained to know when the system should be activated, and empowered to do so without management guidance.

   c. Rescue teams shall not approach the aircraft to conduct a rescue until any associated aircraft fire is controlled, and until a covering back-up team is in position to provide a protected environment in case a fire starts or restarts during the rescue.

- Rescue teams shall be prepared to recover injured survivors from aircraft on their sides, which may entail an element of high angle rescue. Training and equipment to prevent further injury to survivors shall be provided.
- Rescue/fire fighting personnel shall be trained to shut off aircraft engines using cockpit controls and airframe shutoff valves in case of pilot incapacitation. These arrangements vary by helicopter type and require familiarisation training for each type helicopter flying to the facility/vessel.
- Covering back-up teams shall be available and ready to deploy to the helideck when called. Non-availability of covering back-up teams shall require curtailment of normal flight operations.

2. Facility/vessel Emergency Response Plans and Procedures:

a. Response to required aircraft emergency scenarios shall be pre-planned and provide action lists for key personnel to follow.

b. Each responding person/team/crew/asset shall be addressed in the plans as appropriate, such as:

- Incident Commander and Response Team;
- Radio operator;
- Control room / bridge personnel;
- Helideck team;
- Covering back-up team;
- Rescue Team;
- Fast Rescue Craft crew or responding life boat crew; and
- Planned and ad hoc SAR helicopter, standby boat, or support vessel callout and coordination.

c. Ditching response in rescue range of the facility or vessel:

- Emergency response to an aircraft ditching within rescue range of a facility/vessel shall include a local capability to recover persons from the water, including injured persons. This may be provided by facility/vessel Fast Rescue Craft, or other designated vessel or boat.
    - During adverse weather or heavy sea states, the usual methods of rescue may not be available and reducing or stopping normal flight operations shall be considered. This review shall be represented in the facility/vessel Manual of Permitted Operations (MOPO) External Influences section, or equivalent document.
- Ditching of passing aircraft as well as inbound or outbound aircraft should be addressed, based on exposure and Business Unit or Mutual Aid Group response plans and agreements.

d. Emergency response for helicopter ditching beyond local rescue range, overdue aircraft and the loss of contact with an aircraft at the facility/vessel level shall include:

- Acknowledgement of any distress call made on the vessel's frequency;
- Alerting of designated stakeholders through formal communications procedures:

  Alerts shall be issued:

  a. When a helicopter has failed to land at the destination at the advised ETA, plus 5 minutes, and communications cannot be re-established;

  b. En-route, when a call has not been received for more than 15 minutes and/or when satellite tracking is lost, and communications with the en-route aircraft cannot be re-established; and

  c. When a distress call is intercepted.

  Alerts should contain the following information, though the emergency call should not be delayed simply because some of the information listed is not immediately available:

  a. Aircraft identification and name of operator;

  b. Type of aircraft;

  c. Point of departure;

  d. Time of departure;

  e. Speed, level and route;

  f. Destination and ETA;

  g. Time of last contact and means (give frequency);

  h. Last reported position and method of determination;

  i. Action taken by reporting unit; and

  j. Any other pertinent information (this may include recommended Search and Rescue (SAR) action, if appropriate).

  Alerts should include contact with the onshore Business Emergency Response Team, Contracted Helicopter Operator(s), Government and contracted Search and Rescue (SAR) organisations, and Mutual Aid Group coordinators.

  a. Mutual aid through the release of support or standby vessels to assist in rescue efforts, and by accepting and stabilising survivors from rescuing helicopters or vessels:

     - Proactive dispatch of support or standby vessels by the helideck equipped facility/vessel, for search and rescue operations, should be included in the plan.
     - Provisions for survivor stabilisation including medical treatment and warming should be considered.

e. Fuel or oil spillage on the helideck may be addressed in a larger facility/vessel spill plan instead of the Emergency Response Plan and Procedures but shall provide direction on the use of covering fire fighting foam for fire prevention in case of large aviation fuel spills.

3. Emergency Response Plans and Procedures inclusion:

   - The facility/vessel shall conduct a full helicopter accident on the facility/vessel exercise at least annually that includes all responding persons/teams/crews/assets included in the Emergency Response Plans and Procedures.
   - Ditching response shall be exercised at each facility/vessel at least annually and shall include demonstration of the ability to rescue survivors from the water. This may be combined with required man overboard recovery exercises.
   - HLOs and HDAs shall be aware of their duties in an emergency. Regular helideck team exercises are required as described in FAC 04.06 “Helideck Team Exercises”.

ADDITIONAL GUIDANCE

The intent of the covering back-up team is to provide fire fighting protection for rescuers involved in recovering survivors unable to self-evacuate from aircraft after an accident. They should be trained for their role, exercise their role as a team, and available to deploy to the helideck in sufficient time to be an effective part of a post-accident rescue. Typical training would be aircraft crash-fire-rescue or industrial fire fighting training tailored for the covering back-up team role. The number of team members is determined in consultation with fire fighting Subject Matter Experts.

Where receipt of survivors at the platform/vessel from a helicopter ditching while awaiting transport to shore is a Credible Scenario, it may be necessary to provide warming clothing or gear for the survivors who may suffer from hyperthermia and shock. Ad hoc use of facility bedding may be adequate, or sweat suits or blankets may be stored for use in a waterproof container with other rescue equipment. Medical advice in the planning process will inform preparations.

Refer to FAC 04.08 “Normally Unattended Installation (NUI) Procedures” for NUI emergency response requirements.

LINKS (FOR DOWNLOAD)

Associated Processes:

Shell:

1. HSSE & SP Control Framework – Emergency Response Manual
2. HSSE & SP Control Framework - Air Transport Manual
3. FAC 04.02 Helideck Manning Requirements
4. FAC 04.06 Helideck Team Exercises
5. FAC 04.08 Normally Unattended Installation (NUI) Procedures
6. EP2005-0263-TO-84 Emergency Checklist (withdrawn, provided for historical reference)

External:

1. OGUK Guidelines for the Management of Aviation Operations - Part C: Helideck Operations
2. OLF Helideck Manual

Terms in green are included in the SGRAO Glossary.

RELATED INCIDENT

- AAIB 2-1991 G-BEWL strikes crane at Brent Spar - rescue response
- NTSB Accident Report DFW07LA011 GoM S-76 ditched 2 NM from destination without notice
- NTSB Accident Report CEN12FA250 GoM S-76 ditched alongside subsequent local rescue
- NTSB Accident Report DFW05MA230 GoM S-76 ditched returning to shore subsequent USCG rescue

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Do all manned helideck equipped facilities/vessels shall provide:
    a. An emergency response capability at the helideck during helicopter landing, on-deck operations, and take off, in compliance with FAC 04.02 “Helideck Manning Requirements”;
    b. An initial fire fighting capability at the helideck during helicopter landing, deck operations, and take off, in compliance with FAC 04.02 “Helideck Manning Requirements”, to provide a protected environment for helicopter occupants in case of fire;
    c. A competent rescue team to recover surviving personnel from a helicopter accident on the facility; and
    d. A competent covering back-up team to ensure a protected environment for the rescue team during rescue operations?
2. Do helideck equipped facility/vessel Emergency Response Plans and Procedures address the following Credible Scenarios:
    a. Helicopter accident on the facility/vessel;
    b. Helicopter fire on the helideck;
    c. Helicopter ditching in rescue range of the facility or vessel;
    d. Helicopter ditching beyond local rescue range, overdue aircraft, and loss of contact with an aircraft;
    e. Fuel or oil spillage on the helideck; and
    f. Other Credible Scenarios identified in the Emergency Response Review involving helideck / helicopter operations?
3. Do manned helideck equipped facility/vessel Emergency Response Plans and Procedures shall include:
    a. The helideck team in the list of emergency response personnel;
    b. Action lists for emergency scenarios that involve helicopters for offshore incident command staff, helideck team (HLO/HDAs/Fire watch), radio operator, rescue and fire-fighting teams, and control room personnel (where applicable). Additionally, action lists for bridge personnel on mobile facilities and vessels;
    c. Communications procedures to alert approaching aircraft of unsafe conditions at the facility; and

d. Requirements for emergency exercises?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 5 Air Transport / Loss of containment of aviation fuel during storage/refuelling
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework – Emergency Response Manual
2. HSSE & SP Control Framework Air Transport Manual
3. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
4. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.10 Offshore Refuelling Procedures

Shell Aircraft	
Shell Group Requirements for Aircraft Operations	Restricted
Facility Requirements	Version 3.1 – June 2019

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for Requirements 1-2:

1. Each offshore facility / vessel equipped with a helicopter fuel system shall publish site specific procedures for the delivery of fuel into helicopters, including:
    a. Personnel duty assignments and required manning levels compliant with FAC 04.02.1 “Helideck Team Manning and Duties Matrix”;
    b. Safety precautions to control hazards;
    c. Fuelling procedures including equipment operating instructions; and
    d. Considerations and procedures to be taken during special situations faced during fuelling, including rotors running refuelling.
2. Fuelling procedures shall be reviewed and agreed with helicopter operators to ensure they are acceptable to the provider, and in accordance with aircraft manufacturer required procedures.

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirements 1 and 2. The alternate designee and their duties should be clearly identified
2. Refer to FAC 06.03 “Helideck Fuel System Maintenance and Quality Sampling” for fuel system maintenance and quality assurance.
3. Shell Aircraft has commissioned Shell Aviation to produce the Shell Aviation Offshore Fuelling Procedures Manual (SAOFPM) to provide guidance and instruction related to offshore helideck fuelling management. Until this document is accepted for Group use, the legacy EP2005-0263-PR-10 “Helicopter Landing Officer Operations" and EP2005-0263 Work Instruction 10-50 “Helicopter Refuelling”, should be used as guidance when developing local fuelling procedures

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-2

1. Site specific procedures:
    a. Fuelling shall not be allowed with fewer role holders than described in FAC 04.02.1 “Helideck Team Manning and Duties Matrix” for the existing conditions.

b. Fuelling shall not be allowed without control of hazards. Closely review the referenced EP2005 documents when developing site specific procedures to identify safety precautions for inclusion. Include provisions to protect:

   i. Persons from contact with fuel hazard through the use of PPE;

   ii. From static electricity fuel ignition hazard through proper bonding, control of sparks, and cessation of fuelling when lightning is present;

   iii. From incipient fire through the posting of properly trained and equipped fire guards; and

   iv. From helicopter hazards through HLO control of persons on the helideck.

c. Fuelling Procedures shall address:

   i. Pre-fuelling Checks;

   ii. Pre-fuelling Procedures;

   iii. Fuelling Procedures; and

   iv. Post-fuelling Procedures.

d. Special Situations to be considered and accounted for in fuelling procedures are:

   i. Fuelling Helicopters with Passengers on Board;

      1. Passengers shall be briefed on evacuation procedures prior to refuelling.

      2. Cabin doors opposite the refuelling point shall be open and unobstructed and a competent person positioned ready to supervise passenger disembarkation in the event of an emergency.

      3. With rotors stopped, passenger seatbelts shall be undone.

      4. With rotors running the passengers shall be disembarked or they shall have their seatbelts fastened.

   ii. Fuelling Helicopters during Thunderstorms;

      1. Fuelling operations shall be suspended when cloud to surface lightning is present within 5 NM / 8 KM.

   iii. Fuelling Helicopters with Engines and/or Rotors Running.

      1. Passengers shall not board or disembark during refuelling operations nor shall cargo be loaded or unloaded. Passengers outside of the aircraft, baggage handlers, and other persons not involved in refuelling shall remain clear of the helideck.

      2. Pressure fuelling shall be used if available on the facility and fitted to the aircraft.

ADDITIONAL GUIDANCE

- Fuel spill response shall be in accordance with FAC 04.09 “Offshore Emergency Response” and local spill response procedures.
- Offshore fuel system maintenance requirements, including QA fuel sampling requirements are detailed in FAC 06.03 “Helideck Fuel Maintenance & Quality Sampling”.

Terms in green are included in the SGRAO Glossary.

This document is not controlled when printed. See the Change Log for version control information.
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LINKS (FOR DOWNLOAD)

Shell:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.02.1 Helideck Team Manning and Duties Matrix
3. FAC 04.09 Offshore Emergency Response
4. FAC 06.03 Helideck Fuel System Maintenance and Quality Sampling
5. EP2005-0263-PR-10 “Helicopter Landing Officer Operations" (withdrawn, ref only)
6. EP2005-0263-WI-10-50 “Helicopter Refuelling” (withdrawn, ref only)
7. Shell Aviation Airport Operations Manual
8. Shell Aviation Maintenance Manual
9. Shell Aviation Quality Assurance Manual

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 MC 2 - Recommendations in UK CAA CAP 437 (“should” statements) shall be taken as requirements for Company use. - 7 and 8
2. UK HSE Helideck Design Guidelines – Section 11.7
3. OGUK Guidelines for the Management of Aviation Operations - Part C: Helideck Operations
4. OLF Helideck Manual
5. ICAO AMOFSG Lightning Detection in Support of Airport Authority Decision Making

RELATED INCIDENT

- AAIB 7-2002 Helicopter damaged - loss of power contaminated fuel
- NTSB Accident Report NYC95GA060 Helicopter fatal crash from fuel contamination
- NTSB Accident Report LAX05LA176 Helicopter accident caused by contaminated fuel
- SAV Hazard Alert - Lightning strikes aircraft during fuelling

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Has each offshore facility / vessel equipped with a helicopter fuel system published site specific procedures for the delivery of fuel into helicopters that include:
    - Personnel duty assignments and required manning levels compliant with FAC 04.02.1 “Helideck Team Manning and Duties Matrix”;
    - Safety precautions to control hazards;
    - Fuelling procedures including equipment operating instructions; and
    - Considerations and procedures to be taken during special situations faced during fuelling, including rotors running refuelling?

2. Have fuelling procedures been reviewed and agreed with helicopter operators to ensure they are acceptable to the provider, and in accordance with aircraft manufacturer required procedures?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 5 Air Transport / Loss of containment of aviation fuel during storage/refuelling
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.11 Helideck Simultaneous Operations (SIMOPS) Hazards

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for Requirement 1:

1. Managing the risk of the following helicopter operations SIMOPS hazards through specific documented procedures within its Manual of Permitted Operations (MOPO) or equivalent document:
    a. Operations of vessels and equipment in the helideck 5:1 clearance sector creating obstacles, turbulence, or hot/cold gas emission – including seismic towed arrays, FPSO offload hoses, and similar systems;
    b. Crane – helicopter operations;
    c. Multi-Helicopter operations to a single helideck;
    d. Perforating operations and other use of explosives;
    e. Hydrogen Sulphide (H2S) gas release;
    f. Turbulence and hot gas emissions from structure, flaring, and machinery;
    g. Flammable cold gas venting

Note:

The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirement 1. The alternate designee and their duties should be clearly identified.

MEANS OF COMPLIANCE FOR REQUIREMENT 1

SIMOPS Hazards:

1. Combined operations of vessels and equipment in the helideck 5:1 clearance sector:
    a. For vessel infringements of the 5:1 sector, apply the Helideck Certification Agency (HCA) Helideck Limitations List (HLL) limitations from the HLL Part B Table 1.
        i. Brazil's NORMAM 27/DPC Annex 4-D-2 provides alternative mitigations for FPSO offload hoses infringing the Helideck 5:1 sector that are mandatory in Brazil and which may be allowed for operations outside of Brazilian jurisdiction, subject to hazard assessment and agreement from Shell Aircraft.

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b. For turbulence or hot/cold gas emission from vessels alongside, apply the HCA HLL limitations from the HLL Part B Table 2.

2. Crane – helicopter operations:

   a. For cranes that can reach into any portion of the helideck Obstacle Free Sector (OFS) or restricted portion of the helideck Limited Obstacle Sector (LOS):

      i. During helicopter operations the crane shall be stopped (static) and the cab unmanned from initial helicopter radio check-in through helicopter departure from the installation;

         1. If the helicopter shuts down on the helideck, crane operations may resume, but shall be coordinated with the HLO so the crane can be cradled / positioned and stopped prior to helicopter start up;

      ii. If possible, the crane boom shall be cradled when stopped. If not cradled, it shall be positioned clear of the OFS and restricted portion of the LOS.

         1. Notify the helicopter pilots of uncradled crane booms during check-in radio communications;

      iii. When the crane is running/energised during helicopter operations (see item b.i.1 above), the crane operator shall wear a conspicuous jacket or vest and shall stand outside of and adjacent to the crane cab in a position visible to the helicopter pilots;

      iv. For ongoing critical lifts where the crane infringes the OFS or LOS and cannot be repositioned, flight operations shall be cancelled;

         1. In exceptional circumstances where extended crane lifts are required, and flight operations are necessary consult with the helicopter operator and responsible Business Technical Authority (TA) – Air Transport or Shell Aircraft advisor to review the degree of infringement and the effects of crane movement during the lift; and

         2. The final decision on conducting flight operations with a crane OFS or LOS infringement will be made by the helicopter pilot in command.

   b. For cranes which an engineering study confirms cannot physically infringe the helideck OFS or LOS:

      i. Crane operations may continue during helicopter operations with agreement of the helicopter operator and responsible Business Technical Authority (TA) – Air Transport or Shell Aircraft advisor;

      ii. Clearly identify these cranes in the pilot facility information sheet; and

      iii. Notify the helicopter pilots of these crane operations during check-in radio communications.

3. Multi-Helicopter Operations On a Single Helideck:

   a. More than one helicopter shall not simultaneously occupy a single helideck unless:

      i. Conducting restricted aircraft maintenance recovery in accordance with FAC 04.19 "Helideck Aircraft Maintenance Recovery Operations"; or

ii. The helideck is constructed with a designated parking or apron area which is large enough to position the parked helicopter such that a minimum 1/3rd D-value clearance can be maintained between the D-area of the landing helicopter and the closest part(s) of the parked helicopter(s). (Refer to FAC 01.03 "Helideck Physical Characteristics"); and

1. Parked helicopter(s) do/does not infringe the helideck OFS or LOS;
2. Helideck structural capacity will support the combined dynamic load of the landing helicopter and the static weight(s) of the parked helicopter(s);
3. Parked helicopter maintains 1/3 "D" clearance when ground or hover taxiing into parking, and does not hover backwards into parking. It may hover turn on a spot if a 1/3 "D" obstacle clearance is maintained;
4. Parked helicopter(s) is/are parked in a position that provides more than 3 feet / 1-meter clearance between the skid/wheel assemblies and the edge of the helideck;
5. Parked helicopter(s) is/are appropriately secured (blade and fuselage tie downs as well as engines shutdown) prior to additional helicopter landings.

iii. The practice of parking a helicopter on one side of the helideck Safe Landing Area (SLA) and landing another helicopter outside of the Touchdown/Positioning Marking Circle (TD/PM) is prohibited in Company operations.

4. Perforating Operations and other use of explosives:
   a. Close the facility / vessel helideck and install the landing prohibited signal marker on the helideck during the Radio Silence period when explosives are vulnerable to Radio Frequency (RF) ignition. Install a special "No Radio" landing prohibited signal marker if one is available; and
   b. Issue a NOTAM directing all helicopters avoid the facility / vessel by no less than 500 meters.
5. Hydrogen Sulphide (H2S) Gas release:
   a. Close the facility / vessel helideck and install the landing prohibited signal marker on the helideck if possible without endangering personnel;
   b. Issue a NOTAM regarding the release and the helideck closure;
   c. Display required warning lights and / or flags;
   d. Helicopters operating on the facility helideck at the start of an H2S release may depart if the pilots don air packs, otherwise the helicopter shall shut down and the pilots shall shelter on the facility;
   e. If a helicopter is shut down at the facility during the H2S release, the helicopter crew shall shelter on the facility and shall not attempt to depart; and
   f. Flights to installations where H2S is being released shall only be made with agreement of the OIM/Vessel Master, helicopter operator, and Business Technical Authority (TA) – Air Transport, or helicopter operator Company Contract Holder for flight operations during H2S release where a documented pre-planned procedure has been developed and implemented with TA – Air Transport endorsement;

i. Flight crews and passengers shall wear protective air packs;

ii. Flight crews shall be trained in the use of air packs during flight; and

iii. If the helideck is downwind of the H2S source, landing, start up and take off is expressly prohibited.

6. Turbulence and hot exhaust emissions from facility structure and machinery:

   a. For structural and thermal turbulence affecting helicopter operations:

      i. Define the "Turbulence Sector" based on wind directions and speeds which generate unacceptable turbulence;

         1. Turbulence sector should be determined from the results of the facility / vessel environmental CFD or wind tunnel study (See FAC 01.04 "Helideck Environmental Effects Analysis"), supplemented over time with pilot turbulence reports;

      ii. Apply the HCA HLL limitations from the HLL Part B Table 2, or more stringent payload limitations recommended by the helicopter operator;

      iii. Restrict flight operations if the helideck is covered by smoke or other combustion products; and

      iv. Notify the helicopter pilots of any helideck temperature rise during check-in radio communications.

   b. For significant thermal effects from flaring and turbine exhaust affecting helicopter engine performance or operation, normally identified through pilot reports:

      i. Define the combination of operating states (flaring or turbine operation) and wind direction and speeds triggering the undesired thermal effects;

      ii. Apply payload restrictions or restrict flight operations as necessary during the triggering conditions. Set payload restrictions to ensure safe single engine performance (one engine inoperative) for worst case ambient temperature rise; and

      iii. Notify the helicopter pilots of helideck temperature rise during check-in radio communications.

7. Flammable Cold Gas Venting

   a. When cold gas source is upwind of helideck:

      i. Shut down helicopter operating on the helideck - do not allow helicopters to depart;

      ii. Close helideck and install landing prohibited signal marker on the helideck until cold gas venting ceases or wind shift away from helideck; and

      iii. Issue a NOTAM regarding helideck closure and active cold gas venting, including direction and computed length of 10% Lower Flammable Limit (LFL) plume based on wind direction and estimated release quantity.

   b. When cold gas source is downwind of helideck:

      i. Hold helicopter operating on helideck until a departure direction clear of cold gas plume is confirmed with pilots;

ii. Restrict flight operations during cold gas venting when possible;

iii. Issue a NOTAM regarding flight restrictions and active cold gas venting, including direction and computed length of 10% LFL plume based on wind direction and estimated release quantity; and

iv. Coordinate essential flights with helicopter operator, ensuring approach and departure routes are established to remain upwind and clear of 10% LFL plume.

ADDITIONAL GUIDANCE

N/A

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 01.03 Helideck Physical Characteristics
3. FAC 01.04 Helideck Environmental Effects Analysis
4. FAC 04.19 Helideck Aircraft Maintenance Recovery Operations

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 MC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
2. UK CAA Paper 2008_03 Helideck Design Considerations
3. Oil & Gas UK - HS067 - Guidelines for the Management of Aviation Operations (2011)
4. HCA HLL - Part A
5. HCA HLL - Part B
6. NORMAM-27/DPC Brazilian Navy Standards for Approval of Helidecks
7. BSEE Safety Alert No. 311 Methane Venting Hazard to Helicopter Operations
8. NTSB Safety Recommendation A-14-069-070 Methane Ingestion Hazard
9. HSAC RP 89-1 Crane - Helicopter Operational Procedures
10. HSAC RP 93-3 Multiple Helicopter Operations on Offshore Helidecks
11. HSAC RP 92-2 Perforating Operations, Helideck / Heliport Operational Hazard Warning(s)/Procedure(s)
12. HSAC RP 92-3 Hydrogen Sulfide Gas, Helideck/Heliport Operational Hazard Warning(s)/Procedure(s)
13. HSAC RP 92-4 Gas Venting Helideck / Heliport Operational Hazard Warning(s) / Procedures

RELATED INCIDENT

- NTSB Accident Report CEN12FA321 Helicopter hits rig leg during combined operations - fatal
- IADC Safety Alert 12-20 Helideck Obstruction Hazard: Marking and Notification
- AAIB 2-1991 G-BEWL strikes crane at Brent Spar - fatal
- NTSB Accident Report MIA08WA181 Helicopter struck crane
- NTSB Accident Report CEN11LA252 Methane ingestion accident

CORRESPONDING SELF-ASSESSMENT QUESTIONS

Have SIMOPS/MOPO procedures been developed and published for the vessel/platform, covering the required scenarios?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

- HSSE & SP Control Framework – Emergency Response Manual
- HSSE & SP Control Framework Air Transport Manual
- Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
- EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.12 Unscheduled Landing Procedures

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for Requirement 1:

1. Preparing procedures that allow a rapid reaction to unscheduled helicopter landings at the facility/vessel for cases of:
    a. Unannounced visits by third-party helicopters (regulators, military, etc.);
    b. Helicopter wrong deck landings; and
    c. Helicopter precautionary/emergency landings.

Note:

The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirement 1. The alternate designee and their duties should be clearly identified.

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. Ensure that manually operated helideck status lights (if installed) are functioning and activated when the helideck is not prepared and ready to accept helicopters;
2. Ensure the facility/vessel identifying markings on the helideck and elsewhere are unobstructed and legible;
3. The Radio Operator or control room/vessel bridge shall continuously monitor area air band radio frequencies for landing calls, and use the facility/vessel name or call sign in all radio communications;
4. All facility/vessel personnel shall report helicopters approaching or circling the installation to the control room/vessel bridge or other designated person;
5. If a helicopter appears to be attempting an unscheduled landing:
    a. The Radio Operator shall;
        i. Attempt to contact the helicopter on the local area frequency and determine their intentions;
        ii. If the helicopter confirms the intent to land, request the helicopter to stand off until the helideck is prepared for landing.
        iii. In all cases, even if radio contact is not made, broadcast helideck status, facility hazards, and landing information (weather, vessel motion, etc.); and

iv. Brief the HLO on whatever information is known including the aircraft type, any possible requirements and intentions of the helicopter.

b. The control room/vessel bridge or other designated person shall:

i. Notify the OIM/Vessel Master;

ii. Announce the impending landing to the installation;

iii. Direct the duty helideck team to the helideck;

iv. Direct all emergency response teams normally involved in helicopter operations to make ready for helicopter operations. If the landing helicopter declares an emergency, direct emergency response teams to their response stations and activate medical responders;

v. Instruct all operating cranes that can reach into any portion of the Helideck Obstacle Free Sector (OFS) or restricted portion of the Helideck Limited Obstacle Sector (LOS) to be put in a safe position and be stopped immediately in accordance with FAC 04.11 "Helideck Simultaneous Operations (SIMOPS) Hazards"; and

vi. Request any vessels infringing the helideck 5:1 sector to move to a clear location if able.

c. The HLO shall muster and brief the helideck team at the helideck in accordance with local procedures and receive the helicopter in accordance with procedures for a scheduled arrival;

i. In the case of a precautionary or emergency landing, the HLO should ensure that all persons in the vicinity of the helideck take cover for protection until the helicopter is safely on deck;

d. The HLO or Radio Operator should record the aircraft information including aircraft registration number, operating company, and pilot names for later reporting;

e. The facility/vessel shall manage the helicopter departure in accordance with local procedures for scheduled flights; and

f. The responsible person on the facility/vessel shall report the unscheduled landing in Fountain or other safety reporting system in use, and notify the Business Technical Authority (TA) – Air Transport and onshore Logistics manager of the aircraft information who will take further action.

ADDITIONAL GUIDANCE

- Providing company landing procedures and requirements, and facility/vessel information sheets to all offshore helicopter operators and regulator flight departments in the operating area will reduce wrong deck landing frequency and decrease the risk inherent in unannounced landings.
- Managing unannounced regulator visits and wrong deck landings and subsequent departures using normal procedures will make the evolution safer.
- Helicopters making a precautionary or emergency landing cannot normally be denied landing. The facility/vessel should be prepared for a heavy landing and be prepared to respond to a high impact landing, fire, or ditching.

- Depending on potential exposure to unannounced landings (local regulator practice, density of area traffic, previous occurrences), the facility/vessel should consider practicing this event through drills.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework Air Transport Manual
2. FAC 04.11 Helideck Simultaneous Operations (SIMOPS) hazards

External:

1. UK HSE Review of wrong helideck landings OTR 2000_067

RELATED INCIDENT

No illustration at the moment.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

Does the facility/vessel have documented procedures for responding to unscheduled helicopter landings?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.13 Offshore Helicopter Hoist Operations (HHO)

Shell Aircraft	
Shell Group Requirements for Aircraft Operations	Restricted
Facility Requirements	Version 3.1 – June 2019

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for Requirements 1-2:

1. Prepare for planned or anticipated offshore Helicopter Hoist Operations (HHO) transfer of personnel and equipment with trained and competent personnel and documented plans and procedures.
2. Manage emergency offshore HHO, when required, to reduce inherent risk to ALARP.

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirements 1 and 2. The alternate designee and their duties should be clearly identified.
2. Emergency HHO are limited to life or limb personnel casualties, provision of life saving assistance at sea, delivery of critical equipment and parts to repair a system that threatens the integrity/seaworthiness of the facility/vessel, and emergency facility/vessel evacuation.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-2

1. Provide trained and competent personnel;
    a. Persons participating as HHO team on the facility/vessel shall be competent in HHO procedures and safety precautions;
    b. Training should be targeted to role based on the International Chamber of Shipping "Guide to Helicopter/Ship Operations" (ICS Guide); and
    c. Training shall be documented.
2. Documented Plans and Procedures:
    a. Select HHO areas in accordance with FAC 01.10 "Offshore Helicopter Hoist Operation (HHO) Area Selection and Marking";
    b. Vessel/installation HHO procedures shall align with the ICS Guide;
    c. The ICS Guide should be available as a reference on vessels conducting HHO.
3. Conduct of non-emergency HHO:
    a. Non-emergency HHO shall be conducted in daylight conditions, and should be conducted with a defined horizon, and a minimum cloud ceiling of 600 feet;
        i. Other weather conditions and sea state should be in accordance with the ICS Guide section 3.7, or the Aircraft Operator's limits, whichever are more restrictive

b. Shore bound passengers shall be processed in accordance with FAC 04.07 "General Helideck Procedures";

c. Shore bound passengers shall receive pre-flight briefing in accordance with the ICS Guide Appendix D and FAC 04.07 "General Helideck Procedures";

   i. The briefing shall also include instruction on donning and using the lifting harness, as well as other HHO procedures and crew signals; and

d. Facility/vessel emergency response teams shall be notified of the HHO operation and shall be prepared to respond.

4. HHO to restricted areas such as bridge wings are particularly hazardous and shall only be conducted;

   a. During daylight;

   b. When no other suitably designated/marked landing or HHO area is available; and

   c. After a thorough hazard and risk assessment acceptable to Shell, the OIM/Vessel Master, and Aircraft Operator has been completed. Reference ICS Guide Appendix H.

ADDITIONAL GUIDANCE

N/A

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 01.10 Offshore Helicopter Hoist Operation (HHO) Area Selection and Marking
3. FAC 04.07 General Helideck Procedures
4. FAC 04.09 Offshore Emergency Response

External:

1. ICS Guide to Helicopter-Ship Operations
2. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use. - Chapter 10
3. International Aeronautical and Maritime Search and Rescue Manual (IAMSAR) Purchase page

Template:

1. ICS Guide:
   a. Appendix B - Communications
   b. Appendix C - Shipboard Safety Check List for Helicopter Operations
   c. Appendix D - Instructions to Helicopter Passengers Transferring To and From Ships
   d. Appendix H - Bridge Wing Operations for Marine Pilot Transfer - A Risk Assessment

RELATED INCIDENT

- AAIB Bulletin No: 5/2005 During HHO, rotors struck the mast - 15 September 2004
- CA 8010 Fatal injury during HHO – 3 September 2005

CORRESPONDING SELF-ASSESSMENT QUESTIONS

- Are documented procedures available for HHO?
- Have the relevant personnel received appropriate competency training?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 10 Air Transport (RW) / Loss of control of load suspended from helicopter
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.14 Cold Weather Helideck Operations

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for Requirement 1:

1. Prepare and provide the capability to conduct helicopter operations in cold climates, ensuring that:
    a. Personnel are protected;
    b. Helicopter accident and damage by cold weather factors is prevented;
    c. Essential equipment is protected and functions normally in cold weather; and
    d. Normal and emergency plans and procedures remain effective and safe.

Note:

The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirements. The alternate designee and their duties should be clearly identified.

Means of Compliance for Requirement 1:

1. Protect people:
    a. Prevent slips and falls moving to and from the helideck and while on the helideck;
        - A combination of snow and ice removal, and footwear anti-slip ice grips, should be used; and
        - Deck surface chemical de-icers and friction materials (grit) shall be compatible with aircraft to prevent airframe damage.
    b. Prevent fatigue, hypothermia, frostbite, snow blindness, and other cold weather injuries;
        - PPE guidelines should be established and enforced;
        - Helicopter downwash can exacerbate wind chill and should be accounted for in cold weather working guidance, especially for persons on the helideck;Rotor downwash induced wind increases ambient wind even when the helicopter is on deck, the amount varies by aircraft. Typical ground run downwash wind exceeds 15 MPH / 24 KPH; and
        - Develop outdoor work time limits for helideck teams, and aircraft maintenance personnel conducting helicopter recovery maintenance. Warming cycles should be established and time spent working alone outdoors should be minimized.
    c. Control and avoid falling and thrown ice;

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- Helicopter downwash during approach, landing, and departure can dislodge ice from elevated areas at some distance from the helideck
- Helicopter downwash can throw loose deck ice with sufficient force to cause injury and should be removed from the helideck area; and
- Helicopter blade ice sheds with sufficient velocity to cause injury, and will shed periodically anytime the helicopter is operating during active icing conditions.

d. Avoid helicopter static discharge hazard which increases in dry cold weather, and in snow showers between +2 and -10 degrees C. Strong aircraft to structure static discharge may be experienced during landing and take-off.

e. Avoid heated helicopter pitot tubes which present a burn hazard to bare skin.

2. Prevent helicopter accident and damage:

a. Agree and apply cold weather limits in conjunction with the helicopter operator. Include in the facility/vessel Manual of Permitted Operations (MOPO) or equivalent document;
   - Minimum aircraft operating air temperature;
   - Maximum operating icing conditions (freezing precipitation or fog); and
   - Maximum allowed ice and snow deck accumulations in the helideck area.

b. Prevent whiteout conditions during landing and departure;
   - Snow shall be removed from the helideck area prior to flight operations; and
   - Develop removal plans that minimize damage to helideck perimeter netting, landing net and the perimeter, flood, and helideck status lights.

c. Prevent Obstacle Free Sector and Limited Obstacle Sector infringement by accumulated snow or ice piles.

d. Prevent loss of aircraft heading control and aircraft sliding on icy surfaces during rotor stop, rotor start, and during vessel motion;
   - Consider use of sandbags as wheel chocks; and
   - Install and maintain helideck nets. Develop special plans for skid equipped helicopters incompatible with helideck nets.

e. Prevent falling and blown ice from striking rotating components and being ingested by helicopter engines;
   - De-icing procedures should include overhead areas adjacent to the helideck; and
   - Remove loose deck ice from the helideck area.

f. Prevent blade and airframe icing;
   - Report icing conditions to the helicopter operator;
   - Limit requests for helicopters to shut down offshore.
     - A helicopter starting system should be provided if offshore shutdowns are required;

g. Prevent thermal and chemical de-icing and aircraft warming aircraft damage;

- Facility/vessel personnel conducting helicopter de-icing or pre-heating shall be properly trained, provided appropriate PPE and equipment, and supervised by the helicopter crew. Aircraft damage can be caused by;
    - Composite structure debonding and delamination from rapid heating and thermal cycling;
    - Alcohols etching acrylic windows and transparencies;
    - Lubricant washout by hot glycol de-icing fluid, causing bearing corrosion and failure;
    - Electronic components damage by glycol fluids;
    - Corrosion and wear from incompatible granular surface de-icers and grits carried into the aircraft on passenger footwear;
    - Mechanical ice and snow removal including breaking an ice bond by force; and
    - Helicopter components jammed by water released through thermal de-icing, refreezing in helicopter compartments.

h. Prevent improper use of Fuel System Icing Inhibitors (FSII);
    - FSII can damage aircraft fuel systems in excess concentrations, and is ineffective in preventing ice related engine power loss in insufficient amounts;
    - Coordinate FSII use with the helicopter operator and only allow trained authorized persons to inject FSII into aircraft fuel systems; and
    - Only aircraft manufacturer approved fuel additives shall be used.

3. Protect essential equipment and ensure it functions normally:
    a. Ensure the serviceability and readiness of integrated heating systems for the helideck, fuel and foam pipelines, and other helicopter operations supporting equipment, if provided.
    b. Ensure helideck function;
        - Maintain the structural integrity of the helideck under the additional loading of snow/ice;
        - Ice and snow removal equipment shall be provided; and
        - Where ice cannot be readily removed from tie down points it may be necessary to add properly rated links/shackles, which shall lay flat on the helideck when not in use.
    c. Protect helideck perimeter, flood, and status lights from water ingress and damage, including wear to transparencies from helideck de-icing.
    d. Ensure the function of aviation obstacle lights (on derrick, crane booms, etc.) that do not generate sufficient heat to stay ice-free. This may require additional shielding / heating.
    e. Ensure weather reporting, communications, vessel motion and position system function;
        - They should be either of a type not adversely affected by icing, or should have anti-icing protection;

- Protect associated antennae and sensors from snow and ice accumulation that interferes with performance;
- Prevent the inhibition of movement of rotating components by snow or ice;
- Dome and rod antennae should be located such that heavy snowfall will not bury the antennae;
- Temperature and pressure measuring devices shall be capable of registering the range of readings found in the area of operations; and
- Maintain portable VHF air band radios to limit internal condensation caused by continually moving radios between warm spaces and cold weather environments. Consult with the radio manufacturer for advice if required.

f. Ensure the function of fire-fighting systems and associated equipment;

- Use systems and extinguishing agents appropriate for the cold-climate conditions, taking into account low temperature effects on the extinguishing agents;
  - Use fire extinguishing agents (foams, powders, gases) suitable for expected temperatures;
  - Foam concentrates may need to be replaced with low-temperature versions, which may require prior internal flushing of foam production components, tanks, and piping;
  - Ensure the accuracy of fire-fighting foam proportioning/mixing equipment; and
  - Confirm the satisfactory operation of the helideck fire-fighting system (monitors and DIFFS system, if fitted) prior to helicopter arrival.
- Ensure fire-fighting systems exposed on the helideck, open decks or unheated spaces are available for immediate operation;
  - Keep fire extinguisher retention clamps and devices free of ice and immediately operable; and
  - Keep equipment storage box latches and closures free of ice and immediately operable.

g. Ensure the function and availability of helicopter crash equipment;

- Ensure helicopter crash equipment using fluids (e.g. hydraulic operated cutting equipment and jacks) are capable of immediate operation; and
- Ensure equipment stored in lockers and cabinets are immediately available for use by keeping doors, lids, latches and closures free of ice and not blocked by snow.

h. Ensure the function of local helicopter ditching personnel recovery equipment;

- Ensure rescue craft crew access, and launching mechanism and boat operation, all which may be affected by cold, snow, and ice; and
- Ensure cranes and other equipment for the transfer of survivors from rescue craft to the facility/vessel are immediately available/operational.

i. Ensure the function of helicopter fuelling systems;

- Take fuel samples following heavy snow fall in accordance with FAC 06.03 "Helideck Fuel System Maintenance and Quality Sampling";
- Protect tank vent pressure/vacuum relief devices from blockage by snow or ice;
- Condition new fuel hose prior to putting into service where the ambient temperature is very cold with a period of soaking (filled with product and capped) at room temperature; and
- Bond aircraft properly when fuelling while parked on snow or ice as there is an increased risk of static electricity build-up.

j. Protect observation windows /video systems for monitoring landing/take-off from obscuration.

k. Keep helicopter hangar wheel tracks clear of snow and ice.

l. Ensure helicopter starting and pre-heating units are properly stored and maintained, and operationally checked prior to each helicopter shut down offshore.

4. Ensure normal and emergency plans and procedures are effective and safe:

a. Normal operations;

In addition to the precautions listed above;

- Cold weather helideck operations may require additional helideck team members, and flight schedules may require more time between flights;
- Delay flight operations if the helideck and necessary equipment are not properly cleared, de-iced, and functional;
- Cancel flight operations during active snowing or icing if clearing and de-icing efforts cannot keep up with the precipitation rate.

b. Normally Unmanned Installation (NUI) operations;

- NUI support flights may need to be restricted or prohibited if snow and ice are present on an unmanned NUI helideck.

c. Emergency operations;

In addition to the precautions listed above;

- Ensure emergency response personnel can effectively carry out their emergency response duties wearing cold weather PPE. Increase the number of responding persons if necessary;
- Adjust the work status of emergency responders called out from other areas of the facility / vessel to meet response timelines, taking into account delays for cold weather dress out and increased time to deploy emergency response equipment;
    - It may be necessary to pre-position some responders near the helideck;
- Incorporate checks to ensure the availability of emergency response systems (fire-fighting, local ditching response, Search and Rescue (SAR), etc.) prior to conducting flight operations; and

- Ensure realistic post-ditching survivor recovery time is no more than 2/3 the established in water survival time. Conversely, ensure Survival Time ≥ 1.5 x Rescue Time (RT).

ADDITIONAL GUIDANCE

Minimize exposure of baggage and cargo to the elements. Consider adding handling personnel if necessary.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.07 General Helideck Procedures
3. FAC 04.10 Offshore Refuelling Procedures
4. FAC 06.03 Helideck Fuel System Maintenance and Quality Sampling

External:

1. DNV Offshore Standard DNV-OS-A201 Winterization for Cold Climate Operations (Tentative) Oct 2013
2. OGP Report 390 Aircraft Management Guidelines - Appendix 13 Cold weather aircraft operations
3. Fuel System Icing Inhibitor - Flight Comment Magazine - Canadian Forces – Issue 2, 2013
4. ICAO 9640 Manual of Aircraft Ground De-Icing Anti-Icing Operations
5. FAA Special Airworthiness Information Bulletin - Recommendations for Rotorcraft During Icing Snowy Conditions - SW-08-03R4
6. Flight Safety Digest - Protection Against Icing Comprehensive Overview - Jun-Sep 97
7. Army Aircraft Icing - US Army Corps of Engineers - ERDC/CRREL TR-02-13
8. Eliminating Helicopter Icing – Flight Safety Foundation AeroSafetyWorld – Feb 2010
9. Transport Canada Aviation Safety Letter ASL 4-2007 Helicopter Icing

RELATED INCIDENT

No illustration at the moment.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

Where relevant are cold weather procedures in place and drilled to cover the protection of personnel, the prevention of Helicopter accident and damage, the protection and normal function of essential equipment and the effectiveness of normal and emergency plans and procedures?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 5 Air Transport / Loss of containment of aviation fuel during storage/refuelling
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only).

FAC 04.15 Vessel Motion and Relative Wind Hazard Controls

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for Requirement 1:

1. Implement controls for vessel motion and relative wind hazards to helicopter operations on mobile units and vessels.

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirement 1. The alternate designee and their duties should be clearly identified.
2. DP failure controls complement and should be integrated into these more general controls. Reference FAC 04.16 “Dynamic Positioning Vessel Hazard Controls”.

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. Consider vessel motion and relative wind hazards in risk assessment and for inclusion in the facility MOPO, or equivalent document as described in FAC 04.01 Manage Helideck Risk.
2. Report vessel motion and relative wind to helicopter providers and helicopter pilots as specified in FAC 04.07 General Helideck Procedures;
    a. Additionally, provide updated information to the pilots upon request.
3. Establish maximum vessel Pitch, Roll, Heave Rate, and Heave Amplitude motion limits for helicopter operations, for each type of helicopter in use, which shall be the lesser of;
    a. The maximum vessel motion established by the vessel;
    b. The maximum motion limit established by the Aircraft Operator; or
    c. The limits given in the Helideck Certification Agency (HCA) HLL Parts A and C.
4. Establish controls on manoeuvring the vessel whilst a helicopter is rotors running on deck, to mitigate the risk of helicopter rollover;
    a. Change in vessel motion and relative wind can negatively affect helicopter stability whilst on deck. Consult with Aircraft Operator when establishing limits for particular helicopter types.
5. Notify the helicopter pilots immediately by radio if any of the following occurs;
    a. The vessel goes off heading by 10 degrees or more;
    b. There is a vessel/installation or station keeping/handling problem;

Shell International (c)

c. Pitch/roll/heave exceeds the limits determined in item 3 above;

d. A significant change in the relative wind of 30 degrees or more;

e. Dynamic Positioning System failure (if so equipped); or

f. There is any other abnormal event, including unusual aircraft motion on the helideck.

ADDITIONAL GUIDANCE

If vessel motion is near a limit;

- Be watchful for helicopter movement on the helideck, especially when persons are in proximity to the helicopter;
- Consult with the pilots regarding tying the helicopter down, taking into the account the hazard of taking off with a tie down installed;
- Consult with the helicopter pilot prior to conducting refuelling; and
- Helicopter doors should be kept closed during the periods the helicopter is waiting to embark and disembark passengers, except during refuelling with passengers on board if FAC 04.10 “Offshore Refuelling Procedures” requires the door to be open. In this case ensure the door is held to prevent damage or injury.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.01 Manage Helideck Risk
3. FAC 04.07 General Helideck Procedures
4. FAC 04.10 Offshore Refuelling Procedures

External:

1. HCA HLL - Part A - Feb 2015
2. HCA HLL - Part C - Aug 2014
3. OGP 390 Aircraft Management Guide Section A.6.4

RELATED INCIDENT

- AAIB West Navion Accident 3-2004_G-BKZE
- NTSB Accident Report FTW02FA099 Aircraft takes off with tie down installed

CORRESPONDING SELF-ASSESSMENT QUESTIONS

Does the vessel/mobile unit have effective controls in place to manage the hazards of vessel motion and relative wind during helicopter operations?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework Air Transport Manual.
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only).
3. EP2005-0263 legacy documents (withdrawn, ref only).

FAC 04.16 Dynamic Positioning Vessel Hazard Controls

MANDATORY REQUIREMENTS

The facility/vessel Duty Holder is Accountable for Requirements 1:

1. Implementation of controls to prevent aircraft helideck rollover caused by failure of Dynamic Positioning systems on relevant vessels.

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirement 1. The alternate designee and their duties should be clearly identified.

2. DP failure controls complement and should be integrated into the more general controls required in FAC 04.15 "Vessel Motion and Relative Wind Hazard Controls"

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. DP failure controls should be related to the DP system class, design, and redundancy. They should be adjusted as necessary based on the vessel's recent DP failure history.
2. Notifications of vessel motion change, heading change, or wind direction change should be made in accordance with FAC 04.15 "Vessel Motion and Relative Wind Hazard Controls".
3. DP controls should be manned and monitored by a qualified DP operator (DPO) during concurrent DP and helicopter operations, unless the helicopter is shut down and securely tied down to the helideck (including blades tied down).
4. DP system aural and visual alarms should be set and operational.
5. DPO should monitor the air band frequency during helideck operations and have continuous radio contact with the helicopter pilots and HLO.
6. No alterations to the DP system should be instigated during helicopter approach, landing, turning on deck, or departure without the knowledge and agreement of the helicopter pilots and HLO.
7. DPO should immediately notify helicopter pilots and HLO of a DP failure by radio. The communication should:
   a. Alert the pilots and HLO that a redundant control has failed and that the vessel can maintain position and heading; or
   b. Warn the pilots and HLO that vessel position and / or heading control has been lost and that the vessel is shifting to manual control; or
   c. Warn the pilots and HLO that vessel position and / or heading control has been lost and cannot be maintained.

8. If DP position or heading control is lost and the vessel shifts to manual control, the vessel should manually maintain position and heading until the helicopter can be launched or shut down and tied down.
9. The vessel should avoid troubleshooting or re-engaging DP function if it could cause an abrupt change in vessel heading or motion.
10. The helideck team should be prepared at all times to rapidly launch, or shut down and tie down the helicopter, at the discretion of the helicopter pilot.
11. If the helicopter pilot elects to depart the helideck on short notice, the HLO should direct the helideck team to:
    a. Discontinue helideck operations including refuelling;
    b. Move baggage and cargo to a safe distance from the helicopter using available personnel;
    c. Clear disembarked passengers and baggage handlers from the helideck;
    d. Remove bonding cables and fuel hoses from the helicopter to a safe distance on the helideck;
    e. Ensure passengers in the helicopter cabin are prepared and belted in;
    f. Ensure both pilots are at their cockpit stations;
    g. Close and secure helicopter cabin and compartment doors;
    h. Check cockpit doors are closed and secured;
    i. Remove aircraft tie downs, chocks may remain in place;
    j. Clear the helideck team from the helideck; and
    k. Double check that the helicopter is in a safe condition to launch and that the helideck is safe prior to notifying the helicopter pilot that the helideck is ready.

WARNING

Failure to ensure that the helicopter is ready, that all tie downs are removed, that all material and equipment on the helideck is at a safe distance from the helicopter, and that all persons are clear of the helideck prior to helicopter departure can lead to a fatal accident. Short notice departures should be handled methodically and without haste.

12. If the pilot elects to rapidly shut down the helicopter, the HLO should direct the helideck team to:
    a. Discontinue helideck operations including refuelling;
    b. Clear disembarked passengers and baggage handlers from the helideck;
    c. Ensure passengers in the helicopter cabin are prepared and belted in;
    d. Close and secure helicopter cabin doors;
    e. Install chocks;
    f. Clear the helideck team from the helideck; and
    g. Double check that the helideck is safe for helicopter shut down prior to notifying the helicopter pilot that the helideck is ready.

WARNING

Failure to ensure that all persons are clear of the helideck prior to helicopter shutdown can lead to a fatal accident. Rapid helicopter shut down should be handled methodically and without haste.

ADDITIONAL GUIDANCE

- Review all DP incidents regardless of whether or not they involve a helicopter operation, for potential safety implications for helicopter operations.
- Review and agree DP failure controls with the Shell Marine Contract Holder (for contracted vessels) and the Business Technical Authorities – Air Transport and Maritime.
- Review and agree helideck rapid departure and shut down procedures with the Aircraft Operator during operational planning.
- Practice DP failure response and helideck rapid departure and shut down procedures during helideck drills.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.06 Helideck Drills
3. FAC 04.15 Vessel Motion and Relative Wind Hazard Controls
4. Maritime Process Model Dynamic Positioning Operations OPS.35.30

External:

1. OGP 390 Aircraft Management Guide Section A.6.4
2. IMO Guidelines for Vessels with DP Systems - Giddings IMCA Presentation

Template:

1. SCIN Aviation Procedure ASOP 40: DP Vessels (Historical, 2006)

RELATED INCIDENT

- AAIB West Navion Accident 3-2004_G-BKZE
- CAA West Navion Followup F29-2004
- NTSB Accident Report FTW02FA099 Aircraft takes off with tie down installed

CORRESPONDING SELF-ASSESSMENT QUESTIONS

Are controls and procedures in place to prevent aircraft helideck rollover caused by failure of Dynamic Positioning systems on relevant vessels?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 5 Air Transport / Loss of containment of aviation fuel during storage/refuelling
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.17 Offshore External Load Operations

MANDATORY REQUIREMENTS

Unless a different responsible party is designated by the facility/vessel Duty Holder, the OIM/Vessel Master is Accountable for Requirement 1:

1. Prepare and plan to support anticipated offshore helicopter external load (external lift/underslung) operations with trained and competent personnel and documented procedures.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1

1. Provide trained and competent personnel:
   a. Load master and handlers on the facility/vessel;
      i. Participating facility / vessel personnel competence is the responsibility of the OIM/Vessel Master;
      ii. Specialist personnel and persons otherwise not part of the normal installation staff competence is the responsibility of their Contract Holder or line manager, as applicable;
      iii. Training, which will normally be provided by the helicopter operator using a syllabus agreed with the Business Technical Authority (TA) – Air Transport or the responsible Shell Aircraft advisor, shall include;
         1. External load lifting familiarization including vertical reference long line and short line operations;
         2. Weather considerations and required weather and vessel information;
         3. Lifting appliance and equipment types, inspection, and associated maintenance records;
         4. Load preparation and handling;
         5. Hazardous materials;
         6. Lay down/drop zone preparation;
         7. Communications with flight crews including hand and arm signals;
         8. Standard phraseology for radio communications including phraseology for ground crew/loadmaster radio communications, if appropriate;
         9. Required PPE and correct use (see 3.vi.3 below);
         10. Managing static electricity hazards;
         11. Correct hook-up procedures, manual load release, and use of external cargo equipment; and
         12. Aviation hazards i.e. load snags, foreign object damage, etc.;

13. Requirements for control under the aircraft, including actions in event of aircraft emergency, positioning of load and numbers of people under the rotor disk.
14. Training shall be documented.

2. Documented procedures:
   a. Routine external loads:
      i. Develop external load procedures specific to the facility / vessel and make them available to Aircraft Operators conducting external load operations;
         1. Request that the primary contracted helicopter operator conducting external
         2. load operations participate in procedures development or review existing procedures;
      ii. Include the following topics in the plan:
         1. Helicopter pilot and OIM/Vessel Master responsibilities;
         2. A prohibition on the carriage of passengers during external load flights;
         3. Minimum ground crew composition at the installation;
         4. Load master and handler responsibilities;
         5. Required PPE and safety equipment (see 3.g below);
         6. Requirements for unobstructed approach path and clear load-handling areas;
         7. Pilot to load master communication during load delivery, release, and pickup. This must include a secondary means of communication in the event of primary failure (i.e. both radio and hand signals);
         8. Effecting safe static electricity discharge of loads;
         9. Effecting the safe release of loads;
         10. Lifting equipment - inspection and supply;
         11. Preparation of loads at the facility/vessel including weighing and maximum load weights, lifting equipment use by load type, and pre-lift inspection;
         12. Emergency procedures for helicopter malfunction, trapped/snagged loads, lifting equipment failures, abnormal load movements, etc.; and
         13. Preferred routing and designated overwater jettison areas for emergency load release that avoids critical subsea structures and pipelines.
   b. Specialist loads:
      i. These loads usually relate to one-off operations, such as flare tip changes, and should be managed by a designated project team;
      ii. Onsite visits should be made by the Aircraft Operator, specialist service provider, and the installation operator to assess the work required;
      iii. Conduct and document a HAZOP/safety review in conjunction with the project team, aircraft operator, facility/vessel staff, and Business TA – Air Transport or the responsible Shell Aircraft advisor, including any additional assurance actions as advised by Shell Aircraft;
      iv. Develop a plan addressing topics from 2.i.2 above; and
      v. Plan each task to ensure it is safely managed by competent personnel and that risks to personnel, the helicopter, and the installation, are As Low as Reasonably Practicable.

3. Conduct external load operations:
   a. Conduct external load operations in daylight conditions, with a defined horizon, and a minimum cloud ceiling of 600 feet;

b. The facility/vessel, or project team (for specialist and ad hoc external loads), shall designate a load master responsible for the conduct of operations on the facility/vessel;
c. The helicopter pilot in command and the load master shall conduct a pre-operation briefing for each day's operations that will detail at a minimum:
    i. The planned schedule;
    ii. Designated drop zone;
    iii. The helicopter pilot's requirements;
    iv. Loads to be received and extracted at the installation including maximum load weight for the day;
    v. Forecast weather (including defined horizon assessment) and motion conditions and planned helicopter ingress and egress routes;
    vi. Confirmation that no passengers will be carried on external load flights; and
    vii. Confirmation that the helicopter operator and facility/vessel have inspected lifting appliances and equipment at their respective locations for condition, appropriate Working Load Limit (WLL), and have reviewed associated maintenance records to ensure periodic inspections are up to date;
d. Manage arrival of specialist personnel and persons otherwise not part of the normal installation staff in accordance with FAC 04.07 General Helideck Procedures;
    i. Sufficient time should be provided in the work plan for required installation induction and briefings;
e. The external load drop and pickup zone will normally be the facility/vessel helideck when available, but in all cases shall be inspected and approved for use by a Shell Helideck Inspector on at least an annual basis or when required for ad hoc operations;
f. A zone inspection to identify and remove snag hazards based on briefed ingress and egress routes shall be conducted prior to each day's operations;
g. Load master and handlers;
    i. Shall be made readily recognisable from other personnel by means of coloured overalls and/or vests;
    ii. Should be equipped with communication equipment including noise-attenuating headset and/or helmet with integrated headset to allow direct two-way voice communication with the pilots;
    iii. Shall wear the following PPE as a minimum;
        1. Hard hats with chinstraps used;
        2. Strapped goggles;
        3. Hearing protection;
        4. Appropriate protective gloves; and
        5. Steel toe footwear.
h. Facility/vessel emergency response teams shall be notified of the operation and shall be prepared to respond to helicopter crash and/or fire on installation, and helicopter ditching in accordance with FAC 04.09 Offshore Emergency Response; and
i. Flight check in and communication of facility weather and vessel motion information shall be conducted in accordance with FAC 04.07 General Helideck Procedures.

ADDITIONAL GUIDANCE

None

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.07 General Helideck Procedures
3. FAC 04.09 Offshore Emergency Response

External:

1. OGP 376 Lifting & hoisting safety
2. OGP 420 Helicopter guidelines for land seismic
3. UK CAA CAP 426 Helicopter External Load Operations
4. US CFR 29 Subtitle B Chapter XVII Part 1926 Subpart N 1926.551 Safety and Health Regulations for Construction - Helicopters
5. USFS Aviation Safety Message Aug 2013 - External Cargo Loads
6. IHSA Health Safety Manual - Helicopter Lifting
7. US Interagency Aviation Training - A219 Helicopter Transport of External Loads (Ground Crews) Courseware Zip file

RELATED INCIDENT

- Airgreen AB412 accident in Albania, 13th August 2013 caused by a snagged long line

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Does the facility/vessel have procedures for external load operations covering the defined requirements?
2. Have all personnel nominated and involved in external load operations received the appropriate competency training?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 10 Air Transport (RW) / Loss of control of load suspended from helicopter
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

Reserved.

Sources of Mandatory Requirements:

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.18 Offshore Low Hover Operations

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for requirement 1:

1. Non-emergency low hover transfer of personnel between facilities/vessels and a helicopter is prohibited in Company service.

The Shell Incident Commander for an offshore emergency is Accountable for requirement 2:

2. Emergency offshore low hover personnel transfers shall be authorized as specified in the Business Emergency Response Plan, in agreement with the OIM/Vessel Master.

The OIM/Vessel Master is Accountable for requirement 3:

3. Ensure the safety of emergency low hover personnel transfer operation.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-3

1. Non-emergency low hover transfers prohibited;
   a. Facilities / vessels are prohibited from conducting non-emergency low hover transfer of personnel between facility / vessel and helicopters, including vessels without a purpose built Helideck or designated Landing Area which have a designated and marked Low Hover Area; and
   b. Non-emergency personnel transfer between facilities/vessels and helicopters shall be conducted by helicopter landing or Helicopter Hoist Operations (HHO). See FAC 04.13 "Offshore Helicopter Hoist Operations (HHO)".
2. Authorizing emergency low hover personnel transfers;
   a. Shell Aircraft staff and Business Technical Authorities – Air Transport shall not authorize low hover transfers, but may provide advice to the Incident Command Team to control the risk of the operation;
   b. The final decision on whether to conduct these operations will be made by the Aircraft Operator, and the pilot in command of the tasked helicopter;
3. Ensure the safety of the low hover personnel transfer operation;
   a. Select a Low Hover Area with reference to the cancelled / superseded UK Department of Transport - Marine Directorate Merchant Shipping Notice 1506 Helicopter Assistance at Sea; Coordinate with the Aircraft Operator in accordance with the ICS Guide Appendix B;

b. Provide the pilot in command of the tasked helicopter a General Arrangement (GA) depiction of the facility/vessel clearly marked with the selected Low Hover Area. The depiction may be developed referencing the ICS Guide Appendix F "Helicopter Landing/Operating Area Plan" as a guide, and should show;

   i. The size and location of the Low Hover Area;

   ii. Any obstructions and their height above the Low Hover Area;

   iii. Distances and directions to those obstructions from the edge of the Low Hover Area;

c. A member of facility staff, or a ship's officer complete the ICS Guide Appendix C "Shipboard Safety Check List for Helicopter Operations" for the selected Low Hover Area; and

d. Conduct radio communication with the responding helicopter pilots based on the ICS Guide Appendix B.

ADDITIONAL GUIDANCE

- The cancelled UK Department of Transport - Marine Directorate Merchant Shipping Notice 1506 Helicopter Assistance at Sea dated October 1992 provided size and clearance standards and marking information for Low Hover Areas.
- The UK Maritime and Coastguard Agency Marine Guidance Note 325 (M) dated October 2006 which superseded MSN 1506 recommended the designation of Low Hover Areas, but provided no guidance on size, clearances, or marking.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.13 Offshore Helicopter Hoist Operations (HHO)

External:

1. UK MCA MSN 1506 Helicopter Assistance at Sea (Superseded)
2. UK MCA MGN 325 Helicopter Assistance at Sea
3. ICS Guide to Helicopter-Ship Operations

Template:

1. ICS Guide - Appendix C "Shipboard Safety Check List for Helicopter Operations"

RELATED INCIDENT

- No illustration at the moment.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Are non-emergency low hover transfer of personnel between facilities/vessels and helicopters is prohibited in Company service?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 10 Air Transport (RW) / Loss of control of load suspended from helicopter
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.19 Helideck Aircraft Maintenance Recovery

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for requirement 1:

1. Prepare to support offshore maintenance and recovery of disabled helicopters including:
   a. Movement of the disabled helicopter to a properly sized parking area, where available;
   b. Transfer of maintenance personnel, tools, equipment, part, and supplies to the facility/vessel by vessel-to-vessel transfer;
   c. Concurrent maintenance recovery landings (two aircraft on a single helideck with the disabled aircraft not positioned completely within a properly sized parking area);
   d. Helicopter winching of maintenance personnel to the facility/vessel where there is a helicopter winching capability in place; and
   e. Removal of unserviceable helicopters from the facility/vessel by crane.

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirement 1. The alternate designee and their duties should be clearly identified.

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. Maintenance and recovery of disabled helicopters:
   a. Move disabled helicopters to a parking area;
      i. Prepare to assist the helicopter operator move a disabled helicopter to the helideck parking area;
      ii. Pre-plan the method of movement with the helicopter operator prior to a disabled helicopter event to promote safety, prevent aircraft damage, and limit helideck closures from stranded aircraft. Plan should include;
         1. Motive power for movement (manpower, winch and tackle, etc.) and sufficient analysis to ensure equipment used is rated for expected loads;
         2. Provision of an aircraft tow bar or other appliance for steering of wheeled helicopters;
         3. Provision of ground handling wheels for skid equipped helicopters;

4. Brake riding or other means of arresting the movement of the helicopter;
    a. Helicopters should not be moved without a safe and reliable means to stop them;
    b. Only helicopter operator personnel are allowed to operate helicopter brakes during ground movement; and
5. Planned movement path to position the helicopter completely in the parking area without bring the aircraft landing gear within 3 feet / 1 meter of the helideck edge at any time during movement, or when finally parked. See item1.a.iii.

iii. Park the aircraft with the clearances specified in FAC 04.11 "Helideck Simultaneous Operations (SIMOPS) Hazards - Multi-Helicopter Operations to a Single Helideck", to enable normal operational flights. If the parked helicopter infringes the Helideck Obstacle Free Sector (OFS) or restricted portion of the Helideck Limited Obstacle Sector (LOS), flights to the helideck shall be restricted in accordance with item 1.c below.

b. Vessel-to-vessel transfer of helicopter maintenance personnel and equipment;
    i. Follow local procedures for vessel-to-vessel transfer; and
    ii. Ensure that the helicopter operator personnel have received locally required training in the means of personnel transfer to be used (e.g. Billy Pugh lift), prior to conducting the transfer. Ensure they possess or receive locally required PPE and are using it properly.

c. Concurrent maintenance recovery landings with the disabled helicopter infringing the helideck OFS or LOS;
    i. Confirm the helideck structural load capability is sufficient to support the combined dynamic load of the landing helicopter and the static weight of the parked helicopter. Request the smallest approved helicopter available capable of conducting the mission.
    ii. Pre-plan the disabled and recovery helicopter locations prior to a disabled helicopter event;
    iii. Determine the optimum parking position for the disabled helicopter in conjunction with the helicopter operator to provide the maximum clearance from the landing helicopter;
        1. Position the disabled helicopter on the installation side of the helideck, with no less than 3 feet / 1-meter clearance between the skid/wheel assemblies and the edge of the helideck;
    iv. Determine the optimum landing location for the recovery helicopter in conjunction with the helicopter operator;
        1. Minimum obstruction clearance during landing or take-off shall not be less than the greater of 1/3 rotor diameter or 4 meters. Any such obstructions shall be located within the area swept by the 8 o'clock forward through to the 4 o'clock position of the landing helicopter as viewed from the flight deck, taking into account forecast winds;
        2. The landing helicopter shall not touch down with less than 3 feet / 1-meter clearance between the skid/wheel assemblies and the edge of the helideck.
    v. Move the disabled helicopter to the parking location in accordance with section 1.a above;

vi. Chock and tie down the disabled helicopter airframe and all blades. Position the main rotor blade tips to provide the maximum clearance from the landing helicopter;

vii. Conduct recovery flight operations:

1. The helicopter operator, pilot in command of the recovery helicopter, OIM / Vessel Master, and responsible Business Technical Authority (TA) – Air Transport must all agree that the landing can be safely conducted before it can be authorized;
2. Operations shall be daylight only; and
3. Only personnel required for the recovery activity may travel on the recovery helicopter. No other passengers may be transported to or from the facility in the recovery helicopter with OFS or LOS infringements present.

d. Helicopter winching of maintenance personnel:

i. Conduct winching in accordance with FAC 04.13 "Offshore Helicopter Hoist Operations (HHO)".

e. Removal of unserviceable helicopters from the facility/vessel by crane:

i. Removal of a helicopter by crane requires close coordination with the helicopter operator;

1. Helicopter operators should know how to lift their helicopters, but facility / vessel personnel are responsible for lift safety;
2. The lift should be considered Non-routine – complex/critical;

ii. Consult with the helicopter operator Contract Holder during planning regarding Company liability protection if the aircraft is damaged during the lift. Even seemingly trivial damage to aircraft components can result in RAM level 3 asset damage;

iii. Consult with the vessel Contract Holder if a Company contracted vessel will receive the aircraft;

iv. If a non-Company receiving vessel or crane barge is provided by the helicopter operator, consult with the Business TA - Maritime regarding required assessment to operate within the 500-meter zone;

v. Review aircraft manufacturer's published lifting instructions with the helicopter operator;

vi. The business/facility/vessel lifting focal point or TA should review the rigging arrangements, Safe Working Load (SWL), and lift plan prior to authorizing the lift;

vii. Prepare for the lift:

1. Make arrangements to safely collect and dispose of aircraft fuel if download is required;
2. Inspect the aircraft for loose components, parts and ensure all cabin and compartment doors are secured to prevent dropped objects. Require helicopter operator maintenance personnel to conduct a tool control inventory and demonstrate that no tools have been left on the aircraft that could fall during the lift;
3. If not removed, secure blades to prevent rotation; and
4. Inspect lifting appliances and equipment provided by the helicopter operator for condition, appropriate Working Load Limit (WLL), and review associated maintenance records to ensure periodic inspections are up to date;

viii. Conduct the lift in accordance with local procedures;

1. Person in charge of the lift should be provided by the facility/vessel;
2. The lift may be significantly affected by wind and helicopter centre of gravity, and by the tendency for helicopters to spin when lifted. Helicopter windows and blades are at risk when unhooking the load; and
3. All participating personnel should be advised of the particular hazards of lifting the helicopter, including those on the receiving vessel.

f. Removal of unserviceable helicopters from the facility/vessel by helicopter external load lift:

i. Refer to FAC 04.17 "Offshore External Load Operations".

ADDITIONAL GUIDANCE

- N/A

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.11 "Helideck Simultaneous Operations (SIMOPS) Hazards
3. FAC 04.13 Offshore Helicopter Hoist Operations (HHO)
4. FAC 04.17 Offshore External Load Operations

External:

1. OGP 376 Lifting & hoisting safety
2. Sample Aircraft Manufacturer's Lifting Instructions – Do not use for actual planning!

RELATED INCIDENT

- No illustration at the moment.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Does the facility/vessel have plans or procedures covering the support of offshore maintenance and recovery of disabled helicopters including (as applicable):
   a. Movement of the disabled helicopter to a properly sized parking area;
   b. Transfer of maintenance personnel, tools, equipment, part, and supplies to the facility/vessel by vessel-to-vessel transfer;
   c. Concurrent maintenance recovery landings (two aircraft on a single helideck with the disabled aircraft not positioned completely within a properly sized parking area);
   d. Helicopter winching of maintenance personnel to the facility/vessel where there is a helicopter winching capability in place; and
   e. Removal of unserviceable helicopters from the facility/vessel by crane?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 10 Air Transport (RW) / Loss of control of load suspended from helicopter
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 04.20 Helicopter Downwash and Wake Turbulence Hazard Controls

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for requirements 1:

1. Implement controls for blown object hazards caused by helicopter downwash and wake turbulence. These shall include;
   a. Inspection of an extended zone around the helideck which is subject to helicopter downwash and wake turbulence during flight operations;
   b. Securing or removing loose equipment and material in the inspection zone; and
   c. Making a general announcement to the facility of helicopter ETA and caution to secure loose objects, doors, and hatches exposed to helicopter downwash and wake turbulence.

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirement 1. The alternate designee and their duties should be clearly identified.

MEANS OF COMPLIANCE FOR REQUIREMENT 1

Acceptable Means of Compliance for Mandatory Requirements 1:

1. Comply with the requirements of FAC 04.01, FAC 04.07 and FAC 04.08.
2. Secure or remove all unsecured objects within a distance twice the "D" value of the helideck measured from the centre of the helideck, and one deck above and below the helideck (e.g. S-92 helideck "D" value of 21 meters – distance checked is 2 X 21 = 42 meters);
3. Secure all items with a large surface area (e.g. plywood and metal sheeting, personnel transfer baskets, box lids, standing metal lockers, super sacks, and other like items) within three times the "D" value of the helideck measured from the centre of the helideck, and one deck above and below the helideck (e.g. S-92 helideck "D" value of 21 meters – distance checked is 3 X 21 = 63 meters); and
4. Doors and hatches can be blown shut at a considerable distance from the helideck and these shall be latched during flight operations to prevent personal injury. This includes storage container doors.

ADDITIONAL GUIDANCE

1. Refer to the SAI White Paper: "Downdraft and Wake Turbulence Hazards on Offshore Facilities" for downwash and wake turbulence guidance and controls.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. FAC 04.01 Manage Helideck Risk
3. FAC 04.07 General Helideck Procedures
4. FAC 04.08 Normally Unattended Installation (NUI) Procedures
5. SAI White Paper - Controlling Downdraft and Wake Turbulence Hazards on Offshore Facilities and Vessels.

External:

1. OGUK Guidelines for the Management of Aviation Operations - Part C: Helideck Operations
2. OLF Helideck Manual

TEMPLATE:

1. FAC 04.07.1 General Helideck Procedures - Templates for Site Specific Helideck Normal Procedures
2. FAC 04.07.2 General Helideck Procedures - Development of Abbreviated Helideck Operations Checklists
3. FAC 04.07.3 General Helideck Procedures - Weekly Helideck Equipment Checklist
4. FAC 04.08.1 NUI Helideck Procedures - Templates for Site Specific NUI Procedures

RELATED INCIDENT

- SAI White Paper: "Controlling Downdraft and Wake Turbulence Hazards on Offshore Facilities and Vessels" Appendix A – Shell Helicopter Induced Wind Incidents from 2011 to 2016.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Have local helideck procedures been developed and made readily available and do they cover the minimum requirements stated in FAC 04.01, FAC 04.07 and FAC 04.08?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 06.01 Helideck and Helideck System Maintenance

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for requirements 1-4:

1. Include helideck related Safety Critical Elements (SCE), as defined in the facility/vessel HSE case, in the facility/vessel planned maintenance system, and subject them to routine Quality Assurance (QA) checks.
2. Regularly check and correct deterioration of helideck markings and installation side identification panels that render them illegible from the air.
3. Maintain the friction properties of the helideck surface to the level required in the UK CAA CAP-437 if a helideck landing net is not fitted.
4. Commission annual certification of;
   a. The helideck firefighting foam production system if fitted, including a laboratory certified produced foam test;
   b. The helideck perimeter safety net in accordance with the Oil & Gas UK "Guidelines for the Management of Aviation Operations";
   c. Meteorological observation system sensors in accordance with manufacturer's instructions, if a system is fitted; and
   d. Other calibrated instruments having the potential to affect aircraft performance.

Notes:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirements 1 through 4. The alternate designee and their duties should be clearly identified.
2. Additional maintenance requirements for Normally Unattended Installations (NUI) are covered in FAC 06.02 "Normally Unattended Installation (NUI) Maintenance".
3. Fuel system maintenance requirements are covered in FAC 06.03 "Helideck Fuel System Maintenance and Quality Sampling".

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. Maintain SCE in accordance with the manufacturer's instructions or local procedures in the absence of a manufacturer's maintenance scheme.
   a. Where SCE are degraded and only partially effective (e.g. individual perimeter light inoperative) review risks with the Shell Technical Authority - Air Transport (TA1) and the Aircraft Operator servicing the facility, and implement operational restrictions as required.
   b. Issue Notices to Airmen (NOTAMs) for safety of flight issues related to degraded SCE.
   c. The helideck maintenance programme will normally ensure the satisfactory continued operation of:
      i. Landing area, structures and associated appliances
      ii. Firefighting and rescue equipment
      iii. Safety equipment and Personal Protective Equipment (PPE)
      iv. Refuelling equipment
      v. Landing area marking
      vi. Helideck drainage
      vii. Lighting (including lighting of dominant obstacles / obstructions, and status light systems)
      viii. Access points
      ix. Safety netting
      x. Telecommunications and avionics
      xi. Meteorological equipment sensors (particularly cleaning the lenses and sensor heads for cloud height instruments and visiometers)
   d. Maintain auditable records of the routine helideck inspections and maintenance activities. Maintenance documentation may be in the form of hard copies or computerised records.
2. Obtain helicopter pilot reports regarding the legibility of helideck markings and installation side identification panels. Clean or repaint as required.
3. Use a recognised means for determining helideck surface friction, such as the use of a surface friction measuring device.
   a. Where a helideck landing net is installed, helideck friction should still be maintained to a level that prevents personal injury from slips and falls.
4. Annual certifications shall be performed by persons or organisations trained to conduct this work. The equipment manufacturer's endorsement is acceptable.
   a. Test perimeter safety netting annually using the manufacturer's recommended method. Where non-purpose-built material is used for perimeter safety fencing, such as vinyl coated chain link fencing, and no manufacturer's test method has been published, a licensed engineer should certify the continued structural integrity of the entire perimeter net installation on an annual basis. Where vinyl covered chain link fencing shows any corrosion, the affected section should be replaced in accordance with FAC 01.03 "Helideck Physical Characteristics".

b. Calibrated instruments having the potential to affect aircraft performance include refuelling system fuel delivery and filter differential pressure gauges, baggage weight scales, and vessel motion measuring equipment.

ADDITIONAL GUIDANCE

- Facility / vessel use of the Shell Aircraft (SAI) helideck inspection checklist may be valuable in identifying maintenance required between annual inspections.

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Managing Risk Manual
2. HSSE & SP Control Framework - Air Transport Manual
3. FAC 01.03 Helideck Physical Characteristics
4. FAC 06.02 Normally Unattended Installation (NUI) Maintenance
5. FAC 06.03 Helideck Fuel System Maintenance and Quality Sampling

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
2. Oil & Gas UK Guidelines for the Management of Aviation Operations - Addendum C-6

Template:

1. Shell Aircraft Helideck Inspection Checklist

RELATED INCIDENT

- No illustration at the moment.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Is all safety critical helideck equipment, as defined in the HSE, included in the facility/vessel planned maintenance system?
2. Is there a regular check of helideck markings?
3. How are helideck surface friction properties maintained if no helideck net is fitted?
4. Are the following certified annually: Firefighting foam (with lab test), helideck perimeter nets, installed meteorological equipment?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 06.02 Normally Unattended Installation (NUI) Maintenance

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for requirement 1:

1. Monitor and remediate the accumulation of guano where the NUI is used as a roost by seabirds, in addition to the requirements found in FAC 06.01 "Helideck and Helideck System Maintenance".

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirement 1. The alternate designee and their duties should be clearly identified.
2. Where fuel systems are provided on NUI, those fuel systems shall be maintained in accordance with FAC 06.03 "Helideck Fuel System Maintenance and Quality Sampling".

MEANS OF COMPLIANCE FOR REQUIREMENT 1

1. Guano cleaning and maintenance work shall be done prior to guano infestations reaching levels where flight restrictions have to be imposed.
2. Except where guano accumulation is only an occasional problem, helideck wash down, cleaning and repairs shall be a priority activity planned within the normal installation maintenance schedule.
3. Measures taken to clean and repair the areas affected by guano should be properly assessed for their health and safety effects on personnel.
4. When bird exclusion equipment is fitted, it shall also be maintained.

ADDITIONAL GUIDANCE

None

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Managing Risk Manual
2. HSSE & SP Control Framework - Air Transport Manual
3. FAC 01.03 Helideck Physical Characteristics
4. FAC 06.01 Helideck and Helideck System
5. FAC 06.03 Helideck Fuel System Maintenance and Quality Sampling

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use.
2. Oil & Gas UK Guidelines for the Management of Aviation Operations - Addendum C-6

Template:

1. Shell Aircraft Helideck Inspection Checklist

RELATED INCIDENT

- No illustration at the moment.

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Does the NUI helideck maintenance scheme meet the requirements of FAC 06.01 "Helideck and Helideck System Maintenance"?
2. Where fuel systems are provided on NUI, are those fuel systems included in a maintenance scheme that complies with FAC 06.03 "Helideck Fuel System Maintenance and Quality Sampling"?
3. Is seabird guano on NUI helidecks monitored and remediated where applicable?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

FAC 06.03 Helideck Fuel System Maintenance and Quality Sampling

Shell Aircraft	
Shell Group Requirements for Aircraft Operations	Restricted
Facility Requirements	Version 3.1 – June 2019

MANDATORY REQUIREMENTS

The OIM/Vessel Master is Accountable for requirements 1-3:

1. Each offshore facility / vessel equipped with a helicopter fuel system shall publish site specific procedures for the maintenance of helicopter fuel systems, including:
   a. Regular inspection and periodic maintenance of the fuelling equipment, hoses, couplings, bonds, tanks, and ancillary equipment;
   b. Transportable fuel tank acceptance and handling;
   c. Fuel quality sampling and inventory tracking;
   d. Tracking and recording of fuel system inspections, maintenance, and sampling results; and
   e. Special fuel sampling following an aircraft accident.
2. Transportable aviation fuel tanks shall be inspected and serviced onshore by a qualified facility prior to filling and dispatch offshore.
3. Fuel quality provisions procedures shall be reviewed and agreed with helicopter operators to ensure they are acceptable.

Note:

1. The facility/vessel Duty Holder may designate another Accountable/Responsible party for requirements 1 through 3. The alternate designee and their duties should be clearly identified.

Note:

Shell Aircraft has commissioned Shell Aviation to produce the Shell Aviation Offshore Fuelling Procedures Manual (SAOFPM) to provide guidance and instruction related to offshore fuelling management. Until this document accepted for Company use, the legacy EP2005-0263 Work Instructions and Tools should be used for guidance when developing local fuel system maintenance procedures.

Terms in green are included in the SGRAO Glossary.
This Document is not controlled when printed. See the Change log for version control information.

MEANS OF COMPLIANCE FOR REQUIREMENTS 1-8

1. Fuel system maintenance:
   a. Refer to EP2005-0263-WI-10-20 "Checks and Tests of Heli Refuelling System" when developing procedures for daily and weekly system checks. Fixed offshore aviation fuel storage tanks shall be inspected and cleaned on at least a 12 monthly basis. Note that this may require confined space entry precautions and a Permit To Work.
   b. Fuel arriving in transportable tanks shall be acceptance checked for quality. Fuel transporter tanks shall be retested prior to connecting to the helideck fuel system or transfer to a fixed bulk tank for use. Refer to EP2005-0263-WI-10-10 "Sampling Helicopter Fuel". When developing procedures for the operation, handling, and contents transfer of fuel transportable tanks, refer to EP2005-0263-WI-10-20 "Checks and Tests of Heli Refuelling System".
   c. Fuel shall be quality tested through sampling. Samples shall be checked "clear and bright" by qualified persons and subjected to a Shell Water Detector capsule test or equivalent check for finely dispersed water. Fuel failing quality tests shall be not used and shall be returned to shore. Contaminated fuel that could have been dispensed into aircraft shall be reported to the helicopter operator. When developing procedures for fuel quality sampling, refer to EP2005-0263-WI-10-10 "Sampling Helicopter Fuel".
      i. Unless the fuel system manufacturer specifies sampling from different locations or at different frequencies, the fuel system shall be sampled:
         1. Daily from the:
            a. Bulk fuel tank sump;
            b. Online (connected) transportable tank sump;
            c. Fuel filter/water separator sampling points;
            d. Filter monitor sample points;
            e. Hose-end nozzle; and
            f. Additional points specified by the system manufacturer
         2. Again, before and after each Aircraft fuelling from the filter monitor sample points.
         3. On condition after heavy rainfall, snow, or high seas, from fixed bulk tanks and connected transportable tanks.
      ii. A daily sample from the filter monitor shall be held in appropriate storage until the completion of flying for the day. If a new transporter tank is brought on line during the day, the transporter tank pre-connection sample then becomes the retention sample.
      iii. Fuel samples shall be passed through a suitable filtration system prior to being put back into stock tanks. Otherwise, the samples shall be disposed of in accordance with local procedures for disposal of kerosene.
      iv. Transporter tank inventory shall be tracked, and fuel in tanks exceeding 6 months on site shall be returned to shore unused.
   d. Maintenance and inspections shall be tracked to ensure completion. Frequent activity (i.e. daily checks) is usually tracked manually, and less frequent activity is usually tracked in an automated Preventative Maintenance System. The results of all inspections and maintenance on Safety Critical Elements/Equipment shall be recorded in an auditable

form. Refer to EP2005-0263-WI-10-20 "Checks and Tests of Heli Refuelling System" when developing local record keeping requirements.

e. Following an aircraft accident involving an aircraft that might have recently received fuel from the facility / vessel, and when requested by appropriate authority, the facility/vessel shall draw and secure fuel samples for use in aircraft accident investigation. The samples may be evidence in formal proceedings and shall be secured from tampering. Refer to EP2005-0263-WI-10-10 "Sampling Helicopter Fuel" when developing these procedures.

ADDITIONAL GUIDANCE

- N/A

LINKS (FOR DOWNLOAD)

Associated Processes:

Company:

1. HSSE & SP Control Framework - Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 2 Appendix 10: Aircraft Refuelling
3. FAC 04.10 Offshore Refuelling Procedures
4. EP2005-0263-PR-10 Helicopter Landing Officer Operations (withdrawn, ref only)
5. EP2005-0263-WI-10-10 Sampling Helicopter Fuel (withdrawn, ref only)
6. EP2005-0263-WI-10-20 Checks and Tests of Heli Refuelling System (withdrawn, ref only)
7. EP2005-0263-WI-10-50 Helicopter Refuelling (withdrawn, ref only)
8. EP2005-0263-TO-85 Filtration equipment Pressure Record (withdrawn, ref only)
9. EP2005-0263-TO-86 Fuelling System Tank Log Sheet (withdrawn, ref only)
10. EP2005-0263-TO-87 Helicopter Incident Reporting (withdrawn, ref only)
11. EP2005-0263-TO-88 Fuel Sampling Record (withdrawn, ref only)
12. Shell Aviation Airport Operations Manual
13. Shell Aviation Maintenance Manual
14. Shell Aviation Quality Assurance Manual

External:

1. UK CAA CAP 437 – Standards for Offshore Landing Areas: Per FAC 01.01 AMC 2 - Recommendations in UK CAA CAP 437 ("should" statements) shall be taken as requirements for Company use. - Chapter 7 and 8
2. UK HSE Helideck Design Guidelines – Section 11.7
3. OGUK Guidelines for the Management of Aviation Operations - Part C: Helideck Operations
4. OLF Helideck Manual

RELATED INCIDENT

- AAIB 7-2002 Helicopter damaged - loss of power contaminated fuel
- NTSB Accident Report NYC95GA060 Helicopter fatal crash from fuel contamination
- NTSB Accident Report LAX05LA176 Helicopter accident caused by contaminated fuel

CORRESPONDING SELF-ASSESSMENT QUESTIONS

1. Does the facility have documented procedures for the maintenance and quality assurance of the aviation fuel system?
2. Are transportable aviation fuel tanks inspected onshore by personnel prior to filling and dispatch?

SHELL AIRCRAFT MODEL BOWTIE REFERENCE

- Bowtie 5 Air Transport / Loss of containment of aviation fuel during storage/refuelling
- Bowtie 14 Air Transport (RW) / Loss of control of helicopter on helideck

IOGP REPORT 590 AMG DIFFERENCES

1. HSSE & SP Control Framework Air Transport Manual
2. Shell Group Requirements for Aircraft Operations (SGRAO) Part 5 (withdrawn, ref only)
3. EP2005-0263 legacy documents (withdrawn, ref only)

Aircraft Glossary Definitions

Ad Hoc:

For the avoidance of doubt, within this document, the term ad hoc shall be interpreted to mean “for a special, particular purpose only”, and cannot be applied to routine or frequently recurring, scheduled use. Ad hoc use may not extend beyond three months unless the total usage is less than 10 hours per month.

Aerial Work:

An aircraft operation in which an aircraft is used for specialised services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc.

Aerodrome operating minima:

The limits of usability of aerodrome for:

a. Take-off, expressed in terms of runway visual range and/or visibility and, if necessary, cloud conditions;
b. Landing in precision approach and landing operations, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H) as appropriate to the category of the operation; and
c. Landing in non-precision approach and landing operations, expressed in terms of visibility and/or runway visual range, minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions.

Aircraft:

Any machine that can derive support in the atmosphere from the reactions of the air, other than the reactions of the air against the earth’s surface.

Aircraft Operating Manual:

A manual, acceptable to the State of the Operator, containing normal, abnormal and emergency procedures, checklists, limitations, performance information, details of the aircraft systems and other material relevant to the operation of the aircraft.

Note - The aircraft operating manual is part of the operations manual.

Aiming Circle:

Former CAP-437 term for Touchdown/Positioning Marking Circle (TD/PM).

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Air Operator Certificate (AOC):

A certificate authorising an operator to carry out specified commercial air transport operations.

Alternate Aerodrome:

An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing. Alternate aerodromes include the following:

- Take-off alternate. An alternate aerodrome at which an aircraft can land should this become necessary shortly after take-off and it is not possible to use the aerodrome of departure.
- En-route alternate. An aerodrome at which an aircraft would be able to land after experiencing an abnormal or emergency condition while en route.
- ETOPS en-route alternate. A suitable and appropriate alternate aerodrome at which an aeroplane would be able to land after experiencing an engine shut-down or other abnormal or emergency condition while en route in an ETOPS operation.
- Destination alternate. An alternate aerodrome to which an aircraft may proceed should it become either impossible or inadvisable to land at the aerodrome of intended landing.

Note: The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for that flight

Alternate Heliport:

A heliport specified in the flight plan to which a flight may proceed when it becomes inadvisable to land at the heliport of intended landing.

Note: An alternate heliport may be the heliport of departure.

Approach and Landing Phase - Helicopters:

That part of the flight from 300m (1,000 ft) above the elevation of the FATO, if the flight is planned to exceed this height, or from the commencement of the descent in the other cases, to landing or to the balked landing point.

AVAD:

A device that provides automatic voice alerts in respect of Radio Altimeter (RadAlt) “bug” settings.

Bow-Tie:

A Hazard analysis tool in which the Threats and Consequences associated with a Hazard are mapped and assessed to determine the necessary Barriers.

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Category A:

With respect to rotorcraft, means a multi-engined rotorcraft designed with engine and system isolation features specified in FAR/JAR-27 / FAR/JAR-29 and capable of operations using take-off and landing data scheduled under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight or safe rejected take-off in the event of engine failure.

Category B:

With respect to rotorcraft, means a single-engine or multi-engine rotorcraft which does not meet Category A standards. Category B rotorcraft have no guaranteed capability to continue safe flight in the event of an engine failure, and unscheduled landing is assumed.

Commercial Air Transport Operation:

An aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

Controlled Company(ies):

A Company is any company in which Royal Dutch Shell holds a controlling interest, either directly or indirectly, including holding companies, service companies, operating companies and Joint Venture companies. Joint Ventures that are considered Controlled Companies include Joint Ventures Under Operational Control (UOC), and Joint Ventures where Shell holds a Controlling Interest, under Joint Operational Control (JOC), under Other Participant Operational Control (OPOC), or Self-Directed. See the Group HSSE Control Framework - HSSE Management System - Joint Venture HSSE Requirements for more information.

Congested Area:

In relation to a city, town or settlement, any area which is substantially used for residential, commercial or recreational purposes.

Contract Types:

Aircraft Services; Ad hoc/Call off; One Time Charter.

Covering Back-up Team:

In regard to helideck Emergency Response, a facility or vessel response team intended to provide fire fighting protection for rescuers involved in recovering survivors unable to self-evacuate from aircraft after an accident. The rescue team may not begin rescue operations until the covering back-up team in in place and ready to provide a protected environment during rescue.

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Dangerous Goods:

Articles or substances which are capable of posing significant risk to health, safety or property, when transported by air.

Decision Altitude (DA) or Decision Height (DH):

A specified altitude or height in the precision approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.

Note 1: Decision altitude (DA) is referenced to mean sea level and decision height (DH) is referenced to the threshold elevation.

Note 2: The required visual reference means that section of the visual aids or of the approach area, which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path. In category III operations with a decision height the required visual reference is that specified for the particular procedure and operation.

Note 3: For convenience where both expressions are used they may be written in the form "decision altitude/height" and abbreviated "DA/H".

Dry Lease:

When the aircraft is being operated under the AOC of the lessee.

Duty holder:

- in relation to a fixed installation, the operator; and
- in relation to a mobile installation, the owner.

D-Circle:

A circle, usually imaginary unless the helideck itself is circular, the diameter of which is the D-Value of the largest helicopter the helideck is intended to serve.

D-Value:

The largest overall dimension of the helicopter when rotors are turning. This dimension will normally be measured from the most forward position of the main rotor tip path plane to the most rearward position of the tail rotor tip path plane (or the most rearward extension of the fuselage in the case of Fenestron or Notar tails).

Elevated heliport:

A heliport located on a raised structure on land.

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Emergency locator transmitter (ELT):

A generic term describing equipment which broadcast distinctive signals on designated frequencies and, depending on application, may be automatically activated by impact or be manually activated. An ELT may be any of the following:

- **Automatic Fixed ELT (ELT/(AF)):** An automatically activated ELT, which is permanently attached to an aircraft.
- **Automatic Portable ELT (ELT(AP)):** An ELT which is rigidly attached to an aircraft and which is automatically deployed and activated by impact, and, in some cases, also by hydrostatic sensors. Manual deployment is also provided.
- **Automatic deployable ELT (ELT (AD)):** An ELT which is rigidly attached to an aircraft and which is automatically deployed and activated by impact, and, in some cases, also by hydrostatic sensors. Manual deployment is also provided. Also known as an **ADELT**.
- **Survival ELT (ELT(S)):** An ELT which is removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by survivors.

En-route phase:

That part of the flight from the end of the take-off and initial climb phase of the commencement of the approach and landing phase.

Note: Where adequate obstacle clearance cannot be guaranteed visually, flights must be planned to ensure that obstacles can be cleared by an appropriate margin. In the event of failure of the critical power-unit, operators may need to adopt alternative procedures.

Final Approach and Take-Off Area (FATO):

A defined area over which the final phase of the approach manoeuvre to hover or landing is completed and from which the take-off manoeuvre is commenced. Where the FATO is to be used by Performance Class 1 helicopters, the defined area includes the rejected take-off area available.

Flight duty period:

The total time from the moment a flight crew member commences duty, immediately subsequent to a rest period and prior to making a flight or a series of flights, to the moment the flight crew member is relieved of all duties having completed such flight or series of flights.

Flight Manual:

A manual, associated with the certificate of airworthiness, containing limitations within which the aircraft is to be considered airworthy, and instructions and information necessary to the flight crew members for the safe operation of the aircraft.

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Flight Plan:

Specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft.

Flight Recorder:

Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

Flight Time:

The total time from the moment an aircraft first moves under its own power for the purpose of taking off until the moment it comes to rest at the end of the flight.

Note 1: Flight time as here defined is synonymous with the term “block to block” time or “chock to chock” time in general usage which is measured from the time an aircraft moves from the loading point until it stops at the unloading point.

Note 2: Whenever helicopter rotors are engaged, the time will be included in the flight time.
Frequency of occurrences:

Frequency of occurrences:

“Reasonably Probable” means unlikely to occur often during the operation of each aircraft of the type but which may occur several times during the total operational life of each aircraft of the types in which the engine may be installed. Note: Where numerical values are used this may normally be interpreted as a probability in the range 10-3 to 10-5 per hour of flight.

“Remote” means unlikely to occur to each aircraft during its total operational life but may occur several times when considering the total operational life of a number of aircraft of the type in which the engine is installed. Note: Where numerical values are used this may normally be interpreted as a probability in the range 10-5 to 10-7 per hour of flight.

“Extremely Remote” means unlikely to occur when considering the total operational life of a number of aircraft of the type in which the engine is installed but nevertheless, has to be regarded as being possible.

Note: Where numerical values are used this may normally be interpreted as a probability in the range 10-7 to 10-9 per hour of flight.

Helideck:

A landing area on an offshore installation or vessel.

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Heliport:

An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

Heliport Operating Minima:

The limits of usability of a heliport for:

a. Take-off, expressed in terms of runway visual range and/or visibility and, if necessary, cloud conditions;
b. Landing in precision approach and landing operations, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H) as appropriate to the category of the operation; and
c. Landing in non-precision approach and landing operations, expressed in terms of visibility and/or runway visual range, minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions.

Hazard and Effects Management Process (HEMP):

A structured Risk analysis methodology that involves Hazard identification, Risk Assessment, selection of Controls and Recovery Measures, and comparison with tolerability and As Low As Reasonably Practicable criteria.

Hazards and Effects Register:

A list of the Hazards that are associated with an activity, together with their potential Effects and assessed Risks.

Human Factors Principles:

Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

Instrument Approach and Landing Operations:

Instrument approach and landing operations using instrument approach procedures are classified as:

- **Non-precision approach and landing operations:** An instrument approach and landing which does not utilise electronic glide path guidance.
- **Precision Approach and Landing Operations:** An instrument approach and landing using precision azimuth and glide path guidance with minima as determined by the category of operation.

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Categories of precision and landing operations:

- **Category I (CAT I) Operation:** A precision instrument approach and landing with a decision height not lower than 60 m (200 ft) and with either a visibility not less than 800 m or a runway visual range not less than 550 m.
- **Category II (CAT II) Operation:** A precision instrument approach and landing with a decision height lower than 60 m (200 ft), but not lower than 30 m (100 ft), and a runway visual range not less than 300 m.
- **Category IIIA (CAT IIIA) Operation:** A precision instrument approach and landing with decision height lower than 30 m (100 ft) or no decision height; and a runway visual range not less than 200 m.
- **Category IIIB (CAT IIIB) Operation:** A precision instrument approach and landing with decision height lower than 15 m (50 ft) or no decision height; and a runway visual range less than 200 m but not less than 75 m.
- **Category IIIC (CAT IIIC) Operation:** A precision instrument approach and landing with no decision height and no runway visual range limitations.

  Note: Where decision height (DH) and runway visual range (RVR) fall into different categories of operation, the RVR will determine in which category the operation is to be conducted.

Hostile Environment:

An environment in which:

1. A safe forced landing cannot be accomplished because the surface is inadequate; or
2. The helicopter occupants cannot be protected adequately from the elements; or
3. Search and rescue response/ capability is not provided consistent with anticipated exposure; or
4. There is an unacceptable risk of endangering persons or property on the ground.

In any case, the following areas shall be considered hostile:

1. All over-water flights; and
2. Those parts of a congested area without adequate safe forced landing areas.

Instrument Meteorological Conditions (IMC):

Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, less than the minima specified for visual meteorological conditions.

Landing Decision Point (LDP):

The point used in determining landing performance from which, a power-unit failure occurring at this point, the landing may be safely continued or a balked landing initiated.

Note: LDP applies to Performance Class I helicopters.

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Limited Obstacle Sector:

The 150° sector within which obstacles may be permitted, provided the height of the obstacles is limited.

Maintenance:

Tasks required to ensure the continued airworthiness of an aircraft including any one or combination of overhaul, repair, inspection, replacement, modification or defect rectification.

Master Minimum Equipment List (MMEL):

A list established for a particular aircraft type by the organisation responsible for the type design with the approval of the State of Design containing items, one or more of which is permitted to be unserviceable at the commencement of a flight. The MMEL may be associated with special operating conditions, limitations or procedures.

Minimum Descent Altitude (MDA) or Minimum Descent Height (MDH):

A specified altitude or height in a non-precision approach or circling approach below which descent must not be made without the required visual reference.

Note 1: Minimum descent altitude (MDA) is referenced to mean sea level and minimum descent height (MDH) is referenced to the aerodrome elevation or to the threshold elevation if that is more than 2m (7ft) below the aerodrome elevation. A minimum descent height for a circling approach is referenced to the aerodrome elevation.

Note 2: The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path. In the case of a circling approach the required visual reference is the runway environment.

Note 3: For convenience when both expressions are used they may be written in the form “minimum descent altitude/height” and abbreviated “MDA/H”.

Minimum Equipment List (MEL):

A list which provides for the operation of aircraft, subject to specified conditions, with particular equipment inoperative, prepared by an operator in conformity with, or more restrictive than, the MMEL established for the aircraft type.

Maximum operational passenger seating configuration (MOPSC)

The maximum passenger seating capacity of an individual aircraft, excluding crew seats, established for operational purposes and specified in the operations manual.

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Night:

The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise, as may be prescribed by the appropriate authority.

Note: During civil twilight, the geometric center of the Sun's disk is at most 6 degrees below the horizon. In the morning, this twilight phase ends at sunrise; in the evening it begins at sunset. Sunrise and sunset are the moments when the Sun's upper edge touches the horizon.

Non-Hostile Environment:

An environment in which:

1. A safe forced landing can be accomplished; and
2. The occupants can be protected from the elements; and
3. Search and rescue response/ capability is provided consistent with the anticipated exposure.

In any case, water landings in other than float planes are not considered to provide a safe forced landing due to the risk of capsize; and

Those parts of a congested area with adequate safe forced landings areas shall be considered non-hostile.

Obstacle Clearance Altitude (OCA) or Obstacle Clearance Height (OCH):

The lowest altitude or the lowest height above the elevation of the relevant runway threshold or the aerodrome elevation as applicable, used in establishing compliance with appropriate obstacle clearance criteria.

Note 1: Obstacle clearance altitude is referenced to mean sea level and obstacle clearance height is referenced to the threshold elevation or in the case of non-precision approaches to the aerodrome elevation or the threshold elevation if that is more than 2m (7ft) below the aerodrome elevation. An obstacle clearance height for a circling approach is referenced to the aerodrome elevation.

Note 2: For convenience when both expressions are used they may be written in the form “obstacle clearance altitude/height” and abbreviated “OCA/H”.

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Obstacle Free Sector:

The 210° sector, extending outwards to a distance of 1000 metres within which no obstacles above helideck level are permitted, except the following items which shall not exceed the height of the landing area by more than 0.25 m:

- Guttering/Kerb Edging;
- Helideck Lighting;
- Outboard Edge of Safety Nets;
- Foam Monitors;
- Handrails (when folded).

Operational Control:

The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of the flight.

Operational Flight Plan:

The operator's plan for the safe conduct of the flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed and at the airfields/heliports concerned.

Operations Manual:

A manual containing procedures, instructions and guidance for use by operational personnel in the execution of their duties.

Operator:

A person, organisation or enterprise engaged in or offering to engage in an aircraft operation.

Performance Class A airplane:

Multi-engined airplanes powered by turbo-propeller engines with an MOPSC of more than nine or a maximum take-off mass exceeding 5 700 kg, and all multi-engined turbo-jet powered airplanes.

Performance Class B airplane:

Airplanes powered by propeller engines with an MOPSC of nine or less and a maximum take-off mass of 5 700 kg or less. This includes single engine airplanes.

Performance Class C airplane:

Airplanes powered by reciprocating engines with an MOPSC of more than nine or a maximum take-off mass exceeding 5 700 kg.

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Performance Class 1 helicopter:

A helicopter with performance such that, in case of critical power-unit failure, it is able to land on the rejected take-off area or safely continue the flight to an appropriate landing area, depending on when the failure occurs.

Performance Class 2 helicopter:

A helicopter with performance such that, in case of critical power-unit failure, it is able to safely continue the flight, except when the failure occurs prior to a defined point after take-off or after a defined point before landing, in which cases a forced landing may be required.

Performance Class 3 helicopter:

A helicopter with performance such that, in case of power-unit failure at any point in the flight profile, a forced landing must be performed.

Perimeter D Marking:

In relation to helidecks, the marking in the perimeter line in whole numbers; i.e. the D- Value rounded up or down to the nearest whole number.

Pilot Flying:

The pilot who, for the time being is in charge of the controls of the aircraft.

Pilot Not Flying:

The pilot who is assisting the “Pilot flying” in accordance with the multi-crew co-operation concept, when the required flight crew is more than one.

Pilot-In-Command:

The pilot responsible for the operation and safety of the aircraft during flight time.

Rest period: Any period of time on the ground during which a flight crew member is relieved of all duties by the operator.

RPAS:

Remotely Piloted Aircraft System (RPAS) and all of the associated support equipment, ground control station, data links, telemetry, communications and navigation equipment necessary to operate the unmanned aircraft.

Run-Off Area:

An extension to the Landing Area designed to accommodate a parked helicopter.

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Runway Visual Range (RVR):

The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.

Safe Forced Landing:

Unavoidable landing or ditching with a reasonable expectancy of no injuries to persons in the aircraft or on the surface.

Safe Landing Area:

The helideck area bounded by the perimeter line and perimeter lighting.

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

Scheduled Airline:

Air Operator’s offering scheduled services. Airline status ratings for use by Shell travelers are listed in the Airline Safety Assessment Mechanism (ASAM).

State of Registry:

The State on whose register the aircraft is entered.

Synthetic Training Device (STD):

A training device which is either; a Flight Simulator (FS), a Flight Training Device (FTD) or, a Flight & Navigation Procedures Trainer (FNPT).

- **Flight Simulator (FS)**: A full size replica of a specific type or make, model and series helicopter flight deck/cockpit, including the assemblage of all equipment and computer programmes necessary to represent the helicopter in ground and flight operations, a visual system providing an out of the flight deck/cockpit view, and a force cueing motion system. It is in compliance with the minimum standards for Flight Simulator qualification.
- **Flight Training Device (FTD):** A full size replica of a specific helicopter type's instruments, equipment, panels, and controls in an open flight deck/cockpit area or an enclosed helicopter cockpit/flight deck, including the assemblage of equipment and computer programmes necessary to represent the helicopter in ground and flight conditions to the extent of the systems installed in the device. It does not require a force cueing motion or visual system. It is in compliance with the minimum standards

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for a specific FTD Level of Qualification.

- **Flight and Navigation Procedures Trainer (FNPT):** A training device which represents the flight deck/cockpit environment including the assemblage of equipment and computer programmes necessary to represent a helicopter in flight conditions to the extent that the systems appear to function as in a helicopter. It is in compliance with the minimum standards for a specific FNPT Level of Qualification.
- **A basic instrument flight trainer,** which is equipped with appropriate instruments, and which simulates the flight deck environment of an aircraft in flight in instrument flight conditions.

Take-Off and Initial Climb Phase:

That part of the flight from the start of take-off to 300m (1,000ft) above the elevation of the FATO, if the flight is planned to exceed this height, or to the end of the climb in the other cases.

Take-Off Decision Point (TDP):

The point used in determining take-off performance from which, a power-unit failure occurring at this point, either a rejected take-off may be made or a take-off safety continued.

Note: TDP applies to Performance Class 1 helicopters.

Touchdown/Positioning Marking Circle (TD/PM):

The helideck aiming point for a normal touchdown (landing) so located that when the pilot's seat is over the marking, the whole of the undercarriage will be within the landing area and all parts of the helicopter will be clear of any obstacles by a safe margin. Described as the Aiming Circle in earlier editions of CAP 437.

Visual Meteorological Conditions (VMC):

Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, equal to or better than specified minima.

These minima should be defined in the appropriate Operations Manual as specified by the National Aviation Authority (NAA), however, should not be less than those specified in ICAO Annex 2, Chapter 4.

Wet Lease:

When the aircraft is being operated under the AOC of the lessor.

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ABBREVIATIONS

ACAS - Airborne collision avoidance system

ADELT - Automatic Deployable Emergency Locator Transmitter

AEO - All Engines Operating

AFCS - Automatic flight control system

AGL - Above ground level

AOC - Air operator certificate

ASAM - Airline Safety Assessment Mechanism

ASDA - Accelerate stop distance available

ASL - Above sea level

ATC - Air traffic control

ATS - Air traffic services

AVAD - Automatic Voice Alerting Device

CAS - Calibrated airspeed

cm - Centimetre

CFIT - Controlled flight into terrain

CRM - Crew resource management

CVR - Cockpit voice recorder

DA - Decision altitude

DH - Decision height

DME - Distance measuring equipment

EAS - Equivalent airspeed

EASA - European Aviation Safety Agency

EFIS - Electronic flight instrument system

EGPWS - Enhanced ground proximity warning system

ELT - Emergency locator transmitter

ELT(AD) - Automatically deployable ELT

ELT(AF) - Automatic fixed ELT

ELT(AP) - Automatic portable ELT

ELT(S) - Survival ELT

ETOPS - Extended range operations with two engine aeroplanes

EUROCAE - European Organisation for Civil Aviation Electronics

FAA - Federal Aviation Authority

FATO - Final approach and take-off area

FDAU - Flight data acquisition unit

FDR - Flight data recorder

FL - Flight level

FM - Frequency modulation

FOD - Foreign object debris/damage

ft - Foot

ft/min - Feet per minute

g - Normal acceleration

GPWS - Ground proximity warning system

GOM - Gulf of Mexico

HDA - Helideck assistant

HISL - High intensity strobe light

HLO - Helideck Landing Officer

HOMP - Helicopter operations monitoring programme

HUET - Helicopter underwater escape training

HUMS - Health and Usage Monitoring System

IAS - Indicated airspeed

ICAO - International Civil Aviation Organisation

IFR - Instrument flight rules

ILS - Instrument Landing System

IMC - Instrument meteorological conditions

INS - Inertial navigation system

ISA - International standard atmosphere

IVLL - Installation/vessel limitation list

JAA - Joint Aviation Authorities

JAR - Joint Aviation Requirements

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kg - Kilogram

km - Kilometre

km/h - Kilometre per hour

kt - Knot

lb - Pound

LDA - Landing distance available

LDP - Landing decision point

LOFT - Line-oriented flight training

LOS - Limited obstacle sector (helidecks)

m - Metre

MDA - Minimum descent altitude

MDH - Minimum descent height

MEL - Minimum equipment list

MHz - Megahertz

MMEL - Master minimum equipment list

MOPSC - Maximum operational passenger seating configuration

MTOM - Maximum take-off mass

m/s - Metres per second

M/s^2 - Metres per second squared

N - Newton

N1 - Fan speed = LP Turbine

N2 - HP compressor = HP Turbine

NAI - Normally attended installation

NAV - Navigation

NM - Nautical mile

NUI - Normally unattended installation

OCA - Obstacle clearance altitude

OCH - Obstacle clearance height

OFDM - Operational flight data monitoring

OEI - One engine inoperative

OPITO - Offshore Petroleum Industry Training Organisation

OFS - Obstacle free sector (helidecks)

OGE - Out of ground effect

OU - Operating Unit (may be Shell Company, or Shell/Venture owned)

PF - Pilot flying

PNF - Pilot not flying

PNR - Point of no return

RNP - Required navigation performance

RVR - Runway visual range

SAR - Search and rescue

SOP - Standard operating procedures

TAS - True airspeed

TDP - Take-off decision point

TODA - Take-off distance available

TORA - Take-off run available

TD/PM - Touchdown/Positioning Marking Circle

UTC - Universal co-ordinated time

VFE - Maximum flap extended speed

VFR - Visual flight rules

VD - Design diving speed

VHF - Very high frequency

VMC - Visual meteorological conditions

VMCA - Minimum control speed, take off & climb

VMCG - Minimum control speed, on or near the ground

VMCL - Minimum control speed, approach & landing

VMO - Maximum operating limit speed

VNE - Never exceed speed

VR - Rotation speed

VS - Stall speed or minimum steady flight speed at which aircraft is controllable

VSO - Stall speed or minimum steady flight speed in the landing configuration

VTOSS - Take off safely speed for Category A rotorcraft

V1 - Take off decision speed

V2 - Take off safety speed

VSM - Vertical separation minima

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VTOL - Vertical take-off and landing

WX - Weather

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