



Guidelines for the Management of Offshore Helideck Operations

Issue 5

February 2005

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PUBLISHED BY UK OFFSHORE OPERATORS ASSOCIATION

London Office:

2nd Floor, 232-242 Vauxhall Bridge Road, London, SW1V 1AU.
Tel: 020 7802 2400 Fax: 020 7802 2401

Aberdeen Office:

3rd Floor, The Exchange, 62 Market Street, Aberdeen, AB11 5PJ.
Tel: 01224 577250

Email: info@ukooa.co.uk

Website: www.oilandgas.org.uk

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Preface

These guidelines have been produced by the UK Offshore Operators Association, in conjunction with its key stakeholders, to assist all those with responsibilities in offshore helicopter operations to reduce the risks involved in such operations to as low as reasonably practicable.

The guidelines bring together four previous UKOOA publications related to offshore helicopter operations. These are:

- Management of Offshore Helideck Operations
- Helicopter Operations to Normally Unattended Installations (NUIs)
- Offshore Radio Operators' Procedures Helicopter Operations
- Security Controls at Helicopter Terminals

In July 2004, Offshore Helideck Design Guidelines [Ref: 38] were published by the Health and Safety Executive. The helideck design guidelines are complementary to these helideck management guidelines and should therefore be regarded as a companion document.

This edition supersedes Issue 4 February 2003 and incorporates recommendations arising from recent AAIB reports into two helicopter accidents. The first was the Super Puma accident on the West Navion drilling ship in November 2001. The report highlighted the need to communicate significant changes in environmental conditions, to the pilot of a helicopter sitting on the helideck with rotors running (Section 7 Paragraph 9.4. and Section 8 Paragraph 3 (3)). The report also identified the need to ensure that investigations into any Installation accidents consider the safety implications for helicopter operations on helidecks (Section 3 Paragraph 1.3). The second accident was the S-76 crash off the Norfolk coast in July 2002 with the loss of eleven lives. Although not a contributory factor to the accident, the report highlighted the need, in the case of flights between manned Installations, for the radio operator to establish positive contact with the receiving Installation immediately after the departure of the flight and convey the relevant flight details (Addendum 13 Paragraph 1(2)).

Other revisions to the guidelines include; blocked helideck procedure (Section 7), reference to research into operations to moving helidecks (Section 8) and reference to competency standards for helideck crew (Section 13).

Disclaimer

The guidelines in this document set out what is generally regarded in the UK offshore oil and gas industry as good practice. They are not mandatory and those responsible for helidecks and the management of them may adopt different standards in a particular situation where to do so would maintain an equivalent level of safety.

Whilst every effort has been made to ensure the data given in this document is both correct and up to date at the time of publication, the sponsors, participating groups and author will not accept any liability for any erroneous, incorrect or incomplete information published in this document.

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- British Helicopter Advisory Board (BHAB)
- British Rig Owners Association (BROA)
- Civil Aviation Authority (CAA – SRG)
- Cogent/Offshore Petroleum Industry Training Organisation (OPITO)
- Health and Safety Executive – Offshore Division (HSE-OSD)
- International Association of Drilling Contractors (IADC) – North Sea Chapter
- International Association of Geophysical Contractors (IAGC)
- International Marine Contractors Association (IMCA)
- International Association of Oil and Gas Producers – Aviation Sub Committee (OGP)
- Maritime and Coastguard Agency (MCA)
- Offshore Contractors Association (OCA)
- Offshore Industry Advisory Committee – Helicopter Liaison Group (OIAC-HLG)
- UKOOA Aircraft Committee Members

TECHNICAL EDITOR

John Burt Associates Limited



BROA



IADC



List of Abbreviations

AAIB	Air Accident Investigation Branch
ABCB	Association of British Certification Bodies
ACOP	Approved Code of Practice
AEO	All Engines Operative
AFFF	Aqueous Film Forming Foam
ALARP	As Low As Reasonably Practicable
ANO	Air Navigation Order
AOC	Air Operator's Certificate
API	American Petroleum Institute
ASTG	Aviation Safety Technical Group
ATC	Air Traffic Control
BHAB	British Helicopter Advisory Board
BROA	British Rig Owners Association
BS	British Standards
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CCR	Central Control Room
CAPEX	Capital Expenditure
COSHH	Control of Substances Hazardous to Health
D	Overall length of Helicopter
DCR	Design and Construction Regulations
DNV	Det Norsk Veritas
DP	Dynamic Positioning
DoT	Department of Transport
DSV	Diving Support Vessel
EBS	Emergency Breathing System
EERA	Evacuation, Escape and Rescue Analysis
ERP	Emergency Response Plan
ETA	Estimated Time of Arrival
FOD	Foreign Object Damage
FPSO	Floating Production, Storage and Offtake
HASAWA	Health and Safety at Work etc Act 1974
HDA	Helideck Assistant
HLG	Helicopter Liaison Group (sub group of OIAC)
HLL	Helideck Limitations List (previously titled IVLL)
HLO	Helicopter Landing Officer
HORG	Helicopter Offshore Route Guide
HSE	Health and Safety Executive
HUZUP	Hood Up, Zip Up

List of Abbreviations (cont'd)

IADC	International Association of Drilling Contractors
IAGC	International Association of Geophysical Contractors
IAS	Indicated Airspeed
IATA	International Air Transport Association
IMCA	International Marine Contractors Association
IVLL	Installations and Vessels Limitation List (now HLL)
ICAO	International Civil Aviation Organisation
ICP	Independent Competent Person
IMO	International Maritime Organisation
ISO	International Standards Organisation
LDP	Landing Decision Point
LOS	Limited Obstacle Sector
MAR	Management and Administration Regulations
MAUW	Maximum All Up Weight
MCA	Maritime and Coastguard Agency
MODU	Mobile Offshore Drilling Unit
MSI	Motion Severity
NATS	National Air Traffic Service
NDB	Non-directional Beacon
NM	Nautical Mile
NUI	Normally Unattended Installation
OAT	Outside Air Temperature
OCA	Offshore Contractors Association
OBRR	Offshore-based Rescue and Recovery (eg SAR helicopters)
OEI	One Engine Inoperative
OGP	International Association of Oil and Gas Producers
OHIR	Offshore Helideck Inspection Report
OIAC	Offshore Industry Advisory Committee
OIM	Offshore Installation Manager
OPEX	Operating Expense
ON	Operations Notice (HSE)
OPITO	Offshore Petroleum Industry Training Organisation (now COGENT)
OSD	Offshore Safety Division
PA	Public Address
PFEER	Prevention of Fire and Explosion, and Emergency Response
PLB	Personal Locator Beacon
PO	Point of Origin
POB	Persons on Board (used by mariners as alternative to SOB)
PPE	Personal Protection Equipment
PPEWR	Personal Protective Equipment at Work Regulations

List of Abbreviations (cont'd)

RFF	Rescue and Firefighting
RFFF	Rescue and Firefighting Facilities
SAR	Search and Rescue
SBV	Standby Vessel
SCE	Safety Critical Element
SCR	Safety Case Regulations
SLA	Safe Landing Area
SMS	Safety Management System
SN	Safety Notice (Health and Safety Executive)
SOB	Souls on Board (used by aviators as alternative to POB)
SRG	Safety Regulation Group (of CAA)
SSCV	Semi-submersible Crane Vessel
TDP	Take-off Decision Point
UKCS	United Kingdom Continental Shelf
UKOOA	UK Offshore Operators Association
VHF	Very High Frequency
WSI	Wind Severity Index

List of Contributors

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Dave Andrew	Bristow Helicopters Limited/BHAB
Duncan Bliss	PGS/IAGC
John Burt	John Burt Associates Limited
Mike Crabb	BHAB Helidecks (Norwich)
David Doig	Cogent/OPITO
Ian Evans	Stena Drilling/IADC and BROA
John Ferrall	J C Ferrall Aviation Limited (Retired)
Peter Garland	CHC Scotia Helicopters/BHAB
Keith Greenwood	BP Plc/UKOOA (Retired)
Ian Gordon	Shell Exploration and Production/UKOOA
Willie Hacking	BHP Billiton/UKOOA
John Hopson	Civil Aviation Authority (Retired)
Davie Hunter	Shell Exploration and Production/UKOOA
Brian Johnstone	Enterprise Oil/UKOOA
Bob Kyle	UKOOA
Colin Martin	BP Plc/UKOOA
John Monaghan	BHAB Helidecks (Aberdeen)
Wim Morris	Bomel Engineering Consultants Limited (Deceased)
Steve O'Collard	CHC Scotia Helicopters/BHAB
Kevin Payne et al	Civil Aviation Authority
James Prideaux	Civil Aviation Authority (ATSSD)
Bill Quinn	Health and Safety Executive
Bill Ralph	Health and Safety Executive
Des Richard	Avad/OGP and UKOOA (Retired)
Brian Robertson	Technip Coflexip/IMCA
Maarten Sanvig	Navion AS/IMCA
Tony Steel	Civil Aviation Authority

Brian Teeder	Shell Aircraft Limited/UKOOA
Adrian Thomas	Bristow Helicopters Limited/BHAB
Chris Twyman	Shell Exploration and Production/UKOOA
Phil Wiggs	IMCA
Bob Williams	Exxon Mobil/OGP

Section 1 Introduction

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1 Purpose

The objective of these guidelines is to provide up-to-date advice about the management of offshore helideck operations and the provision of suitable arrangements on Installations and vessels. It is also to assure helideck availability during both normal and emergency situations. The intention of these guidelines is to provide the following:

- Assistance to the onshore management personnel (eg logistics, safety etc) responsible for providing offshore helicopter and helideck services, with setting the standards and monitoring safety and efficiency of operations
- Assistance with the implementation of good industry practices by offshore personnel (eg Offshore Installation Manager (OIMs) and Helicopter Landing Officers (HLOs)) responsible for assuring the safe and efficient conduct of helideck operations
- Independent Competent Persons (ICPs) who undertake offshore helideck and facilities inspections and audits, with examples of good industry practice and acceptable performance standards that should be achieved
- Information to helideck designers preparing Safety Cases for offshore Installations and vessels about the essential operational need to provide 'fit for purpose' helideck arrangements that will assure good availability under both normal and emergency operating conditions

2 Scope

These guidelines are intended to address the key and routine issues that are known to arise in the execution of United Kingdom Continental Shelf (UKCS) offshore helideck operations.

In doing so, the guidelines should provide the industry with information on good practice and the acceptable helideck operating standards that Dutyholders are reasonably expected to adopt.

3 Background

Since oil and gas exploration and production activities began on the UKCS, the offshore industry has been heavily dependent upon the efficient use of helicopters for logistics and emergency support.

The primary role of helicopters is moving people to and from their workplaces on offshore facilities and vessels. Other roles include freight movements, emergency evacuation and Search and Rescue (SAR).

The helicopter's evolution, since the early 1960s, into a routine offshore 'workhorse' has inevitably brought its operational support activities into sharper focus. The harsh operating environment, some serious and fatal incidents and the introduction of goal-setting offshore safety requirements have all contributed to a greater awareness concerning the problems associated with operating helicopters in a marine environment.

Technologically, helicopters have advanced significantly during the last 30 years. However, despite these technical improvements, aircraft designers, maintenance engineers, aircrews and helicopter operators continue to seek ways to improve flight safety and aircraft reliability.

Offshore Installation Operators and vessel owners also have a major part to play in assuring and improving offshore helicopter flight safety. The Installation Operators and vessel owners are entirely responsible for the helideck facilities they provide offshore. Therefore, they should also fully recognise and understand the need to ensure that high standards of operating management and hardware are maintained. However, greater awareness of offshore helicopter operating problems is not always matched by a full and clear understanding of the management requirements associated with aeronautical operations that interface with oil and gas/marine activities.

The Guidelines for Management of Offshore Helideck Operations were first published by the UK Offshore Operators Association (UKOOA) in 1993 and were last updated in 2003.

The joint industry guidelines originated as a result of a series of helideck inspections carried out between 1992 and 1995 by the Civil Aviation Authority (CAA) on behalf of the Health and Safety Executive.

In final report on the Health and Safety Executive/CAA inspection project prepared for the Health and Safety Executive [Ref: 42], there were many deficiencies concerning the physical layout of helidecks, helideck operations, maintenance, standards of equipment and the competence and training of helideck crews.

Since the guidelines were introduced, they have become recognised by the industry and regulators as an authoritative publication. They are referenced in Civil Aviation Publication (CAP) 437 [Ref: 46] and in the Offshore Installations and Wells (Design and Construction, etc) Regulations 1996 and Approved Codes of Practice (AcoP) where guidance is given on matters to do with helidecks and helideck operations.

This fifth edition of these guidelines embodies the latest informed operational thinking, some new topics and up-to-date data. It is intended the guidelines should further contribute to the level of technical understanding and to the achievement of higher standards of safety and operability during helideck operations on Installations and vessels.

Section 2

The Offshore Helicopter Operating Environment

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1 Introduction

Due to competing priorities, the offshore helicopter operating environment is viewed quite differently by the organisations and people that are involved in a wide range of related activities, from helideck design through to actual offshore helideck operations. The various entities include:

- Installation Operators and vessel owners management (Dutyholders)
- Helicopter operators (the Air Operator's Certificate (AOC) Holder), flight crews and maintainers
- Helicopter Landing Officers (HLOs), deck crews and service providers
- Helideck designers, fabricators and technical support specialists
- Installation/vessel project engineering and construction management
- Regulators

Throughout the 'lifetime' management of a helideck, several individuals and organisations will be involved from design to routine operation. It is the different perspectives held by these entities that can, and often does, lead to inadequate helideck facilities and support arrangements being provided, particularly when they act or operate in isolation from one another.

The following sections serve to offer an insight into the end-users' perspectives and thus provide a better understanding of the overriding operational requirements and outcomes that should be given priority consideration.

2 The Offshore Platform Operator's/ Vessel Owner's Perspective

The helicopter crew, HLO and deck crews are the end users. Respectively, they are responsible for safely flying to and from the helideck, supervising helideck operations and providing serviceable helideck facilities on a day-to-day basis. It is the end users that have to deal with operating problems that arise from helideck inadequacies such as poor design and maintenance.

3 The Offshore Helicopter Pilot's Operating Environment

Offshore flight operations are a highly complex and specialised process. It requires high levels of training, competence and skill to plan a flight, to land and take off from an offshore Installation and to consistently execute the task safely and efficiently under 'normal', good weather flying conditions.

When a task is carried out in adverse weather (eg poor visibility), during night flying and when other predictable and/or unpredictable factors routinely found in and around the environs of an offshore Installation or vessel, the skills of flight crews can be stretched.

Unlike pilots operating from onshore airfields, offshore helicopter crews have relatively little ground-based technology and fairly limited information to assist them as they commence their final approach for landing on an offshore helideck. It is much the same when taking off.

Despite the many advances in aircraft technology, navigation, landing and communications aids in recent years, there are currently no reliable and effective electronic landing aids available for use on offshore Installations/vessels. Therefore, offshore helicopter crews have to rely heavily on their acquired skills and experience when approaching, landing and taking off from offshore Installations/vessels.

It is not necessary or appropriate to review the whole scope of helicopter flying in these guidelines. However, it is essential to consider two important topics concerning flight crew activities performed within the offshore flight operations process. These two topics are:

- (1) Pilot information.
- (2) Approach, landing and take-off manoeuvres.

These two topics are covered in more detail in Addenda 2 and 3.

4 Evidence of Helideck Problems Encountered on the UKCS

In recent years, the Health and Safety Executive and Civil Aviation Authority (CAA) have jointly funded a number of studies and research projects that have included analysis of incidents and other statistical data relating to offshore helicopter safety.

CAA Paper No 99004 [Ref: 50] provides two good measures of the extent of problems encountered by offshore helicopters due to adverse helideck environmental conditions.

In 1997, a simple count of the British Helicopter Advisory Board (BHAB) Installation/Vessel Limitations List (IVLL) – now renamed the Helideck Limitations List (HLL) – showed the following:

Unrestricted Helidecks	Restricted Helidecks
96 (25.6%)	279 (74.4%)

Restrictions referred to in the HLL included notified non-compliances (eg physical obstructions in 210° sector and 5:1 infringements) and limitations/comments arising from flight experience (eg turbulent sectors and turbine exhaust effects). It is important to note that the restricted helidecks are not only confined to older Installations, Mobile Offshore Drilling Units (MODUs) and vessels (eg those built over 20 years ago or more). Restrictions continue to be imposed by BHAB for basic deficiencies on helidecks that have been more recently installed.

In the same CAA Paper (No 99004), a cause analysis of 18 accident reports (see the following table) taken from the CAA SI&DD, Mandatory Occurrence Reporting (MOR) database shows that defects in Installation design can be cited as the cause for two thirds of the occurrences. This situation clearly suggests that helideck operability was not properly addressed during the initial design phase of the Installations in question. Such design deficiencies can seriously undermine operational efficiency.

Flight Phase At Offshore Installation				
Approach	Landing	Take-Off	Hover	Climb
5 (27.8%)	9 (50.0%)	2 (11.1%)	2 (11.1%)	0 (0%)

Primary Cause			
Flare/Burners	Turbulence	Exhaust Plumes	Pilot Error
4 (22.2%)	7 (38.9%)	3 (16.7%)	4 (22.2%)

Secondary Cause				
Flare/Burners	Turbulence	Exhaust Plumes	Pilot Error	Other
0 (0%)	9 (50%)	2 (11.1%)	3 (33.3%)	4 (22.2%)

Failure Category	
Installation Design	Aircraft Operation
12 (66.7%)	6 (33.3%)

Further evidence to demonstrate the need for ensuring that the design and operation of helidecks on the UKCS are properly managed, is illustrated in the following table. The table takes data from the CAA SI&DD, MOR database over the period starting from 1975 to 2001 and provides a breakdown of non-fatal reportable accident causes.

In recent years, as a result of several flight safety initiatives, a significant reduction in the number of non-fatal reportable accidents on the helicopter side of the equation is noted. The number of non-fatal reportable accidents caused by Installation/vessel deficiencies remain fairly constant, in line with flight activity levels.

Cause	Number of Occurrences		
	1975 to 1983	1984 to 1992	1993 to 2001
Aircraft Related Incidents (eg flight crew, operations, weather, manufacture, maintenance etc)	15	19	5
Installation/Vessel Related Incidents (eg helideck operations, adverse helideck environment, vessel motions etc)	2	6	2

In addition to fatal and non-fatal reportable accidents, the MOR database also records other occurrences.

These relatively minor occurrences take place in greater numbers but are equally as important from an offshore flight safety viewpoint. They require appropriate actions to be taken to prevent recurrence.

From an aviation perspective, the occurrences are typified by events such as engine and other component failure and operational shortcomings. Their effects are generally contained within the design and operating capability of the helicopters.

Other occurrences are helideck environmental issues, offshore helideck management and operational procedure violations. Avoiding these violations is the substance for these guidelines.

Section 3

Responsibilities and United Kingdom Legislation

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1 Responsibilities and Relationships

1.1 Responsibility for UK Offshore Helicopter Safety

Responsibility for assuring the safety of United Kingdom (UK) offshore helicopter operations involves several organisations and individuals including the workforce, travelling as passengers. It is therefore important to establish how they all fit together and to put the individual roles and responsibilities into proper perspective.

Figure 3.1 summarises the hierarchy and relationships of the main bodies responsible for attaining good offshore helicopter safety standards. Having an appreciation of these relationships and individual responsibilities should assist helicopter and helideck operators within their areas of responsibility.

1.2 Key Organisations

The Installation Dutyholders, Mobile Offshore Drilling Unit (MODU) and vessel owners who operate Installations and vessels with helidecks are key to assuring the safety of offshore helicopter operations. Similarly, the helicopter operators as Air Operator's Certificate (AOC) holders operate the helicopters to Installations, MODUs and vessel helidecks.

As regulators for ensuring the safety of UK offshore helicopter operations, the Health and Safety Executive and CAA, are key organisations. The Health and Safety Executive and CAA are jointly committed to working together because there is a collective responsibility for regulation and enforcement. Health and Safety Executive/CAA pamphlet '**How Offshore Helicopter Travel is Regulated**' [Ref: 24] summarises the relationship well.

The key organisations mentioned above, along with other offshore industry associations and associated industry and government bodies, develop the industry standards that are used to achieve good helicopter operating safety. The functions of each of the organisations are described in the following paragraphs.

1.3 Offshore Installation Dutyholders, MODU and Vessel Owners

In the UK, offshore Installation Dutyholders, MODU and vessel owners have an overriding legal responsibility to comply with the Health and Safety at Work etc Act (HASAWA) 1974 [Ref: 1]. Generally, they also carry most, if not all, of the responsibilities and liabilities for providing a safe place of work.

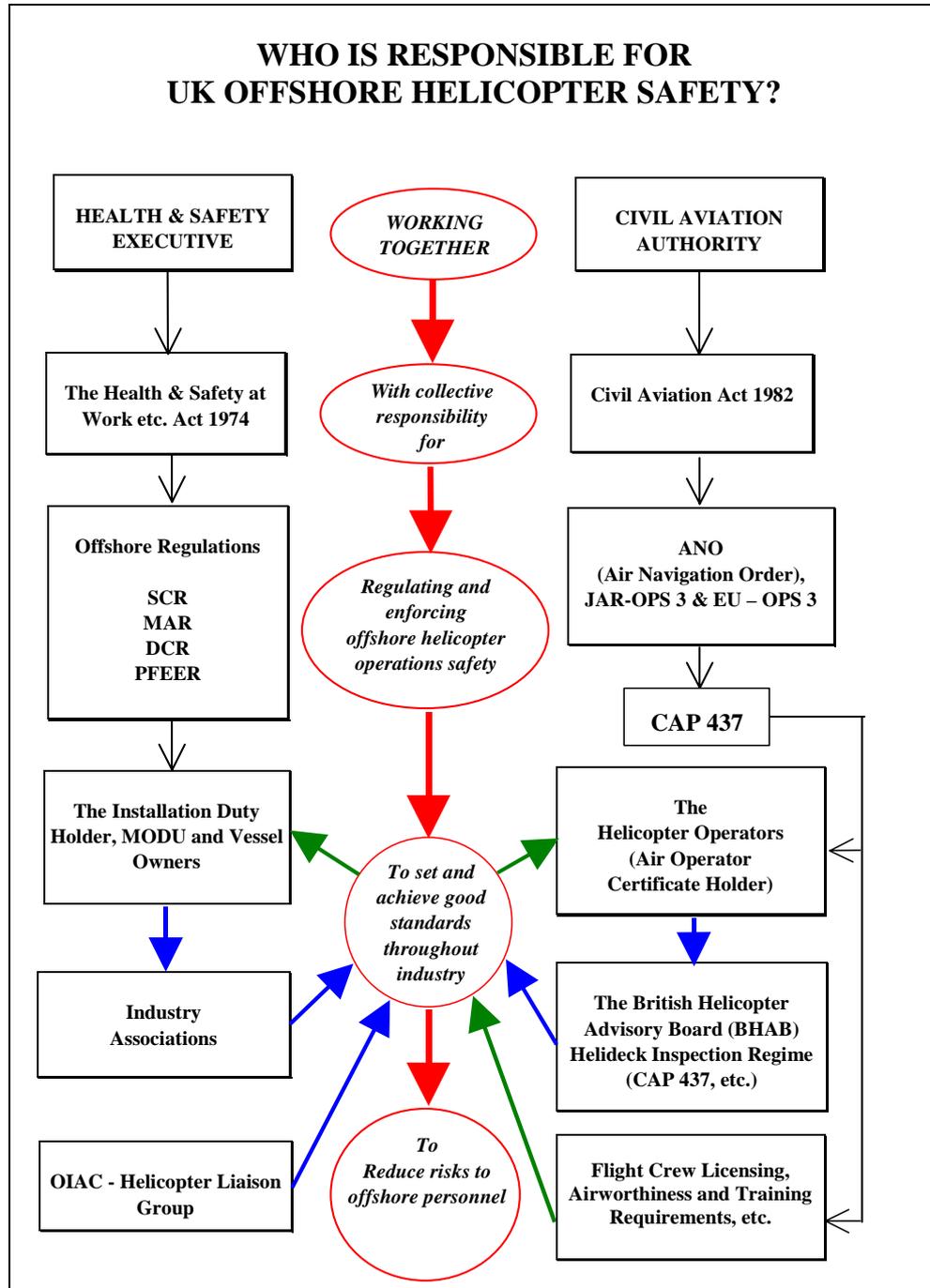


Figure 3.1 Who is Responsible for UK Offshore Helicopter Safety?

Whilst in some instances legal duties may be delegated, ultimately the final responsibility and accountability lies with the Installation Dutyholder, MODU or vessel owner.

Oil and gas companies as Installation Operators (Dutyholders) generally finance offshore operations along with their co-venturers. In doing so, they are responsible for the following:

- Providing 'fit for purpose' and properly maintained 'unlicensed' helideck facilities (structure and equipment) on the Installation
- Contracting the services of one or more helicopter operators (AOC holders) to provide helicopters and flight crews in order to supply a helicopter service. In addition to basic aircraft and crew provision, this will often include terminal facilities, flight scheduling and onshore handling, survival suits, helifuel supply etc
- Providing the internal staff (or may choose to use consultants and sub-contractors) for the onshore heli-logistics support team, inspection and auditing functions and the offshore helideck crews, Radio Operators etc

MODU and vessel owners are generally contracted by oil and gas companies to undertake specific drilling, production and other types of marine operations (eg seismic). Generally, with respect to helicopter operations, MODU and vessel owners are limited to providing 'fit for purpose' and properly maintained 'unlicensed' helideck facilities (structure and equipment) and the competent offshore staff to operate and control them (eg helideck crews, Radio Operators etc).

MODU and vessel owners have a different position in law to Installation Dutyholders and they will normally operate under 'Flag State' rules (appropriate to the Port of Registration) and will also comply with international agreements (International Maritime Organisation (IMO) Codes) and Coastal State legislation, where appropriate. MODUs and vessels generally move in and out of different areas of the globe and operate under changing local aviation rules etc. The differences between individual state requirements for helideck facilities sometimes cause confusion, as do training requirements.

However, if a MODU or vessel is operating as an offshore Installation on the United Kingdom Continental Shelf (UKCS), the owner has duties under UK offshore and aviation legislation and must therefore comply with the relevant regulations.

Following an accident or incident which had the potential to imperil helicopter operations (regardless of whether or not it involved a helicopter at the time), Dutyholders of fixed Installations, MODUs and vessels, should consider during their subsequent Installation safety investigations and the potential safety implications for helicopter operations on helidecks.

1.4 The Helicopter Operating Company

Helicopter operating companies have duties under the ANO [Refs: 13 and 44] and must obtain an AOC prior to commencing flight operations.

Many requirements have to be understood and met and aircraft, facilities, people, policies and procedures etc all put in place. This is an exacting process.

For the helicopter company to keep an AOC means continued compliance with aviation laws and the many operating and airworthiness requirements that are specified in the Operations Manual, along with any additional requirements that emerges from time to time.

There are some parallels with offshore in the aviation management systems employed by helicopter companies. They are similar in principle but the specific content and emphasis are different.

Helicopter companies who own, crew and operate offshore helicopters are in the business of providing a 'public transport, non-scheduled' flying service. However, because of overriding needs under aviation law and AOC requirements, customers (eg the oil companies) have no direct control over the management of offshore air operations. Any customer influence is limited to the commercial aspects of contracts put in place for providing safe and efficient flying services.

Conversely, the AOC holder will exert considerable pressure on the customer (the Installation Operator, MODU or vessel owner) to provide a Safe Landing Area (SLA) offshore in accordance with CAP 437. If the structure, operating environment and facilities related to helicopter operations do not meet the standards specified, the AOC holder is within his legal rights to refuse to land helicopters on any Installation, MODU or vessel. In order to keep commercial interests out of this equation, BHAB Helidecks perform the task of inspecting and issuing helideck approvals in the UK. Although BHAB Helidecks perform these tasks on behalf of the helicopter operator, it is the responsibility of the helicopter operator to determine appropriate operational limitations and restrictions based on an evaluation of non-compliances highlighted in the BHAB Offshore Helideck Inspection Report (OHIR).

1.5 UK Health and Safety Executive – Offshore Safety Division

Health and Safety Executive regulates the safety of offshore Installations and related activities.

This includes providing suitable arrangements for the provision of a safe operating environment for helicopters on or in the vicinity of Installations, including arrangements for dealing with emergencies.

The regulations are described in Section 3 Paragraph 2. Inspectors enforce these regulations through a systematic review and acceptance of Safety Cases and by carrying out inspections.

1.6 UK Civil Aviation Authority

UK CAA has the responsibility to ensure the safety of the helicopter and the competence of the offshore helicopter operators, enabling them to meet requirements for the safe transportation of passengers. This responsibility covers all regulatory aspects of the areas concerning airworthiness of the aircraft and the safety of flight operations.

CAA places a duty (through the ANO and JAR-OPS 3) on helicopters to only permit flights to suitable landing areas and to satisfy themselves that a safe operating environment is in place. Guidance on standards for offshore helidecks and associated facilities to assist helicopter operators and offshore Installation Dutyholders is provided in CAA document CAP 437 [Ref: 46]. CAA also produces other instructions and guidance on many aspects of aviation. The instructions and guidance given in these publications (generally issued as CAPs) are required by CAA to be accounted for in the helicopter company's Operating Manuals.

The individual helicopter company's Operations Manual is the cornerstone for the AOC. It is against this document that the CAA audits the AOC holder to satisfy the Authority that the helicopter operator continues to comply with all the requirements for operating aircraft under, and in accordance with, the terms and conditions of the AOC, and remains competent to do so.

1.7 Industry Organisations

Industry organisations are involved with promoting offshore helicopter safety in the UK. They have wide-ranging interests and involvement and provide support to the aviation and oil industry in various ways. The main organisations and their responsibilities are:

1.7.1 The UK Offshore Operators Association

The UK Offshore Operators Association (UKOOA) is the principal body in the UK offshore industry representing the collective interests of its members, the offshore oil and gas companies.

In the past, the main technical committees concerned with offshore helicopter operations were Aircraft and Safety, but principally the Aircraft Committee. The Aircraft Committee was UKOOA's specialist aviation advisor for nearly 25 years and a major player in promoting the safety of offshore helicopter operations, including funding much research.

In 2003 the standing committee structure was superseded by new arrangements and the UKOOA HSSE Group now routinely provides a focal point for aviation issues and co-ordinates relevant information flow for its members. Additionally, the HSSE Director chairs an Aviation Safety Technical Group (ASTG).

The ASTG provides a forum for all key stakeholders to promote improvement in offshore aviation safety and, when appropriate, facilitates at working groups for aviation specialists to process solutions for resolving specific problems. Membership of ASTG comprises senior representatives of CAA, HSE, OGP and NATS, the helicopter companies (also BHAB representatives) and selected oil and gas companies. Where ASTG business may affect other stakeholders such as IADC, BROA and IMCA, these organisations are invited to attend.

1.7.2 British Helicopter Advisory Board

The British Helicopter Advisory Board (BHAB) is the principal commercial helicopter association in the UK. The offshore helicopter operators are full member companies of BHAB and comprise the Offshore Operators Committee.

Some of the oil and gas operators and offshore aviation specialists are associate members of the BHAB.

The Offshore Operators Committee retains a brief to overview activities relating to standards and procedures for offshore helicopter operations. This is achieved through a number of sub-committees and the organisation, BHAB Helidecks.

BHAB Helidecks is responsible for the inspection and acceptance of all helidecks operating on the UKCS. Responsibility for these activities passed from CAA (SRG) to BHAB Helidecks on 1 December 1998.

BHAB Helidecks also acts as a focus for the assessment of the design and performance of offshore helidecks. A Technical Committee (formed in early 2003 and comprising senior operational pilots from the offshore helicopter operators) makes assessments of helidecks and, where appropriate, applies operational limitations or restrictions. These operational limitations or restrictions are published in the Helideck Limitations List (HLL).

BHAB Helidecks also provides, through CHC Scotia Helicopter Services (formerly known as British International Helicopters Training), a training course and certification for 'approved' offshore helideck inspectors.

'Approved' helideck inspectors are currently only drawn from the member helicopter operating companies, namely Bristow Helicopters and CHC Scotia Helicopter Services.

1.7.3 British Rig Owners Association

The British Rig Owners Association (BROA) is the industry association for UK registered drilling rig owners and Operators.

1.7.4 International Association of Drilling Contractors

The International Association of Drilling Contractors (IADC) is the industry association for international drilling rig owners and Operators.

1.7.5 Cogent – Offshore Petroleum Industry Training Organisation

The Offshore Petroleum Industry Training Organisation (OPITO) is an organisation that was formed when the Offshore Petroleum Industry Training Board (OPITB) was privatised. In 2002, OPITO was brought under Cogent, the Sector Skills Council.

The OPITO management committee includes government and industry representatives. The organisation performs the role of:

- Custodian of offshore industry training standards and personnel competence requirements
- Validating and approving oil industry training course syllabi and training providers
- Sponsors of training manuals development
- Maintaining the oil industry training register

In conjunction with UKOOA, OPITO led the development of competency-based personnel training requirements and standards for the offshore industry. These published standards for the UK offshore oil industry are relevant to offshore helicopter operations because they include the Helicopter Landing Officer (HLO) and Helideck Assistants (HDAs).

OPITO is also the sponsor and custodian of the HLO Handbook and Helicopter Refuelling Handbook. Both of these documents form part of the approved training courses.

OPITO does not set competencies for the Radio Operator, the CAA sets these competencies.

CAA-approved training providers issue the Offshore Radio Operator's Certificate, the requirement for operating aeronautical radio equipment. This requires the candidate to pass practical and written examinations acceptable to CAA Air Traffic Control (ATC) Policy and Standards Departments.

Exemption from the Offshore Radio Operator's Certificate examination can be obtained if the Radio Operator holds specific qualifications that are acceptable to the CAA.

1.7.6 Offshore Contractors' Association

The Offshore Contractors' Association (OCA) is the leading representative body for contracting and supply companies providing services to the UK oil and gas industry.

Some OCA members also own and operate specialist offshore support vessels that have helidecks.

1.7.7 International Marine Contractors Association

The International Marine Contractors Association (IMCA) is the international association for a large number of contractors who provide a wide variety of marine support vessels (with helidecks) to the offshore industry.

1.7.8 International Association of Oil and Gas Producers

The International Association of Oil and Gas Producers (OGP) (formerly the E&P Forum) represents the oil and gas companies at international level. The aviation sub-committee monitors the safety performance of fixed and rotary wing operations supporting global oil and gas industry operations and publishes international operating standards, where appropriate.

1.7.9 International Association of Geophysical Contractors

The International Association of Geophysical Contractors (IAGC) covers seismic activities and the specialist seismic vessels used offshore for this purpose. The larger, more modern vessels have helidecks.

1.7.10 Emergency, Escape and Rescue Vessel Association

The Emergency, Escape and Rescue Vessel Association (EERVA) represents the interests of ship owners that provide the specialist vessels used for standby activities. These vessels tend to have winching areas rather than helidecks.

However, Standby Vessels (SBVs) have an important role in day-to-day offshore helicopter operations by providing safety and rescue cover during helicopter movements.

The standby ship operators are members of the British Chamber of Shipping. They were previously known as the Standby Ship Owners Association (SSOA).

1.8 Other UK Government Organisations

When required in specific instances (eg in the event of a helicopter accident offshore), government responsibilities are broadened beyond Health and Safety Executive and CAA to include organisations from within the Department of Transport, Local Government and the Regions (DTLR). These organisations are:

1.8.1 The Maritime and Coastguard Agency

The Maritime and Coastguard Agency (MCA) is an executive agency within DTLR and its main activities in support of offshore operations are to:

- Provide Search and Rescue (SAR) facilities and assets
- Act in a co-ordinating role during offshore incidents when SAR assets are deployed

For more information, Health and Safety Executive's publication '**Dealing with Offshore Emergencies**' [Ref: 25] sets out the respective roles of the various government agencies.

MCA is also the UK marine industry enforcement authority for vessels operating on the UKCS. This includes vessels operating in support of offshore oil and gas exploration and production activities. In this role, MCA responsibility extends to the helidecks and management of helicopter operations involving offshore support vessels which do not come under the regulatory regime and jurisdiction of the Health and Safety Executive as offshore Installations (refer to Section 1 Paragraph 1.3 guidance on MAR 3 for exclusions).

1.8.2 The Air Accidents Investigation Branch

The Air Accidents Investigation Branch (AAIB) is the UK's aviation accident investigation body. It provides the aviation accident investigation expertise in the event of a helicopter accident or serious incident offshore.

The appointed AAIB Inspector works independently but in conjunction with the helicopter and Installation operators, CAA and the Health and Safety Executive during accident and incident investigations that occur offshore.

1.8.3 Marine Accidents Investigation Branch

The Marine Accidents Investigation Branch (MAIB) is the UK's marine accident investigation body. An appointed MAIB Inspector will work in conjunction with the helicopter operator, vessel owner and other appropriate authorities (eg CAA) during investigations following an aircraft accident that involves a vessel operating on the UKCS under UK marine jurisdiction.

1.8.4 Offshore Industry Advisory Committee – Helicopter Liaison Group

The Offshore Industry Advisory Committee (OIAC) is an advisory body. It was set up and functions under the auspices of the UK Health and Safety Commission (HSC). The Helicopter Liaison Group (HLG) is a sub-group of OIAC and meetings are held half yearly in London. The Health and Safety Executive chairs the meetings and the membership currently includes:

- British Helicopter Advisory Board
- British Rig Owners Association
- Civil Aviation Authority
- Health and Safety Executive
- International Association of Drilling Contractors
- Manufacturing, Service and Finance Union (MSF) who also represent the interests of the British Airline Pilot's Association (BALPA)
- Offshore Contractors Association
- Transport and General Workers Union (TGWU)
- UK Offshore Operators Association

The purpose of OIAC-HLG is to provide a forum for discussing relevant issues affecting the health and safety of the offshore workforce and to give leadership on setting standards for helicopter operations.

2 UK Regulations and Codes of Practice

2.1 Introduction

In the UK, helicopter operations to offshore oil and gas Installations are subject to regulation by two principal regulatory authorities, the Health and Safety Executive – Offshore Safety Division and the CAA. Refer to Sections 3 and Paragraphs 1.5 and 1.6 for their individual roles and responsibilities.

Several offshore health and safety regulations, codes of practice and guidance on other official notices and publications cover the many and various aspects of offshore helicopter operations. There are also aviation legislation and guidance and joint industry standards to consider. A comprehensive list is provided in Addendum 1.

2.2 UK Offshore Health and Safety Legislation and Guidance

The Health and Safety at Work etc Act (HASAWA) 1974 is the main legislation providing for the health and safety of workers offshore. Under the Act, there are several regulations that deal with specific requirements relating to helidecks on offshore Installations and to helicopter operations. Four sets of modern goal-setting regulations cover the following topics:

- Safety Cases (SCR)
- Prevention of Fire and Explosion, and Emergency Response (PFEER)
- Management and Administration (MAR)
- Design and Construction (DCR)

Guidance and Approved Codes of Practice (ACoP) (where applicable) for each of the above regulations is provided in individual documents as listed in Addendum 1 [Refs: 17, 18, 19 and 20]. In addition, where specific topics under the regulations need to be brought to the attention of Dutyholders, the Health and Safety Executive will, where appropriate, issue a Safety or Operations Notice [Refs: 30 to 37].

HASAWA places a duty on Installation owners and Dutyholders for the safety of the entire Installation, including the helideck and helideck operations. In so doing, the regulations made under the Act require Dutyholders to ensure that the helideck operating environment is such that helicopter operators can discharge their duty.

Amongst other things, the Dutyholders have direct control over the physical characteristics of the helideck and surrounding environment, except of course, the prevailing meteorological conditions.

Main features of the regulations as they apply to offshore helicopter operations are summarised in the following tables.

Regulation	Summary	Guidance
Regulation 2(1)	Helicopter collision is defined as a major accident.	
Regulation 8	Dutyholder to demonstrate that potential Major Accident Hazards (MAHs) and consequences are As Low As Reasonably Practicable (ALARP).	<p>Within the framework of SCR, the requirement exists to identify helicopter operating hazards and to evaluate the risks and consequences of those hazardous events.</p> <p>Where appropriate, control measures must be established to reduce or manage the risks so they are kept ALARP.</p> <p>Currently, helicopter operations risk-assessment studies (Quantified Risk Assessment (QRA)) focus almost entirely on what the helicopter may do to an Installation. The overall transportation risk is also covered. Risks to helicopters from the immediate environment around an Installation should also be addressed. This is the main element that a Dutyholder can most influence during design to reduce, if not eliminate operational problems.</p> <p>Full account should be taken of the hazards and risks that an Installation may pose to a helicopter and the personnel onboard. Refer to the Health and Safety Executive Safety Notice 2/2004 [Ref: 32].</p>
Regulation 8(1)a	Demonstrate Safety Management System (SMS).	To demonstrate that the management of helicopter operations is properly considered, a Dutyholder should consider setting out the system employed for managing offshore helicopter operations within the SMS.

Table 3.1 Offshore Installations (Safety Case) Regulations 1992

Regulation	Summary	Guidance
Regulation 11	Generally stated, this regulation requires Dutyholders to ensure that helicopter landing areas on Installations are sufficient for helicopters to use safely in any weather conditions that permit helicopter operations. The design and construction is to be adequate for its purpose.	<p>The key words in DCR are 'ensure that helicopter landing areas on Installations are sufficient for helicopters to use safely in any weather conditions that permit helicopter operations'.</p> <p>Recent research has clearly shown (refer to Safety Notice No: 2/2004 [Ref: 32] and CAA Helideck Environmental Report [Ref: 50]) that during design, the operability of helidecks is rarely closely examined and viewed from the operational helicopter pilot's perspective. This has led to over three-quarters of UK helidecks incurring operational restrictions when they are commissioned and approved for flight operations.</p> <p>To ensure this regulation is met, helideck operability should be properly addressed and reported upon.</p>
Regulation 26	SCR modified by DCR to address Safety Critical Elements (SCEs) and requirements for a Verification Scheme for ensuring that the SCEs are or, where they remain to be provided, will be suitable; and where they have been provided, remain in good repair and condition.	Schedule 2 of Regulation 26 defines SCEs and Management System and goes on to outline the requirements for a Verification Scheme.

Table 3.2 Offshore Installations and Wells (Design and Construction etc) Regulations 1996

Regulation	Summary	Guidance
	MAR focuses on the appointment of competent people and the preparation of the arrangements and instructions required for helicopter operations.	
Regulation 8	Personnel to co-operate with HLO.	There is a basic requirement for everyone to acknowledge the HLO's appointment by the Dutyholder and to co-operate fully with him.
Regulation 11	Written instructions for helideck operations.	This covers the whole suite of instructions to be promulgated and used for helideck operations. The minimum scope of procedural requirements is covered in these guidelines.
Regulation 12(b)	Effective communications.	Proper and effective internal, marine and aeronautical communications are to be provided.
Regulation 13	Competent persons to be appointed and procedures and plant provided for safe helideck operations.	The appointment of a competent HLO, Helideck Assistants (HDAs) and Radio Operator is fundamental to safe helicopter operations offshore. Also there is a requirement that all the helicopter and helideck operations procedures are in place, along with all the necessary equipment.

Table 3.3 Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995

Regulation	Summary	Guidance
Regulation 14	Collect and keep meteorological information.	<p>There is a need to collect, disseminate and keep records of meteorological and oceanographic (for MODUs and Floating Production, Storage and Offloading units (FPSO)) information used for assisting helicopter operations.</p> <p>This information is normally provided to the helicopter operators on a 'daily helicopter operations report'. However, increasing use is being made of 'online' meteorological and oceanographic data recording and transmission.</p> <p>Regardless of the recording and reporting methods used, there is a requirement for efficient recordkeeping and a specified retention policy.</p>
Regulation 19	Clear Installation identification.	Clear and unambiguous Installation identification provides the helicopter pilot with a positive reference for locating the correct landing site and therefore plays a major part in preventing wrong deck landings.

Table 3.3 Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995 (cont'd)

Regulation	Summary	Guidance
	The main thrust of PFEER in respect of helicopter operations, is the preparation required to handle helicopter accidents effectively and to apprehend emergencies.	
Regulation 6(1)c	Personnel trained for emergencies.	As a minimum, Offshore Installation Managers (OIMs), HLOs, HDAs, Radio Operators and Installation fire/rescue crews should meet OPITO training and competency standards.
Regulation 7	All emergency equipment to be available.	All fire/rescue equipment provided under Regulations 9, 12, 13 and 19 should be in their correct positions and readily available for use. Also, CAP 437 specifies the minimum requirements that are acceptable to the CAA and BHAB. These aviation requirements are invariably used as the benchmark for offshore helidecks.
Regulation 19(1)	All equipment provided to be suitable for use.	Although PFEERs are goal setting, the minimum requirements for offshore helicopter operations are largely specified (prescribed) in CAP 437 [Ref: 46]. Verification of the systems and equipment selected as suitable for use for helicopter operations should be a function of the Installation design approval process. Subsequently, the Installation maintenance programme should ensure that the equipment remains serviceable and readily available for use.
Regulations 9, 12 and 13	General requirements for prevention of fire and explosion.	Refer to Regulation 19(1) references to CAP 437 and verification process.
Regulation 17	Arrangements for personnel rescue from ditched helicopters.	These arrangements should cover adverse weather policies as well as rescue assets (eg SBVs, SAR helicopters etc). The ability of modern helicopters to operate in extreme weather conditions that are well beyond the weather limitations of marine rescue assets should be considered in detail.

Table 3.4 Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995

2.3 Applicable Aviation Regulations and Guidance

2.3.1 Introduction

The CAA Safety Regulation Group is responsible for regulating the airworthiness and operational safety of aircraft, including its passengers.

Under the Civil Aviation Act of 1982 [Ref: 2], the CAA is responsible for the content of the ANO [Ref: 13].

This legislation governs the airworthiness of helicopters and the technical and operational requirements that must be met. It also lays down the requirements for the issue of an AOC, which helicopter operators must hold, if they are to conduct public transport operations.

Helicopter operators (as public transport operators) have a duty under the ANO and JAR-OPS 3 to permit flights only to suitable landing areas (refer to CAP 393 [Ref: 44] extract below). Amongst other things, they are also responsible for the safety briefing of passengers, providing certain personal safety equipment aboard the aircraft and for satisfying themselves that aeronautical radio stations and navigation aids serving the intended route or any planned diversion, are adequate for safe navigation of the aircraft.

The CAA has no statutory duty to license offshore helidecks, instead, there is a certification process conducted by BHAB Helidecks. The CAA also audits both the helicopter operators and BHAB Helidecks (including the HLL) for compliance.

CAA produces guidance (CAP 437 [Ref: 46]) which includes the criteria and minimum standards for helicopter landing areas, along with other information that should enable helicopter operators to comply with their legal obligations. This guidance conforms to the Standards and Recommended Practices (SARPS) contained in the ICAO Annex 14 Volume II [Ref: 85].

2.3.2 Extract from Air Navigation Order, Article 34 – CAP 393

‘Public Transport Operator’s Responsibilities

34(1) The operator of an aircraft registered in the UK shall not permit the aircraft to fly for the purpose of public transport without first:

- (a) Designating from among the flight crew, a pilot to be the commander of the aircraft for the flight;*
- (b) Satisfying himself by every reasonable means that the aeronautical radio stations and the navigation aids serving the intended route or any planned diversion therefrom are adequate for the safe navigation of the aircraft; and*

- (c) *Subject to subparagraph (2) hereof, satisfying himself by every means that every place (whether or not an aerodrome) at which it is intended to take off or land and any alternate place (whether or not an aerodrome) at which a landing may be made are suitable for the purpose and in particular that they will be adequately manned and equipped at the time at which it is reasonably estimated such a take off or landing will be made (including such manning and equipment as may be prescribed) to ensure so far as practicable the safety of the aircraft and its passengers.'*

Similar requirements are stipulated in JAR-OPS 3 (EU-OPS 3).

2.3.3 Extract from JAR-OPS 3.220

Authorisation of Heliports by the Operator – Helidecks

(refer to AMC No 2 to OPS 3.220).

'An Operator shall only authorise use of heliports that are adequate for the type(s) of helicopter and operation(s) concerned.'

Section 4

Management System Template for Offshore Helicopter Operations

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4.1 Processes for the Management of Helicopter Operations	4-1

1 Introduction

The purpose of this section is to identify the topics that should be considered during the operation and maintenance of offshore helidecks. The template can be applied, as a whole or in part, to any helicopter operations in support of offshore oil and gas exploitation and production.

The management of offshore helideck operations is an integral part of an overall company management system and therefore, it should contain a number of fundamental and defined processes. These can be illustrated simply as shown in Figure 4.1.

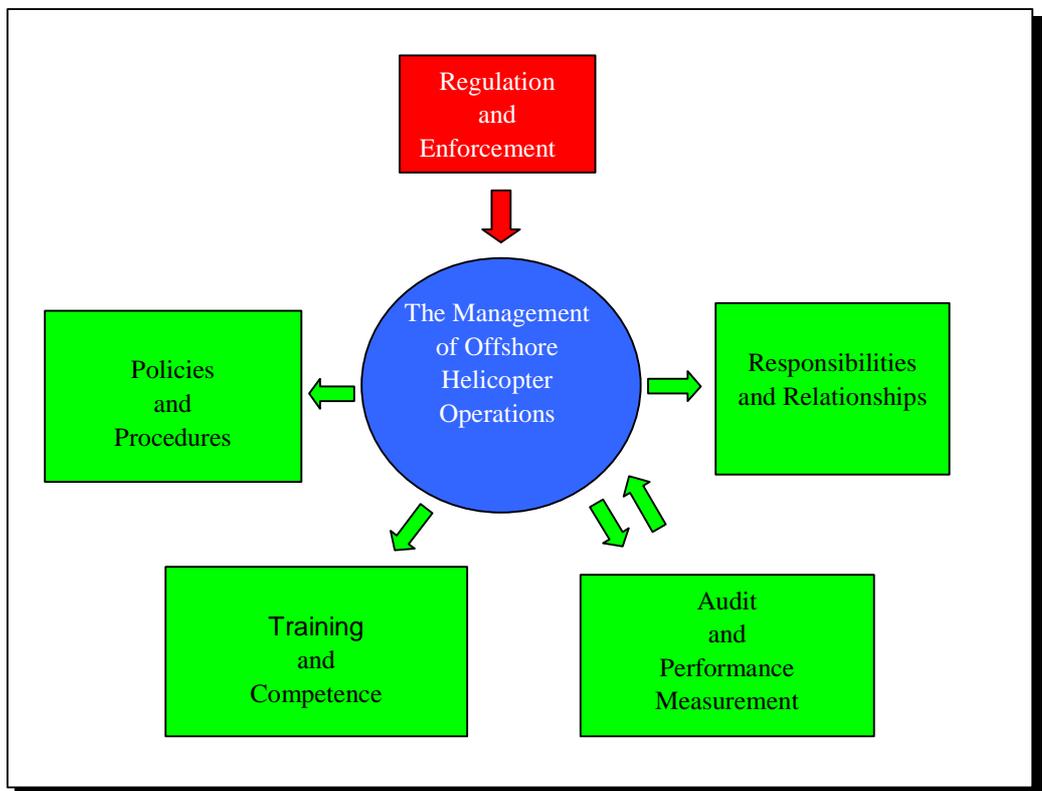


Figure 4.1 Processes for the Management of Helicopter Operations

2 Management System Template

Key elements of successful management apply equally to the management of offshore helicopter operations as they do with safety. Details of a system and its key elements can be found in the Health and Safety Executive booklet 'Successful Health and Safety Management' [Ref: 15].

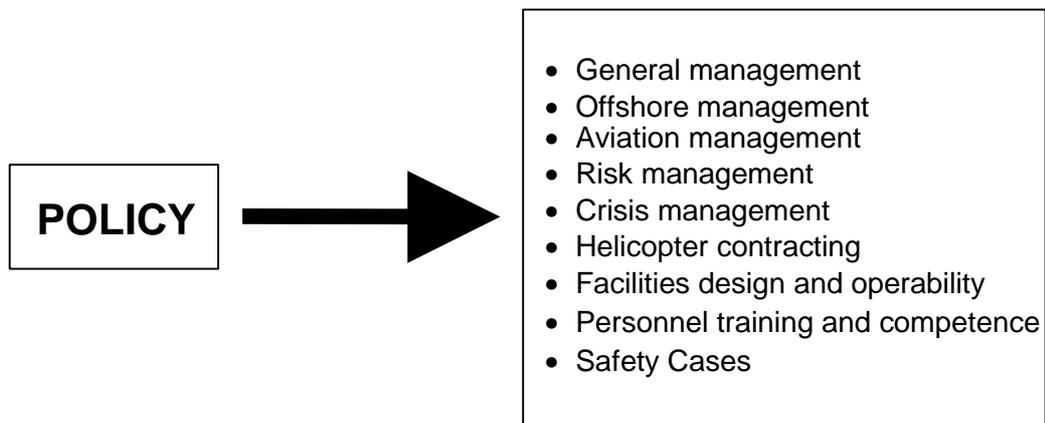
The initial focus should be on policy and organising. This is the starting point to ensure good standards are set and the right people are in place to get the job done properly.

The next element is planning and implementation which addresses the procedures and tools needed to perform the job safely and efficiently.

The final element covers the systems employed to demonstrate compliance. These are the systems for reviewing and measuring performance, auditing and feedback.

More detailed topic lists that may be used as a basis for developing management system auditing and helideck facilities inspection checklists are set out in Addenda 11 and 12 respectively.

2.1 Helicopter and Helideck Operating Policies



Company helicopter operations objectives and operating standards should be set out as company policy and to be of real value they should be fully underwritten by executive management.

The policy and standards then become a baseline against which Auditors should review the company's operational management of helicopter operations and measure the level of performance attained. Policies should include all those topics shown in the above diagram.

Several of the policies embrace the whole company operation and are not unique to helicopter operations. That is preferable and will normally show a broad and consistent approach to management and control. If the general policies of a company are weak, then helicopter operations management will not be good and will be a prompt for an Independent Competent Person (ICP) to be extra vigilant during a helicopter operations audit or inspection.

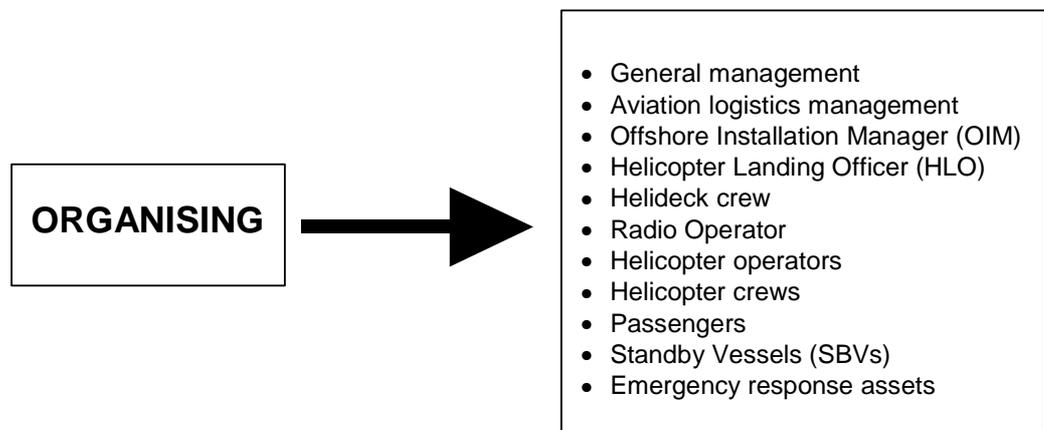
Similar to policies, operating standards need to be properly and competently developed, promulgated and driven from the 'top down'. Without them, there is little chance that field helicopter operations will measure up to acceptable industry standards.

In the absence of company standards, heavy reliance is placed on assigned individuals to apply their own standards, training and levels of competency.

If this is the case, consistently getting good results within the management regime is probably very difficult for an individual to achieve. Where a situation like this exists, it should always give cause for concern.

Where policies and operating standards are published, they should always be scrutinised, assessed and validated against established good industry practice.

2.2 Organising

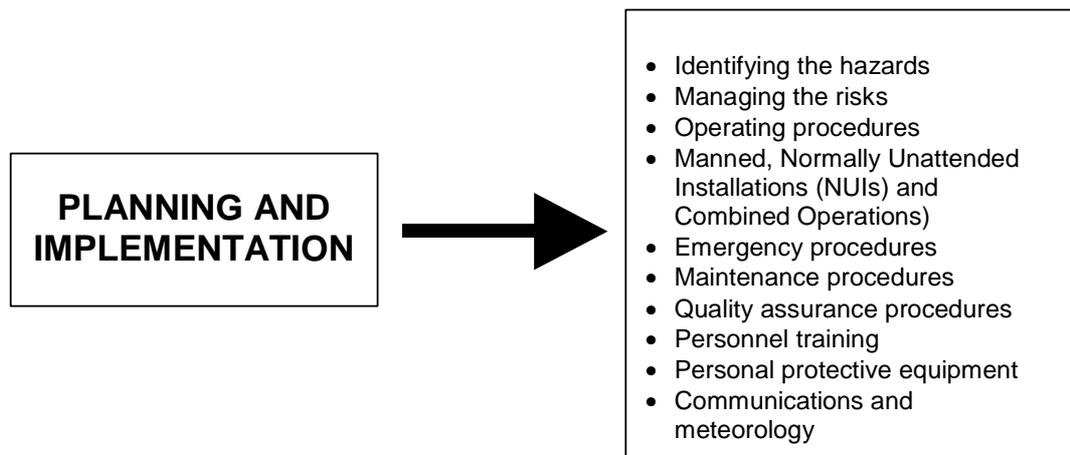


All organisations need good leadership to be successful.

People at all levels are key assets of the organisation but they need to have proper direction to perform at their highest potential. There should be a clear, well-defined organisational structure for managing offshore helicopter operations, top to bottom.

The 'leaders' managing and supervising offshore helicopter operations should be identifiable at the various levels and interfaces within an organisation. These assigned individuals should also be made fully accountable in order to keep their minds properly focused on their job responsibilities. To do their jobs properly, they also need to be trained and competent. Suitable and sufficient resources should be provided to do the job properly.

2.3 Planning and Implementation



2.3.1 Introduction

The Dutyholder's Safety Management System (SMS) should address all aspects of helicopter operations appropriate to an Installation, Mobile Offshore Drilling Unit (MODU) or vessel and the relevant procedures should be put into place. Responsibilities should be assigned and a custodian identified to ensure the procedures are revisited at prescribed intervals with proper checks made to ensure they are both up to date and still valid.

2.3.2 Identifying the Hazards

The Offshore Installations (Safety Case) Regulations (SCR) 1992 (SI 1992/2885) require Dutyholders to identify hazards, including helicopter accidents. SCR concentrates on the risks to the Installation and its personnel from helicopter collision, but it is now recognised that some aspects of helideck design and operation may increase the risk of collision, and these risks must be addressed. Typically these include:

- (1) Poorly controlled activities that could adversely affect the wind flow over the helideck such as basic design or modifications to the topside layout and allowing equipment to be stored under the helideck, thereby reducing the effectiveness of the airgap.

- (2) Combined operations involving a workover rig or a floatel positioned close to the Installation can also have serious implications for the safety of helicopter operations by introducing additional wind flow and temperature effects as well as encroaching into the obstruction free sector. In addition, there is the issue of the impact of one Installation on helicopter flights to another that is nearby. For bridge-linked units where more than one helideck is available, there may well be a choice of which helideck should be used in a given set of circumstances.
- (3) An awareness by the OIM of the impact of routine activities on helicopter operations can also be important. Gas turbine plumes are largely invisible to a helicopter pilot but can be detrimental to helicopter handling and performance. Information on the operational status of such equipment should be made available to pilots.
- (4) Rare events such as releases of hydrocarbon gas, whether due to an unforeseen accident or as part of a controlled blowdown of process equipment, also represent a hazard to helicopters. Appropriate action by the OIM in promptly notifying all helicopters will minimise the hazard involved.

2.3.3 Managing the Risks

Managing the risks associated with offshore helicopter operations requires the Installation Dutyholder, MODU or vessel owner, where applicable, to:

- (1) Ensure that the SMS for an Installation, MODU or vessel employs adequate systems and operational procedures (in accordance with good industry practice) designed to minimise hazards to helicopter operations. This should include an evaluation of the comparative risks and mitigation factors for flying single versus multiple flight stages.
- (2) Set the standards to be attained and the procedures to be used for monitoring the control of Installation or vessel activities to ensure an acceptable level of safety for helicopter operations is maintained.
- (3) Ensure that procedures are in place for communicating relevant information to helicopter operators in a timely manner, including any departure from agreed operational practice which may have an adverse effect on helicopter safety.
- (4) Promote good co-operation between everyone who has a contribution to make to ensure health and safety with respect to offshore helicopter operations on and around offshore Installations and vessels. The scope of Regulation 8 of Management and Administration Regulations (MARs) is very wide and includes Operators, owners, concession owners, employers, employees, managers and people in charge of visiting vessels or aircraft.

Typical ways of minimising risk include:

- Design of a smooth airflow across the helideck as far as practicable. During operations do not obstruct (with temporary structures and equipment) the airgap beneath the helideck
- Prevent deterioration of airflows across the helideck by assessing and mitigating the effects of initial topsides structural arrangements (eg clad derricks) and any future changes which may cause turbulence
- Assess the thermal flow patterns of gas turbine and diesel prime mover exhausts and take steps to minimise their effects on helicopter flight paths
- Ensure flaring and blowdown (cold venting) of flammable gases cannot prejudice helicopter operations
- Provide appropriately located meteorological instrumentation, and (for floating units and ships) motion measuring and recording equipment. Ensure that this equipment remains serviceable and appropriately calibrated
- Check that the presence of other units or vessels does not infringe obstacle free sectors or introduce new turbulent airflow or emit hot exhaust hazards into the flight path of a helicopter. For combined operations, the Safety Case should describe how risks (obstruction, turbulence or exhaust flows) arising from Installations in proximity, are managed. For floating structures and vessels additional hazards may be present in the sea, such as towed equipment and flexible hoses that may be within the 5:1 clearance zone, thus adversely affecting the ability of a helicopter to ditch in an obstruction free location

Detailed design information about the foregoing items can be obtained by referring to the Offshore Helideck Design Guidelines [Ref: 38].

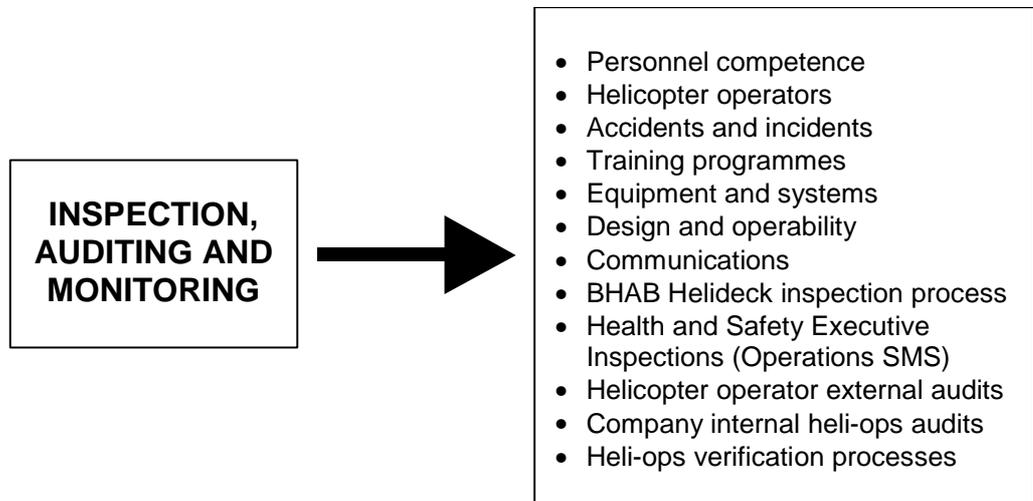
Operating Procedures

Operating procedures must include all the activities to be performed and the controls that are necessary to ensure safe and efficient helicopter operations to and from manned Installations (fixed and floating), NUIs, MODUs, vessels and for combined operations.

Some of the logistics and personnel procedures and controls that relate to onshore and airborne activities clearly fall within the scope and responsibility of the helicopter operator and his service providers. Therefore, they come under the jurisdiction of the Civil Aviation Authority (CAA) or British Helicopter Advisory Board (BHAB).

Where the activities of helicopter operators or other third-party service providers interact with those of the Dutyholder, clear definition of the boundaries is required, with appropriate procedures to ensure seamless risk management. Since differing safety and legislative regimes govern aeronautical, marine and offshore activities, close co-operation between all parties is a practical as well as a legal necessity.

2.4 Inspection, Auditing and Monitoring



2.4.1 Introduction

The Offshore (Safety Case) Regulations (SCR) 1992 mandates the audit of the management scheme and examination (inspection) of Safety Critical Elements (SCEs). An effective auditing regime, which monitors compliance with regulatory requirements, in-house operating procedures, equipment inspection processes, training requirements etc, is essential to sustain safe operations and is a fundamental part of the SMS. SCR guidance discusses the management and timing of audits.

The independence, qualifications, experience and competence required by Auditors and inspectors should be covered in the company SMS.

Safety-Critical Elements

SCR (Regulation 2, as modified by DCR) requires a Verification Scheme for SCEs. Dutyholders are required to list the SCEs, have them subject to independent review and develop a scheme for verification of their performance throughout the lifecycle of the Installation.

United Kingdom Offshore Operators Association (UKOOA) Guidelines for the Management of Safety Critical Elements [Ref: 64] provide further detailed information.

An offshore Installation helideck is a collection of systems, some of which are safety critical or have safety critical sub-systems or components. This means that a failure in any part of its operation could cause, or substantially contribute to, a major accident at the Installation with potentially serious consequences for Installation, helicopters and workforce.

Relevant helideck components are:

- Helideck structure
- Helicopter firefighting
- Escapeways
- Tertiary means of escape
- Power
- Personnel Protective Equipment (PPE)
- Emergency lighting
- Drainage

This list primarily arises from the helidecks function as a means for evacuating the Installation/vessel in an emergency (where possible under certain defined scenarios).

Failure of helideck safety systems (eg the firefighting system) may prevent the onboard capability to limit the effects of a helicopter accident on the helideck.

2.4.3 Helideck Inspections

Objectives

Maintaining a correctly prepared helideck and associated systems, and ensuring that correct operational procedures are observed, will help to prevent and limit the effects of an incident. Therefore, the primary purpose of helideck inspections should be to satisfy Installation Operators, MODU and vessel owners and the helicopter operators, that a helideck and its associated equipment are safe for continued helicopter operations.

Process

To complete the full scope of a physical helideck inspection (on an Installation, MODU or vessel) and to cover all the offshore operating aspects (some of these also fall within the Audit Process – refer to Section 4 Paragraph 2.4.4) will require a considerable amount of time. Therefore good planning and logistics are key factors.

In the case of MODUs and vessels, planning and logistics should also take into account that they often mobilise direct to site from ports outside the UK. Therefore, initial inspections and audits may be best undertaken prior to leaving port to avoid situations where access to a MODU or vessel on location is prevented for any reason (eg weather etc).

To assist with this task, a sample visit plan is outlined in the following. The intention should be to maximise inspection coverage of the helideck and helicopter operations areas in the time available onsite. This can be done by using an inspection structure that is logical, yet has sufficient flexibility, to allow the inspector to focus initially on key issues and any areas of concern that have previously been reported.

Prior to an offshore visit, inspectors (and Auditors) should be aware of previous inspection or audit visits to the Installation, MODU or vessel and, with respect to helicopter operations, any enforcement action that may have been taken by the regulators. A note should be made to:

- (1) Check and note the last Health and Safety Executive inspection visit and any outstanding actions on the Dutyholder.
- (2) Contact BHAB Helidecks Co-ordinator to:
 - Establish the issue and expiry date of the BHAB Helideck Landing Area Certificate stating that the helideck is suitable for helicopter operations
 - Establish the date of the last BHAB inspection, and be aware of any non-compliances that have been declared
 - Where appropriate, check the Helideck Limitations List (HLL) to establish the extent and form of any physical infringements or limitations that have been applied to the Installation by BHAB

With this information, inspectors (and Auditors) can focus on specific areas of helideck operations requiring attention and thus avoid wasting time on issues that have already been identified and reported and are undergoing remedial work.

During preparation for a helideck inspection visit (this also applies for an offshore audit), it is recommended that the offshore visit be broken down into specific activities for ease of assessment and reporting. Each activity requires either observation and/or testing to be carried out. Suggested activities are:

- (1) Pre-inspection visit preparation.
- (2) Arrival and check-in at the heliport.
- (3) Preparation for the flight.
- (4) Boarding the outbound helicopter, startup (if appropriate) and take-off.
- (5) Approach and landing at the Installation.
- (6) Disembarking and movement into heli-admin.
- (7) Platform safety and inspection visit briefings.
- (8) Testing SMS procedures and documentation systems used in helideck operations.
- (9) Assessing HLO, Helideck Assistant (HDA) and Radio Operator competence.

- (10) Physically inspecting helideck and support systems.
- (11) Check-in at heli-admin.
- (12) Boarding the inbound helicopter, startup (if appropriate) and take-off.
- (13) Disembarking and movement into the heliport.

Helideck inspections (primarily the examination and testing of hardware), may be carried out under the BHAB Offshore Helideck Inspection Report (OHIR) scheme to satisfy helicopter operators that the helideck complies with the requirements of Civil Aviation Publication (CAP) 437.

Alternatively, they may be carried out by an ICP (eg class society or a company appointed inspector) to satisfy the verification requirements of the Installation Dutyholder or the classification requirements of MODU and vessel owners.

Inspection Reporting and Recording

The format for recording and reporting the findings of helideck inspections (other than the BHAB Helideck inspections) is a matter for the Dutyholder to determine in conjunction with the inspector prior to undertaking the work. Dutyholders may require their corporate or local inspection documentation or an industry association standard (eg BHAB, UKOOA or International Association of Oil and Gas Producers (OGP)) to be used. Alternatively, Dutyholders may leave it to the discretion of the ICP.

To achieve consistency, the UK oil and gas industry in conjunction with BHAB has developed the OHIR that forms the basis for BHAB Helidecks inspection scheme (structure and equipment) which is covered in more detail in Section 4 Paragraph 2.4.5. The content of the OHIR provides for an inspection of a helideck and its associated systems, with the exception of aviation refuelling systems and detailed helideck management topics. A comprehensive helideck inspection checklist is provided in Addendum 12.

Whichever document format is selected, it should be clearly and logically set out, completed with concise comments and signed by the inspector. An ambiguous report is of no value to the recipient and will delay rectification of any non-compliance that is recorded.

Inspection Frequency

The frequency of helideck inspections should be laid down by Installation Operators, MODU and vessel owners in their SMS.

The inspections should be carried out annually and up-to-date information on the helideck, equipment and systems condition should be made available to helicopter operators. Therefore, during a helideck inspection, when an ICP discovers an infringement or non-compliance with the potential for jeopardising flights or Installation, MODU or vessel safety, the findings should be reported to BHAB Helidecks, who will in turn pass findings on to the Technical Committee.

Competence

The competence required of persons performing independent helideck inspections should be defined in the Installation Dutyholder, MODU or vessel owner's SMS.

Specific knowledge should be clearly demonstrated so that the full scope of the contents of CAP 437 and all its working interfaces with relevant offshore legislation and guidance are known.

The nature of these inspections may require that persons with different skills be employed. These persons must also be independent of the Installation's direct line management.

The Installation Dutyholder, MODU or vessel owner should validate the technical competence of ICPs by reference to the standards laid down by the CAA in conjunction with the BHAB. This may include demonstrating experience in the offshore aviation environment and include attendance and successful completion of a BHAB Helideck inspector's course.

2.4.4 Helicopter and Helideck Operations Auditing

Objectives

The auditing of offshore helicopter and helideck operations is a primary requirement of the SMS. It is important to measure the effectiveness of the various elements of a helideck operation and to make an assessment of the overall performance. Doing so also provides a means for comparison when subsequent audits are carried out.

Process

A framework that is useful as the foundation for an audit can be obtained from the wide range of topics that are addressed in applicable regulations and industry guidance. In addition, the audit framework can be further enhanced by distilling out the Dutyholder's arrangements and stated intent as set out in a facilities SMS and Safety Case (where appropriate).

Having established an audit framework, Auditors should normally conduct the audit onsite and elsewhere (as appropriate) by making visual observations of plant operations and equipment condition, undertaking system reviews of operating and inspection procedures/documentation and conducting personal interviews.

An Audit Strategy

The main topics for an audit of helideck and helicopter operations onshore and offshore are set out in Addendum 11.

An audit of the onshore elements for managing offshore helicopter operations is essentially a focus on specified areas of the company management system.

During design and operations Safety Case reviews, an Auditor should expect to find detailed information about helicopter operating hazards, the risks and consequences likely to be encountered, the risk influencing factors and the mitigating measures that are being employed to reduce risks. A proper and comprehensive analysis (qualitative and quantitative) of helicopter operational risk issues will have the potential for providing a significant contribution to the overall level of safety achieved offshore.

Software issues (primarily the Installation or vessel SMS) address management policies, organisation, administration and operating procedures and personnel competence and these topics are covered in Addendum 11.

A list of hardware topics (normally subject to a separate inspection) covering the helideck structure, systems and equipment is provided in Addendum 12.

Audit Reporting and Recording

Levels of compliance or otherwise should be noted and reported upon by the Auditor(s) using a format agreed with the Installation Dutyholder, MODU or vessel owner. Refer also to Section 4 Paragraph 2.4.3.

Audit Frequency

Ideally, the offshore elements of helideck and helicopter operations should be sampled for compliance on an annual basis. Some onshore elements may only require sampling at two to three-yearly intervals or at contract review/change (eg helicopter contractors and other service providers).

Competence

The competence and independence of personnel engaged in helicopter and helideck operations audits will depend upon the level and extent of auditing and should be established by the Dutyholder, MODU or vessel owner in a manner similar to that required for helideck inspections (refer to Section 4 Paragraph 2.4.3).

2.4.5 BHAB Helideck Inspection

Introduction

UKCS offshore helidecks and facilities are subject to inspection and acceptance by BHAB Helidecks. They represent the UK offshore helicopter operators and have responsibility for ensuring a consistent approach to helideck inspections.

Note: Monitoring infringements and standardising any operating restrictions that may need to be applied is completed through a Technical Committee made up of senior operational pilots from the offshore helicopter operators.

BHAB Helidecks are responsible for maintaining data about all UKCS Installations, MODU, vessel helidecks, their equipment and operating environments. This information is promulgated into a Helideck Limitation List (HLL), formerly known as the Installation/Vessel Limitations List (IVLL). CAA audits the HLL through its audits of the helicopter operators as well as directly auditing BHAB Helidecks.

BHAB Helidecks encourage the owners of MODUs and vessels that regularly move in and out of the UKCS to lodge with them an up-to-date status and details of all their helidecks, in readiness for any UKCS operations.

The HLL is made available to aircrew for pre-flight planning and in-flight management. The document not only shows features that will affect operations to a helideck but also sets out and gives reasons for any restrictions imposed (eg weight limitations) that should be observed, dependent on aircraft type.

The basis for a BHAB Helideck inspection is compliance with CAP 437. The inspection requires completion of an OHIR (refer to Addendum 9) by an 'approved' BHAB Helideck inspector and is largely a 'hardware' inspection against a set of prescriptive physical requirements.

Note: Where a current BHAB Helideck Certificate is in force (refer to Addendum 10), ICPs may not always consider it necessary to make detailed hardware checks unless there have been recent system modifications, equipment changes or if obvious deficiencies are noted.

The helicopter refuelling system and much of the helicopter operations management 'software systems' are generally excluded from the BHAB OHIR. These are areas that should be the focus of an ICP's attention when called upon to perform a helicopter operations audit or inspection.

The BHAB Inspection Process

Helicopter operators are required by the Air Navigation Order to satisfy themselves that offshore helidecks and equipment are up to standard and that deficiencies are known to them at all times. In order to do this, the following process has been established:

- (1) A BHAB approved inspector will carry out an initial inspection (and subsequently, at three-yearly intervals) of the helideck, its markings, associated equipment, physical obstructions (essentially hardware) and the peripheral operating environment (turbulence and thermal effects) in accordance with the topics listed in the OHIR.
- (2) The Installation Dutyholder, MODU or vessel owner is then required to take the following actions on receipt of the OHIR:
 - Submit to BHAB Helidecks a completed OHIR to indicate that the information in the report is verified and has been supported by a person(s) with the relevant competencies and that the submitted drawings and data are correct and in accordance with the inspection. The list of non-compliant items is particularly important and will ultimately be distributed to aircrew through their HLL. This correspondence is normally undertaken by Email between a management representative and BHAB Helidecks
 - Forward the whole report to BHAB Helidecks (address is detailed on the cover of the OHIR), highlighting any changes from the preceding report. Include up-to-date scale drawings of the helideck and associated surrounding equipment/obstructions etc (stating reference and revision number) but only when different from the previous report
 - Significant changes occurring at any time between periodic submissions of the OHIR should be forwarded without delay to BHAB Helidecks and follow-up action on rectification items should be in accordance with details outlined on the OHIR
 - All Installations and vessels new to the United Kingdom Continental Shelf (UKCS), should have an initial helideck inspection carried out by BHAB Helidecks before flight operations commence

However, the Helicopter Operators Operations Manual allows AOC holders to make an initial helideck inspection which will allow flights for 7 days or 28 flight movements, whichever expires first. This is intended to cater for MODUs and vessels entering UK waters from overseas and going straight onto location.

- (3) The achievement and results of the inspection process as demonstrated by the OHIR must be fully open to those having statutory rights to audit.
- (4) After submission of the report, the Dutyholder will be advised by BHAB Helidecks of any rectification necessary to allow helicopter operations without limitations. If this is not possible, then any limitations imposed will be notified to the Installation Dutyholder, MODU or vessel owner.

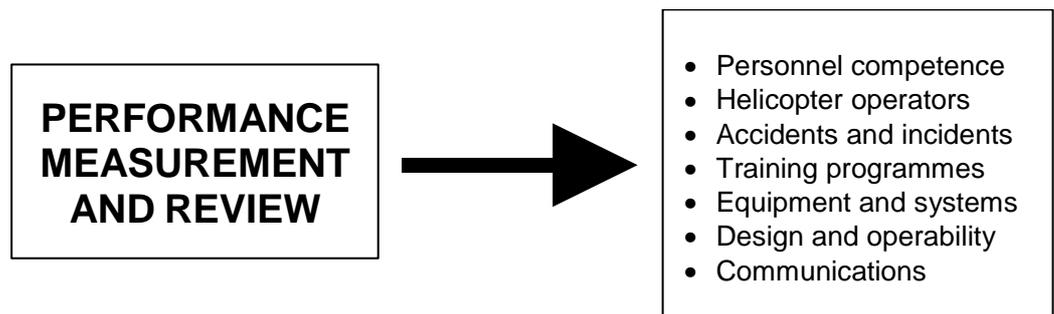
2.4.6 Health and Safety Executive Inspections (Operations SMS)

Health and Safety Executive's helicopter operations inspection programme covers those facilities that are designated offshore Installations and in some cases, specialist vessels engaged in specific activities to do with offshore operations. The primary focus of the inspections is directed at the operations SMS to:

- (1) Measure Dutyholder performance against good industry standards.
- (2) Take appropriate enforcement action where necessary.

It should be noted that when a Health and Safety Executive inspector concerning helicopter operations issues takes enforcement action, the inspector should provide all relevant information to the Dutyholder about the infringement or non-compliance. If considered appropriate, the inspector will also inform the BHAB and helicopter operators about the infringement or non-compliance.

2.5 Performance Measurement and Review



Performance measurement and detailed review of the Installation Dutyholder, MODU or vessel owners helideck operations and helicopter operations support services (where applicable) should be based on industry norms.

A recognised measurement system and review procedure should be used.

Section 5 Security

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1 Introduction

The provision of good security is a fundamental flight safety requirement in international aviation. Therefore, responding positively to known and perceived threats, that may have an adverse effect on flight and personnel safety during UK aviation operations, is essential.

Good security procedures for helicopter travel to and from offshore Installations, MODUs and vessels are equally, if not more important. Therefore, heliport security in the offshore industry is extended beyond normal flight operations requirements to include those additional security measures required to ensure safety in the offshore working environment.

2 Main References

- Management of Competence and Training in Emergency Response for Offshore Installations [Ref: 57]
- Health and Safety Executive Drug Abuse at Work. A Guide to Employers [Ref: 27]

3 Setting and Monitoring Industry Aviation Security Standards

The areas of airfields used for heliport operations at the locations at which these industry guidelines might be expected to apply are not regulated under the Department of Transport (DoT) National Aviation Security Programme (NASP).

NASP essentially prescribes security standards only for operations by large passenger aircraft (eg Maximum All Up Weight (MAUW) exceeding 15 tonnes) on which the general public may choose to travel. It is therefore, incumbent upon the oil and gas industry and its helicopter operators to set suitable standards for offshore helicopter operations.

The security control system at helicopter terminals is an extension of the control and inspection systems established by helicopter operators in consultation with the Civil Aviation Authority (CAA) and the Police.

Guidelines for security at heliports are proposed and agreed by the Helicopter Users Security Group (HUSG), with the aim that they should provide minimum standards of security control at heliports which serve the oil and gas exploration and production activities on the UKCS.

The guidelines are intended to provide the means to co-ordinate the requirements of helicopter users and thereby, encourage the adoption of similar practices, independent of heliport terminal and company.

HUSG is a group comprising of representatives from the heliport operators and oil and gas companies. They meet at regular intervals to share best practice and to arrange systematic auditing of heliport security procedures.

4 The Purpose of Security Controls

Security control at heliports exists to prevent the transportation of undesired personnel and goods to offshore Installations and vessels. They are arranged so that the degree and extent of security is flexible and can be adjusted to the current security threat level.

These controls have a dual security and safety purpose and shall consist of a flight booking system and the checking of passenger identification and personal details. The controls are designed to ensure that travellers offshore shall:

- Be properly authorised to undertake helicopter journeys to Installations, MODUs and vessels and meet safety standards (eg helicopter emergency survival certificate)
- Not be under the influence of alcohol or drugs
- Be fit to travel (eg hold a valid UKOOA Offshore Medical Certificate)

Security control at heliports is the first step in a number of measures introduced to ensure that an acceptable level of security is maintained offshore at all times.

In this context, security control is limited to inspecting passengers' identity and ensuring that passengers do not carry prohibited items. All items that are intrinsically dangerous (eg weapons, explosives, ammunition and prohibited substances) must be excluded from carriage.

Other items (eg alcohol, lighters, matches etc) should be prohibited from carriage by common agreement between all participating companies. Medicines are allowed but must be declared.

Refer to Addendum 6 for the List of Prohibited Items for Carriage in Passenger Baggage or on Person on Flights within the UKCS.

5 Heliport Restricted Zones

A restricted zone (eg secured area) is a limited and guarded part of the heliport terminal, towards the aircraft side, into which entry requires authorisation.

All persons in the secured area, including cleaning, catering and other staff, as well as passengers, are expected to comply with security routines to ensure the integrity of the area.

A security inspection (eg a body search) shall take place immediately prior to staff, the passengers and goods being admitted or transferred to the secure area.

If a passenger leaves the secured area, a new security inspection must be made on re-entry.

Whilst in the restricted zone, departing and arriving passengers shall be kept separate.

6 Outbound Passenger and Luggage Security Controls

6.1 Introduction

On arrival at the heliport, passengers shall be subject to the following security checks during the offshore flight check-in procedure:

- An identity check
- A baggage check prior to its release into the heliport baggage handling system
- A personal security check(s)
- Declaration of medication(s)

6.2 Identity Control

When checking in, passenger Identification (ID) shall be shown so that individuals can be checked against the passenger list.

The following forms of passenger ID are valid:

- An Operator ID card or an ID card used by a contractor vendor etc that is approved by the operating company. The ID card shall contain a photograph of the holder
- A valid passport
- An ID card issued by a Public Authority

- In exceptional circumstances, should a passenger not have a valid means of identification with them, an authorised representative from the Installation Dutyholder, MODU or vessel owner or the employing company (eg contractor) must verify the individual's identity and provide proof that the passenger holds valid offshore certificates prior to them completing the check-in procedure at the heliport terminal

If the Installation Dutyholder, MODU or vessel owner so requires, boarding cards shall be completed prior to check-in.

6.3 Baggage Check

Requirements for checking of baggage for flights are laid down by the DoT and are carried out for all passengers on each offshore flight.

On offshore flights all baggage shall be weighed and brought to the security control for inspection and a manual search in the presence of the owner. It shall then be moved to a secure area by the security staff and put on to the helicopter by authorised ground staff.

6.4 Individual Security Check and Inspection of Personnel on Departure

Before entering a secure area, all persons shall be subject to a security check (body search), both visually and manually by the security staff.

All **restricted items** shall be taken from passengers by security staff and, if requested, restored to the owner on return from offshore. (Refer to Addendum 6 for a List of Restricted Items.)

The body search shall include a thorough clothing check to be undertaken by a member of security staff of the same gender.

Once a passenger has entered the secure area, they shall not normally be permitted to leave the area. If for any reason they do so, the search procedure shall be repeated prior to re-entry.

Other personnel (eg flight crews and ground staff) may also be subject to the above search procedures on entering the secure area.

Prior to boarding the helicopter, a further name check and head count should be carried out to ensure the passenger manifest is correct.

6.5 Medicines

All medications (whether prescribed by a Doctor or those medicines categorised as 'purchased over the counter') should be declared by passengers and handed to a security guard at the security control desk. The medications shall then be placed in a container with a tamper-proof seal and returned to the passenger.

DRUGS AND MEDICINES

You have been given this card because you were carrying medication which has now been placed in a sealed container.

It is possible that the Offshore Medic at your destination will need to render **first aid** should you become ill or become involved in an accident. It is essential the Offshore Medic knows about all personnel on their Installation who are using medication, which may affect diagnosis or treatment and your ability to perform your work safely. Accordingly, on your arrival offshore, you are required to report to the

Offshore Medic who shall open the sealed container and check your medication before handing it over to you. Information regarding your medication shall be treated in the strictest confidence.

Your co-operation is much appreciated.'

Any medication found during a subsequent search of persons and/or luggage should similarly be placed in a container, sealed and returned to the owner for carriage offshore.

All passengers who have declared their medications will be handed a card (see above example) that explains the reasons for this security procedure.

Issues regarding medical confidentiality are addressed in [Ref: 66].

The aircraft passenger manifest shall be marked to indicate which passengers are carrying medication offshore. A separate mark is required against the name of an individual for each sealed container taken offshore.

On arrival at the offshore destination, the Offshore Medic shall check the aircraft passenger manifest for passengers carrying medication, open the container(s) and check the contents.

Medications being carried by an Offshore Medic should be checked by the OIM.

6.6 Intoxication

During the check-in procedure and the security check, and at any other time prior to the flight departure, passengers shall be observed for possible signs of intoxication by alcohol or any other substance.

If security staff or any other person observe this condition, they shall bring it to the attention of the Traffic Supervisor and the employing company representative.

The Traffic Supervisor and employing company representative shall deal with the matter in accordance with company procedures and in turn, notify the helicopter operator. It is an offence under the Air Navigation Order (ANO) to enter any aircraft when drunk or to be drunk onboard an aircraft.

7 Outbound Freight Security Controls

7.1 Goods from Operators

All goods (including mail) for transportation offshore shall be checked by the operator or by a contractor on their behalf, and a manifest of goods prepared.

7.2 Goods Delivered Direct to Heliport

Freight and parcels delivered directly to the heliport shall be checked for quantity and weight.

Under no circumstances shall goods be accepted for transport offshore unless approved by the charterer. This means that, for example, personal items handed in at the heliport shall not be carried, but should be processed through the correct checking-in procedure and thereafter properly manifested.

7.3 Checking Goods

All goods received at the heliport shall be checked against the presented manifest prior to being processed onto the outbound manifest.

7.4 Dangerous Goods

Where required, a qualified person prior to the items arriving at the heliport shall raise dangerous goods paperwork. Goods must comply with the International Air Transport Association (IATA) Dangerous Goods Regulations [Ref: 94] for packing, marking, labelling and documentation.

8 Inbound Passengers, Baggage and Freight Security Controls

8.1 Introduction

Security controls for inbound flights from offshore locations are of equal importance to those for outbound flights. Here the emphasis is on:

- The flight safety of inbound helicopters by ensuring that the weight and contents of all personal baggage and freight are accurately checked and manifested
- Reducing opportunities for unauthorised conveyance of company equipment and materials and contraband substances

8.2 Security Controls at the Offshore Departure Point

Checking of inbound passengers, baggage and freight is the responsibility of the offshore Installation Dutyholder, MODU or vessel owner.

Where possible procedures similar to the outbound security controls should be adopted for all return flights from an offshore location. In particular, once an individual has checked baggage in for an inbound flight, the baggage should be held in a secure area prior to it being loaded onto the helicopter.

8.3 Inbound Security Controls at the Heliport

Inbound security checks at the heliport shall be carried out by security personnel as directed by the helicopter charterer and may involve personnel, luggage and freight searches. The prime responsibility of Her Majesty's Customs and Excise Officers in this area must be given due recognition.

All freight arriving at the heliport from an offshore Installation, MODU or vessel shall be checked as follows:

- The cargo manifest/packing list has been completed and coincides with the number of parcels
- Dangerous goods documentation has been completed, where applicable
- The names of the sender and receiver are clearly stated
- The sealing, if any, is intact

The freight shall then be retained until cleared for release by HM Customs and Excise.

Section 6

Aeronautical Radio Communications

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1 Introduction

Legal requirements for providing offshore aeronautical radio operations are contained in The Offshore Installations and Pipeline Works (Management and Administration (MAR)) Regulations (SI 1995/738). Guidance and procedures for personnel engaged in offshore aeronautical radio operations are currently provided in Civil Aviation Publications (CAP) 452 (scheduled to be replaced in 2003) and 535.

In addition to the above requirements, United Kingdom Offshore Operators Association (UKOOA) and the British Helicopter Advisory Board (BHAB) have jointly published **normal** and **emergency** procedures for operations with helicopters. In doing so, they have defined **alerting service** and **flight watch** and the related responsibilities and duties.

2 Main References

- Helicopter Operations – Offshore Radio Operators' Procedures (UKOOA) [Ref: 59]
- A Guide to the Offshore Installations and Pipeline Works (Management and Administration) Regulations (SI 1995/738) [Ref: 19]
- Civil Aviation Publication No 535, Offshore Aeronautical Radio Station Operators Guide [Ref: 48]
- Civil Aviation Publication No 452, Aeronautical Radio Station Operators Guide Chapter 5 [Ref: 47]

3 Flight Watch and Alerting Service

Aircraft operating in support of the offshore oil and gas industry need to receive an **alerting service** whenever airborne. An **alerting service** is a service which initiates emergency action when an agency (eg an Installation or vessel) loses and is unable to re-establish contact with, or ascertain the whereabouts of, a helicopter to which **flight watch** service is being provided.

Flight watch is provided by the nearest en route Installation, often the destination Installation. The term Flight Watch has not previously been defined in terms of the responsibilities involved.

3.1 Northern and Central North Sea

A traffic information and alerting service between the Aberdeen 050 Radial and Aberdeen 120 Radial from 80 DME (distance) to the Median Line between 1500ft and Flight Level 85, is provided by Air Traffic Control (ATC) at Aberdeen via the REBRO Service (between the hours of 07.30 to 21.00 local time).

3.2 Southern North Sea

An alerting service is provided by Anglia Radar (between the hours of 06.30 to 20.30 local time).

3.3 Outside the REBRO Service or Anglia Radar Areas

Traffic information and alerting services may be provided by whomever is the controlling Authority.

4 Normal and Emergency Radio Operating Procedures

Approved normal and emergency radio operating procedures have been jointly established by UKOOA and the BHAB. They are set out in Addendum 12.

Offshore Radio Operators working on Installations, MODUs and vessels on the UKCS must comply with these procedures at all times.

When passing weather and operational information to flight crews on either traffic and log frequencies, it is recommended that the information be consistently sent in a standard order as listed in Addendum 13. Using a standard order should limit opportunities for errors and omissions.

5 Radio Operator Routine and Emergency Administration Procedures

In addition to the operating procedures in Section 6 Paragraph 4, management should also publish written administration procedures for the following Radio Operator's routine and emergency activities including:

- Logging the instructions from the Installation to the vessel(s) standing by to close with the Installation, during helicopter operations and confirmation of receipt of the instruction by the vessel(s)
- A procedure for keeping the vessel(s) standing by informed of all helicopter movements, in particular flight watch procedures applicable to the offshore Installation
- Procedures for the interface with other air-traffic facilities

- The requirement to notify helicopter operators of all appropriate helicopter arrival and departure times
- Duties in the event of an aircraft incident/accident both on and off the helideck

6 Communications with Flight Crews

Note: Under no circumstances should the Helicopter Landing Officer (HLO) or Radio Operator assume the role or authority of an Air Traffic Controller. They may only act in an advisory capacity.

On most Installations and vessels, the Radio Operator is the initial and final point of radio contact between the helicopter flight crew and Installation/vessel. However, the radio room is often located remotely from the helideck environs and thus visual contact with the helicopter is impossible.

To overcome this deficiency and thus enhance flight and helideck operations safety, the HLO (and preferably, at least one Helideck Assistant (HDA)) should be equipped with a portable headset(s) tuned to the local aeronautical Very High Frequency (VHF) for the Installation. Such arrangements can help to eliminate wrong deck landings. The HLO can provide flight crews with confirmation of positive identification of the Installation during the final approach.

During helideck operations, it is essential for the HLO to have direct visual contact at all times with a helicopter and its flight crew whilst the aircraft is on final approach for landing and during the take-off phase. It is also highly desirable for the HLO to have direct R/T contact with the flight crew whilst a helicopter is on final approach for landing, during the take-off phase and all the time the helicopter is on the helideck.

Additionally, one of the HDAs should be positioned remotely from the HLO, at another helideck access point, to gain a different view of the helicopter during approach, landing and take-off. Should the HDA observe that something is wrong with the aircraft, he can then alert the HLO and, in the event that the HLO is unable to do so, initiate emergency/firefighting procedures.

Radio Operators and helideck crew should use only the CAA allocated identification references (eg callsign and helideck name) whilst communicating with a helicopter.

7 Recommended Radio Operator to HLO Handover Procedure

Formal procedures should be in place for the Radio Operator to effect a proper R/T handover procedure to the HLO, when the HLO has made visual contact with the aircraft on its final approach. The Radio Operator should then maintain a listening watch in order to respond to any situation that may require an emergency response by the Installation management. When the HLO has completed helideck operations and the helicopter has taken off and cleared the Installation/vessel, the Radio Operator effects R/T handover procedures from the HLO and resumes his normal radio surveillance.

The following points should be considered when developing and implementing such procedures:

- The HLO should be suitably trained (eg restricted radio/telephone operators certificate) and must be able to demonstrate competence when using the portable aeronautical VHF communications equipment
- HDAs selected to use portable aeronautical VHF communications equipment should be suitably trained and must be able to demonstrate competence when using the equipment
- HDAs must be instructed to have their headsets switched to 'receive only' in order to hear flight crew and HLO instructions clearly. Transmissions should only be made by HDAs in the event of an emergency
- To avoid loss of communication at any stage of helideck operations, at least one HDA should be equipped with a headset
- The handover and general R/T procedures employed must be designed using standard R/T phrases and vocabulary to avoid misunderstandings and must be kept brief to avoid unnecessary 'chatter' on the selected aeronautical frequency
- The use of the R/T during helideck operations should be confined to essential dialogue between flight crew and HLO. For example, it should not be used for loading instructions

On helicopter approach the Radio Operator will advise:

'Aircraft Callsign – This is [Installation/vessel name] – Call [Installation/vessel callsign] Landing Deck Officer for deck clearance.'

When called, the HLO will reply:

'Aircraft Callsign – This is [Installation/vessel name] Landing Deck Officer – the helideck is clear – you may land at your own discretion.'

The procedure for helicopter departure would be:

'Aircraft Callsign – This is [Installation/vessel name] Landing Deck Officer – the helideck is clear – you may take off at your own discretion – Call [Installation/vessel name] when airborne.'

Note: Only the 'Name' and 'Callsign' allocated by the CAA should be used.

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1 Introduction

The Installation Safety Management System (SMS) is one of the keys to assuring safe and efficient offshore helideck operations. Supervision of helicopter operations should be fully integrated into the SMS.

The responsibilities and authority assigned to individuals for controlling all activities related to helideck operations (in all weather conditions) should be set down in a clearly defined structure and hierarchy. They should be widely promulgated, onshore and offshore, to ensure full and proper understanding by **all**. The interfaces with other disciplines and those activities that may impact safe and efficient helideck operations should be identified and built into operating procedures.

2 The Duty of Care

The Offshore Installations and Pipeline Works (Management and Administration) Regulations (MARs) 1995 (SI 1995/738) place a responsibility on the Dutyholder to ensure that:

‘Such procedures are established, and plant provided, as will secure, so far as reasonably practicable, that helicopter operations, including landing and take-off of helicopters, are without risk to health and safety.’

2.1 Step Change in Safety – First-time Travellers

Checking in and flying offshore in a helicopter is invariably a bewildering and sometimes worrying experience for the first-time or infrequent traveller. Therefore, Dutyholders are encouraged to adopt appropriate procedures to identify and assist inexperienced individuals when they travel offshore in a helicopter, particularly for the first time.

Detailed procedures may vary between operating companies and their helicopter operators but the objectives should be the same and the similar fundamental processes followed (eg **a green armband policy**).

2.1.1 Initial Identification of First-time Travellers

Prior to arriving at the heliport, all first-time travellers should be identified by the Dutyholder and employing companies (eg contractors, vendors and visitors). Ideally, this information should be readily available on the flight booking system at the heliport check-in desk. In addition, attention should be drawn to the requirement that it is the individual’s responsibility to notify the check-in desk if they are a first-time or infrequent traveller.

2.1.2 Green Armband Policy

At the check-in desk, a first-time traveller should be issued with a **green armband** and be given clear instructions to wear it in a visible location on the sleeve of the survival suit. Also, the individual should be advised that by wearing the armband they are easily identifiable to fellow passengers, the flight crew, heliport ground staff and helideck crews who can then ensure they are escorted and assisted throughout the preparation for and during their journey offshore.

3 Providing Helideck Operating and Performance Information for Flight Crews

3.1 Flight Planning Information

Helicopter pilots have a vital need for accurate knowledge of the details of the helideck, available support facilities and the surrounding operating environment.

Therefore, Installation Operators/vessel owners should always provide current drawings, specifications and relevant design reports (eg helideck model testing) for new or modified helidecks to British Helicopter Advisory Board (BHAB) Helidecks.

3.2 Flight Management Information

To enable flight crews to manage an offshore flight safely, an essential ingredient in the operational information flow, is for them to receive accurate and up-to-date weather and Installation/vessel operations data (eg vessel motions, number of gas turbines online etc).

Flight crew confidence in the quality of the information transmitted whilst en route and at the destination helideck that will be a key factor toward ensuring the flight proceeds safely and as planned.

3.3 Installation Identification

To avoid confusing helicopter flight crews and to reduce the potential for wrong deck landings, particularly where several Installations of similar appearance and/or belonging to the same Dutyholder are in close proximity, it is essential to ensure that the Installation identification boards, the helideck identification marking (ie the name) and the radio callsign are consistent. Refer to Health and Safety Executive Operations Notice No 39 [Ref: 37].

Installation and vessel visual identifications should, at all times, be kept unobscured, in clean condition and well illuminated at night or when there is limited visibility.

It is also recommended that Dutyholders adopt a procedure whereby helicopters approaching to land on an offshore helideck are visually identified by the HLO and the correct helideck destination is confirmed verbally with the flight crew.

3.4 Installation/Helideck Safety Status Signals

3.4.1 Status Lights Protocol and Procedures

Installations, MODUs and vessels (when appropriate to the type of operations being undertaken) should be equipped with a helideck status light system specified in accordance with Civil Aviation Publication (CAP) 437 and CAA Paper 2003/06.

For further information on status lights and operating protocol contact the helicopter operators or the CAA.

The purpose of this system is to provide a high-intensity '**international red**' warning signal (**flashing** red light) to flight crews when conditions on the Installation, MODU or vessel helideck are unsafe for making an approach and landing or for a helicopter to remain on the helideck. Alternatively, in some cases the Captain of a helicopter already on the helideck may elect to shut the aircraft down.

3.4.2 Landing Prohibited Marker

A landing prohibited marker (as specified in CAP 437) shall be displayed on the helideck when the helideck is taken out of use for operational or technical reasons.

When it is necessary to prohibit landings on a helideck, the Installation Dutyholder, MODU or vessel owner should formally notify the helicopter operator and BHAB, advising the reasons and anticipated period the landing prohibition will remain in effect.

4 Providing Helideck Operating and Performance Information for OIMs and HLOs

It is the duty of the Installation Dutyholder, Mobile Offshore Drilling Unit (MODU) or vessel owner responsible for a helideck with operating limitations placed upon it by the BHAB, to appraise the person(s) responsible for helideck operations fully of the nature and extent of each limitation. Suitable procedures should be in place to deal with each limitation. Whilst developing the procedures, it is essential to consult with the BHAB.

5 Management of Flight Operations Paperwork

Reducing the paperwork associated with offshore helicopter movements without detriment to flight safety controls should be a management objective.

Apart from reducing time-consuming administrative effort on Installations, MODUs and vessels, it is particularly important for flight safety to reduce, where possible, flight crew workload.

Consideration should be given to reducing the amount of paperwork generated offshore for passenger, baggage and cargo loads on sectors (other than the first outbound), the sequencing of multisector routes and the recording of flying times and other items which are of contractual importance.

When a Dutyholder has contracted a helicopter operator, they should consult with each other to find ways to eliminate, if not reduce, the manual recording and onpass of flight information by flight crews and helideck staff. Particularly where the basic information to be transmitted is much the same but the individual companies simply require it in a different form.

Dutyholders and their helicopter operators should also consider the options available to them for making greater use of Installation, MODU, vessel and aircraft (eg modified RNav1 or hand-held device) computer systems for pre-planning individual sectors and loads and generating the loadsheets.

Dutyholders should not introduce last-minute changes to pre-planned routes and manifests, other than in exceptional circumstances.

6 Helideck Operations Management

6.1 Introduction

Irrespective of the specific operating purpose of the offshore Installation, MODU or vessel or the frequency and extent of day-to-day helicopter operations, the same fundamental requirements for the receipt and dispatch of helicopters will apply.

Where people involved in helideck operations are assigned other primary duties, and are therefore not members of a full-time helideck crew, special consideration should be given to the operating practices, procedures and continuing competence of the crew.

Irrespective of the volume of helicopter traffic, the level of preparedness and effectiveness of both personnel and equipment involved in helicopter operations requires to be of a single satisfactory standard.

On facilities with infrequent helicopter operations, this may involve a significant commitment to ensure there are enough adequately trained personnel available for helideck duty. Such operations will require routine monitoring and testing to ensure proper standards are maintained.

6.2 Helideck Preparation

Prior to helicopter landings taking place on an Installation or vessel, the helideck and support facilities should be properly prepared for use. Preparation should be carried out in a systematic manner, following an approved procedure/checklist to ensure all equipment serviceable, in the correct position and ready for immediate use. Completion of helideck and support equipment preparation should be formally documented by the HLO.

6.3 Helicopter Crew Composition

All offshore helicopter flights in the United Kingdom (UK) sector of the North Sea will be flown using multi-engined aircraft operated by a crew of two qualified pilots.

6.4 Helideck Crew Composition

An Installation Dutyholder must appoint a HLO (MAR Regulation 13) and 'sufficient' emergency personnel (Prevention of Fire and Explosion, and Emergency Response (PFEER) Regulation 6 (1)) when undertaking helicopter operations on an offshore Installation.

The precise composition of helideck crews required for offshore helideck operations is a matter for the Installation Dutyholder, MODU or vessel owner to decide. The primary objective is to ensure the safety of the helicopter passengers and crew, the helideck crew and the Installation, MODU or vessel.

To establish the optimum number of helideck crew members for a particular offshore operation, the Installation Dutyholder, MODU or vessel owner making reference to CAP 437 should carry out a thorough assessment (task analysis), which should form part of the Safety Case. The full list of helideck duties and the environment in which they are to be carried out by a helideck crew must be considered in depth. To be acceptable, helideck crew numbers selected for a given operation must clearly be demonstrated as safe and practicable.

BHAB recommend a helideck crew comprising of an HLO to supervise the helideck operations plus three HDAs (in effect a monitor operator to give top cover plus two personnel to effect a rescue). Reduction of these numbers should only be considered when there are insufficient personnel to make up a full helideck crew. Members of the flight crew should not be counted as part of the helideck crew.

It is always prudent for the Dutyholder to advise the helicopter operator of those flights scheduled to use Installations, MODUs and vessels where minimum helideck crews are likely to arise. In turn, the helicopter operator should advise the flight crew. The Radio Operator or HLO should confirm the situation is acceptable to the flight crew when initial radio contact with the Installation is made. This includes any requirement for the non-handling Pilot to provide assistance to the HLO whilst on the helideck (eg with disembarking and embarking passengers, refuelling etc).

Note: There is a Civil Aviation Authority (CAA) ruling that flight crew wearing survival suits, although they can supervise activities such as loading and unloading freight and baggage, they may not become physically involved.

Advice on the helideck crew composition specifically for Normally Unattended Installations (NUIs) is covered in Section 10.

7 Meteorology and Adverse Weather Procedures

7.1 Meteorology

A key component of aviation safety and flight planning is the acquisition and use of accurate weather information.

Helicopter operators routinely obtain their regional and area weather forecasts and actuals for flight planning purposes from official Meteorological Office sources.

However, an essential part of the management of offshore helideck operations is to provide the helicopter operator and flight crews with up-to-date and accurate weather information for the destination Installation or vessel.

When providing destination weather information for an offshore Installation, MODU or vessel, offshore management should ensure that the necessary instrumentation is available (properly calibrated) and a competent person employed to make comprehensive and accurate meteorological observations and readings. The information should be recorded and then transmitted to the helicopter operators and/or flight crews in the correct format with the time of the observations clearly stated.

It is worth noting that should a meteorological reading be in doubt due to instrument calibration or other problem, a gross error check can be made by cross-checking with other rigs and vessels in the immediate area.

Where practicable, the Installation and use of online weather stations is highly recommended.

The required weather information includes:

- Wind speed and direction (steady and gusting) – noting the elevation at which the readings were taken
- Outside air temperature
- Barometric pressure
- Visibility
- Cloudbase
- Seastate
- Presence and extent of any precipitation
- Local lightning activity

The safety of helicopter operations to moving helidecks on floating structures, MODUs and vessels is also dependent on flight crews receiving accurate information about helideck motions. This topic is covered in Section 8.

7.2 Adverse Weather Operations

7.2.1 General

PFEER Regulation 17 requires Dutyholders to make effective arrangements to rescue persons from the sea near the Installation in the event of a helicopter ditching during landing or take-off.

Adverse weather conditions can, and will occur at any location on the United Kingdom Continental Shelf (UKCS). They cannot be avoided. Therefore, access to up-to-date and accurate weather forecasting information is essential to allow advance planning of helicopter operations to take place.

The onset of adverse weather conditions offshore introduce a number of related factors that must be considered and closely examined by a Dutyholder's operations management (on and offshore) in order to make prudent judgements as to whether routine offshore helicopter flights should continue, be delayed or curtailed altogether.

Note: Routine is defined as all flights with the exception of those for casualty evacuation, platform evacuation and marine Search and Rescue (SAR).

A decision by the Dutyholder to delay or curtail offshore flights in the event of adverse conditions takes precedence over the decision by a helicopter company and its flight crew that helicopters can still safely fly within the approved (Flight Operations Manual) operating limitations of the aircraft.

Information on specific helicopter type operating parameters can be obtained from the helicopter operator.

7.2.2 Limiting Factors

Notwithstanding the ability of modern helicopters to operate safely in extreme weather conditions, the limiting factors for normal flight operations to offshore Installations and vessels during adverse weather (such as high winds, poor visibility and heavy seas) are:

- The ability of personnel to use external walkways and access the helideck safely
- In the event of a helicopter ditching near an Installation, the ability to provide a good prospect for the rescue and recovery of its passengers and crew
- The ability of a helicopter to tolerate the predicted and prevailing environmental conditions and vessel motions (eg roll, pitch and heave accelerations) in order to land, remain on helideck and take off safely from a floating Installation or vessel

7.2.3 Procedures

Adverse weather procedures should be promulgated by the Dutyholder to provide effective guidance for OIMs, Masters and flight crews to undertake routine and prudent decision making prior to the onset, and during deteriorating weather conditions.

The Dutyholder may choose to combine the Installation procedures for adverse weather operations, covering and cross-referencing the weather effects and prescribed activities for helicopter, marine and onboard operations.

The essence of these procedures should be their simplicity, ease of reference and use. They should also offer sufficient flexibility for OIMs, Masters and helicopter flight crews to make reasoned judgements in the light of actual and predicted weather conditions at the point of departure, en route and at the destination.

The combinations of factors to be considered when preparing procedures are:

- Consider dividing the procedure into clearly defined phases, each with a series of decision points. Each phase should set out the flying rules that should apply for a given set of weather conditions
- For practical and comparative purposes, refer observed weather conditions to the Beaufort Scale
- Establish a mean wind speed measured at the helideck (eg 45 knots), above which passenger movements on the helideck require additional safety precautions to be put into effect (eg safety lines)
- Consider the ability and likely time taken to provide a good prospect for the rescue and recovery, to a safe location, of passengers and crew from a ditched helicopter
- Establish the helicopter wind speed limitations for shutting down and starting rotors (depends on aircraft type in use)
- For the Installation location, establish the availability and predicted time of arrival 'onscene' of SAR helicopters
- Establish the maximum mean and gusting wind speeds (eg 50 and 60 knots respectively) measured at the helideck where crew change and shuttle flights may only proceed if SAR helicopters are available and sea conditions are such that a standby boat and its Fast Rescue Craft (FRC) remain effective during helicopter operations

- Make reference to the point at which normal helicopter operations will cease (eg 60 knots)
- Establish the point at which normal flight operations should cease when sea fog is below helideck level
- Establish the point at which normal flight operations should cease when snow is falling
- Establish the point at which normal flight operations should cease due to low cloudbase
- Establish the point at which normal flight operations should cease because of limited visibility. This will also affect the SBV and SAR helicopters' ability to effect a rescue
- Establish the vessel motions and accelerations (predicted and actual) at which the upper limit for any of roll, pitch and heave parameters are exceeded for a given helicopter type
- Establish time periods for situation review and decision making, taking into account flying programme requirements and the actual and forecasted weather updates

8 Helideck Emergency Response Plan

8.1 Introduction

The Offshore Installations (Prevention of Fire and Explosion and Emergency Response) Regulations 1995 (SI 1995/No 743) require the Dutyholder of an offshore Installation to take appropriate measures with a view to:

- Protecting persons on the Installation from fire and explosion
- Securing an effective emergency response

Regulation 8 requires an Emergency Response Plan (ERP) to be in place for an offshore Installation.

The ERP for an offshore Installation, MODU or vessel should set out the emergency duties and responses for management, the HLO, helideck and firefighting teams, the requirements for emergency drills and exercises and the training and assessment of personnel competence.

Helideck ERPs should contain procedures for all credible emergency scenarios where helicopters may be involved. Procedures can range from dealing with major accident events and precautionary situations that occur on the Installation, MODU or vessel to providing helicopter support for emergencies arising elsewhere. Scenarios to consider are:

The following events that may occur on the Installation, MODU or vessel:

- Helicopter crash on the helideck (with or without fire and fuel spillage)
- Engine fire on helicopter

- Fire in the helicopter cabin
- Offshore Installation or vessel on fire
- Fire during helicopter refuelling operations
- Aviation refuelling skid fire
- An emergency or precautionary landing
- An attempted wheels-up landing
- Evacuation and emergency movement (eg Medevac) by helicopters
- Helicopter use for man overboard

The following events that may occur near the Installation, MODU or vessel:

- Helicopter ditching near to offshore Installation, MODU or vessel
- Inter-installation/vessel emergency support
- SAR duties and contingencies

In addition, the following events should also be considered for inclusion in the ERP, in so far as they may severely impact flight safety or the use of helicopters in the event of an emergency response (eg an evacuation):

- Aviation fuel contamination
- Obstructed helideck
- Wrong deck landing
- Installation, MODU or vessel status changes with helicopter on deck

Personnel assigned to offshore helideck activities and the related emergency duties should receive appropriate training and their competence assessed as specified in Section 13.

8.2 Emergency Procedures

The following sections provide sample structures for developing procedures for a variety of helideck firefighting, evacuation and rescue scenarios etc that should be included in the ERP.

The procedures should be written to encourage the full use of available firefighting appliances, rescue equipment and resources to best advantage. The ERP should include all elements for both on and offshore co-ordination and support.

8.2.1 Crash on Helideck

In the event a crash on the helideck, the HLO should:

- Raise the alarm
- Direct first response helideck firefighting and rescue activities. On some Installations and vessels, the arrival onscene of an appointed emergency co-ordinator may signal handover of responsibilities after the initial response

- Contact the OIM/Master at the earliest opportunity
- Establish and maintain contact with the radio room, Central Control Room (CCR) or incident room throughout any subsequent firefighting and rescue operations

8.2.2 Crash on Helideck, Major Spillage with No Fire

In the event of a crash on helideck with a major spillage but no fire, the HLO should:

- Raise the alarm
- Direct helideck Fire Team to lay a foam blanket around and under the aircraft
- Direct evacuation of the aircraft
- Establish and maintain contact with the radio room/CCR/incident room as required
- Contact the OIM/Master at the earliest opportunity

8.2.3 Significant Fuel Spillage, Rotors Turning

In the event of a significant fuel spillage with rotors turning, the HLO should:

- Immediately ensure that no further fuel is delivered to the aircraft
- Inform the pilot of the circumstances. The Pilot will decide whether to shut down or take off
- Once the aircraft has taken off or shut down, direct the hosing down of the helideck with water to wash away the fuel prior to any further operations. If the aircraft remains on deck, care must be taken not to spray the aircraft with salt water

8.2.4 Evacuation by Helicopter

In the event of evacuation by helicopter, the HLO should:

- Prepare the helideck to receive incoming aircraft
- Establish payloads as each aircraft approaches and inform administration of the number of passengers required on deck
- As each aircraft departs, report to administration the number of evacuees lifted off

8.2.5 Man Overboard

In the event of a man overboard, the HLO should:

- If there is a helicopter available on deck equipped for winching or required for search activities, be prepared for it to take off when requested by the OIM/Master

- If the helideck is not in use, prepare the helideck for operations and stand by to receive an incoming SAR aircraft if it is diverted to the Installation, MODU or vessel
- Inform vessels standing by of anticipated helicopter movements
- Maintain communication with the radio room/CCR/incident room

8.2.6 Emergency or Precautionary Landing

In the event of an emergency or precautionary landing, the HLO should:

- Contact the OIM/Master at the earliest opportunity
- Instruct any aircraft on deck to take off, and hold off any incoming aircraft. Instruct cranes to lay down loads, and move jibs to a safe position
- Confirm that the approach and overshoot areas are clear and in the case of vessels, if possible, turn the vessel onto appropriate heading for an optimum approach by helicopter
- Ensure that Rescue and Firefighting (RFF) equipment is ready for instant use
- Ensure firefighting and rescue teams are standing by and are correctly dressed for firefighting/rescue response
- Ensure complementary firefighting media are also to hand
- Inform the radio room that the deck is clear and ready to receive the aircraft, maintain contact with the radio room

8.2.7 Inadvertent Wheels-up Landing

In the event that a helicopter is observed to be inadvertently attempting a landing with wheels up, the HLO should not assume the authority of Air Traffic Control (ATC) but should only act in an advisory capacity by calling, for example:

'WHEELS, WHEELS, WHEELS, [aircraft callsign] THIS IS [Installation/vessel call sign] WHEELS, WHEELS, WHEELS.'

8.2.8 Helicopter Incident on Landing

In the event of a helicopter incident on landing, the HLO should:

- Hold the helicopter on deck and advise the pilot of his observations. Inform the helicopter operator of the nature of the incident
- Contact and inform the OIM/Master at the earliest opportunity
- The helicopter operator and pilot will decide if the flight is to proceed

8.2.9 Installation/Vessel Status Change with Aircraft on Deck

Refer to Paragraph 3.4.1 Status Light Protocol and Procedures and Paragraph 9.4.3 Important Note.

The HLO should:

- Advise the helicopter flight crew that there is an imminent status change that may affect helideck safety. Helideck activities (eg helicopter refuelling and passenger transfers) should cease and the aircraft should be secured and prepared for an immediate take-off
- Contact the OIM/Master/radio room to receive further information and instructions

8.2.10 Wrong Deck Landing

In the event of wrong deck landing, the HLO should:

- Contact OIM/Master/radio room to receive further instructions
- The Radio Operator should immediately notify the helicopter's base operations and advise that the aircraft has landed at the wrong destination

8.3 Helicopter Handling Procedures

After a helicopter has landed or before it has taken off, it is not permitted for anyone to approach the helicopter if the anti-collision light (flashing red) is on.

Once the anti-collision light is turned off and prior to any helideck operation taking place which involves a helicopter with rotors turning (eg embarking/disembarking passengers, loading/offloading baggage and freight, refuelling etc), personnel should only approach the aircraft when authorised to do so by the HLO. This will be after the anti-collision beacon has been switched off and clearance given by the flight crew.

An approach to the helicopter should only be made via the 'safe approach sectors', and when under the rotor disc personnel must remain within the safe areas. The helicopter operators define safe approach and working areas for each type of aircraft. Refer to Addendum 15.

Diagrams clearly illustrating this safety information should be obtained from helicopter operators for the helicopter types in service. The information should be prominently displayed at an appropriate location on the offshore facility (eg heli-admin) as an aide-memoir to the helideck crew and passengers.

Whenever the HLO briefs the helideck crew, he should bring to their attention, the importance of using the safe approach and working areas.

On floating facilities, the potential hazards from the effects of vessel motions on a helicopter should be clearly advised to all personnel.

9 Operational Personnel Duties and Procedures

9.1 General

The ultimate responsibility for helideck operations on an offshore Installation, MODU or vessel rests with the Installation Dutyholder or owner. This responsibility is commonly delegated to an OIM or Vessel Master and the HLO.

The legal requirements and duties of OIMs and HLOs are defined in The Offshore Installations and Pipeline Works (Management and Administration) Regulations (SI 1995/738), Regulations 6 and 13.

The general duties and roles of OIM/Master, HLO, HDAs and passengers are detailed in the following sections for a variety of operational and emergency scenarios. For convenience, a summary of individual roles and responsibilities is provided in Addendum 4.

9.2 Site-specific Duties and Responsibilities

Written descriptions of the duties and responsibilities of all individuals assigned to helicopter operations and related emergency duties should be held by the OIM/Vessel Master with copies readily available for reference by the assigned personnel.

Offshore Installation Dutyholders, MODU and vessel owners should display onboard their Installations and vessels, posters showing safe means of access to helicopters and the emergency escape routes. They should also provide copies of appropriate safety/rescue data and technical manuals for reference by helicopter handling crews.

A list of documentation required for use offshore can be found in Addendum 11 (Paragraph 4.6).

The equipment and documentation provided for helideck operations should be itemised on a formal 'checklist' and subject to routine checks to ensure its condition, currency and availability.

9.3 Planned Flights Prior to Initial Contact

Prior to a routine (planned) flight landing on an offshore Installation or vessel, the HLO will:

- Ensure the helideck crew is properly clothed (wearing correct Personal Protective Equipment (PPE)), trained, competent and familiar with helicopter firefighting techniques
- Inform appropriate Installation management and vessels standing by that helicopter operations are to take place
- Ensure that any refuelling requirements can be met ie status of equipment and quantity of available fuel

- Ensure that the helideck and related equipment is available and in a serviceable condition available for immediate deployment if required (eg firefighting and rescue equipment, lighting, deck surface free of contamination and Foreign Object Damage (FOD) etc). Report all defects and deficiencies to the facility management
- Ensure that 210° and 150° sectors for infringements (eg cessation of crane operations)
- On Installations and vessels where helideck movement is a key factor for executing safe helicopter landings, ensure that the helicopter operator has been informed about the Installation/vessel operating status during helideck operations and predicted helideck motion limits during helideck operations
- Brief the helideck crew

Note: The HLO is responsible for supervising all helideck operations and is accountable for ensuring that the many individual activities are conducted safely. To effectively supervise helideck operations, the HLO should therefore delegate specific tasks to HDAs for them to accomplish under the HLO's supervision. In most operational circumstances, the HLO should not undertake an active role in performing the tasks.

9.4 Flight Crew and Helideck Crew Duties and Procedures from Initial Contact to After Take-off

Initial contact with an offshore Installation or vessel by the flight crew will normally be at more than 10 miles inbound to the facility, however, later contact may be made.

Final contact with the Installation/vessel on an inbound flight will cease when the pilot states that he is changing frequency. The flight crew and helideck crew duties and procedures between these first and last calls will generally conform to those detailed in Paragraphs 9.4.1 to 9.4.4:

9.4.1 Initial Contact

- Pilot will advise his Estimated Time of Arrival (ETA) and request the latest weather, return load and routing

Note: After initial contact is made, the Installation/vessel must maintain a flight watch. The pilot may formally hand over the flight watch responsibility to the offshore Installation or vessel giving details of Souls Onboard (SOB), endurance and revised ETA. 'Operations Normal' calls will be made by the Pilot every 10 minutes. The absence of such calls must trigger further enquiries from the offshore Installation, MODU or vessel. Refer to Section 6 Paragraph 4.

- On floating Installations and vessels, roll, pitch, heave and heading data will be requested

- The Non-directional Beacon (NDB) may be requested by the flight crew to assist location of the Installation, MODU or vessel
- Note:** Vessels transiting between operational areas on a short-term basis should always ensure they are tuned to the right area frequency (refer to current version of CAA ENR 6-1-15-10)
- HLO will advise helideck crew, standby and attendant vessels of any change in ETA
 - HLO, assisted by HDA(s), will check to confirm that helideck facilities are ready to receive the aircraft
 - Prior to landing on floating Installations or vessels, the Pilot must be advised of any change in roll, pitch, heave or heading

9.4.2 In Descent

- After the aircraft has completed its initial approach checks, the flight crew will obtain from the HLO clearance to land on the helideck
- Note:** To avoid 'wrong deck landings', the HLO (subject to visibility limits) should establish visual contact with the approaching helicopter and confirm the correct aircraft identification with the flight crew, prior to giving clearance to land.
- Until the helicopter has landed, the helideck crew should remain below the surface of the helideck for their protection. When it is necessary to observe the incoming helicopter, the HLO and HDAs should only have their heads visible above the helideck surface

9.4.3 On Helideck

Important Note: Offshore Installations, MODUs and vessels are required to have an operating procedure whereby a helicopter on the helideck (eg parked, with rotors turning) is immediately informed of any change in Installation or vessel alert status. For example, depending on the circumstances, it may be necessary to order the aircraft either to take off or shut down in the event of an alert due to a gas leak or a change in the environmental conditions.

Particularly in the case of floating structures and vessels, a loss of heading control (eg loss of Dynamic Positioning (DP)) or a significant change in environmental conditions (in particular, wind speed and relative wind direction) must immediately be notified to the flight crew. Any changes to environmental conditions on the helideck may require the flight crew to prepare for immediate lift-off if the helicopter limits of operability or helideck motion limits are likely to be exceeded.

- The radio room passes an arrival message to the helicopter operator base operations, only if the elapsed time between arrival and departure is likely to exceed 15 minutes or if requested by the Pilot/helicopter operator
- The Pilot will switch the anti-collision light off and, when in visual contact with the HLO, give a thumbs-up signal to indicate that it is safe to enter the helicopter landing area and approach the aircraft

Note: The HLO must check that the anti-collision light is working when the aircraft is landing. If it is not working, the HLO must confirm with the Pilot (by radio or hand signals) that it is safe to enter the helicopter landing area and approach the aircraft.

- The HLO assumes a supervisory role and, from a prominent position on the helideck, monitors all helideck activities
- Transmit/receive radio contact should be maintained between the HLO and the helicopter handling Pilot whilst on the helideck. HDAs should be in receiving mode only
- Only standard hand signals should be used (refer to Addendum 5). These may be supplemented by RT contact by the HLO
- If the tail rotor is close to access points or refuelling equipment, the Pilot should be requested by the HLO to reposition the aircraft if possible
- On floating Installations and vessels, chocks must be placed against the aircraft's main wheels unless advised otherwise by the Pilot

Note: The following procedures outlined for disembarkation and embarkation of passengers and the offloading and loading of baggage and freight should, where appropriate, be modified to take into account any additional operational risks. These additional risks are likely to be encountered on fixed Installations in inclement weather conditions and on MODUs and vessels due to helideck motion and inclement weather conditions. When deemed appropriate, the Installation Dutyholder, MODU or vessel owner should modify the order in which passenger embarkation and disembarkation, and baggage and freight unloading and loading is accomplished to minimise passenger exposure on the helicopter and the helideck. Refer to Section 7 Paragraph 12.6.

- During the offloading of baggage, passengers should remain seated, strapped in and continue to wear their lifejacket. Once offloading is complete, the HLO will signal the pilot that the passengers are clear to disembark. The pilot will then switch off the 'fasten seat belt' signs, indicating to the passengers that they are cleared to leave the aircraft

- When weather conditions allow, incoming baggage is normally offloaded by the HDA(s) onto the helideck and the passengers are then disembarked and allowed to reclaim their personal baggage from the helideck. Alternatively, and particularly on moving helidecks (also refer to Section 8) or when a small number of passengers are involved, the helideck crew may offload the baggage and take it well clear of the rotor disc to a safe location for passenger reclaim before signalling the Pilot to disembark passengers. Any baggage not claimed is to be checked by the HLO (to verify ownership and location tag) prior to returning it to the aircraft
- HLO initiates passengers disembarkation after the baggage has been removed from the helicopter and for passengers to go below helideck level under the direction of an HDA. The HLO should ensure that disembarking passengers are kept separate from embarking passengers

Notes: (1) If wind speeds over the helideck are considered severe for a particular offshore Installation or vessel (guidance of severe = 45 Knots steady state or gusting up to 45 Knots), escorts should be provided for the passengers.

If escorts are not practical and it is essential to continue helideck operations, the OIM's permission should be obtained to rig handlines between a tiedown adjacent to the aircraft passenger door and the helideck access in use. **Handlines must not be attached to the helicopter.**

(2) Passenger safety equipment (eg lifejackets, Re-breathers (EBS) and Personal Locator Beacons (PLBs) should be worn and properly fitted when embarking and disembarking from helicopters on offshore helidecks. Personal safety equipment should only be removed when clear of the helideck and in a designated area where they can be safely passed to embarking passengers.

Returning passengers should don their personal safety equipment before venturing onto the helideck. (Note that crotch straps, if fitted, should be fastened prior to walking around).

Under no circumstances should the personal safety equipment be removed/exchanged on the helideck or inside the aircraft.

If there are more disembarking passengers than embarking passengers, surplus lifejackets should be returned to the helicopter by a member of the helideck crew. The lifejackets are part of the aircraft safety equipment inventory.

- Inbound freight is offloaded by HDAs and taken clear of the helideck outside the unobstructed sector
- Refuelling by the helideck crew is completed in accordance with Section 12

- The HLO provides flight crew with a manifest and gives a statement that the passengers have received the relevant safety briefing
- Outbound freight and baggage is loaded by HDAs
- HLO initiates embarkation and checking of outbound passengers. If there is no cabin attendant, the HLO ensures that passengers are seated in accordance with any load plan issued by the Pilot, the 'Hood Up, Zip Up' (HUZUP) policy is being complied with (refer to Addendum 8, if applicable), seat belts/harnesses are properly fastened and a correct headcount against the manifest is obtained before securing the cabin door
- Passengers are briefed for the flight by the helicopter crew
- Aircraft passes departure message to the facility's Radio Operator (written or over radio) whilst still on deck. The message should contain the following information:
 - Call sign or flight number
 - Route and final destination
 - Flight time en route to first landing
 - Altitude/flight level for initial cruise
 - SOB
 - Endurance in hours and minutes

Note: Refer to Section 6 Paragraph 6. A departure message is not required if computerised flight movement system does it automatically.
- Once the helideck is cleared of all personnel, the HLO will give clearance to 'take off' over the radio to the Pilot, together with a thumbs-up signal, having checked that as far as he can see all is clear above and behind the helicopter. The Pilot will acknowledge this clearance
- Just prior to take off and with the anti-collision light on, the Pilot will make a 'lifting call' to advise other aircraft in the area. The lifting call should contain the following information:
 - Call sign or flight number
 - Departure point
 - Initial en route radial and intercept or trace
 - Initial en route cruising altitude

9.4.4 After Take-off

- Radio Operator sends departure message to helicopter operator base operations
- Helicopter flight crew advises radio room of change of frequency. **Radio Operator may cease flight watch at this stage. (Refer to Section 6 Paragraph 6)**
- HLO ensures that the helideck surface is free from any contamination, debris, damage etc

10 Passenger Management

10.1 Introduction

To ensure the safety and comfort of all passengers travelling on offshore helicopters, it is essential that sound and consistent controls be employed. Section 3 Paragraph 2 outlines the regulatory and recommended requirements. Also refer to CAP 393, Air Navigation Order (General) Regulations.

10.2 Passenger Briefings

10.2.1 General

The helicopter operator is legally responsible for ensuring that prior to the departure of any flight, all personnel travelling are given a thorough briefing on the safety instructions and emergency procedures for the type of aircraft to be flown and safety equipment in use.

In addition, where the flight involves travelling over water, all passengers should be given comprehensive briefings on the survival suit to be worn, including if appropriate, HUZUP (refer Addendum 8), underwater Emergency Breathing System (EBS) and PLBs. The manner in which these briefings are accomplished is the responsibility of the Installation Operator, MODU or vessel owner.

10.2.2 Arrangements

Every aircraft operator is required by law to place flight safety information cards onboard an aircraft designed to carry passengers. These are usually placed in the seat pockets to allow free access for all passengers to study. Similarly, flight attendants, when they are carried, give a visual and verbal flight safety briefing to the passengers.

Flight attendants are not normally carried onboard offshore helicopters.

Also, more comprehensive passenger briefings are required for travellers to offshore Installations and vessels. The briefings are normally provided in video form in the 'suiting-up area' at the heliport and the offshore location.

Generally, offshore Installations, MODUs and vessels will provide a suitable area where passengers are shown a helicopter operator approved video briefing of the aircraft type including safety and emergency procedures and lifejacket operating instructions. Additional video briefing material covering procedures for the wearing of survival suits and using PLB and EBS devices will also be provided by the Installation Operator, MODU or vessel owner. The video method is preferable to a verbal briefing.

When updates and amendments to any briefings come into force, they should be made available, as soon as practicable, at all locations holding such briefing material.

10.3 Passenger Manifests

The correct manifesting by the HLO of passengers, baggage and freight is essential to enable the flight crew to calculate the total weight accurately on the aircraft load sheet. Inaccurate weights on the manifest can result in adverse aircraft performance and in centre of gravity limits being exceeded.

Note: The HLO should ensure that correct units of weight (eg lbs or kg) are used in accordance with the helicopter operators' requirements. Incorrect use of units of weight can have a major impact on the safety of an aircraft.

Manifests should be prepared in a legible fashion and sufficient copies provided for retention of records for every aircraft sector of the flight. They may be computer or manually generated. Details of passenger weight allowances, document retention and other relevant information is contained in CAP 393, Air Navigation Order (ANO) (General) Regulations and the aircraft operator's Operations Manual.

For security reasons, all manifests should show the number of bags per passenger.

See also the security requirements in Section 5.

10.4 Passenger Baggage Weight Limits and Labelling

Offshore passenger baggage should not exceed 25 lbs (11.3kg) per individual and should be contained in a properly secured, robust, soft-walled holdall.

Baggage exceeding the weight limit or contained in large, hard-walled cases or cabin trunks should be despatched by an alternative shipping method.

Baggage should be labelled with the correct destination on all flights. Such labels should be 'airline type' ensuring maximum integrity.

Where a Dutyholder authorises (at the embarkation point) an individual's passenger baggage limit to exceed 15kg or the article is a large hard-walled case or cabin trunk, the helicopter crew and receiving location should be notified prior to despatch.

Should the weight of any article of baggage constitute a hazard to handling personnel, an 'airline type' label saying **heavy**, should be attached to the article.

Also refer to the security requirements in Section 5.

10.5 Prohibited Items

The International Air Transport Association (IATA) Dangerous Goods Regulations prohibit dangerous goods from being carried by passengers and crew with the exception of specific items. However, due to the nature of offshore oil and gas industry operations, many of those specified items should also not be carried.

A list of prohibited items applicable to passengers travelling offshore is contained in Addendum 6.

See also the security requirements in Section 5.

10.5.1 Passengers to Remain Seated

The **fasten seat belt/no smoking signs** will remain **on** in all offshore helicopters during flight. However, passengers are permitted to come forward and talk to the flight crew if they feel there is an urgent need for them to do so.

After landing on the helideck or at an onshore heliport, passengers (for safety and operational purposes) must remain seated until the '**fasten seat belt**' sign is turned off. The Pilot will do so only after the HLO/Dispatcher has signalled to the Pilot that the helideck/onshore heliport is cleared for aircraft disembarkation.

11 Freight Management

11.1 Introduction

To ensure the safety of all helicopters travelling to offshore destinations, it is essential that sound and consistent controls are employed for freight movements. Section 3 Paragraph 2 outlines the regulatory and recommended requirements. Also refer to CAP 393, Air Navigation Order (General) Regulations.

11.2 Main References

- UKOOA Guidelines for the Safe Packing and Handling of Cargo to and from Offshore Installations [Ref: 67]
- OPITO Helicopter Landing Officers Handbook [Ref: 68]

11.3 Carriage, Labelling and Handling of Freight

11.3.1 General

The manifesting, packaging, labelling of freight and confirmation of correct permissible quantities, must be conducted in accordance with the IATA Dangerous Goods Regulations, and the current International Civil Aviation Organisation (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air.

Trained and competent personnel should control the manifesting of freight to be shipped by air. They must receive continuation training at periodic intervals (not exceeding 24 months), to ensure they are aware of current regulations.

11.3.2 Handling

Single items of freight carried in the baggage holds of helicopters should never exceed reasonable weight and size limits that are manageable by onshore helicopter freight handlers and offshore helideck crews.

The Manual Handling Operations Regulations (1992) place a duty on employers to avoid, so far as is reasonably practicable, the need for employees to undertake any manual-handling operations which involve a risk of injury.

The weight and size limits for carriage of items of freight will vary with helicopter type. The floor loading limits and allowable size of items of freight that can be carried, should be ascertained from the helicopter operator.

Any freight or equipment destined for delivery and offloading on floating Installations, MODUs or vessels should take fully into account the handling difficulties that can be experienced on moving (pitching) helidecks.

Where large and heavy freight loads are carried by helicopters within the cabin, this may present a significant problem for offshore helideck crews. Therefore, prior to despatch the load must be properly evaluated (weight, size, shape and packaging) and its movement co-ordinated between the freight dispatcher and HLO at both the consigning and receiving locations.

Large and heavy freight that requires loading onto a helicopter with a forklift truck or mini loader at the heliport should only be transported offshore where similar equipment is available at the receiving Installation, MODU or vessel helideck for offloading.

When loading and unloading large and heavy freight loads into helicopters on offshore helidecks the helicopter rotors must be shut down.

All freight should be clearly tagged with its destination and accurate weight (in lbs or kg) for all flights.

Note: The HLO should ensure that correct units of weight (eg lbs or kg) are used in accordance with the helicopter operators' requirements. Incorrect use of units of weight can have a major impact on the safety of an aircraft.

Also refer to the security requirements in Section 5 Paragraph 5.3.

11.4 Restricted Items

A full list of articles that are prohibited is contained in the Dangerous Goods Regulations but for convenience a list of prohibited items particularly applicable to the offshore oil industry, is contained in Addendum 6.

Dangerous and Prohibited Articles information posters are available and can be obtained from the CAA Safety Regulation Group Dangerous Goods Office (Telephone: 01293 573800).

11.5 Carriage of Baggage and Freight with Passengers

The law permits the carriage of baggage in an aircraft cabin with passengers, if properly secured. Although not a legal requirement on offshore flights, but in order to minimise cabin clutter in the event of an aircraft emergency, all personal baggage, coats and other articles of clothing should be placed in the passenger's baggage and stowed in the aircraft baggage compartment. The only item which should be permitted in the cabin of an offshore helicopter is reading material, unless the cabin has approved baggage stowage facilities.

The CAA within the rules defined in Operations Manuals permit the carriage of freight in an aircraft cabin with passengers. The oil industry, however, normally chooses to place additional constraints on such carriage in offshore helicopters to enhance safety and comfort as follows:

- The mixing of freight and passengers should only be permitted on non-crew change flights
- The number of passengers should be minimised and generally restricted to those associated with the freight being carried or with priority need to travel
- Freight must not obstruct main doors, emergency escape routes and secondary emergency exit hatches, impede access to and use of emergency equipment or general inconvenience to the movement of passengers
- Freight containing dangerous goods must not be loaded in the passenger cabin
- Freight must be securely tied down to the aircraft strong points and/or properly restrained with a tensioned load net. The load configuration should comply with the Flight Operations Manual and must be accepted by the aircraft Captain
- If seats are folded to provide freight space, care should be taken to ensure that they are properly stowed and secured so they do not present a hazard to any passenger in the event of an emergency

11.5.1 Unloading/Loading Baggage and Freight

The general objective during all loading and unloading of baggage and freight is to ensure that disembarking/embarking passengers spend the minimum amount of time underneath the rotating helicopter rotor blades.

Unloading Procedure

Baggage should be removed from the aircraft baggage holds and placed on deck by the HDA (subject to acceptable wind conditions) prior to passenger disembarkation and baggage collection.

Alternatively, when few passengers are involved or if high-wind conditions present a loose article hazard, all baggage and light freight should be offloaded and taken well clear of the rotor disc to a safe location (preferably below helideck level) for reclaim, before signalling the pilot to disembark passengers.

Loading Procedure

Baggage and freight should be loaded prior to embarkation of passengers, however, logistically it may be desirable for passengers to carry their own baggage to the helicopter baggage bay for the helideck crew to load.

12 Helicopter Fuelling

12.1 Introduction

The entire process of storing aviation fuel through to aircraft refuelling is critical to flight safety. For this reason, the Air Navigation Order (Article 76A) sets out the requirements that must be complied with by persons responsible for the management of an aviation fuel installation at an aerodrome.

The ANO requirements apply equally to the management of offshore Installations, MODUs and vessels that are equipped to store and dispense aviation fuel to helicopters. The requirements include the filling of transit tanks, transfer of fuel from transit tanks to static storage, fuel sampling, using the correct grade and quality of fuel, refuelling aircraft, documentation and recordkeeping.

12.2 Main References

- CAP 437 [Ref: 46]
- OPITO Helicopter Refuelling Handbook [Ref: 69]
- OPITO Helicopter Landing Officers Handbook [Ref: 68]
- UKOOA Guidelines for Safe Packing and Handling of Cargo to and from Offshore Installations [Ref: 67]

Note: The UKOOA Guidelines for Offshore Helicopter Refuelling Systems Issue 2, December 1992 have been embodied in their entirety into Chapters 7 and 8 of CAP 437. In future, when appropriate, the content of CAP 437 Chapters 7 and 8 will be amended by the CAA following consultation with UKOOA.

12.3 The Requirement for Helicopter Fuelling Offshore

Full consideration should be given to providing Jet-A1 refuelling facilities where the distance from shore to an Installation, MODU or vessel exceeds 50 nautical miles. However, in the case of smaller vessels with an operational helidecks it may be preferable and safer to refuel helicopters on a nearby Installation, if one is available.

The decision to install a refuelling system on an Installation, MODU or vessel is purely an operational one.

There is no legal requirement to hold and dispense aviation fuel offshore but if a system is provided it must be guaranteed to produce clean fuel.

It should be noted that the CAA imposes specific requirements on helicopter operators when planning offshore fuel diversions. Therefore, it is important to discuss the operating impacts of not providing refuelling facilities with the helicopter operator.

If not intending to provide onboard refuelling, the following factors should be properly evaluated and mitigated:

- The ready availability of alternate refuelling options within a short distance of the Installation, MODU or vessel. Also refer to the paragraph above
- The increased risks likely to be incurred when alternate offshore refuelling sites have to be used (ie risks associated with increased take off and landings)
- The increased cost of using alternate offshore refuelling sites. Potentially, these costs can be very high over the 'life of Installation' due to the additional flying time involved
- The potential for increased operating expense due to logistical delays

And where appropriate, detailed alternate refuelling procedures agreed between the Installation Dutyholder, MODU or vessel owner and the helicopter operator prior to the commencement of flight operations.

The uplift of aviation fuel required during offshore helicopter operations should be properly calculated and the results used to dictate minimum system sizing. Allowances should be made for unusable fuel, potential re-supply problems (eg weather delay), emergency reserves etc.

12.4 General Considerations

Each element of the fuelling process demands proper care and attention by competent personnel.

Aviation fuel 'Tote Tanks' are Cargo-carrying Units (CCUs) used for the shipment of aviation fuel to offshore Installations and vessels. Routine checks, handling and safety procedures should be undertaken as noted in UKOOA Guidelines for the Safe Packing and Handling of Cargo to and from Offshore Installations [Ref: 67].

Fuel testing should be controlled by the HLO at each stage of the operation. It is a prerequisite to ensure uncontaminated fuel is supplied to helicopters.

It is also essential that each procedural stage is recorded and for the documentation to be completed and well maintained. Failure to do so can result in major operational disruption.

Refuelling the helicopter itself, is a critical operation with several associated hazards, requiring proper awareness by those involved. This is particularly so when 'rotors turning' refuelling is carried out.

12.5 Rotors Turning Refuels with Passengers Onboard

CAP 74, Aircraft Refuelling: Fire Prevention and Safety Measures, requires that passengers be disembarked during both gravity and pressure refuelling.

During offshore operations, passengers may remain onboard at the helicopter Captain's discretion, if it is judged to be the safer option due to high winds or if there is an urgent operational reason or if an agreed and documented procedure is in place.

In this event, the helicopter Captain should assess the risks in conjunction with the OIM/Master prior to disembarking the passengers.

If passengers are to remain onboard during refuelling, they should:

- Be briefed
- Whilst refuelling operations are in progress, communications should be maintained between the helicopter crew and the refuelling team
- All cabin doors opposite the refuelling point should be open and unobstructed and a competent person positioned ready to supervise passenger disembarkation in the event of an emergency
- Passenger seat belts should be unfastened throughout the refuelling operation to assist with speedy evacuation in the event of a fuel spillage or fire. This should apply whether the aircraft is shut down or not

Prior to refuelling an aircraft, it is essential that the refuelling crew are briefed by the HLO and are familiar with the specific aircraft refuelling requirements and practices. This is to ensure that the internal aircraft systems are not damaged or impaired in any way.

If any doubt exists, the refuelling crew should call for assistance from the helicopter crew.

Refuelling procedures, for specific helicopter types, are contained in the appropriate Flight Manual. This is carried by the helicopter crew onboard the helicopter. Alternatively, details can be obtained from the helicopter operator(s).

13 Personal Protective Equipment

13.1 Introduction

The Personal Protective Equipment (PPE) at Work Regulations (SI 1992/ No 3139) (PPEWR), as modified by PFEER, set out the key requirements on provision, suitability, and use of PPE. There are also requirements for maintenance, training and the selected PPE to be capable of fitting the person who may wear it.

13.2 PPE Standards

Helideck crew working on Installations, MODUs and vessels operating on the UKCS should be suitably equipped with adequate PPE that complies with the appropriate European Standards.

Where MODUs and vessels are temporarily working on the UKCS, PPE conforming to international standards such as Safety of Life at Sea (SOLAS) may be considered an acceptable alternate to the European Standards.

13.3 Helideck Crew and Firefighters Protective Clothing

The European Standard for firefighter's protective clothing is EN469. It covers general clothing design, minimum performance requirements and the methods of test for determining these performance levels. The Standard allows for a degree of flexibility and design and the protective clothing may either be:

- A single outer garment
- An outer two-piece suit consisting of a jacket and trousers with a minimum overlap
- A series of outer and under garments designed to be worn together

It is the employer's responsibility to establish, by means of an assessment, the type of risks to which personnel will be exposed and base their purchase requirements for helideck PPE on this assessment. Factors to consider include:

- Clothing weight and bulkiness
- Potential for heat stress when being worn for everyday helideck duties
- Mobility of the wearer
- Level of firefighter training and experience

- Level of fitness and health of the firefighters
- Function of the firefighters
- Environmental conditions likely to be encountered
- Specific hazards to be faced at the incident scene
- Limitations of the PPE

13.3.1 Equipment Selection

Following the introduction of EN 469, Home Office Specification A26 was withdrawn. However, it should be noted that it is not necessary to withdraw serviceable clothing that was purchased prior to the introduction of EN 469. However, subsequent purchases of such clothing should meet EN 469 standards an equivalent.

The requirements for firefighting clothing can be achieved in different ways and whilst the final selection will be a matter of company preference, it has been found that:

- The one-piece suit [option (i) of EN 469] poses less snagging hazards
- The jacket and trouser combination [option (ii) of EN 469] which is more convenient to use

- Notes:**
- (1) It is likely that an assessment of PPE clothing for general firefighting duties on an offshore Installation, MODU or vessel will identify a performance standard similar to the PPE clothing required for helideck personnel.
 - (2) Helideck crews on NUIs have specific PPE requirements for intervention operations. Refer to Section 10 Paragraph 6.2.5.
 - (3) European Standard (EN 1486) is for protective clothing designed to reflect intense heat (eg aluminised material). This standard is not intended for general firefighting use and is not recommended for helideck firefighting duties on an offshore Installation, MODU or vessel.



(Photograph courtesy of GD Clothing)

Figure 7.1 An Example of Option (i) One-piece Suit



(Photograph courtesy of GD Clothing)

Figure 7.2 An Example of Option (ii) Jacket and Trouser Combination

13.4 Complementary PPE for Helideck Personnel

13.4.1 Footwear

Conventional rig boots (manufactured to EN345/BS 1870) are satisfactory for all helideck use (including firefighting duties). However, purpose made firefighters boots are available (photograph courtesy of Bristol Uniforms).



Figure 7.3 An Example of Purpose Made Firefighting Boots

13.4.2 Gloves

Firefighters gloves manufactured to EN659 or an equivalent standard is required to be carried by all members of the helideck crew (photograph courtesy of Bristol Uniforms).



Figure 7.4 An Example of Gloves Suitable for Firefighting

13.4.3 Helmet with Visor

Firemen's helmets complete with an appropriate visor (to enable the use of Breathing Apparatus (BA)) manufactured to EN443/BS3864 or an equivalent standard should be specified (photograph courtesy of Bristol Uniforms).



Figure 7.5 Examples of Firemen's Helmets with Visor

Note: A conventional rig safety helmet is not a suitable item of PPE for use by helideck crews during helicopter operations. The thermo-plastic shell of the helmet has inadequate heat-resistant properties, and will readily deform if subjected to heat from a fire.

Also, the chinstrap is generally not secure enough when subjected to rotor 'downwash' and as a result the helmet may be dislodged, with the potential for injuring personnel or entering the rotor system and causing blade damage.

The use of conventional rig safety helmets on helidecks must be limited to maintenance activities only, when helicopters are not present.

13.4.4 Hearing Protection

It is necessary to take special precautions to prevent damage to hearing by exposure to excessive or prolonged noise. Under the Noise at Work Regulations 1989 SI 1989/1790, work areas above certain noise exposure levels require to be specifically identified, and it is likely that helidecks will fall into this category.

It is common for noise levels on helidecks to exceed 114 dB(A). At this level, a single days noise dose will be exceeded in 2 minutes.

Helideck personnel should use hearing protective devices that conform to British Standard (BS) 5108 (or an equivalent European Community (EC)/international standard).

13.4.5 Spectacles

Spectacles are considered to be 'loose items' and are liable to be dislodged when subject to rotor downwash etc. Arrangements are necessary to ensure that spectacles are properly secured when worn by helideck operators. This requirement applies to both safety and prescription spectacles. Safety spectacles should conform to BS 2902 or an equivalent standard.

13.4.6 HLO Identification on PPE Clothing

The HLO should wear identification on his outer PPE clothing to clearly show he is the responsible person during helideck operations. Either purpose made reflective markings on the Fireman's jacket or the wearing of a waistcoat or tabard will achieve this.

A waistcoat or tabard made of flame-retarding material and in a contrasting colour to the firefighting suit should be worn. The waistcoat should be marked on the front and back with the letters **HLO** in a reflective material, and should be clearly visible from a distance.

Because of the potential for static electricity hazards during helideck operations, clothing made from nylon should not be worn by helideck crew members.

13.5 Passengers' Personal Protective Equipment

13.5.1 Hard Hats

Embarking and disembarking passengers are not permitted to wear any type of headgear (eg hard hats) when proceeding onto the helideck.

13.5.2 Hearing Protection

Suitable hearing protection should be provided for all passengers travelling on helicopters. Also refer to Section 7 Paragraph 14.4.1.

13.5.3 Helicopter Passenger Survival Aids

On all offshore flights over the UKCS, passengers are required to don immersion suits and lifejackets prior to boarding the aircraft and they should not be removed until after disembarkation. Thermal liners may also be worn under the immersion suit all-year round, although some companies might choose to require the wearing of this garment depending on the time of year and the sea temperature.

Recent developments in sea-survival aids for offshore workers have seen the introduction of underwater EBSs and PLBs. Installation Dutyholders, MODU and vessel owners to further enhance passenger survival and recovery at sea may also issue these pieces of equipment.

13.5.4 Compatibility of Survival Aids

A key consideration for the Dutyholder when specifying personal survival equipment is to ensure that equipment selection is based on achieving total 'system' compatibility. This will require individual items of survival equipment/garments to function correctly 'as specified' and not to impede operation or reduce the performance of other survival equipment/garments when worn or used in conjunction with each other.

For instance, the inherent buoyancy of an immersion suit should not prevent the lifejacket from retaining a survivor in the correct face-up attitude when floating in water.

13.5.5 Immersion Suits

Immersion suits (commonly referred to as survival suits) should be designed and approved for use in conjunction with the lifejacket to be worn, when deployed in the event of immersion in the sea.

The CAA does not publish a specification for passenger immersion suits, however, a Joint Aviation Authority (JAA) specification is currently under development. As an interim measure, reference can be made to CAA Specification No 19 Aircrew Immersion Suits [Ref: 54]. This document stipulates that a sealed immersion suit, including the head and hand coverings, shall be so constructed that when worn in conjunction with recommended clothing and an inflated lifejacket, it shall provide insulation as required by JAR OPS Part 3, Commercial Air Transport (Helicopters).

The degree of protection provided by an immersion suit will depend critically upon it remaining watertight and the thermal insulation provided by clothing worn under the suit.

Various designs of immersion suit and types of seal are in use on the UKCS. To remain watertight, demands an efficient seal at the wrists and face/or neck. Where appropriate, the Dutyholder's HUZUP policy, must be complied with whilst personnel are onboard the aircraft. (Refer to Addendum 8.)

The complete survival suit system (suit, lifejacket and standard undergarments) should be able to keep the wearer above the minimum stipulated core temperature long enough for the rescue services to find and recover the full complement of survivors from an incident.

13.5.6 Thermal Liners

When a survivor is immersed in the sea, particularly for an extended period of time, an immersion suit worn on its own will not protect the wearer from hypothermia for very long. However, immersion suits worn with appropriate undergarments can play a vital role in protecting survivors against hypothermia.

In order to meet the physical criteria and survival times over a range of sea temperatures and weather conditions the provision and use of thermal liners, in addition to standard personal clothing worn under an immersion suit is strongly recommended year round. They should always be worn when the sea temperature is 10°C or below.

13.5.7 Underwater Emergency Breathing Systems

Methods of extending underwater survival time for enabling survivors to escape from a submerged helicopter (eg those passengers who survive ditching impact) should be considered by Dutyholders. An aid to underwater survival may be achieved by using a suitable underwater breathing device.

Underwater EBSs selected for emergency use by passengers and crew on offshore helicopters should meet current best practice. A recent CAA Research Paper [Ref: 53] provides background on the use of these devices and offers some suggestions for developing a specification.

Comprehensive training (eg wet drills) (Basic Offshore Safety and Induction Emergency Training [Ref: 70]) should be given to all personnel likely to be issued with these lifesaving aids.

13.5.8 Personal Locator Beacons

PLBs provide an efficient means for rescue services (when equipped with suitable homing devices) to quickly locate a survivor(s) on land and at sea.

At sea, quickly locating survivor(s) is essential in order to give the casualty the maximum chance for a safe recovery.

The selection and use of PLBs for offshore helicopter travel should consider the following:

- The device(s) should function effectively at night, in low visibility and during daylight
- Ease of wearing and use, including manual and automatic activation methods
- The need for robust construction and reliable operation
- Combining the PLB with an effective visual aid (eg illuminated collar) to assist rescuers with visually locating the survivor
- Compatibility when worn with other items of personal survival equipment
- Additional survival training requirements
- Maintenance requirements

14 Helideck Fire Rescue Equipment

14.1 General

Helicopter crash rescue equipment is a fundamental component of a properly prepared and certified offshore helideck, ready for operations.

Note: During helideck inspections, it is often found that the crash rescue equipment is incomplete and in poor condition. Also, access and lighting at the storage location(s) is often poor.

14.2 Main References

- CAP 437, Chapter 5

14.3 Rescue Equipment Cabinets

The provision of at least one set of helicopter crash rescue equipment is required in order to support helideck firefighting and rescue activities. The equipment must be easily accessed by the helideck/fire crew, kept in complete and serviceable condition, and be ready for use in the vicinity of the helideck.

On larger helidecks, it may be considered appropriate to provide more than one set of crash rescue equipment. This case may arise if gaining quick access to a single set is difficult or, if it is likely that a single set of equipment could be compromised as a result of a helicopter crash.

14.3.1 Location

An ideal location for crash rescue equipment on Installations is on the monitor/access platforms providing there is sufficient space available and the cabinet/chest can be protected from a conflagration on the helideck.

On vessels, location can be slightly more difficult and is dependent on helideck location (eg bow or stern mounted, elevated or at main deck level) and the availability of suitable adjacent space. On foredeck-mounted helidecks, there may be space available behind the bridge wings.

Alternatively, the cabinet/chest can be located in close proximity to the helideck on an adjacent access walkway or stairway platform.

When positioned on walkways or stairway platforms, it is imperative to consider the location very carefully so as to avoid hindering personnel escape from the helideck and causing problems for the helideck/fire crew in retrieving the equipment when needed. Placing the cabinet/chest where several stairs have to be negotiated is not acceptable.

Wherever the crash rescue equipment cabinet(s) are located, the internals should be illuminated by some form of local lighting (eg by placing the cabinet adjacent to general walkway lights or vice versa).

14.3.2 Equipment Specification

Helicopter rescue equipment cabinets should be robustly constructed and suitably protected from the marine environment. Normally the cabinets are manufactured from high quality Glass Reinforced Plastic (GPR) supplied ready coloured in **red**.

The cabinet door/lid design should incorporate a storm-proof seal, robust hinges and secure locking arrangements. Door/lid stays should be provided. Drainage/ventilation holes should be incorporated into the cabinet or an alternate means employed to prevent condensation. Inside the door/lid a suitable arrangement should be provided to hold the inventory checklist (photograph courtesy of John Burt Associates Limited).



Figure 7.6 Typical Chest Type Crash Rescue Equipment Storage

Ideally, the internals of the cabinet should include hooks and clips to secure each individual piece of equipment and silhouettes to assist with easy location, keeping the equipment in good condition and for easy inventory checking. The choice of either a cabinet or chest will be dependent upon available space to meet the basic requirement for good, long-term equipment storage.

A cabinet style arrangement is the preferred option because it provides easier access to the equipment (Photograph courtesy of Bristol Uniforms Ltd).



Figure 7.7 Typical Cabinet Type Crash Rescue Equipment Storage

14.4 Rescue Equipment Inventory

CAP 437 lists the minimum emergency rescue equipment that is required to be located in the vicinity of the helideck. The largest helicopter for which the helideck is certified determines the scale of equipment.

14.4.1 Equipment Specifications

Historically, the provision of crash rescue equipment has often resulted in individual pieces (eg tools) being incorrectly selected and frequent replacement in the field due to poor quality. The following specifications are recommended when the tools are listed in the equipment inventory:

- **Adjustable spanner 25cm** – standard, good quality chrome vanadium steel construction
- **Crowbar**– standard, good quality steel approximately 105cm long
- **Set of assorted screwdrivers** – standard range of flat bladed and crosspoint screwdrivers with moulded, impact resistant plastic handles and high-quality steel shafts
- **Small Aircraft Rescue Axe** – with non-wedging steelhead and insulated handle tested to 20,000V in accordance with BS 3054 (photograph courtesy of Bristol Uniforms Ltd)



Figure 7.8 Typical Small Aircraft Rescue Axe

- **Bolt Cutters** – centre cut high-tensile steels jaws with good quality cast iron handles, approximately 60cm in length (photograph courtesy of Bristol Uniforms Ltd)



Figure 7.9 Typical Bolt Cutters

- **Heavy-duty Hacksaw with 6 spare blades** – aluminium die cast handle with frame of standard, good quality steel construction to fit 300mm hardened steel 28 to 30 TPI blades (photograph courtesy of Bristol Uniforms Ltd)



Figure 7.10 Typical Heavy-duty Hacksaw

- **Grab Hook** – Purpose designed to rescue persons or objects in fire situations. Good quality steelhead firmly fixed to two-section 4.5m hardwood shaft joined by a secure brass ferrule (photograph courtesy of Bristol Uniforms Ltd)



Figure 7.11 Typical Grab Hook (For offshore use, the spike should be removed from the head)

This item of rescue equipment should preferably be located adjacent to the crash rescue cabinet(s). Ideally, the grab hook (both sections) should be securely stowed horizontally in cradles attached to handrailing, where it can be easily accessed by the helideck/fire crew (photograph courtesy of John Burt Associates Ltd).



Figure 7.12 Typical Storage for Grab Hook and Ladders

- **Stepladders** – two ladders each 2 to 2.5m long are required to allow access to casualties in an aircraft on its side. The ladders should be constructed in good quality aluminium with securely fixed rungs and high friction quality, integrally formed treads.

Similar to the grab hook, these items of rescue equipment should preferably be located adjacent to the crash rescue cabinet. Ideally, they should be securely stowed horizontally in cradles attached to handrailing, where they can be easily accessed by the helideck/fire crew

- **Tin Snips** – straight cut, approximately 300mm long, constructed in good quality steel (photograph courtesy of Bristol Uniforms Ltd)

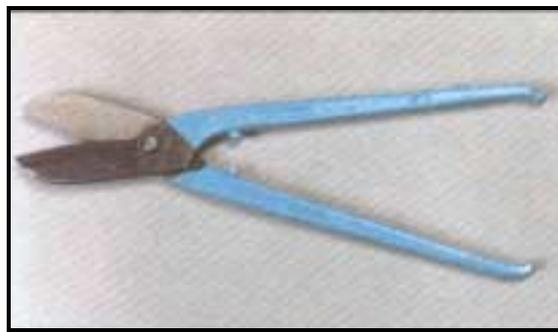


Figure 7.13 Typical Tin Snips

- **Lifeline** – constructed with a steel core and hemp cover approximately 5mm in diameter and at least 15m long. Complete with a brass snap-lock hook at one end (photograph courtesy of Bristol Uniforms Ltd)



Figure 7.14 Typical Lifeline

- **Fire-resistant Blanket** – the blanket should be 1800mm x 1800mm in size of woven glass fabric coated on both sides with white silicone rubber, fully tested in accordance with BS 6575. Normally, the fire blankets are supplied in a container ready for use, however; being stored in the rescue equipment cabinet, the container is not an essential item (photograph courtesy of Bristol Uniforms Ltd)



Figure 7.15 Typical Fire Blanket in a Wall-mounted Container

- **Harness Knife** – ideally two types of harness knife should be available to the helideck/fire crew. A large type harness knife (Figure 7.16) should be stowed in the crash rescue equipment cabinet and each helideck crew member should be equipped with a small harness knife in a carrying sheath (Figure 7.17) (photograph courtesy of Bristol Uniforms Ltd)



Figure 7.16 Typical Large Harness Knife



Figure 7.17 Typical Small Harness Knife with Sheath

- **Safety Torches** – these items of equipment should be suitable for use in hazardous environments and British Approvals Services for Electrical Equipment in Flammable Atmosphere (BASEEFA) approved. The torches should be capable of at least 3 hours continuous operation.

A supply of suitable batteries should be readily available for battery-powered torches (photograph courtesy of Bristol Uniforms Ltd)



Figure 7.18 Typical Right-angled Safety Torch with Clothing Clip

Where rechargeable handlamps are specified, a charging unit should be included and it should be positioned at a convenient location to the helideck with a suitable power source. Chargeable handlamps should always be maintained in a fully charged state (photograph courtesy of Bristol Uniforms Ltd).



Figure 7.19 Typical Rechargeable Safety Handlamp

- **Self-contained Breathing Apparatus** – a minimum of two sets of self-contained breathing apparatus with spare cylinders should be located adjacent to the helideck and be easily accessible to the helideck/fire crew. The equipment should be stored in purpose-made weatherproof cabinets painted green and clearly marked '**breathing apparatus**' in white letters

The BA specified for the helideck should ideally be the same type specified for Installation or vessel general firefighting duties. Therefore, it is strongly recommended that contact be made with the Installation or vessel operating company safety department to establish whether they employ standard equipment throughout their operations and whether they use a preferred supplier. This approach will ensure equipment interchangeability, the same maintenance procedures, spares and the same cylinder charging facilities can be used. BA training for all Installation, MODU or vessel personnel will also be the same.

It is essential that the BA sets are kept serviceable with fully-charged cylinders at all times. They should be regularly checked (daily) by the helideck/fire crew (photograph courtesy of Sabre).



Figure 7.20 Typical Self-contained Breathing Apparatus

- **Rescue Harness** – a purpose-made harness for lifting survivors out of a damaged helicopter is a useful piece of equipment. A SAR Rescue Strop as illustrated in Figure 7.21 can be used.

Alternatively, a coil of good quality Terylene rope (approximately 20mm in diameter) can be provided.



Figure 7.21 SAR Rescue Strop
(photograph courtesy of CHC Scotia)

15 Miscellaneous Helideck Equipment

15.1 General

Reference should be made to CAP 437 to establish the minimum requirements for miscellaneous support systems and equipment for the helideck.

Where the initial fitting out of a helideck is undertaken by a design contractor/module builder, the Installation Dutyholder, MODU or vessel owner should be consulted because often they may wish to specify their own standard scales and type of miscellaneous equipment for helideck operations.

All helideck miscellaneous equipment with electrical power sources should be specified in accordance with the Installation, MODU or vessel hazardous area classification.

Equipment provided (when appropriate) generally includes the items covered in the following sections.

15.2 Aircraft Chocks

Sufficient chocks should be readily available at the helideck and of a type that are suitable for the helideck surface and helicopter types anticipated.

15.2.1 Location

Chocks should be stowed (when not in use) in suitable and convenient locations around the helideck that are quickly accessible to the helideck crew.

On no account should the chocks be placed in locations where they may cause a trip hazard for the helideck crew or embarking/disembarking passengers and crew.

15.2.2 Equipment Specification

Gravel/sand bags, solid rubber or single piece fore and aft chocks tailored to a particular helicopter wheel size are generally available.

For offshore applications, it is highly recommended that NATO type sandbag chocks be specified. This type of chock is highly effective where landing nets are fitted and particularly on moving decks (eg vessels).

Sandbag chocks should be specified with a robust outer covering (leather preferred) and flexible carrying handles.

The bag should readily retain its shape but be sufficiently pliable to provide a 'snug' fit when placed in front or behind the aircraft wheels. Size should be approximately 400mm (long) x 350mm (wide) x 200mm (deep).

15.3 Tie-down Strops/Ropes

Often, the helicopter operator provides this equipment and the tie-down strops are carried as part of the aircraft role equipment.

When this equipment is to be provided by the Installation Operator or vessel owner, purpose made tie-down strops should be specified. The BHAB recommend six (6) in number.

An alternative to purpose made tie-down strops is to use good quality rope. However, this method of picketing a helicopter can be very time consuming and labour intensive.

15.3.1 Location

If tie-down strops are to be stored on the Installation, MODU or vessel, they should be stored in a dry locker easily accessible from the helideck.

15.3.2 Equipment Specification

The strops should be constructed of webbing or similar durable material and incorporate a robust ratchet tensioning system. The strops should have a safe working capacity of 5000kg and the end hooks should both be sized to properly engage the aircraft picketing rings and helideck tie-down fixtures. The size of the strop hooks is 20mm.

It should be noted that on older helidecks, the tie-down fixtures are often oversized. Thus they will require appropriately sized 'D' Shackles provided in order to fit the strops. This is particularly important to note when a helideck is part of an Installation, MODU or vessel conversion or is undergoing modification/re-work.

15.4 Scales for Weighing Baggage and Freight

Scales should be provided for weighing baggage and general pieces of freight.

The scales should be able to cater for loads up to 300kg and the weighing platform should be large enough to handle packages securely without having to lift them off the ground more than a few inches.

Scales should be supplied with an initial calibration certificate and manufacturer's recommended maintenance schedule. The scales should subsequently be calibrated annually or in accordance with the manufacturer's instructions (Photographs courtesy of Avery Berkel Ltd).



Figure 7.22 Typical Baggage Scales

Location

The baggage scales should be located in the heli-admin area at a location set aside for the receipt, weighing, labelling and secure stowage of baggage and freight, ready for transport by helicopter. The baggage/freight area should ideally be segregated from the passenger area.

15.5 Freight Loader

A means should be provided offshore for loading and unloading heavy freight from helicopters, if it is intended to transfer freight in this manner. Where handling heavy freight is a routine activity on the helideck, providing this equipment should be a serious consideration in order that the helideck crews can avoid manual handling injuries.

When considering the use of freight loaders on helidecks, the following points should be noted:

- The difficulties likely to be encountered when manual handling and manoeuvring wheeled vehicles over a helideck net. Wheel size is a vital factor
- The stowage location will need to be outside the Safe Landing Area (SLA) and the stowed height of the freight loader shall not exceed the height restrictions in obstruction free areas
- The freight loader will need to be properly secured when not in use. This is essential on a floating structure or vessel during rough seas
- The freight loader should be suitable for use with aircraft (platform height adjustable for proper access to the freight floor) and have adequate safeguards built-in to prevent damage to the aircraft when parked alongside a helicopter

15.6 Helicopter Start Facility

A suitable 28V dc power source should be provided for starting helicopters on offshore Installations and vessels.

Where a helicopter starting system is not provided on an Installation or vessel helicopters will not be permitted to shut down and this shall be noted in the Helideck Limitations List (HLL) and the offshore route guide. With some exceptions (eg on NUIs), this is an unsatisfactory situation from an operational viewpoint.

15.6.1 Location

The equipment should be stowed in a location convenient to the helideck surface ready for use.

The equipment in its storage location must not exceed the obstruction height criteria for the helideck.

15.6.2 Equipment Specification

When specifying a heli-start system, full account should be taken of the need for one man to be able to deploy the power supply cable safely to an aircraft parked on the SLA or on a parking area (if provided).

Portable systems offer the most flexibility and these trolleys should be equipped with:

- An aircraft 28V dc supplies connection complete with a cable that is sufficient in length to position the trolley outside the rotor disc, when in use
- A cable of sufficient length to reach between the Installation power supply receptacle and the start trolley when it is located at the helicopter (photograph courtesy of Masterpower Electronics Ltd)



Figure 7.23 Typical Helicopter Start Facility

- Proper cable stowage bins or cradles to prevent damage to cables, when not in use
- An electrical equipment enclosure specified as suitable for the area classification requirements of the helideck and Institute of Petroleum (IP) rated (ingress protection) for permanent deployment on an exposed helideck in a marine environment
- An adequate braking system to ensure the start trolley can be safely used in and around an aeroplane
- Sufficient tie-down fixings for lashing the unit into the stowage area, particularly on floating structures and vessels

15.7 First-aid Equipment

Where practicable, stretcher(s) suitable for use with helicopters (eg for putting a casualty into the cabin and/or for winching) should be provided in a protected environment near an access point to the helideck.

They may be stored in the heli-admin area provided they remain easily accessible to the helideck.

15.8 Helicopter Ground Handling Equipment

A steering arm and/or mechanical handling equipment should be provided for moving an aircraft clear of the SLA or onto a parking area (where provided), in the event that a helicopter becomes unserviceable.

15.8.1 Location

The equipment should be kept readily available at a place where it does not cause an obstruction or interfere with day-to-day helicopter and passenger movements.

15.9 Landing Prohibited Marker

For certain operational and technical reasons an Installation or vessel may have to prohibit helicopter operations. In such circumstances, a landing prohibited marker system should be displayed.

15.9.1 Location

The landing prohibited marker should be kept in a dry and accessible location ready for use. Storage in heli-admin would be appropriate.

Note: During helideck inspections this item of equipment is often found not to be available onsite.

15.9.2 Equipment Specification

Refer to CAP 437 for dimensions, style and colour system for the landing prohibited marker.

The marker fabric should be of highly durable quality and have sufficient reinforced lashing rings or eyes embodied into the construction, for fixing to the helideck. When in use the marker may be exposed to severe wind and weather and should therefore be tear resistant.

Preferably, the marker flag should be supplied with a purpose made valise and be complete with sufficient good quality sisal or terylene type rope of suitable diameter and length should be provided for lashing the marker down onto the helideck.

15.10 Helideck Washdown and Cleaning Equipment

Helideck washdown is a routine activity carried out in order to maintain the helideck in a clean and serviceable condition. This activity is particularly important:

- When aviation fuel is spilt onto the helideck surface during helicopter refuelling
- When guano accumulations need to be removed, particularly on NUIs

An adequate supply of water (seawater or potable) should be provided at sufficient pressure to effectively clean the helideck surface and any surrounding equipment.

In the case of removing guano accumulations, this may require the addition of a high-pressure pumping system in order to be totally effective.

15.10.1 Equipment Specification

Either a fixed mains water supply (manned Installations and vessels) or a portable pump and transportable tanks (for NUIs) may be provided.

15.11 De-icing Equipment

Portable equipment for clearing the helicopter landing area and personnel movement areas of snow and ice should be provided. A backpack and applicator system is highly recommended for spraying de-icer fluid along with brooms and shovels for general use.

15.11.1 Location

The de-icing equipment should be stowed in a convenient locker adjacent to the helideck. It should be noted that the chemicals used for de-icing are invariably flammable, therefore, the lockers provided should be suitable for storing flammable liquids and be marked accordingly.

15.11.2 Equipment Specification

A backpack system with reservoir (minimum 10 litre capacity) hand pump and lance applicator is recommended. Sufficient quantities of 'Kilfrost' de-icing fluid should be provided for initial and second fill.

15.12 Safety Signs

15.12.1 Introduction

A proliferation of random, irrelevant or ill-conceived safety signs and posters on and around the helideck and in heli-admin will serve little purpose. A complete lack of good signs and posters is equally as bad. Getting the balance right should be the primary aim.

Note: On helideck inspections safety and emergency notices are generally found to be missing, inadequate or damaged.

Essentially there are two objectives for having helideck signs and posters. The objectives are:

- To clearly inform embarking passengers of the potential dangers and to give specific instructions during helideck operations
- To provide safety and general instructions to all personnel, including the helideck crew

15.12.2 Main References

- CAP 437, Chapter 6

15.12.3 Specifying Safety Signs

When specifying signs and posters for use in the helideck environs, it is imperative that:

- (1) Signs and posters are of adequate size and can be seen and read from a reasonable distance.
- (2) Instruction or advice is stated briefly, clearly and unambiguously.
- (3) Signs follow EC shape, symbol and colour conventions for prohibition, warning or advice, where appropriate.

15.12.4 General Helideck Signs



Figure 7.24 Example of Helideck Safety Signs Securely Mounted on a Robust Frame

(Photo courtesy of John Burt Associates Limited.)

General helideck signs should include:

- (1) Access to helideck prohibited unless authorised by HLO (prohibition).
- (2) Keep clear of tail rotor (warning).
- (3) Do not approach helicopter until anti-collision light switched off (advice).

These signs are best grouped together and positioned at all the entry points to the helideck. Preferably, they should be located at the foot of the stairways or landings leading to the helideck surface taking into account the normal routes to and from heli-admin and the helideck.

The signs should be placed in the normal line of sight of embarking and disembarking passengers and other operational personnel.

The signs should be constructed in robust materials, properly fixed to robust frames that are secured to suitable hard points.

If possible, the signs should be located in a relatively unexposed position to avoid potential mechanical or wind damage.

15.13 Safety Posters

Aircraft safety equipment and emergency action information posters should be provided for the helicopter types in use. They should originate from an official source (ie to be supplied by the helicopter operator) and be up to date.

Posters should be of a suitable size and correctly positioned in heli-admin so they can be easily read by more than one individual.

16 Underslung Load Operations

16.1 General

Helicopters are capable of carrying large and unwieldy items of equipment as underslung loads. Each helicopter operator will have the appropriate and approved procedures for underslung load operations in the Operations Manual.

There are three scenarios to consider for flights with underslung loads to offshore locations:

(1) Regular Loads Routinely Flown to Installations, MODUs and Vessels

Helideck crews should be briefed and trained to act as load receivers and hook-up men, initially by the helicopter operator. Providing the same offshore personnel are regularly involved in underslung load operations and they are in current practice, it is considered safe to proceed without further training.

Generally, where underslung operations are undertaken to moving helidecks on floating Installations, MODUs and vessels, the operational limits will differ to that of fixed Installations. The risks associated with each type of underslung load to a mobile operation should be assessed and the limits and procedures agreed by the Operator/owner with the helicopter operator.

(2) Specialist Loads

These loads relate mainly to Installations and cover flare tip changes etc.

In this case, 'onsite' visits should be made by the helicopter operator and the Installation Operator to assess the work required. A Hazard Operability Study (HAZOP)/safety review should be carried out and documented.

Each task requires to be pre-planned by the Installation Operator and helicopter contractor to ensure the task is safely managed by competent personnel to ensure that risks to personnel, the helicopter and the Installation are As Low As Reasonably Practicable (ALARP).

These tasks should never be considered as ad hoc underslung loads.

(3) Ad hoc Delivery of an Underslung Load to an Offshore Installation, MODU or Vessel

In this case, the load receiver should receive a thorough briefing by telephone/fax detailing the helicopter pilot's requirements. Information should include a full safety brief for the load receiver and load handlers in accordance with the helicopter operator's Operations Manual.

16.1.1 Training

Where it is planned by the Installation Operator/vessel owner that underslung loads will be routinely undertaken as part of an offshore operation, it is essential that the offshore personnel designated as load receiver and load handlers receive adequate training from the helicopter operator and can clearly demonstrate their competence prior to being involved in an underslung load task.

16.1.2 Procedures

Comprehensive procedures should be developed and promulgated by the Installation Operator, MODU or vessel owner where routine underslung loads are planned. These procedures must be developed in conjunction with the helicopter operator to ensure they mirror the requirements of the Operations Manual. They should include, but not necessarily be limited to, the following topics:

- Helicopter Pilot and OIM/Master responsibilities
- Ground crew composition at the Installation
- Load receiver and load handler responsibilities
- The issue and wearing of essential safety equipment
- Flight path and load reception area clearances, freedom from personnel, unnecessary equipment etc
- Pilot to load receiver communications during load delivery and release. This must include a secondary means of communication in the event of primary failure (eg both radio and hand signals)
- Effecting safe static discharge of loads
- Effecting the safe release of loads
- Lifting equipment – selection, inspection and supply
- Preparation of loads
- Emergency procedures in the event of helicopter unserviceability during the operation, 'snagged' load, lifting equipment failures, abnormal load movements etc

17 Winching Operations

17.1 Introduction

There may be a requirement to undertake dry-wincing operations to or from an Installation, MODU or vessel. This may occur as a result of an emergency when able bodied or injured personnel need to be recovered to safety by this method. The operations may take place on the helideck, a designated winching area or another suitable location on the Installation, MODU or vessel.

17.2 Preparation

Installation Dutyholders, MODU or vessel owners should identify areas on their facilities that are suitable for winching, in the event that the helideck or a designated winching area (on vessels without a certified helideck) becomes inaccessible to helicopters or personnel.

Winching areas require the surrounding environs to be clear of obstructions that could inhibit safe operations, particularly in high winds. In the case of floating structures and vessels, movement of the vessel will affect obstruction clearances (eg from masts etc) and this should be taken fully into account.

When establishing alternate winching areas, reference should initially be made to the CAP 437 criteria for winching areas and the helicopter operators consulted with to obtain appropriate advice on notification and markings.

Normally, members of the helicopter crew will manage activities in the helicopter and on the Installation, MODU or vessel during winching operations.

The winchman will supervise all activities at the winching location.

All equipment required to perform winching operations should be provided by the helicopter operator.

Where winching operations on an Installation or a vessel are anticipated, the Installation Dutyholder, MODU or vessel owner should develop and promulgate procedures in conjunction with the helicopter operator. Any Installation, MODU or vessel personnel who will be called upon to assist with winching operations should also undertake training.

18 Documentation Systems

Formal documentation systems should be in place to record and verify a wide variety of helicopter and helideck activities on offshore Installations, MODUs and vessels. Responsibility for maintaining up-to-date documentation should be assigned and defined in the SMS.

The requirements for preparing documents and assigning specified retention periods are identified in the appropriate sections of these guidelines.

When designing documentation systems for offshore helicopter operations, Installation Dutyholders, MODU and vessel owners should consider the volume of documents required for efficiently managing the operation. A proliferation of folders and forms etc that unnecessarily add to flight crew, helideck crew and Radio Operator workload should be avoided.

A full set of documentation should be readily available during auditing/inspection, in either hard copy or electronic form.

19 Unserviceable Helicopters on Helidecks

19.1 Background

There will be times when a helicopter is declared unserviceable on an offshore helideck and the aircraft cannot be flown again until it has been repaired. To complete aircraft repairs in a reasonable timeframe, a 'recovery helicopter', with an engineer(s) and spare parts will usually be flown onto the Installation.

Where a designated parking area is available it should only require the unserviceable aircraft to be moved onto the parking area to clear the Safe Landing Area (SLA) so that the inbound helicopter can execute a normal landing.

Where there is **NO** designated parking area available, the flying task requires full and proper consideration to ensure that it can be done in accordance with the Helicopter Company Operations Manual. This type of 'recovery' flight requires special authorisation by the Helicopter Company and the task also has to be done safely from an offshore Installation viewpoint.

A blocked helideck will significantly impact operational flexibility. Therefore, this section is intended to provide owners of helidecks without a designated parking area, advice in order to make suitable preparations in advance of a helideck being blocked by an unserviceable helicopter.

Dutyholders should also be aware that in the event of an emergency when helicopters may be required for personnel evacuation, a blocked helideck could severely compromise the Installation Emergency Response Plan. However, in an emergency the OIM may be authorised to clear the helideck by any practicable means.

19.2 Helicopter Operator Considerations

The Helicopter Operators Operations Manual will generally state that before any flight (eg recovery flight) takes place, the helicopter operator is required to:

- Obtain confirmation from the Installation/vessel operator that the helideck is able to support the sum of the weights of the helicopters which may be on the deck at any time
- Limit the landing weight of a 'recovery' helicopter to ensure it has out of ground effect hover capability. This will provide the necessary power margin that may be required for landing in an area with restricted obstacle clearances

19.3 Installation/Vessel Owner's Considerations

The flight crew of an unserviceable helicopter on an offshore Installation or vessel should be available to provide relevant guidance to the OIM/Master with respect to aviation matters associated with authorising the landing of a 'recovery helicopter'.

Instances have arisen in the past where an OIM has refused permission for a 'recovery helicopter' to land on an Installation because it was believed the presence of two helicopters on the helideck would exceed the stated 't' value (allowable mass), therefore having adverse implications for the helideck structure.

Installation Operators and Vessel Owners should provide in the Installation/Vessel Operations Manual sufficient and relevant information to allow an OIM/Master to make operational decisions concerning the authorisation of a 'recovery helicopter' landing in the event that the helideck is 'blocked' by an unserviceable helicopter. Additionally, it is prudent for the Installation operator/Vessel Owner to provide this information to the helicopter operators (via BHAB Helidecks).

19.4 Establishing Helideck Structural Load Capability and Clearances

The following factors should be borne in mind when assessing the clearances and structural load capability of a helideck to accept a 'recovery helicopter' landing with a parked helicopter on the safe landing area:

- The parked (unserviceable) aircraft should be well below the maximum all up weight (MAUW) and will only impose a static load on the helideck surface equivalent to the aircraft basic weight plus fuel load
- The 'recovery aircraft' will be light (well below MAUW) as it will only have two pilots, an engineer and some spares. It will also be landing in accordance with the Operations Manual (refer to Paragraph 19.2). This will significantly reduce dynamic loadings imposed on the structure during the landing cycle and subsequently the static load

- Structural load combinations should be determined for likely helicopter combinations. Combinations will be dependent upon:
 - The helideck size (eg 'D' value) and the ability to position an unserviceable helicopter such that sufficient clearance can be obtained for the 'recovery helicopter' to land safely
 - The helicopter types that are currently available to use the helideck. For example, if the helideck is rated for an EH101 then an unserviceable AS332 (Super Puma) is already well below the size and weight limits of the helideck structure, therefore there is a structural load margin available
 - The 'recovery helicopter' selected by the helicopter operator is likely to be a smaller aircraft in order to safely gain access to the helideck with restricted clearances caused by the obstructions posed by the unserviceable helicopter
- Acceptable obstruction clearances should be established for the likely helicopter combinations. These clearances should be determined in conjunction with the helicopter operator and should take into account the optimum position for a parked helicopter (with blades deployed but rotated to reduce encroachment onto the remaining safe landing area)

Section 8

Operations to Moving Helidecks

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1 Introduction

Helicopter operations to moving helidecks on floating structures, Mobile Offshore Drilling Units (MODUs) and vessels introduce additional problems for the flight crews, helideck crews and embarking/disembarking passengers that are not experienced on fixed Installations.

Installation Dutyholders, MODU and vessel owners should therefore take fully into account the additional procedures and precautions that are required for ensuring safe helicopter operations to and from moving helidecks (photograph courtesy of Technic Coflexip).



Figure 8.1 Example of a Helideck Severely Affected by Vessel Motions

2 The Operating Environment

Helicopters landing and taking off from moving helidecks require greater airmanship skills than when landing and taking off from a fixed platform. For this reason the British Helicopter Advisory Board (BHAB), through their Helideck Limitations List (HLL) currently impose helicopter operating limitations (dependent on aircraft type) to moving helidecks (dependent on vessel size).

Once on the helideck, the helicopter is susceptible to the changing motions of a floating structure, MODU or vessel caused by seastate and also the influences of changes in wind speed and direction over the rotor systems and fuselage. This condition potentially makes a helicopter unstable whilst it is parked on the helideck, particularly with its rotors turning.

Controlling the helicopter under moving helideck conditions requires the flight crew to be constantly alert to any changes in the floating structure, MODU or vessel operating conditions. Should for any reason the flight crew experience helicopter handling difficulties whilst on the helideck, they will need to take immediate actions to take off, in order to avoid a deteriorating situation which may result in an accident.

Research Into Operations to Moving Helidecks

The Industry is seeking to replace the existing landing criteria (based primarily on pitch, roll and heave) with limits that better reflect the stability of a helicopter landed on a moving helideck, and which are more directly related to the aspects of deck motion that affect the safety of the landing itself (touchdown).

A Civil Aviation Authority (CAA) research programme is in progress which has developed a helideck Motion Severity Index (MSI) and a Wind Severity Index (WSI) which, together with associated helicopter operating limits, will directly ensure the safety of helicopters while landed on moving helidecks. In addition to and in association with this work, BHAB Helidecks is investigating the provision of a helideck heave rate parameter for use as a touchdown operating limit.

At the time of publication, work on the development and testing of the MSI has been completed, and the WSI has been formulated. The MSI has been implemented in motion sensing systems produced by the two main northern European manufacturers, and installed on vessels operating in the North Sea. Data collection and analysis exercises have been completed. The main task remaining is the validation of the computer model used to generate the helicopter operating limits in terms of the MSI and WSI. Once this has been completed, operating limits for the AS332 and S76 will be produced and limited introduction into service trials will be undertaken to validate the new criteria prior to full implementation.

3 Key Considerations During Moving Helideck Operations

Key requirements for the Offshore Installation Manager (OIM)/Vessel Master, Radio Operator and Helicopter Landing Officer (HLO) to take into account during helicopter operations to moving helidecks are:

- (1) To check with BHAB for any helicopter operating limitations imposed in the HLL for specific vessels.

Note: Limitations may apply to monohull vessels where Dynamic Positioning (DP) is the sole means of holding station and the vessel helideck exceeds a height of 80ft above sea level with draft and trim existing at time of helideck operations.

- (2) To ensure that accurate and up-to-date meteorological and vessel motion information in accordance with Civil Aviation Publication (CAP) 437 (eg pitch, roll and heave) is passed to the helicopter operator/flight crews prior to and when requested during helicopter operations.

Note: The value for heave is the **maximum** peak to trough value recorded in a 10-minute period prior to helideck operations. Heave values should be rounded up to the nearest metre (refer to CAP 437). However, where floating structures and vessels are equipped with approved modern and accurate motion measuring systems the 'as measured and recorded' values should be reported.

Pitch and roll **maximum** values are measured and reported about a true vertical axis.

- (3) To ensure that all floating structure, MODU or vessel activities that may adversely affect helicopter or helideck safety are closely monitored during helicopter operations. Adequate procedures should be in place **whilst a helicopter is on the helideck** to immediately notify the flight crew and HLO of any change or deterioration in vessel operating condition that may require a rapid departure of the helicopter.
- (4) To ensure that passenger and freight numbers and weights are accurate and that the manifests are diligently completed to reflect actual loads. Helicopter weight is a critical factor toward ensuring that helicopter performance is not compromised when operating to and from moving helidecks.

- (5) To ensure that helideck activities such as passenger movements and freight operations only take place in acceptable seastate conditions that permit passengers and freight to be embarked/disembarked safely and under proper supervision of the flight crew and HLO. Unlike fixed Installations, on moving helidecks the time that passengers remain seated onboard helicopters and beneath the rotating helicopter blades when embarking and disembarking should be kept to an absolute minimum.

Adopting passenger and baggage handling procedures that quickly remove the passengers to a safe area below the helideck surface and clear of helideck access will:

- Minimise passenger exposure times and thus reduce risks to passengers should a helideck emergency occur
 - Reduce the potential for passengers to hinder the helideck crew and emergency response team in the event of a helideck incident, also refer to Section 7 Paragraph 7.11
- (6) To ensure that helideck activities such as refuelling operations only take place in acceptable seastate conditions and under proper supervision of the flight crew and HLO.

Section 9

Combined Helideck Operations

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1 Introduction

Combined operations can take several different forms. Essentially, they are situations offshore where there are two or more Installations, Mobile Offshore Drilling Units (MODUs) or vessels working alongside each other. Generally this will mean that, to some extent, the operational clearances and aerodynamics of the helidecks on each of the Installations/vessels may be impeded in some way by positioning the additional structures alongside. In turn, this means that specific considerations have to be taken into account during helicopter operations (photograph courtesy of British Gas PLC).



Figure 9.1 Example of Complex Temporary Combined Operations

Note: Installation helideck **not in use** (landing prohibited marker in position) and relative positions (shown approximately) of each helideck 210° obstacle free sector.

2 Safety and Risk Assessment

2.1 Permanent Arrangements

Where two or more permanently fixed structures are bridged together or are in close proximity (1000m or less) to another Installation(s), the safety and risk assessments developed during the initial design (or if later modified) should reflect all aspects of the combined facilities that will have potential impacts on helicopter operations and flight safety.

Where it is intended that an additional permanent structure will be installed, the full effects on helicopter flying environment around the combined facilities should be re-assessed fully (whether or not both structures have helidecks).

The information in the safety and risk assessment should also be passed to the British Helicopter Advisory Board (BHAB) in order for them to make an assessment of the extent and form of any operating restrictions or limitations that should be applied. Flight crews for flight planning and flight management purposes will use the information (photograph courtesy of TotalFinaElf).



Figure 9.2 Example of a New Structure Installed Adjacent to an Existing Platform with the Potential for Gas Turbine Exhausts to Affect the Flying Environment Around New Helideck

2.2 Temporary Arrangements

Where fixed Installations, floating structures (eg Floating, Production, Storage and Offtake Units (FPSOs) and MODUs), jack-up rigs and vessels are temporarily bridged together, linked by an offloading system (or other such mechanism) or are in close proximity to each other (1000m or less), a safety and risk assessment is normally required to address changes to onboard processes and the management of the these operations etc.

The assessment should reflect all physical aspects of the combined facilities including interim layout changes (eg helidecks out of use, vessel relocations/movements, obstructions), its operations, management organisation and responsibilities and any procedural changes that will have potential impacts on helicopter operations.

This information should be passed to the helicopter operator and copied to BHAB Helidecks, so that an assessment can be made through the Technical Committee for appropriate operational restrictions and limitations. Flight crews for flight planning and flight management purposes will use the information (photograph courtesy of Shell Exploration and Production).



Figure 9.3 Example of a Temporary Combined Operations Arrangement with a NUI and Accommodation Vessel Bridge-linked

Note: The Normally Unattended Installation (NUI) Helideck is 'Inactive' (Prohibited Landing Marker)

3 Management of Combined Operations Helidecks

During the management of combined operations, the potential may exist for more than one helideck to be available. Also, there is the possibility that a helideck(s) will be inaccessible due to the temporary physical arrangement of the facilities or activities taking place thereon.

The field Operator in conjunction with other Dutyholder(s) and the helicopter operator should:

- (1) Initially decide which helideck(s) will be designated **active** or **inactive**.
- (2) If one or more helidecks will remain available, introduce a combined helideck management organisation in order to appoint the Offshore Installation Manager (OIM), Helicopter Landing Officer (HLO) and Radio Operator who shall act as co-ordinator for the combined operations helicopter activities.
- (3) Agree any changes to normal operating procedures and, where appropriate, develop helideck management and emergency procedures that will properly accommodate safe helicopter operations during the temporary works.
- (4) Make provisions for the correct marking of **inactive** helideck(s).
- (5) Where appropriate, undertake a full assessment of any potential effects from combined operations on the helicopter flying environment (eg adverse aerodynamic and thermal effects on flight paths, obstructions, crane operations, vessel movements, fugitive gas emissions etc).
- (6) Consider the possible effects on helideck management from increased helicopter movements and make suitable provisions to mitigate these effects. There may be increased passenger and freight flows through the designated heli-admin and increased number of refuels requiring greater fuel stocks to be held onboard etc.

Note: Some seismic operations can include the use of multiple vessels steaming on parallel courses within 1000m of each other, thus the vessels and towed equipment will potentially infringe helideck obstruction criteria. In addition, towed equipment may be within the 500m zone of an Installation or MODU although the seismic vessel itself is outwith. Normal 500m zone protocols will apply including any restrictions on aviation activities.

Section 10

Normally Unattended Installations

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Section 10

Normally Unattended Installations (cont'd)

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1 Introduction

The unique operating requirements for Normally Unattended Installations (NUIs) require that helicopter operations be given special consideration (photograph courtesy of John Burt Associates Limited).



Figure 10.1 Typical NUI

The design and operating guidance originally published in United Kingdom Offshore Operators Association (UKOOA) Guidelines for Helicopter Operations to NUIs is superseded by this publication.

These updated guidelines continue to set out the standards recommended by industry for operating helicopters to NUIs and in addition, where design related issues are significant to the performance of operations they have been retained for completeness. Detailed information about NUI helideck design and equipment is also covered in the HSE Offshore Helideck Guidelines [Ref: 38].

The aim is to achieve common standards and procedures that are regarded by industry as good practice for helicopter operations to NUIs. They are not mandatory, and Operators may adopt different standards in a particular situation where to do so would maintain an equivalent level of health and safety.

Overall a Dutyholder should demonstrate through safety and risk assessment, that risks to personnel are As Low As Reasonably Practicable (ALARP).

When these guidelines are read in conjunction with Civil Aviation Publication (CAP 437), the Dutyholder should be able to ensure that all aspects of helideck operations specific to NUIs have been addressed.

2 Main References

- CAP 437 – Offshore Helicopter Landing Areas: A Guide to Criteria, Recommended Minimum Standards and Best Practice [Ref: 46]
- Guidelines for Telecommunications Systems [Ref: 60]
- Prevention of Fire and Explosion, and Emergency Response on Offshore Installations Regulations [Ref: 20]
- OTO 00:131 – Bird Guano Accumulations and their Effect on Offshore Operations [Ref: 39]
- OTO 00:067 – A Review of Wrong Deck Landings, Status Lights and Signalling Lamps [Ref: 40]
- CAP 452 – Aeronautical Radio Station Operators Guide [Ref No: 47]

3 Definitions

3.1 Remote Installation

An Installation should be considered 'remote', if it is more than 40 nautical miles from the nearest manned Installation or airport/heliport. The distance of 40 nautical miles has traditionally been used by United Kingdom (UK) helicopter operators as the criterion for the definition of a 'remote' Installation.

Although recognised as arbitrary, factors taken into consideration in the definition are the approximate range of Very High Frequency (VHF) radio line of sight limitations and areas of similar weather conditions.

This arbitrary definition should be carefully considered with respect to local conditions and procedures referred to in Sections 10 Paragraph 5 and Paragraph 6.

3.2 Normally Unattended Installation

An Installation that is normally unattended is defined as an Installation where no personnel are permanently present (see also Management and Administration Regulations (MARs) Regulation 4 [Ref: 7]). Personnel attending the Installation and working as intervention or maintenance crews do so on a planned or unplanned basis for short periods (eg a working day). The exceptions to these short periods are events where personnel are compelled to remain onboard because the means for their recovery to a manned Installation or heliport becomes unavailable for any reason (eg rapid weather deterioration). This situation should be regarded as an emergency and therefore suitable temporary accommodation and provisions should be made available.

In the event that personnel are to be continuously present on the Installation (eg for a period in excess of 24 hours) and helicopter operations are to continue for routine crew changes etc, the Installation should no longer be considered normally unattended. Therefore, the CAP 437 requirements for a normally attended helideck operation should be met in full.

4 Flights Planning and Management

4.1 Helideck Performance Standards

Helicopter operators will assess any helideck non-compliance or variation against CAP 437 through the Technical Committee. Operational or performance limitations will be applied, where necessary, to ensure an adequate level of safety to flights.

4.2 Time Of Visits – Routine Flights

Planned operations should normally take place during daytime hours.

Exact times may vary depending on local airport/heliport operating hours. However, routine night-time operations may be justified in the individual Installation Safety Case. In any event, CAP 437 lighting requirements must be met for operations in other than daylight.

4.3 Night-time Emergency Flights

Night-time flights for medical emergencies, or to resolve problems of an urgent technical nature are allowed, provided that the integrity of the platform insofar as helicopter operations are concerned is not in question.

If such flights are part of the Dutyholder emergency plan, CAP 437 lighting requirements must be complied with.

4.4 Frequency of Visits

These are determined to meet legislative operational/technical requirements and justified in the individual Installation's Safety Case.

4.5 Weather Criteria

4.5.1 Weather Minima

Weather operating minima should be as per the helicopter operators' limitations stated in the relevant section of the Operations Manual and as per the individual Installation's Safety Case/adverse weather policy.

4.5.2 Monitoring Weather Conditions

At all times when personnel are onboard a NUI, a person or organisation should be nominated to monitor the weather in order that the personnel may be recovered before the onset of a deterioration which would subsequently prevent this.

Depending on the circumstances this may be undertaken by:

- The intervention crew on the Installation
- A suitable manned facility
- A shore base
- A vessel standing by that is suitably equipped

5 Intervention Crew Organisation and Duties

5.1 Personnel

5.1.1 General

The passengers on a helicopter servicing a NUI should normally be restricted to those being delivered to, or collected from it.

Where longer flights are planned from a base location (on or offshore) to an area where two or more NUIs are to be served, risk analysis may show it to be safer to visit more than one platform with the same helicopter during a round trip. However, if it is intended to conduct multiple sector (flight stages) helicopter flights to unattended Installations whilst carrying passengers to more than one destination Installation, the helicopter operator is required to submit a Safety Case to the Civil Aviation Authority (CAA) with details of the routings together with a supporting risk assessment. The CAA will consult the Health and Safety Executive as required.

5.1.2 Expertise Required

The personnel on the Installation should be trained and competent and should between them provide:

- An Offshore Installation Manager (OIM)
- A Helicopter Landing Officer (HLO). The HLO must have satisfactorily attended an Offshore Petroleum Industry Training Organisation (OPITO) approved HLO course and be assessed as competent to the UKOOA standard in the role of HLO
- Two persons (one must be the HLO) must have attended appropriate firefighting courses, which include helicopter fires
- Two offshore First Aiders

5.1.3 Maximum Number of Personnel to be Landed on an NUI

The maximum number of personnel to be landed on an NUI should be determined by the individual Installation's Safety Case. For example, it may be shown that by increasing the number of personnel, the number of visits is reduced and therefore exposure to risk is either not increased or reduced.

5.1.4 Minimum Number of Personnel to be Landed on an NUI

The minimum number of personnel onboard a helicopter operating to an NUI is governed by the minimum number of personnel required to safely handle the helicopter on deck. To establish minimum helideck crew numbers that are consistent with the intended operations, reference should be made to Paragraph 5.1.1 and Section 7 Helicopter and Helideck Operations, Paragraph 6.4 Helideck Crew Composition.

5.2 Safety Provisions

The Installation Safety Case will demonstrate through the Evacuation, Escape and Rescue Analysis (EERA), the arrangements for emergency response, including those for Standby Vessels (SBVs) and survival craft. Under Prevention of Fire and Explosion, and Emergency Response (PFEER), an Emergency Response Plan (ERP) will be available.

5.3 Emergency Procedures

5.3.1 Emergency Evacuation

The procedure for emergency evacuation should be as per the individual Installation's Safety Case and ERP.

5.3.2 Helicopter Crash on or near an Installation

ERPs must include procedures for dealing with a helicopter crash on or near the platform. For instance, this should include:

- Provision of rescue vessels
- Provision of rescue helicopters
- Search and Rescue (SAR) availability
- Assistance from neighbouring Installations eg air-droppable liferafts

5.4 Briefing and Movements of Personnel

5.4.1 Pre-flight Briefing

Prior to the departure of a flight to an NUI, formal approval for the visit must be obtained from the controlling platform or location.

In addition to the normal pre-flight briefing, the HLO must brief the members of the team on their roles and duties relative to helicopter operations.

Before a flight departs, a check must also be made by remote sensing, closed circuit television or by observation from a standby/supply vessel that the Installation is in a satisfactory condition for the visit.

If helideck surface condition cannot be assessed by remote means, it should be ascertained either by using recent company knowledge or by observations or reports from overflying flight crews.

5.4.2 Overflight Procedure

Prior to landing on an NUI helicopter, flight crews should carry out a fly around, in order to make a good visual check of the helideck and its environs.

This procedure is particularly important if it is suspected that conditions on the Installation or helideck may jeopardise flight safety or if an Installation is not frequently visited. Circumstances in which a fly around is required are:

- Where the NUI is shut down for any reason
- Helideck status lights have been activated
- In the event that sea birds refuse to disperse from the landing area
- If it is evident that a process upset condition may exist (eg gas venting)
- Where a visual check by a SBV has not been undertaken

An overflight procedure should be conducted upwind of the Installation and at a safe distance.

5.4.3 Disembarkation

Onboard the helicopter, the HLO should be seated so that the HLO can be first to disembark at the Installation and, as soon as practicable, the HLO should wear clear identification.

On disembarking from the helicopter on the Installation, an immediate check should be made to ensure that the status of the platform is acceptable as far as the safety of the personnel and the helicopter is concerned. There should also be an immediate check of process conditions, and a check that the fire and gas signals are being transmitted to the controlling facility. Only after the HLO is satisfied that the platform is in a safe condition, should the HLO signal to the helicopter crew that the remaining passengers may disembark under the HLO's supervision.

5.4.4 Embarkation and Departures

When the helicopter has landed (or if already parked, ready to start up) on the helideck to embark personnel, the HLO shall ensure that all personnel have correctly boarded the helicopter and the following actions taken:

- Bird exclusion devices are switched on
- The helideck is clear for the helicopter departure
- All equipment (fire extinguishers, firefighting clothing, chocks etc) positioned on the helideck and surrounding areas is correctly stored and secured
- Note should be taken of any equipment unserviceability (eg lighting not working, condition of helideck surface including painted markings, net and drainage. A rectification programme should be scheduled for the next available opportunity

6 Helideck and Helicopter Operations

6.1 Helideck Size and Helicopter Shutdowns

If a helideck on a NUI is of a size which does not allow a second helicopter to land on, shutdown is not normally permitted, in the event that the first aircraft becomes unserviceable or is unable to start whilst on deck.

If a crane is available on the Installation capable of lifting the unserviceable helicopter on to the deck of a supply vessel, shutdown may be permitted.

Shutdown is permitted on decks which are of sufficient size to allow a second helicopter to land using the special procedures for operations to obstructed helidecks in the helicopters operator's Operations Manual (see also Paragraph 7.19).

On existing Installations any size deficiency will be the subject of operating restrictions agreed by the Technical Committee who act on behalf of the helicopter operators.

On all 'new build' Installations, the helideck size must comply with CAP 437.

If helicopter shutdown is planned, external power start facilities should be available.

6.2 Helideck Services and Equipment

6.2.1 General

The following are specific helideck services and equipment considerations that need to be addressed when specifying systems and equipment for NUIs. The listed topics are covered in more detail in the Offshore Helideck Design Guidelines [Ref No: 38].

6.2.2 Lighting

If night operations are to take place, helideck lighting should be provided in accordance with CAP 437. If it is decided not to install lighting in compliance with CAP 437, no night emergency flights may be undertaken. Therefore, helicopter evacuation or Medevac night flights must not be part of the Installation Safety Case or the emergency procedures.

Some floodlighting of the structure, especially below the helideck surface should be considered. The purpose of this floodlighting is to provide flight crews with good visual cues and to avoid the 'floating in space' effect often experienced at night when approaching NUIs for landing.

Perimeter and floodlighting should 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.

Dutyholders should consider lighting systems in accordance with CAA letter 10A/253/16/3 [Ref: 55].

6.2.3 Helideck Net

Under normal circumstances, helideck nets are required on NUIs.

However, if due to special circumstances, there is good reason why a particular helideck net should be removed, this may be done, provided the helideck friction requirements specified in CAP 437 are fully complied with at all times (eg there is no guano problem).

6.2.4 Firefighting Equipment

The following equipment should be available on the Installation.

- A dry-powder fire extinguisher having a capacity of not less than 45kg and a carbon dioxide fire extinguisher with engine applicator having a capacity of not less than 22.5kg
- Serious consideration should be given to the provision of a portable foam unit. Such a unit should be self-contained, with a minimum capacity of 90 litres and should be fitted with an aspirated branch

Every effort should be made to select equipment that will require minimum maintenance.

Note: As an alternative to a portable Aqueous Film Foaming Foam (AFFF) foam unit, Operators of NUIs may wish to consider systems currently in use in other sectors of the North Sea. One system widely used is a Deck Integrated Firefighting System (DIFFS). This system consists of a series of 'pop-up' nozzles designed to provide an effective spray distribution of foam to the whole of the Safe Landing Area (SLA). A specification for DIFFSs is detailed in NORSOK Standard No C-004 (Draft 1 of Rev 1, 2004-04-01). Interpretation and guidance on this standard, and for similar alternative systems, should be sought from CAA, Flight Operations Department.

6.2.5 Fireman's Protective Clothing

Two sets of the following items of fireman's equipment should be provided, and be readily available adjacent to the helideck, for the intervention crew members assigned to helideck duties:

- A protective outfit including gloves, boots, a facemask or a hood and a helmet
- A self-contained Breathing Apparatus (BA)
- A portable battery-operated safety lamp capable of functioning efficiently for a period of not less than 3 hours
- A fireman's axe, safety harness and lifeline

Serious consideration should be given to the protective clothing requirements for firefighting (EN469) and the survival suit requirements for helicopter passengers. Implicit in operating guidelines is the requirement to remove the survival suit to don protective clothing for Rescue and Firefighting (RFF) purposes.

Whilst every effort should be made to obtain protective clothing that will meet the requirements of both functions, an acceptable compromise may be to allow the helideck fire crew to wear the survival suit under a suitable knee length firefighting bunker coat and leggings. See Section 7 Paragraph 14.3.2.

6.2.6 Rescue Equipment

Rescue equipment should be provided in accordance with scales laid down in CAP 437.

6.2.7 Helicopter Operations Support Equipment

The following equipment should be provided:

- Chocks and tie-down straps
- Scales for baggage and freight weighing (if freight is to be carried)
- Equipment for clearing the landing area of snow, ice and other debris
- If helicopter shutdown is planned, a suitable power source for starting helicopters must be available

6.2.8 Status Lights

All NUIs should be equipped with 'Status Lights' to indicate to flight crews when a condition exists on the Installation that may be hazardous to the helicopter and its occupants or the Installation.

The status lights should be capable of being switched off with a manual override locally from an appropriately manned Installation or shore base.

More detailed information about status lights is given in CAP 437, the HSE Offshore Helideck Design Guidelines [Ref: 38] and in CAA Paper 2003/06 [Ref: 55].

6.2.9 Weather Measuring Equipment

For most NUIs that are satellite Installations near to a manned facility, no weather measuring equipment is required provided that weather patterns do not generally differ from the 'master' or nearest manned Installation.

For '**remote**' unattended Installations or where local weather patterns are known to change rapidly and the NUI weather conditions may differ greatly from the 'master' or nearest manned Installation, equipment capable of providing the following 'automatically relayed' information is required.

- Windspeed and direction across the helideck
- Outside air temperature
- Barometric pressure (QFE/QNH)

Consideration should also be given to the provision of cloudbase measuring equipment but in the absence of practical automatic visibility measuring equipment, the visibility should be obtained from the nearest manned Installation.

A windsock is an essential requirement on all NUIs.

6.2.10 Remotely Operated Television System

A remotely operated television system is highly recommended for all NUIs, in order to provide continuous monitoring of the helideck prior to and during helicopter operations.

On 'remote' Installations which are more than 40 miles from a manned platform or heliport and where NUI operations are permitted (for any reason) where a SBV is unlikely to be in attendance, a remotely operated television system capable of monitoring the helideck and associated areas should be fitted.

The system would provide considerable operational value by:

- Allowing surveillance of the helideck to confirm safe helicopter landing/departure
- Allowing routine security surveillance of the Installation when unmanned
- Reducing the possibility of wasted flights, if for some reason, the helideck is unsuitable for a landing
- Monitoring the 'buildup' of guano accumulations where the NUI is used as a roost by seabirds. This has merit for maintenance planning and avoiding helicopter landing restrictions

6.2.11 Tie-down Points

Where insufficient tie-down points are provided on the helideck, it will not be permissible to conduct operations where a planned helicopter shut down is required. This deficiency will obviously effect helideck operability especially during strong wind conditions.

6.3 Communications

Aeronautical VHF radio contact must be established with the controlling manned facility prior to landing on the NUI. All VHF aeronautical equipment to be used onboard an NUI must have the appropriate CAA approval for use.

Where a third party operates the manned Installation concerned, an inter-company agreement must be in place.

Provision must be made for radio contact to be maintained whilst a helicopter is on deck and when lifting from the Installation. Such provision should include the ability to provide weather reports, flight information and SAR alerting.

7 Guano Problems And Solutions

7.1 Introduction

Bird/guano infestation problems are routinely encountered on Installations in some areas on the United Kingdom Continental Shelf (UKCS), in particular when the Installations are normally unattended. The effects of bird/guano infestation on the safety of offshore helicopter operations, personnel health and the additional maintenance costs incurred, cannot be ignored.

Various species of gulls and other seabirds use NUIs as roosts in the middle of their feeding areas and migrating species use them as rest stops on their annual flight paths. Normally manned Installations are less affected because the 'onboard' activities generally tend to scare the birds away.

The presence of both individual seabirds and flocks of gulls and other species in the vicinity of helicopters and Installations presents a number of problems for the Dutyholder.

7.2 Main References

- CAP 437 [Ref: 46]
- Operations Notice No 39 – Guidance on Identification of Offshore Installations, Issued by Health and Safety Executive – Offshore Safety Division (HSE-OSD) December 1997 [Ref: 37]
- HSE OTO Report No 00:131 – Bird Guano Accumulations and Their Effect On Offshore Helicopter Operations [Ref: 39]
- HSE OTO Report No 00:067 – A Review of Wrong Deck Landings, Status Lamps and Signalling [Ref: 40]

7.3 The Problems



Figure 10.2 An Example of the Effects of Guano Infestations on a Helideck Surface

(Photograph courtesy of TotalFinaElf.)

The following problems are generally associated with the presence of seabirds in the vicinity of helicopters and offshore Installations:

- Potential for a 'bird strike' damaging and/or bringing down a helicopter as it approaches to land or is taking off from an Installation
- Additional cost of aborting landings on an Installation because the birds will not move away
- Obliteration of helideck markings and lighting by guano making helideck landings in daylight more difficult and potentially unsafe at night. Obliterated markings also have the potential for causing a 'wrong deck landing'
- Potential for helideck crews and helicopter passengers to lose their footing on wet guano
- Potential for diseases that can be transmitted by contact with gull guano or by inhaling dried guano dust
- Costly deterioration of the Installation structure and its fittings caused by the acidic guano
- Increased costs of cleaning programmes associated with clearing up guano and other detritus

7.4 Helideck Condition Monitoring

The levels of operational acceptance for helideck surface condition adopted by the helicopter operators are shown in the table below. Any reported surface deterioration above Level 7 would incur flight restrictions thus limiting operational helideck availability.

Level	Surface Condition/restriction
1	Clean.
2	Small isolated bird droppings.
3	Noticeable, but no operationally significant bird droppings.
4	Markings beginning to be degraded.
5	Obvious bird usage.
6	Noticeable degradation of markings.
7	Bird usage causing operational problems.
8	Substantial degradation of markings.
9	No night operations.
10	Totally obscured – daylight cleaning operations only .

NUI helideck condition monitoring and reporting is co-ordinated by BHAB Helidecks and is a measure of the importance attached by helicopter operators for properly managing the problems caused by bird/guano infestation. The problems range from obscured helideck markings causing wrong deck landings, cancelled or aborted sorties to bird strikes or near misses etc. Routinely, flight crews are therefore required to complete and file helideck condition reports that indicate the condition of the helideck surface, whether a helideck net is fitted, windsock and windsock illumination.

7.5 Mitigating Measures

The problems caused by the presence of seabirds and guano infestation on and around an Installation helideck should be thoroughly investigated, documented and, following production of a risk analysis/Safety Case and consultation with the BHAB/CAA, best available solutions implemented to mitigate the effects.

However, finding permanent solutions to the problem is very difficult due to the forces of nature. It must be recognised that the 'bird' problem has persisted in general aviation as well as offshore for many years, yet to date, the optimum solution has so far eluded the aviation industry.

Active measures taken to discourage seabirds from roosting on a helideck may include an automatic bird deterrent system that creates a 'hostile' environment for the birds in a given area of an Installation. The use of such systems should consider:

- The long term acceptance (habituation) by the birds of a 'deterrent' system. This may require a sophisticated design that provides random changes to the 'distress call' outputs etc
- The value of remote controlled startup and shutdown of the deterrent system to coincide with commencement of helicopter operations
- Using an exclusion system that is only activated by bird movements, with automatic and random changes to the bird distress calls
- The potential for the deterrent system to cause birds to flock onto adjacent Installations (or to migrate to other parts of the same Installation) and interfere with helicopter operations at a new roosting site
- The value of using a database that provides local observation and recording of the bird species involved (eg North Sea Bird Club). This can provide useful input for determining the best solution to employ

7.5.1 Exclusion Measures

Installing specialised equipment onto NUIs is generally a requirement to combat the problem of seabirds on helidecks. When the equipment is fitted, it also needs to be maintained.

There are three classes of mitigation systems that can be used for dealing with the bird problem – proofing, scaring and control.

Control (culling) is not a realistic option in the offshore environment and would also be publicly unacceptable.

Proofing is used but this has generally been limited to fitting bird spikes on the perimeter lighting. The attachment of numerous, brightly coloured ty-raps onto the helideck net has also been tested and was initially successful until the birds habituated to the arrangements.

The offshore industry has generally accepted bird scaring as the principal means of dealing with the problem.

Audio bird scaring systems are the most commonly employed devices and these reproduce bird distress and predator calls through loudspeaker systems, controlled by microprocessor to randomise various characteristics of the sound. Such an arrangement produces 'a constantly changing audible hostile environment' which, although disliked by the birds, is harmless to them.

More recently, electromechanical bird scaring systems have been tested and have met with some success. These systems incorporate inflatable devices that randomly appear from a box and are accompanied by sounds. However, it is reported that the birds also habituate to these systems and as a result modifications are being made and further tests carried out.

The effect of bird decoys – static models of predators – is very short lived.

Water-spray systems, where they can be installed, have been found effective but require constant surveillance and system activation from a remote location to control the problem.

It should be noted that individual bird exclusion devices are reported to have only low to moderate success on most Installations.

Combined systems have been more successful. For example, the use of a Gullscat bird-scaring device in conjunction with a water spray system automatically activated when birds encroach onto the helideck area, has proved to be successful.

Current exclusion methods have only partially solved the bird/guano problem therefore, the search for new and innovative methods should continue.

7.6 Routine Cleaning and Maintenance

The most effective management solution to the 'guano problem' is to recognise when there is a persistent problem (it may be seasonal) and then accept that regular helideck cleaning and maintenance is required.

Cleaning and maintenance work should to be done prior to guano infestations reaching levels where flight restrictions have to be imposed by the helicopter operators. Helicopter operators will continually monitor and assess the levels of guano contamination on NUIs. Where excessive levels of contamination are noted this is likely to have an effect on operations (eg night restriction imposed).

Other than those Installations where guano infestations are a limited problem, an ad hoc approach to guano removal is unlikely to provide the best solution. Helideck washdown, cleaning and repairs should be a priority activity planned within the normal Installation maintenance schedule.

Measures taken to clean and repair the areas affected by guano should be properly assessed for their health and safety effects on personnel. Therefore, a detailed Control of Substances Hazardous to Health (COSHH) assessment should be undertaken.

Section 11

Offshore-based Rescue and Recovery Helicopter Operations

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3	General Considerations	11-1

1 Introduction

Offshore-based Rescue and Recovery (OBRR) helicopters are not a new method for obtaining commercially provided Search and Rescue (SAR) cover in oil and gas fields. From the early 1980s, commercial SAR helicopters were based offshore on the United Kingdom Continental Shelf (UKCS) and located in the East Shetland Basin (Brent area), Frigg area and Forties field, but they have since been withdrawn from service. Offshore-based SAR helicopters continue to operate in the Norwegian sector of the North Sea.

In the past when SAR/OBRR helicopters were deployed offshore these operations were considered 'one-off' and the Dutyholder in conjunction with the contracted helicopter operator set their own standards.

Recently, a proposal was put forward by the industry to reintroduce OBRR helicopters onto the UKCS. The proposal, in response to Prevention of Fire and Explosion, and Emergency Response (PFEER) requirements [Ref: 8], is to use modern, fully SAR-equipped helicopters which are identified as prime assets for achieving a more effective and integrated offshore emergency response. In so doing, the proposal has raised a need for developing and adopting industry standards for OBRR operations in order to meet requirements for submission of a PFEER Regulation 5 assessment.

2 Main References

- (1) Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995 (SI 1995/No 743) [Ref: 8].
- (2) A Study into Onshore and Offshore Based Rescue and Recovery (OBRR) Helicopters [Ref: 41].

3 General Considerations

It is entirely for an Installation Dutyholder to decide if he/she wishes to use rescue and recovery helicopters and/or shuttle helicopters as part of an emergency response package to support offshore operations.

The extent to which OBRR aircraft are used, whether based onshore, offshore or a combination of both, is also the Dutyholder's decision and will depend entirely upon the number of Installations to be covered and the oil and gas field locations.

When proposing the use of OBRR helicopters, the Health and Safety Executive will require a Safety Case to be submitted by the Dutyholder setting out the intended arrangements, and to demonstrate their effectiveness. This work should also include all the aviation operational interfaces.

A Health and Safety Executive study into OBRR helicopters [Ref: 41] provides a comprehensive list of the factors that should be fully considered.

Assessment of the matters arising from an Installation Dutyholder's submission of a PFEER Regulation 5 assessment will fall entirely to the Health and Safety Executive. However, where appropriate, the Health and Safety Executive will consult with the Civil Aviation Authority (CAA) to obtain specialist aviation advice but it is unlikely that they will be directly involved in the Health and Safety Executive's offshore Safety Case review and acceptance process.

Responsibility for complying with aviation rules and regulations rests solely with the Air Operator's Certificate (AOC) holder (in this case the offshore helicopter operator). Also, any aviation certification and operating issues concerning the use of OBRR helicopters should be handled directly by the AOC holder in conjunction with the CAA.

The CAA will expect an AOC holder to submit, for CAA 'agreement', any modifications that are required to their operations' manual if intending to undertake 'new type' (eg OBRR) operations under the existing AOC. The modifications will form a supplement to the operations manual in order to account for any additional licensing, airworthiness, training or operational considerations. Thereafter, it is the AOC holder's responsibility to demonstrate operating competence, management and self-regulation to the standards that satisfy the Authority.

Section 12

Offshore Helideck Maintenance

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1 Introduction

Helidecks and supporting ancillary equipment form an integral part of the offshore Installation/vessel equipment and should be included within a formal maintenance and inspection programme. This is essential for safe helicopter operations, and for obtaining and retaining approval for helicopter use from the appropriate authorities.

The Installation/vessel maintenance and inspection programme is part of the overall management system and should be used to ensure that servicing, inspections and testing of helideck equipment are sufficient to ensure they are maintained in good condition and the operation of the equipment is according to specification.

The maintenance system should reference technical particulars of all main, ancillary and safety equipment, and machinery associated with helideck operations. It should contain a hierarchy of standard auditable maintenance routines to inspect, test and repair each system and its components.

Equipment or associated services should not be used until appropriate pre-use inspection or verification of its condition has been made by an authorised person.

The maintenance and inspection should (as a minimum) include routines to ensure satisfactory continued operations within the following areas:

- Landing area, structures and associated appliances
- Firefighting and rescue equipment
- Safety equipment and Personal Protective Equipment (PPE)
- Refuelling equipment
- Landing area marking
- Drainage
- Lighting (including lighting of dominant obstacles/obstructions)
- Access points
- Safety netting
- Telecommunications and avionics

Maintenance routines should comply with documented procedures to ensure each component of the helideck and ancillary equipment is subjected to proper identification, testing and inspection.

The inspection and test procedures applied should follow the guidance of CAP 437 and manufacturer's instructions. Trained and competent personnel should complete all maintenance routines and activities. No item should be released for service until the required inspection and tests have been completed and the maintenance report verified. Defects and non-conformance to standards should be reported in writing to local management and corrective/repair action initiated appropriately.

2 The Helideck Structure

Verification and approval of helideck structures on offshore Installations, Mobile Offshore Drilling Units (MODUs) and vessels is addressed in detail in the Offshore Helideck Design Guidelines [Ref: 38]. Mobile offshore Installations and vessels (with helidecks) are also surveyed and certificated by their classification society.

The British Helicopter Advisory Board (BHAB) Helicopter Landing Area Certificate is normally valid for 3 years. However, it can be revoked or suspended by BHAB Helidecks at any time they receive information that warrants such action (eg as a result of non-compliances disclosed during annual inspection). The certificate shall cease to be valid if:

- Changes of ownership or name of Installation are made without notification to the BHAB
- Changes to the helideck, its environs and/or related equipment are made without prior agreement of the BHAB
- Helideck crew qualifications/competency are not maintained to the levels described in these guidelines or suitable alternative standards

3 Landing Area and Markings

In particular the following should be inspected:

- Position, orientation, colouring, condition and dimensions of all helideck markings checked against latest layout drawings
- Colour and condition of helideck surface and effectiveness of anti-slip coating
- Condition, size, tension of the helideck net and sufficiency of tiedowns
- Condition of helideck perimeter net
- Colour and brightness of helideck lighting ie perimeter, obstacle and flood
- Helideck for surface water/fuel, and drains for blockages and Foreign Object Damage (FOD)

4 Firefighting and Safety Equipment

In particular the following should be inspected:

- Rate of oscillation, angle and direction of sweep, elevation, and nozzle angle of oscillating monitors
- Valve positions
- Speed of response
- Rate of foam induction/concentration
- Regular flowing of foam systems, the periodicity being determined by the type of system installed
- Periodic (eg annual) testing of **both** foam concentrate and produced foam by an independent laboratory, and the issue of certificates of conformity for both

Note: Foam monitor systems are key to effective helideck firefighting and are dependent on the quality of the foam produced. Reference should be made to HSE Safety Notice 2/2004 [Ref: 32] to ensure that testing and certification of helideck foam production systems meet the required standards.

- Flexible hoses
- Nozzles and hydrants
- Personal firefighting clothing
- Portable equipment in place, correctly stowed, and where appropriate, in date and correctly charged
- Extinguishers should be checked for settling of contents

The Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995 (Regulation 13(a)) [Ref: 7], requires the Dutyholder to appoint a Helicopter Landing Officer (HLO) who will be responsible for the day-to-day management of the helideck and its operation. Ensuring that daily checks of helideck firefighting and safety equipment are carried out, should be considered as part of the HLO's responsibility. Any shortages, replacements or repairs and the action taken to replace/rectify them should be reported to the Offshore Installation Manager (OIM)/Master. In addition to this general duty, it is recommended that a weekly check is carried out by the HLO against a proforma checklist and formally recorded.

5 Refuelling Equipment

Recommended maintenance schedules for refuelling equipment are detailed in CAP 437 [Ref: 46]. These schedules and the detailed instructions issued by the equipment manufacturers are essential references.

6 Maintenance Systems Documentation

Records should be maintained of the routine inspections and maintenance activities associated with helidecks.

Maintenance documentation may be in the form of hard copies or may be computerised records.

Where applicable, new records should be verified by authorised personnel. Full records should be kept offshore and appropriate duplicate copies returned onshore for retention, regardless of the medium. All records should be adequately indexed, filed and stored to allow ease of retrieval. The period of retention of all such records should be defined and documented, by the Installation operator, MODU or vessel owner.

From the records, it should be possible to determine maintenance trends, changes or revisions to routines, modifications to equipment, outstanding work etc.

All records must be auditable.

Section 13

Competence and Training

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1 Introduction

The competence and training of helideck personnel is a key factor with regard to the overall safe operation of an Installation/vessel helideck. There are two primary objectives:

- To ensure that personnel are competent to carry out their routine aircraft handling responsibilities
- To ensure that personnel are competent to carry out their duties in the event of helideck emergencies as defined in the Emergency Response Plan required by the Offshore Installation's (Prevention of Fire and Explosion and Emergency Response (PFEER)) Regulations 1995 [Ref: 8]

Within the Installation/vessel Safety Case, the Dutyholder's Safety Management System (SMS) for helideck operations should include:

- Job descriptions or an identification of job roles and responsibilities for all personnel involved
- Training requirements of all personnel involved
- Procedures covering routine and emergency operations
- Interfaces with other departments covering restrictions imposed on helicopter operations and vice versa
- Reasons for and extent of, any operational limitations

When identifying the competence and training requirements for helideck crew, reference should be made to the following:

- UKOOA Guidelines for the Management of Competence and Training in Emergency Response [Ref: 57]
- COGENT The Sector Skills Council's Standards for:
 - Helicopter Landing Officer (HLO) (routine and emergency response) [Ref: 71 and 73]
 - Helideck Assistant (routine operations) [Ref: 72]
 - Emergency Helideck Team member (emergency response, firefighting and rescue) [Ref: 74]

Note: The above Training and Competence Standards are routinely subject to review and change. To ensure the latest version is used in Cogent OPITO should be contacted to obtain the latest amendment.

The UKOOA Guidelines for Management of Competence and Training in Emergency Response [Ref: 57] set out UKOOA's recommendations on the management of competence and training in emergency response for all persons who work offshore. These include HLOs and Emergency Helideck Team members normally referred to as Helideck Assistants (HDAs). They seek to set out good practice and Dutyholders should make a judgement on how best to apply them to a specific location. Where there are exceptions to the guidelines, Dutyholders should ensure their own policies and procedures cover these.

The Offshore Petroleum Industry Training Organisation (OPITO) Standards detail the competence requirements for each role and explain how the competencies shall be assessed. Where appropriate, the standards also set out the initial training, the further practice and the assessment requirements. Where training programmes are detailed as part of the standard recognised courses approved by OPITO, the approval function of COGENT-SSC or similar standards, they are available from onshore training providers.

Competence is maintained and enhanced through ongoing offshore practice and assessment, and further onshore-approved training and practice.

In addition to OPITO-approved onshore training courses, other training should include in-house, on-the-job and scenario-based emergency training (eg simulated helicopter crash on deck etc).

2 Process for Developing Competence and Training

2.1 Identifying Competencies for Each Role

Functional map – this summarises the main functions and responsibilities which HLOs and HDAs would be expected to fulfil.

Competence statements – these are derived from the functional map and give a written description of the skills and knowledge necessary to perform effectively in each role.

2.2 Training the Individual to Achieve the Required Competence

The OPITO training programme contains full details of the onshore training requirements for each category of personnel, along with entry criteria, training outcomes, training programmes, practical exercises and further practice. It also sets out standards of qualification and experience for training assessment staff, instructor/delegate ratios, specifications for training equipment, and facilities and details of training provider responsibilities.

2.3 Assessing that the Individual Demonstrates the Desired Level of Competence

Guidance for assessors is available from COGENT and will be used by OPITO-approved training providers as an aid to assessing competence during onshore training programmes and exercises. Not all competencies can be assessed during onshore training programmes. The Dutyholder should therefore ensure that those competencies that can only be checked offshore are properly assessed, in which case the assessor's checklist or a suitable alternative method may be used.

3 Achieving and Maintaining Competence

3.1 Achieving Competence

Dutyholders should ensure persons working on offshore helidecks are competent to perform the functions they are expected to perform.

OPITO-approved courses provide training and assessment to the OPITO standards. However, there will be some aspects of training and assessment which can only be undertaken in the place of work onboard the offshore Installation or vessel (eg identification and operation of the specific Installation – fixed firefighting systems).

It is expected that personnel who have undertaken initial training and assessment will be given the opportunity to operate, under supervision, on the offshore helideck during routine operations and emergency response training and exercises, before taking on the full role of an HLO or HDA.

Dutyholders should determine the skills and knowledge requirements for each Installation helideck team. These will normally be met by the OPITO standards. However, it may be necessary to develop further competence statements and assessment guidance where the standards do not fulfil Installation requirements. In such cases guidance can be requested from UKOOA or COGENT-SSC.

3.1.1 Helicopter Landing Officer

HLOs should previously have completed an OPITO-approved basic offshore safety induction and emergency training programme or a further offshore emergency training programme.

They should also:

- Have previously served as an HDA onboard an offshore Installation or have some previous experience of handling the movement of helicopters either onshore or offshore and consistent with the nature and frequency of helicopter movements on the Installation to which they are assigned

- Be in possession of a Helicopter Refuelling Certificate (currently provided by specialists from refuelling companies and should meet the industry standard)

Note: HLOs working on Installations (eg NUIs) or vessels without helicopter fuelling equipment may be exempted.

- Be in possession of a relevant statutory certificate covering the operation of aeronautical communications equipment
- Be in possession of a current OPITO Offshore Emergency Helideck Team member certificate
- Complete an initial OPITO-approved HLO training programme which has an optimum duration of 32 training hours

3.1.2 Helideck Assistant

HDA's should previously have completed an OPITO-approved basic offshore safety induction and emergency training programme or a further offshore emergency training programme.

They should also:

- Ideally have some experience of handling the movement of aircraft (preferably helicopters) either onshore or offshore
- Obtain, when required, a relevant statutory certificate covering the operation of aeronautical communications equipment
- Undertake an initial training and assessment programme covering routine operations, including refuelling, to meet the requirements of the OPITO standard. (Currently there is not an OPITO-approved programme for HDA routine operations)
- Complete an OPITO-approved Emergency Helideck Team member programme. This programme has an optimum duration of 32 training hours

Note: Copies of the OPITO standards which include the functional map, the competence statements, training programme and guidance for assessors, may be obtained from OPITO along with a list of OPITO-approved training providers.

3.2 Practising, Maintaining and Enhancing Competence

The routine functions performed by HLOs and HDAs during normal helicopter operations present opportunities for practice, further development and assessment. (Refer to Addendum 4.)

Dutyholders should draw up a schedule which ensures regular offshore practice takes place, which links such practice to the hazards identified in the Installation's Safety Case, and to the essential functions and responsibilities of personnel in relation to emergency response. In this way, offshore practice will serve to test relevant elements of the Installation/vessel Emergency Response Plan.

Such practice may take the form of a drill, whereby personnel receive training on specific emergency equipment, techniques or procedures, or a prearranged exercise where personnel can demonstrate their ability to apply skills, knowledge and techniques learned during initial training and during previous offshore drills and instruction.

Drills and exercises and onshore training should provide opportunities to:

- Practice in the use of foam agents and their application on simulated helicopter fuel spill fires
- The application and use of portable equipment, including dry chemical and CO₂ extinguishing agents on simulated helicopter engine fires. This should include when and where to use, and methods of operation
- The application and use of helideck fixed firefighting systems, including water, fluoroprotein and Aqueous Film Forming Foam (AFFF) (aspirated and non-aspirated), controlled and oscillating monitors, and twin agent units. This should include when and where to use, and methods of operation
- Practical search and rescue, methods of entry, removal of casualties, with and without smoke and breathing apparatus, and using helicopter simulations
- Types of helicopter crash, high and low impact, on and off helideck incidents, pre-planning, priorities, actions, techniques and problems likely to be encountered

A formal 'on the job' training/assessment session should be conducted by a Company-approved instructor/assessor periodically (not more than 2 years) to enhance competence of helideck crews. This session should:

- Refresh and update technical and practical requirements
- Include a practical exercise utilising all personnel and equipment
- Enable further assessment of individuals and the team against the OPITO standards

Benefits will be gained from carrying out offshore training exercises as a 'team', in which the assigned helideck crews participate.

4 Record Keeping

Dutyholders should be able to demonstrate that there is an adequate system in place ensuring competence in helideck operations, including emergency response, this should be supported by 'fit for purpose' records.

Dutyholders may develop their own system for demonstrating and recording those competencies that can only be checked offshore. For example, a list showing when and how these competencies were checked for each helideck crew member, a schedule for offshore practice supported by a record of when it took place and who attended, may be used to show that competence is being practised and maintained.

It is not the intention of these guidelines that Dutyholders should keep unnecessary paper records of training and competence conducted offshore beyond that which is necessary to show that there is an effective system in place.

A certificate from an OPITO-approved training provider will be sufficient evidence of competence for those parts of each role which have been trained for and assessed onshore during an OPITO-approved training course. Details are maintained on the COGENT-SSC central register.

5 Acceptance of Suitable Alternative Standards

Whilst these guidelines, the Guidelines for the Management of Competence and Training in Emergency Response and the associated OPITO training standards should be the main reference points when making judgements on the training and competence of personnel, there will be cases when it will be appropriate to accept suitable alternative standards. Such circumstances could arise for example, when personnel from other European Union member states such as Denmark or the Netherlands, or from other countries such as Norway, come to work on the United Kingdom Continental Shelf (UKCS). Another example would be when a mobile accommodation or drilling unit and crew from outwith the UK is contracted to work in UKCS waters.

The decision to accept suitable alternative standards rests with Dutyholders. UKOOA and/or COGENT may be able to provide assistance if requested.

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1 Introduction

Throughout this manual, references are made to regulations and codes of practice. Where specific references are applicable to a particular topic, these are given at the end of the relevant paragraph for quick reference.

At the time these guidelines were produced, the following list of publications were current. It is strongly recommended when making reference to any of these documents that the most up-to-date revision is obtained and used. Advice for obtaining these documents can be obtained from UKOOA.

2 Legislation

2.1 Acts of Parliament

- (1) Health and Safety at Work etc Act (HASAWA) 1974.
- (2) The Civil Aviation Act 1982.
- (3) Aviation Security Act 1982.
- (4) Merchant Shipping Act 1995 Chapter 21.

2.2 Statutory Instruments

- (5) Health and Safety at Work etc Act 1974 (Application Outside Great Britain) Order 1995 (SI 1995/No 263).
- (6) Offshore Installations (Safety Case) Regulations (SCR) 1992 (SI 1992/No 2885).
- (7) Offshore Installations and Pipeline Works (Management and Administration) Regulations (MAR) 1995 (SI 1995/No 738).
- (8) Offshore Installations (Prevention of Fire and Explosion, and Emergency Response (PFEER)) Regulations 1995 (SI 1995/No 743).
- (9) Offshore Installations and Wells (Design and Construction etc) Regulations (DCR) 1996 (SI 1996/No 913).
- (10) The Management of Health and Safety at Work Regulations (MHSWR) 1999 (SI 1999/No 3242).
- (11) Noise at Work Regulations 1989 (SI 1989/No 1790).
- (12) Personal Protective Equipment at Work Regulations (PPEWR) 1992 (SI 1992/No 3139).
- (13) Air Navigation Order 2000.
- (14) The Civil Aviation (Investigation of Air Accidents and Incidents) Regulations 1996.

3 Health and Safety Executive Publications

3.1 Guidance and Approved Codes of Practices

- | | | |
|------|---|----------|
| (15) | Successful Health and Safety Management. | HS(G) 65 |
| (16) | Management of Health and Safety at Work. | L21 |
| (17) | A Guide to the Offshore Installations (Safety Case) Regulations 1992. | L30 |
| (18) | A Guide to the Installation Verification and Miscellaneous Aspects of Amendments by the Offshore Installations and Wells (Design and Construction etc) Regulations 1996 to the Offshore Installations (Safety Case) Regulations 1992. | L83 |
| (19) | A Guide to the Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995. | L70 |
| (20) | Prevention of Fire and Explosion, and Emergency Response on Offshore Installations. Approved Code of Practice and Guidance. | L65 |
| (21) | Personnel Protective Equipment at Work. Guidance on Regulations. | L25 |
| (22) | Manual Handling. Guidance on Regulations. | L23 |
| (23) | A Guide to the Integrity, Workplace Environment and Miscellaneous Aspects of the Offshore Installations and Wells (Design and Construction etc) Regulations 1996. | L85 |

3.2 Leaflets

- | | | |
|------|---|----------------------|
| (24) | How Offshore Helicopter Travel is Regulated. (CURRENTLY BEING REVISED). | IND(G)
219L, 4/96 |
| (25) | Dealing with Offshore Emergencies. | |
| (26) | Emergency Handbook. | |
| (27) | Drug Abuse at Work. A Guide to Employers. | |
| (28) | Offshore Industry Advisory Committee – Helicopter Liaison Group. | TBN |
| (29) | Offshore Helicopter Safety Record. | TBN |

3.3 Safety Notices

- | | | |
|------|---|------------|
| (30) | Mobile Installations and Vessels: Movement of Helidecks, revised and reissued March 1995. | No: 1/94 |
| (31) | Falling Ice from Installation Structures – Potential Hazards, issued December 1996. | No: 5/96 |
| (32) | Offshore Helidecks – Testing of Helideck Foam Production Systems, Issued April 2004. | No: 2/2004 |

3.4 Operations Notices

- | | | |
|------|---|--------|
| (33) | Reporting of Offshore Installation Movements, revised and reissued September 2001. | No: 6 |
| (34) | Marking of Offshore Installations, issued January 1998. | No: 14 |
| (35) | Status of Technical Guidance on Design, Construction and Certification, revised and reissued August 1998. | No: 27 |
| (36) | Arrangements for reporting under RIDDOR 95, revised and reissued November 2001. | No: 30 |
| (37) | Guidance on Identification of Offshore Installations, issued December 1997. | No: 39 |
| (38) | Offshore Helideck Design Guidelines – Issue 1 June 2004. | No: 67 |

3.5 Research Reports

- | | | |
|------|---|------------|
| (39) | Bird Guano Accumulations and their Effect on Offshore Helicopter Operations. | OTO 00:131 |
| (40) | A Review of Wrong Deck Landings Status Lights and Signalling Lamps. | OTO 00:067 |
| (41) | A Study into Onshore and Offshore Based Rescue and Recovery (OBRR) Helicopters. | OTO 01:039 |
| (42) | HSE/CAA Inspection Project Offshore Helidecks 1991 to 1995. | OTO 98:088 |
| (43) | Helicopter Offshore Safety. | OTO 00:089 |

4 Civil Aviation Authority etc Publications

- | | | |
|------|---|---------------------|
| (44) | Air Navigation Order/Rules of the Air Regulations etc. | CAP 393 |
| (45) | Aircraft Refuelling: Fire Prevention and Safety Measures. | CAP 74 |
| (46) | Offshore Helicopter Landing Areas: A Guide to Criteria, Recommended Minimum Standards and Best Practice, 3rd Edition, October 1998. | CAP 437 |
| (47) | Aeronautical Radio Station Operators Guide. | CAP 452 |
| (48) | Offshore Aeronautical Radio Station Operators Guide. | CAP 535 |
| (49) | Joint Aviation Requirements, Commercial Air Transportation (Helicopters). | JAR-OPS 3 |
| (50) | Research on Offshore Helideck Environmental Issues. | Paper No:
99004 |
| (51) | Friction Characteristics of Helidecks on Offshore Fixed-Manned Installations. | Paper No:
98002 |
| (52) | Motion Limits and Procedures for Landing Helicopters on Moving Helidecks. | Paper No:
94004 |
| (53) | Preliminary Study of the Implementation and Use of Emergency Breathing Systems – SRK Coleshaw for CAA 2002. | Report No:
SC123 |
| (54) | Aircrew Immersion Suits. | CAA Spec.
No: 19 |
| (55) | CAA Letter 10A/253/16/03 – Helideck Lighting – Guidance on Interim Standards – 20 July 2004. | |
| (56) | CAA Paper 2003/06 – Specification for an Offshore Helideck Status Light System. | |

5 Industry Publications

5.1 UK Offshore Operators Association

- (57) Guidelines for the Management of Competence and Training in Emergency Response – March 2004 – TRN02.
- (58) Guidelines for Helicopter Operations to Normally Unattended Installations – HEL03 (SUPERSEDED by this publication), Issue 2, 1997.
- (59) Helicopter Operations – Offshore Radio Operators' Procedures – HEL01 (SUPERSEDED by this publication), Issue 1, 1994.
- (60) Guidelines for Telecommunications Systems – EHS06, Issue 3, 2005.
- (61) Guidelines for the Management of Helideck Operations – HEL04 (SUPERSEDED by this publication), Issue 3, July 1997.

- (62) Guidelines for Security Controls at Helicopter Terminals – HEL02 (SUPERSEDED by this Publication), Issue 1, Oct 1995.
- (63) Emergency Response and Rescue Vessel Management Guidelines – VES04, Issue 3, Sept 2004.
- (64) Guidelines for Management of Safety-critical Elements – EHS04, Issue 1, Sept 1996.
- (65) Fire and Explosion Hazard Management – EHS03, Issue 2, Oct 2003.
- (66) Guidelines for Medical Aspects of Fitness for Offshore Work – A Guide for Examining Physicians – EHS11, Issue 5, 2003.
- (67) Guidelines for the Safe Packing and Handling of Cargo to and from Offshore Installations, Issue 2, 2002.

5.2 COGENT/Offshore Petroleum Industry Training Organisation

- (68) Helicopter Landing Officers Handbook, Seventh Edition (Revised March 2004).
- (69) Helicopter Refuelling Handbook, Third Edition, updated Dec 1999.
- (70) Basic Offshore Safety and Induction Emergency Training.
- (71) OPITO Approved Standard – Offshore Helicopter Landing Officer
- (72) OPITO Approved Standard – Offshore Helideck Team Member.
- (73) OPITO Approved Standard – Offshore Fire/Emergency Response Team Leader.
- (74) OPITO Approved Standard – Offshore Emergency Helideck Team Member.

Note: The above Training and Competence Standards are routinely subject to review and change. To ensure the latest version is used, OPITO should be contacted to obtain the latest amendment.

5.3 British Standards

- (75) BS EN 345 and 346: 1993 Safety Footwear.
- (76) BE 2092 Specification for Eye Protectors for Industrial and Non-industrial Uses.
- (77) BS 3864 Specification for Protective Helmets for Firefighters.
- (78) BS 6249 pt 1 Specification of Flammability Testing and Performance.
- (79) BS EN 352-1 and 2: 1993 Industrial Hearing Protectors.

5.4 HM Coastguard

- (80) UK Maritime and Aviation Search and Rescue Handbook.

5.5 European Standards

- (81) EN 469 Firefighters Protective Clothing.
(82) EN 345 Safety Footwear.
(83) EN 659 Safety Gloves.
(84) EN 443 Firemen's Protective Headgear.

5.6 International Civil Aviation Organisation

- (85) Annex 14 Volume II and Heliport Manual.
(86) Technical Instructions for the Safe Transport of Dangerous Goods by Air.
(87) Performance Level 'B' Standard – Firefighting Foam Specification.
(88) IMO/ICAO International Aeronautical and Maritime Search and Rescue Manual 1999.

5.7 International Standards Organisation

- (89) ISO 11613 Structural Design Code.

5.8 International Oil and Gas Producers Association

- (90) Aircraft Management Guide 6.51/232, Feb 1998.
(91) Substance Abuse Guidelines for Managers 6.87/306, June 2000.
(92) Offshore Helideck Review Checklist 6.56/322, Nov 2001.
(93) Fuel System Checklist 6.57/323, Nov 2001.

5.9 International Air Transport Association

- (94) Dangerous Goods Regulations.

Addendum 2

Pilot Information

Paragraph		Page
1	Introduction	1
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3	Helideck Limitations List	2
4	Offshore Route Guide	3
Figure		
1	Thales Avionics AERAD Plates Example Information	4

1 Introduction

During the flight planning stage, it is vital for flight crew to have access to as much relevant information about the offshore landing site as possible. For United Kingdom Continental Shelf (UKCS) offshore flights this will include:

- Meteorological information
- Helideck Limitation List (HLL) formerly the Installation/Vessel Limitations List (IVLL)
- Offshore Route Guide

2 Meteorological Information

At base, weather information is obtained by the flight crew in the form of a general regional meteorological forecast; an area forecast covering the offshore destination (if available) and an actual weather report from the destination Installation.

The weather information will include temperature, pressure, cloud base, visibility and wind conditions, amongst other parameters.

Temperature and pressure, and in some cases wind velocity, will be used in conjunction with the aircraft performance graphs (WAT curves) to calculate the power available and acceptable payload for take-off and landing.

This information is essential to the Pilot because it gives the aircraft maximum permissible weight for his take-off and landing procedures. In turn, this relates to the One Engine Inoperative (OEI) conditions that a Pilot must be acutely aware of at all times during the critical flight phases (eg approach, landing and take-off).

Nowadays, computer-generated performance graphs are generally available to Pilots working for the major offshore helicopter operators, thus, to some extent reducing workload during flight planning.

Free and surface wind conditions (actual) for the Installation location are also required by the flight crew for planning and safely executing approach, landing and take-off manoeuvres at the Installation.

During flight planning, the wind conditions will be checked against the HLL to establish whether they occur in 'turbulent sectors' of the destination Installation.

If adverse winds occur outwith the 'turbulent sectors', the flight can generally operate within normal aircraft flight manual wind velocity and payload limitations.

If adverse winds occur within the 'turbulent sectors', reference to the HLL will specify **additional wind velocity and payload limitations** (for each different helicopter type) imposed by British Helicopter Advisory Board (BHAB) for the destination Installation, Mobile Offshore Drilling Unit (MODU) or vessel.

Similar considerations will be made for taking into account any significant physical (eg 5:1) infringements at the Installation.

Weather information received by Pilots from official meteorological forecasting sources is generally of good quality. There have been significant improvements in weather forecasting in recent years. This is mainly due to the sophisticated technology advances used for acquiring and processing weather data. As a result, the interpretations by weather specialists have become more accurate.

The quality of weather information provided from offshore Installations is variable. On the one hand it can be good, particularly where sophisticated instrumentation is installed and meteorological specialists manage it. However, in the main, the weather information provided to Pilots from offshore Installations leaves a lot to be desired. Instrumentation is often limited and fairly basic, and it can often be poorly sited and calibrated, thus leading to fundamental errors in reporting. Also, the readings and observations that are used in the actual weather reports for a given Installation rely entirely on the basic knowledge of personnel who usually lack specialist meteorological skills. However, things are improving in this respect with the introduction and use of sophisticated, 'online', automated weather instrumentation packages.

3 Helideck Limitations List

The HLL (formerly IVLL) is issued by BHAB Helidecks. It is the only official document that is currently in place on the UKCS to publish details of offshore helidecks with non-compliances that require operational limitations to be applied. These non-compliances include limitations related to vessel motions, physical infringements in the obstacle-free sector and turbulent sectors.

Non-compliances will generally originate from two sources.

- At the helideck design/construction acceptance stage when BHAB have identified shortfalls in the layout and/or system's design that will require them to apply appropriate operational limitations
- From flight crew reports which focus mainly on operational helideck/ Installation performance (eg turbulence problems), rather than physical obstructions

When first starting operations to a new offshore Installation, flight crews are required to submit turbulence report forms through the managing Pilot to BHAB Helidecks for review by the technical committee. These reports allow an operational assessment of the Installation to be made in order to validate initial limitations that may have already been applied. They also allow limitations to be modified on the basis of ongoing experience. Setting flight operating limitations can take from a couple of weeks to several months. The time taken is dependent upon the frequency of weather patterns encountered and obtaining sufficient Pilot reports.

Having received guidance through the technical committee, BHAB Helidecks will advise helicopter operators of any potential problems via a system of 'hot news' (interim updates of HLL).

4 Offshore Route Guide

An offshore route guide is a document that contains relevant flight information and plates for aerodromes, helidecks etc.

Specialist companies like Thales AERAD or Jepperson may commercially supply these documents to helicopter operators.

Alternatively, individual helicopter companies may prepare a specific document that is essentially a collection of information about a whole range of offshore Installations. It may include photographs, drawings, general data and notes, and specific notices about individual offshore Installations etc that can be referred to by flight crews to familiarise themselves with an intended destination helideck/Installation.

The detailed information provided for each offshore helideck is generally a composite, single sheet of information that gives flight crews a two dimensional general arrangement of the Installation (elevations) and an Installation/helideck plan. Additionally, it provides the Installation co-ordinates, aeronautical frequencies, critical obstructions and heights, key equipment available onboard and sometimes there are notes concerning restricted sectors due to exhaust temperature effects etc. An example of the type of information provided by Thales Avionics in their AERAD plates is given in Figure 1.

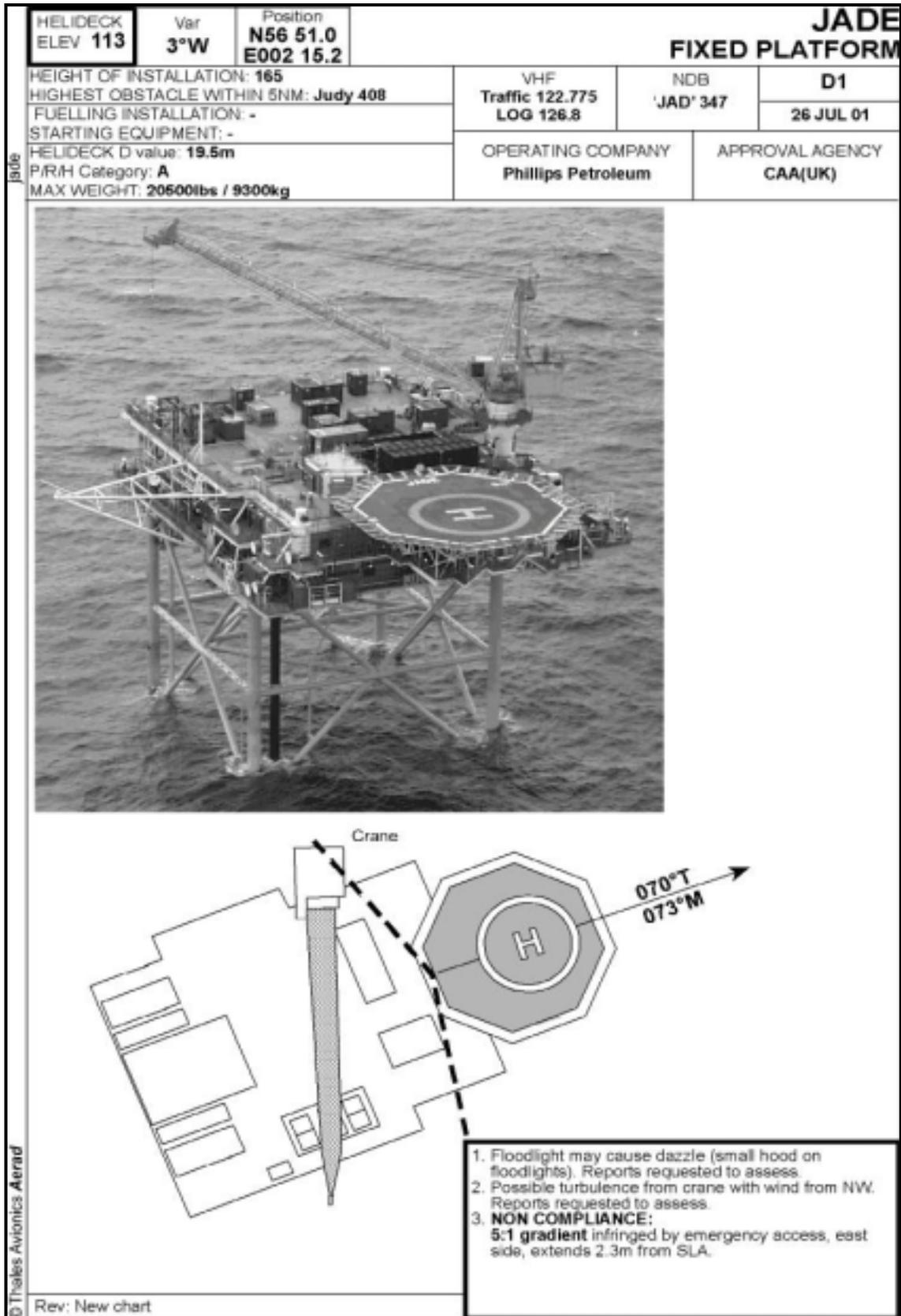


Plate courtesy of Thales Avionics Aerad

Figure 1 Thales Avionics AERAD Plates Example Information

Addendum 3

Approach, Landing and Take-off Manoeuvres

Paragraph	Page
1 Standard Procedures	1
2 Approach and Landing on Fixed Installations	2
3 Approach and Landing on Mobile Installations and Vessels	2
4 Take-off Manoeuvres	3
5 Avoidance of Environmental Hazards	3
6 Combined Operations	3

1 Standard Procedures

The offshore support helicopter is classed as a non-scheduled public transport service and flies passengers and freight to a variety of fixed and mobile Installations and vessels that are normally anchored on station or underway.

There are standard procedures to be followed by flight crews when approaching, landing and taking off from offshore helidecks. These procedures vary for a given helicopter type to take account of handling characteristics, performance etc.

The standard procedures, which chief Pilots would expect to see used during the Pilot's routine checks, are used for everyday operational flying.

The reality is that due to the large number of environmental variables likely to be encountered around offshore installations and vessels, individual Pilots will tend to fly the approach, execute a landing and take-off, using slight variations to the standard procedure.

These variations to standard procedures occur in response to sometimes extremely difficult flying conditions and are required to control the risks to an aircraft. Such variations are accepted practice and fall within the Captain's ultimate responsibility for ensuring the safety of his aircraft and passengers.

Installation, Mobile Offshore Drilling Unit (MODU) and vessel helideck specifications, locations, orientations and elevations and other performance influencing factors can vary enormously. Even with a generic type of Installation, such as some classes of semi-submersible drilling rigs, there can be marked helideck performance differences between individual rigs. This can, for example, be the result of different owners configuring topside arrangements slightly differently, to meet their individual operating layout preferences and requirements.

The highly variable situation with offshore Installation and vessel helideck design layouts does not make it possible to quantify a standard approach for a generic Installation or vessel helideck design. This makes it highly desirable, if not essential, for a helideck designer to have a good understanding of the overriding needs of the flight crews.

2 Approach and Landing on Fixed Installations

Upon arrival in the vicinity of the Installation, the helicopter Pilot will aim to line up into wind and adopt a 4 to 6° glideslope to bring him to hover over the aiming circle on the helideck. If the orientation of the helideck permits, the Pilot will fly the preferred 'straight-in' approach. However, if the helideck, from the Pilot's perspective, is oriented on the far side of the superstructure, a 'dog-leg' approach may be required in which the helicopter is flown sideways onto the helideck whilst maintaining its heading into the wind.

During the latter stages of approach, the helicopter passes through a Landing Decision Point (LDP) after which, in the highly unlikely event of an engine failure, the crew will no longer have the option to go around from a balked approach but will be committed to landing.

Due to the reduced ground speed of the approach, it is usually preferable for approaches to be made into wind in light to moderate conditions. If the wind is calm the helicopter will suffer performance (payload) restrictions. If the wind is too strong other problems exist such as increased turbulence especially if tall solid structures are located close to the helideck.

Throughout the approach, the Pilot will be mindful of the standard approach profile to be flown but may well have to alter it to take account of windspeed and direction, orientation of the helideck, possible turbulence effects to the lee of the Installation superstructure together with the effects of flare or turbine exhausts and the go-around flight path to be adopted in the event of an engine failure.

3 Approach and Landing on Mobile Installations and Vessels

The same general considerations apply for approaching and landing on mobile Installations and vessels. However, because the Pilot also has to consider helideck motion, the landing manoeuvre requires a slightly different approach technique.

As before, the helicopter will pass through the LDP during its approach. This will generally be approximately a half rotor diameter from the deck edge but well above helideck level (eg 20 to 30ft).

When this point is reached, the helicopter will sideslip onto the landing circle usually without coming to the hover. The crew may also need to hold off at such a point in order to assess the deck motion visually for the landing.

In the event of single engine failure after LDP, the handling Pilot is already committed to land. If a failure occurs prior to committal point he should be clear of obstructions to overshoot, and should have sufficient forward airspeed and altitude to make a safe One Engine Inoperative (OEI) recovery.

4 Take-off Manoeuvres

Once the helicopter is secure, it lifts off into the hover and the hover checks are completed. The helicopter climbs vertically above the helideck to the Take-off Decision Point (TDP) before acceleration into forward climbing flight. Before it reaches TDP, the helicopter may be landed back onto the helideck if the take-off manoeuvre cannot be completed. Once it has passed through TDP, the possibility of hitting the deck edge following an engine failure is significantly reduced and the prospect of a safe OEI climb is greatly increased.

If, at the commencement of the take-off manoeuvre, the helicopter is pointing into wind and there are no obstructions in front of it, a standard take-off profile will usually be flown. If severe turbulence and/or obstructions are encountered within the preferred flight path, this will mean the crew will plan and execute a different take-off profile.

5 Avoidance of Environmental Hazards

Specific flight procedures and limitations are applied to some offshore Installations where the combined effects of adverse windflows and the increased temperature effects of exhaust plumes/flares are likely to be present.

There are currently no laid down boundaries for avoiding the effects of gas turbine exhaust plumes or flares. So long as the crew can see flare plumes and the shimmering effects of turbine exhausts they will avoid them. Invisible hot gases from turbine exhausts, particularly when emitted close to or over the helideck, are often not easily recognisable and may cause problems for the helicopter crew.

6 Combined Operations

When operating to combined Installations, the foregoing considerations equally apply, depending on the helideck in use. Normally, because falling 5:1 gradient and obstruction-free sector clearance requirements may come into play, along with induced structural turbulence and other factors (eg exhaust plumes). It is therefore normal to seek a compromise solution by nominating one of the helidecks for each of the favourable wind directions.

Addendum 4

Helideck Responsibilities

Paragraph		Page
1	Introduction	1
2	Installation Manager/Vessel Master	1
3	Helicopter Landing Officer	1
3	Helideck Assistants	2
4	Passengers	2

1 Introduction

The ultimate legal responsibility for helideck operations rests with the operators of offshore Installations and the owners of Mobile Offshore Drilling Units (MODUs) and vessels. Responsibility for specific helideck activities are delegated through the operator/owner's management system. Typical responsibilities are summarised below.

2 Installation Manager/Vessel Master

With respect to helicopter operations, the Offshore Installation Manager (OIM) or Master of a vessel is responsible for:

- Ensuring that the appointed Helicopter Landing Officer (HLO) carries out his duties as described by the Safety Management System (SMS) within the HLO's terms of reference and job description
- Ensuring that all persons engaged in any helicopter operation or who are in or near any helicopter landing area are under the immediate and effective control of the HLO

3 Helicopter Landing Officer

The HLO's responsibilities should include, but are not necessarily limited to:

- Overall charge (eg supervision) of the helideck and helideck crew
- Ensuring pre-operational and post-operational helideck checks are carried out
- Ensuring that on receipt of radio information regarding helicopter arrivals, helideck facilities are ready to receive the aircraft
- Monitoring airband frequency to warn the Pilot if it appears that an unsafe situation may be developing and giving landing clearance when appropriate
- Ensuring the safe movement of passengers, baggage, freight and correct loading of the aircraft
- Ensuring correct manifest procedures are used
- Initiating firefighting and rescue procedures on the helideck, and ensuring that members of the helideck crew carry out their duties as described in the SMS within their terms of reference and job descriptions
- Briefing the helideck crew on helideck handling and other relevant tasks
- Liaison with the Installation/vessel fire teams and OIM/Master to ensure that backup firefighting and rescue procedures are available to assist after the initial stage of an emergency. This would normally be activated by sounding the General Alarm

- Ensuring that the completion of aviation fuel handling documentation, recording stocks and ordering of replenishments are satisfactorily carried out
- Ensuring that correct refuelling procedures are used by helideck staff
- Ensuring aviation fuel quality control checks are properly carried out
- Ensuring the Installation/vessel management and vessels standing by, if applicable, are kept aware of aircraft movements and that cranes in particular have ceased movement whilst aircraft operations are in progress
- Carrying out on-the-job training for trainee HLOs and Helideck Assistants (HDAs) in accordance with management's overall training strategy

4 Helideck Assistants

The responsibilities of HDAs should include but not be limited to:

- Assisting the HLO in the operation of the helideck
- Directing passengers to and from the aircraft
- Loading and unloading freight and baggage from the aircraft
- Operation of firefighting and rescue equipment under the direction of the HLO, and assisting the HLO in checking firefighting and rescue equipment
- Coupling/uncoupling bonding leads and refuelling hoses from aircraft under the direction of the HLO
- Assisting the HLO in general fuel handling procedures
- Undertaking other duties around the helideck area as required by the HLO

5 Passengers

The responsibilities of helicopter passengers shall include but not be limited to:

- Following explicitly the instructions given to them by the helicopter crew, HLO or HDAs prior to embarking or disembarking from the aircraft
- Obeying the 'fasten seat belt' and 'no smoking' signs in the aircraft
- Wearing headsets as and when directed, and carrying out the duties of communications seat passenger, where appropriate
- Complying with the relevant baggage and freight regulations
- Correctly wearing the safety equipment and survival aids provided, and immediately reporting to the flight crew, onshore Dispatcher or a member of the helideck crew if any unserviceabilities are discovered prior to or during its use

Addendum 5

Standard Hand Signals

A notice to Air Operator's Certificate (AOC) holders – 6/95 was issued by the Civil Aviation Authority (CAA), flight operation's department in October 1995 drawing attention to a requirement for AOC holders to adopt standardised flight deck/ramp signals for the safe operation of aircraft. To avoid misunderstandings, and thus potential hazards in the offshore operating environment, this requirement also applies to offshore helideck crews.

Air Navigation Order (ANO) Rule 48 Section 2/44 details the signals to be given from the ground (eg HLO to Pilot). These signals (numbered 1 to 17) are illustrated in the following figure.

In addition, there are a small number of signals specific to the UK offshore industry. These signals fall outwith the ANO but are considered acceptable practice. They are illustrated in the following figure and are numbered 18 to 20.

Where no direct intercom exists between the aircrew and helideck crew the appropriate hand signals should always be used.

Signals other than those used for aircraft manoeuvring should always be repeated by the other party when the required action is completed.

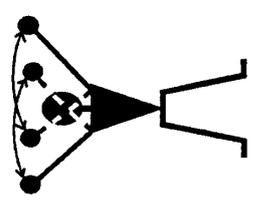
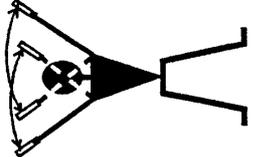
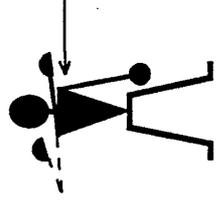
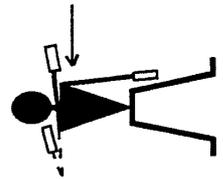
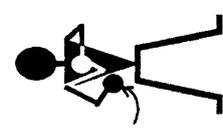
Meaning of Signal	Description of Signal	In Daylight	By Night
1. Stop	Arms repeatedly crossed above the head. The speed of arm movement indicates the urgency of the stop.		
2. Shutdown (includes cut engines)	Either arm and hand placed level with chest, then moved laterally with the palm downwards. (e.g. Cut throat action)		
3. Connect Ground Power	One arm horizontal in front of the body at shoulder level. Other arm, fist clenched, brought up to form a 'T' of forearms.		

Figure 1 Standard Hand Signals

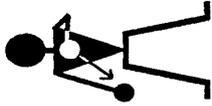
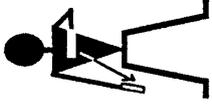
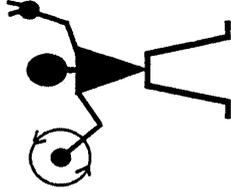
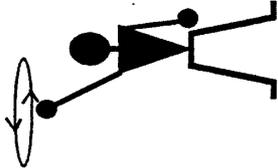
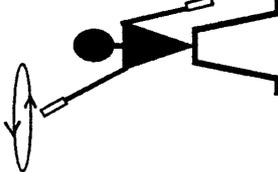
Meaning of Signal	Description of Signal	In Daylight	By Night
4. Remove Ground Power	One arm horizontal in front of the body at shoulder level. Other arm, fist clenched, held vertical to form 'T' of forearms. Leaving the horizontal arm in place, return the arm forming the vertical smartly to the side of the body.		
5. Start Engines	Left hand overhead with the number of fingers extended, to indicate the number of the engine to be started, and circular motion of right hand at head level.		Shall not be given at night
6. Start Rotors	Circular motion in the horizontal plane with the right hand above the head.		

Figure 1 Standard Hand Signals (cont'd)

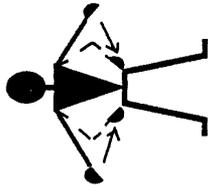
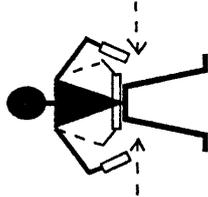
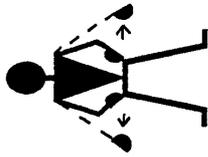
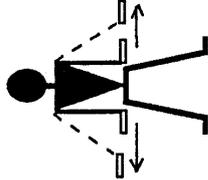
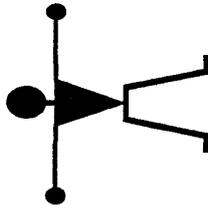
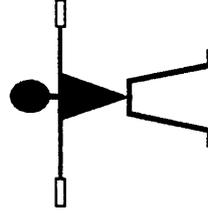
Meaning of Signal	Description of Signal	In Daylight	By Night
7. Chocks Inserted	Arms extended, the palms facing inwards, then swung from the extended position inwards.		
8. Chocks Away	Arms down, the palms facing outwards, then swung outwards.		
9. Hover	Arms placed horizontally sideways.		

Figure 1 Standard Hand Signals (cont'd)

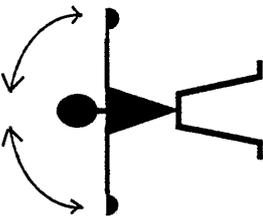
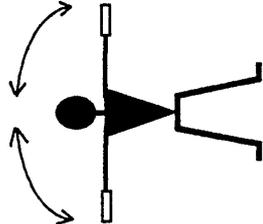
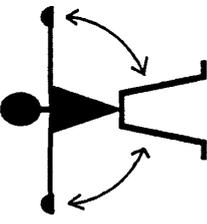
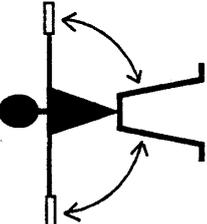
Meaning of Signal	Description of Signal	In Daylight	By Night
10. Land	Arms placed down and crossed in front of the body.		
11. Move Upwards	Arms placed horizontally sideways with the palms up beckoning upwards. The speed of arm movement indicates the rate of ascent.		
12. Move Downwards	Arms placed horizontally sideways with the palms towards the ground beckoning downwards. The speed of arm movement indicates the rate of descent.		

Figure 1 Standard Hand Signals (cont'd)

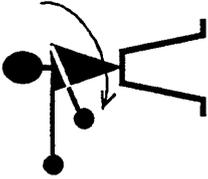
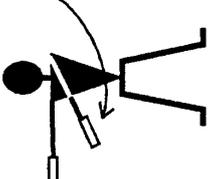
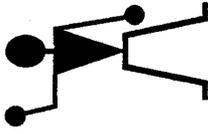
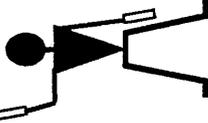
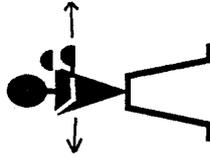
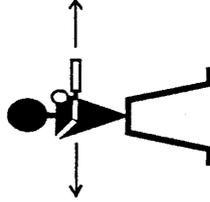
Meaning of Signal	Description of Signal	In Daylight	By Night
13. Move Horizontally	Either arm placed horizontally sideways, then the other arm moved in front of the body to that side, in the direction of the movement, indicating that the helicopter should move horizontally to the left or right side, as the case may be: repeated several times.		
14. All Clear	The right arm raised at the elbow, with the arm facing forward.		
15. Release Load	Left arm extended horizontally forward, then right arm making a horizontal slicing movement below left arm.		

Figure 1 Standard Hand Signals (cont'd)

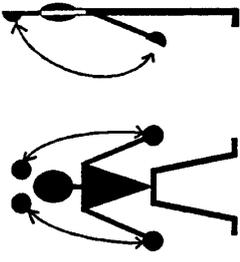
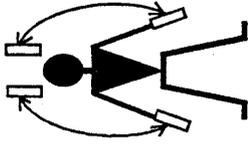
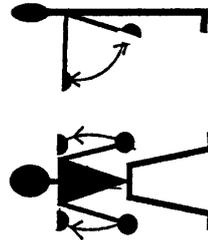
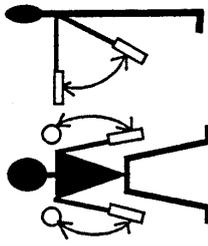
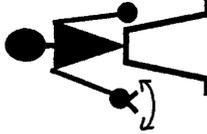
Meaning of Signal	Description of Signal	In Daylight	By Night
16. Move Ahead	Arms repeatedly moved upward and backward, becoming onward.		
17. Move Back	Arms placed down, the palms facing forward, then repeatedly swept up and down to shoulder level.		
18. Ready to Disembark Passengers	Two fingers pointed downwards and moved backwards and forwards in opposite directions to represent 'walking'.		Shall not be used at night.

Figure 1 Standard Hand Signals (cont'd)

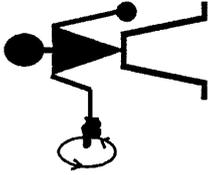
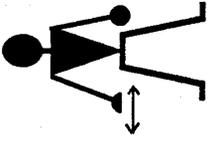
Meaning of Signal	Description of Signal	In Daylight	By Night
19. Commence Refuelling	Right arm extended outwards, forefinger pointed horizontally and rotated clockwise.		Shall not be used at night.
20. Stop Refuelling	Right arm held downwards with hand horizontal, palm facing down, hand waved from side to side.		Shall not be used at night.

Figure 1 Standard Hand Signals (cont'd)

Addendum 6

List of Prohibited Items for Carriage in Passengers' Baggage or on their Person During Flights within the UKCS

- Adhesives
- Aerosols
- Alcohol of any kind
- Bleaches
- Canned drinks of any kind
- Cigarette lighters
- Corrosive Liquids
- Drugs (save on prescription) – refer to Note 1
- Explosives and fireworks
- Firearms/ammunition
- Flammable gas or liquids, tear gas, CS gas
- Magnetic materials
- Matches of any kind
- Oils and greases
- Paints and solvents
- Poisons, weedkillers, pesticides and insecticides
- Radio-active materials
- Radio, cassette and disc players, unless batteries are removed
- Weapons including knives with a blade longer than 3in – refer to Note 2
- Wet batteries

- Notes:**
- (1) Prescribed and 'over the counter' drugs must be surrendered at check-in for safe-hand carriage, recording and reissue on the Installation, Mobile Offshore Drilling Unit (MODU) or vessel; a similar procedure should be in place for passengers returning onshore.
 - (2) Knives which are tools of trade (eg Chefs and Divers) may be carried, but must be declared at check-in.

Addendum 7

Trainee Helideck Assistant Achievement Record

Name:

Oprs No:

Installation/Vessel:

CREW CHANGE AIRCRAFT (12 turnarounds)

.....
.....
.....
.....

Date: _____ Initial: _____

CREW CHANGE AIRCRAFT (6 refuels)

.....
.....

Date: _____ Initial: _____

FIRE DRILLS (3)

.....
-------	-------	-------

Date: _____ Initial: _____

I hereby certify that the above named person has successfully completed the required number of activities and may now be considered as a qualified member of the helideck crew.

Signed: _____ Date: _____

Addendum 8

Survival Suit (Hood Up, Zip Up) Guidelines

It is standard practice for passengers on North Sea helicopters to wear survival suits. In the past, for reasons of comfort, these have typically been worn with the hood down and the main zip partially undone. In that mode the suit offers virtually no protection to the wearer in the event of an uncontrolled ditching of the aircraft into the sea. In a controlled ditching however, there should be time for passengers to fasten their zips properly and don hoods (ie Hood up, Zip up (HUZUP)).

Note: The following HUZUP guidelines may **not** apply if suits with bellows neck seals are in use.

The following recommended guidelines on HUZUP policy should be given consideration:

- Passengers should don hoods and zip up their suits during the following critical phases of offshore flight:
 - Offshore landing
 - Offshore take-off
 - Offshore flight below 500ft
 - Whenever instructed to do so by the aircraft crew
- Transit passengers should be allowed to lower zips and remove hoods for the periods when the aircraft is on deck with the cabin door open

Addendum 9

Offshore Helideck Inspection Report Form

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2	Offshore Helideck Inspection Report Form Annex 'A'	1

1 Introduction

The Offshore Helideck Inspection Report (OHIR) form is subject to ongoing change and refinement by British Helicopter Advisory Board (BHAB) as the offshore helideck inspection process progresses and matures. For this reason, an original form, not a photocopy, must be used and thus a '**specimen**' copy of the document is not included in this Addendum.

Original forms can be obtained from:

BHAB Helidecks
c/o CHC Scotia Helicopters
Aberdeen Airport East
Dyce
Aberdeen
AB21 7DU

Telephone: 01224 846339/725505

2 Offshore Helideck Inspection Report Form Annex 'A'

The following information should be submitted to BHAB Helidecks on controlled scale drawings of the helideck and support systems. All drawings should be up-to-date and should include a unique identification number, date and revision number.

- General arrangement (plan) of the whole Installation/Mobile Offshore Drilling Unit (MODU)/Vessel
- Elevation clearly showing the 180° 5:1 sector
- Plan view of the helideck clearly showing obstacle environment and 210°, 150° and 180° sectors. All obstructions, both non-compliances and items close to the sectors to be detailed showing height above/below helideck level
- Hot emission sources (eg flares, turbine exhausts)
- Cold emission sources (eg vents, blowdown systems)
- Location and colour/markings schemes for structures that are obstructions, and those that might cause turbulence over the helideck
- All helideck markings, giving dimension and colour
- Helideck net locations
- Tie-down points
- Perimeter safety net
- Perimeter and floodlighting

- Locations of rescue and firefighting equipment
- Refuelling system
- Guttering and downpipes (details of drainage below helideck not required)
- Access points
- Windssocks

Addendum 11

Topic List for Management System Auditing

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2.1 General Management	1
2.2 Helicopter and Support Services Contracting	3
2.3 Facilities Design and Operability	3
2.4 Personnel Training and Competence	3
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1 Introduction

The following topics are listed to provide a reference when preparing checklists for auditing offshore helicopter and helideck operations. Also, reference to the International Association of Oil and Gas Procedures (OGP) 'Offshore Helideck Review Checklist' on the OGP website at <http://www.ogp.org.uk/base/publications.html> provides additional reference material developed by the international oil and gas industry.

2 Policy

2.1 General Management

A Dutyholder's policies for general management of its exploration, production, capital projects and commercial business should address the following list of topics, in addition to those specifically covered in the following sections:

- Responsibilities, Accountabilities, Operating Interfaces and Procedures
- Internal and External Communication
- Control of Documents and Records
- Monitoring, Verification and Audit

The manner and detail in which the above policies are written, promulgated, disseminated, implemented and complied with throughout a company should provide a good insight into the way the Company is led by executive management.

The quality of executive leadership will, in turn, have a direct impact on how the operational leadership responds to their day-to-day responsibilities and accountabilities. In this case, the management of helicopter and helideck operations.

When reviewing policies for each of the following management activities, the topics outlined should be addressed. Evidence found and the responses given by individuals can be evaluated by an auditor to determine strengths and weaknesses within the management system.

2.1.1 Offshore Management

- To what extent is the Installation management made directly responsible and accountable for aviation operations, including the facilities and personnel provided offshore?
- Do the offshore management understand the responsibilities and accountabilities for aviation operations on offshore Installations and are these responsibilities undertaken fully?

2.1.2 Aviation Management

- Is there a corporate or business unit aviation department responsible for setting the standards for aviation operations?
- If no aviation department exists, who sets the standards for aviation operations?
- Are the aviation policies and standards based on good industry practice? If so, what is their origin and validity?
- Is the responsibility for aviation operations outsourced and if so, to what extent and how are they managed by the Dutyholder?
- Are Company aviation policies and standards readily available onsite and are they current?

2.1.3 Risk Management

- Is there a safety or other independent specialist appointed to advise executive and line management of their responsibilities for the health, safety and environmental aspects of aviation operations?
- Who defines and sets the acceptable risks associated with aviation operations?
- What specific company (or proprietary) safety and risk management programmes are in place and being used to control the exposures associated with offshore helicopter operations?

2.1.4 Crisis Management

- Who sets the standards and develops the procedures for handling and mitigating aviation incidents?
- Are aviation incidents handled as an integral part of the Dutyholder's crisis management plan and emergency procedures?
- Who is made responsible and held accountable by the Dutyholder for handling the management of an aviation incident?
- Where, and in what manner, are aviation incidents handled?
- How and by whom are offshore aviation incidents reported (are OIR 9s raised)?

2.2 Helicopter and Support Services Contracting

- Are there laid down policies for contracting helicopter flights and helicopter operations' support services?
- If not, who specifies the commercial and technical requirements for contracting helicopters and helicopter operations' support services?
- Who retains the liabilities for contracted helicopters and helicopter operations' support services?

2.3 Facilities Design and Operability

- Is there a corporate or business unit aviation department responsible for setting the standards for helideck and facilities design and operability?
- If no aviation department exists, who sets the standards for helideck and facilities design and operability?
- Is the responsibility for helideck and facilities design and operability outsourced to the design contractor and if so, how is the design and construction work managed by the Dutyholder?
- Who is directly responsible for monitoring and auditing the performance of helideck and facilities design and operability?
- Who is ultimately responsible and held accountable for the safe and efficient operational outcome of helideck and facilities designs?

2.4 Personnel Training and Competence

- Is there a corporate or business unit aviation department responsible for setting the standards for helideck operation's manning levels, personnel training and competence?
- If no aviation department exists, who sets the manning levels and standards for helideck operation's personnel training and competence?
- Is the responsibility for helideck operation's manning, personnel training and competence, outsourced to contractors and service providers? If so, how is this managed and validated by the Dutyholder?

2.5 Safety Cases

- Is there a written policy and standards covering the preparation, routine review, updating, approval and submission of Safety Cases for Health and Safety Executive review and acceptance?
- To what extent are helideck design and operability and helicopter operations covered in Safety Cases? Are they adequately covered?

Note: When Dutyholders are preparing Safety Cases they should be fully aware of current industry guidelines and good practice for the management of offshore helicopter operations, in order to address all the key factors likely to have a direct impact on the safety of helicopter operations.

It is also recommended that auditors draw attention to the more recent industry and Health and Safety Executive/Civil Aviation Authority (CAA) research/study project reports. Several recommendations have been made in these documents that, although not yet fully reflected in published guidelines, propose significant changes to the traditional approaches to offshore helicopter design and operations.

3 Organising

3.1 General Management

- Is there a well-defined management structure in place that provides trained and competent leadership, and proper day-to-day management for all the various on and offshore activities concerning helicopter operations?
- Is the management organisation clearly promulgated and widely recognised at all operating sites by all personnel involved?
- Are assigned helicopter operations' personnel job descriptions, competencies, delegated responsibilities and duties properly documented and understood by the individuals?

3.2 Aviation Logistics Management

- Is there a clearly defined aviation management function within the logistics organisation or does it report elsewhere in the organisation?
- Among the personnel employed, to what extent are competent aviation specialists used to undertake the day to day management and support duties for offshore helicopter operations?
- Is the aviation logistics function or any part of it out-sourced to third party service providers? If so, to what extent and what management controls are in place to ensure a complete, competent and quality service is provided?

3.3 Offshore Installation Manager/Vessel Captain

- Is the Offshore Installation Manager (OIM)/Master trained and fully cognisant of the legal requirements for offshore helicopter operations?
- Does the OIM/Master appoint the Helicopter Landing Officer (HLO) and Radio Operator, and do they assign the Helideck Assistants (HDAs). If not, who does?
- To what extent does the OIM/Master supervise and monitor the helideck crew and Radio Operator's performance during helideck operations?

3.4 Helicopter Landing Officer

- On the Installation, Mobile Offshore Drilling Unit (MODU) or vessel (if applicable) is there a duty HLO onboard and is their name shown on the 'appointed person's board or elsewhere?
- On the Installation, MODU or vessel (if applicable) is there a deputy HLO available onboard?
- What selection process is used to identify and recruit HLOs whether permanent staff or outsourced?
- Are all HLOs assigned offshore certified as fully trained and competent?
- Are the HLOs fully aware of, and do they understand their duties and accountabilities as defined by the offshore regulations?

3.5 Helideck Crews

- How many people comprise the Installation helideck crew? Is the number adequate for the type of operation?
- How many trained and competent HDAs are there in the helideck crew? Is there an adequate number for the type of operation?
- What selection process is used to identify and recruit HDAs, whether permanent staff or outsourced?

3.6 Aeronautical Radio Operator

- Are there fully trained, competent and certificated Aeronautical Radio Operators assigned to the Installation, MODU or vessel?
- Is the Radio Operator the individual's primary duty?
- Is there more than one fully trained and competent Radio Operator available onboard the Installation, MODU or vessel?
- What selection process is used to identify and recruit Radio Operators, whether permanent staff or outsourced?
- Are the Radio Operators fully aware of, and do they understand their duties and accountabilities as defined by the offshore and aviation regulations?

3.7 Normally Unattended Installations Intervention Crews

- Where personnel are organised into intervention and working crews for supporting production and maintenance activities on Normally Unattended Installations (NUIs), is there a clearly defined management organisation promulgated for helicopter operations to each facility?
- During helicopter operations to NUIs, do all intervention crews have competent personnel appointed to act as OIM, HLO and Radio Operator as noted in Paragraph 4.17?

3.8 Helicopter Operators

- What process is used to identify and contract competent and CAA-approved helicopter operators to provide offshore support services?
- How, and to what extent, does the contracted helicopter operator's operating management, ground staff and third-party service providers fit into the Dutyholder's organisation and management system?
- If the helicopter operator is working as an independent contractor, to what extent and how does the Dutyholder exercise the necessary day-to-day management, logistics, personnel and offshore safety controls?
- To what extent is the Dutyholder involved with the contracted helicopter operator(s) in selecting trained and competent operation's management and service provider personnel for their offshore operations?

3.9 Helicopter Crews

- What process is used by the Installation Dutyholder to ensure that highly trained, fully certificated, experienced and competent flight crews are assigned to offshore operations by the contracted helicopter operator?
- Who specifies crew composition for the specific helicopter types contracted by the Installation Dutyholder?

3.10 Passengers and Freight

- What process is used by the Dutyholder to control the passenger movements (manifesting and weighing), security, offshore briefing and emergency/survival training for helicopter flights (including the offshore workforce and visitors)?
- What process is used by the Dutyholder to control the freight movements (manifesting and weighing), security, offshore briefing and emergency/survival training for helicopter flights (including the offshore workforce and visitors)?
- Do the passenger and freight movement processes eliminate last minute changes and reduce flight crew paperwork to a minimum?

3.11 Standby Vessels

- What process is used by the Dutyholder to ensure that standby vessels and crews are adequately equipped, trained and competent to perform personnel rescue operations in the event of a helicopter ditching?
- To what extent does the Dutyholder check that a standby vessel crew member (eg a Radio Operator) is trained, certificated and competent to operate on aeronautical frequencies?

3.12 Emergency Response Assets

- In the event of a helicopter emergency on an Installation, MODU or vessel, what emergency response assets are available to the OIM to apprehend the emergency and to rescue casualties?
- In the event of a helicopter ditching in the Installation's 500m zone, what emergency response assets are available to the Dutyholder to apprehend the emergency and to initiate the rescue of casualties?
- In the event of a helicopter emergency and a ditching/crash en route to the Installation, what Dutyholder arrangements are in place to obtain emergency response assets to apprehend the emergency and to assist rescue of casualties/survivors?

4 Planning and Implementation

4.1 Arrival and Check-in at the Heliport

- Are passenger identification, weighing, carriage of medicines offshore and manifesting procedures carried out completely and accurately?
- Is the baggage weighing, labelling and security procedures carried out diligently?
- Is the extent of personal searches adequate, and do they include control of prohibited and restricted articles?
- Are posters and other information available that clearly state baggage weight limits, prohibited and restricted articles, correct layers of personal clothing to be worn etc?

4.2 Preparation for the Outbound Flight

- Are the facilities provided for suiting up adequate?
- Is a helicopter safety video shown or a briefing given by the flight crew for the helicopter type to be used?
- Is the safety briefing adequate and shown without interruptions?

4.3 Boarding Outbound Helicopter, Startup (if appropriate) and Take-off

- Are movements to the aircraft for boarding properly announced and supervised by ground staff?
- If passengers carry baggage to the aircraft, is it properly handled, loaded and supervised by ground staff?
- Is passenger boarding orderly, and the seating plan and securing of seat belts properly supervised by ground staff or flight crew?
- Are the aircraft doors properly secured, and locked and checked by flight crew or ground staff prior to startup and taxiing for take-off?
- Are sufficient headset/ear protectors and emergency instruction cards available for all passengers?
- Did the flight crew give passengers details of the flight?
- Are flight crew instructions audible and clearly given (whether over the Public Address (PA) or directly)?

4.4 Approach and Landing at the Installation/Vessel

- Did the flight crew give adequate pre-landing instructions to passengers prior to descending below 500ft on the approach?
- If the Installation signage and helideck name is seen on the approach, is it highly visible and unobscured?
- If the Installation/vessel can be clearly seen during approach and landing (in low light conditions), is the appropriate obstruction lighting visible on all high structures?
- Is a Standby Vessel (SBV) on station?
- If the Installation can be seen during the approach and landing, check/assess the following:
 - Cranes are stationary and booms are well clear of the helideck area or stowed in their rests
 - Any other platform or field activities taking place that may interfere with safe helicopter operations?
 - Windsock(s) visible and positioned for best effect, and illuminated
- If helideck activities can be seen during the approach and landing, check/assess the following:
 - Helideck is properly manned, the crew are visible and in place for the landing (but not exposed to potential hazards)
 - Helideck clear of equipment and freight
 - Helideck perimeter and floodlighting all working (if appropriate)

- After landing, check/assess the following, depending on whether the helicopter is to be shut down or rotors remain turning:
 - Did the flight crew instruct passengers on procedures for disembarking?
 - Do the HLO and helideck crew approach the aircraft on instruction from the flight crew?
 - Do passengers remain seated and strapped in until instructed to disembark by the flight crew or the HLO?

4.5 Disembarking and Movement into Heli-admin

Some of these checks/observations can be made on the auditor's outbound trip but, preferably, they should be done by observing helideck activities during other incoming helicopter movements (if scheduled).

4.5.1 Passenger Control and Supervision

- Are disembarking passenger preparations and movements from the aircraft properly announced and supervised by the flight crew/HLO and helideck crew?
- Is the HLO and helideck crew correctly positioned to ensure that passengers are routed across the helideck away from helicopter rotors/engines hazard zones?

4.5.2 Baggage/Freight Control and Supervision

- Is passenger baggage and freight unloading, and stowage by the helideck crew carried out in a safe and efficient manner that minimises hazards to the baggage crew (manual handling incidents) and interference with the helicopter (particularly if rotors turning)?
- If passenger baggage is collected by individuals at the aircraft (particularly with rotors turning), are adequate safety controls and helideck crew supervision provided?
- If passenger baggage is unloaded and transferred off the helideck by the helideck crew for collection, is it stowed in a safe area away from helideck operations?

4.6 Testing Safety Management System Document Systems Used During Helideck Operations

4.6.1 Reference Documents

- What helicopter operations' reference documents are available to the OIM/HLO/Radio Operator. Are they all up-to-date and where are they kept?
- Do they include?
 - Health and Safety Executive Regulations and guidance publications relevant to offshore helicopter operations
 - Health and Safety Executive Safety and Operations Notices relevant to offshore helicopter operations
 - Company Aviation Policy Document
 - Company helicopter operations management procedures
 - CAA – CAP 437 Guidance on Offshore Helideck Landing Areas [Ref: 46]
 - UKOOA Guidelines – Management of Offshore Helideck Operations [Ref 62]
 - OPITO – HLO Handbook
 - OPITO – Refuelling Handbook
 - CAA ENR 1.15

4.6.2 Installation/Heliops Daily Reporting Log or similar

- Is there a helicopter operations' daily log kept on the Installation and by whom is it maintained?
- What format does the log take and is it kept up-to-date?
- For each flight, does the log include entries for:
 - Preflight weather
 - Updated weather
 - SBV informed and available
 - Radio log
 - Return loads
 - Corrected weights
 - Routing
 - Helifuel and crew food requirements
 - Departure message

4.6.3 Flights Planning and Manifesting

- Is there a document system for providing helicopter operators with a daily report giving relevant Installation/helicopter operating information?
- What form does the daily report take, who completes and transmits it to the helicopter operator, and how are the records kept and archived?
- Does the daily report include sufficient details about:
 - Helifuel availability (quantity)
 - Helifuel system serviceability
 - Gas turbine operating conditions
 - Other process conditions likely to affect helicopter operation's safety
 - Any Installation or field activities likely to affect helicopter operations (eg combined operations)
 - Vessel heading and helideck motion information Floating Production Storage and Officers (FPSOs), MODUs and vessels)
 - Weather forecasting (including area lightning activity)
- In what form and how are outbound helicopter passenger list/freight manifests received by the installation?
- Does the manifest system record the total passengers, and the pieces of baggage and freight on the helicopter during lift from the Installation, including through and during transfer loads?
- Is a helicopter departure report and passenger list transmitted (faxed) to the helicopter operations/traffic department immediately after an inbound helicopter has departed the helideck?

4.6.4 Helicopter Refuelling System Certification and Records (Where a Helifuel System is Installed)

Also refer to physical checks on the helifuel system (Addendum 12).

- Who is the specialist contractor responsible for maintenance and certification of the helifuel package?
- When was it last inspected?
- Is the helifuel system properly certified for use? If not, is the system clearly marked to show that no helifuel is to be dispensed and helicopter operators advised that no fuel is available?
- Who is responsible for daily, weekly and monthly checks on the helifuel system?
- Are there complete and up-to-date records for the helifuel certification, maintenance and routine checks?
- Are the helifuel storage, usage and resupply records complete and up-to-date?

4.7 Routine Helideck Operations and Aircraft Handling

Whilst the HLO and helideck crew are at work during routine helideck operations, the following activities should be observed and noted:

- Prior to manning the helideck for routine operations, was an adequate helideck crew briefing carried out by the HLO?
- Is the HLO clearly visible (identified as HLO) to the flight crews, helideck crew and passengers, and are they acting positively in a supervisory role?
- Have proper and clear communications been established between the HLO and HDAs (including the fire monitor operator)?
- Prior to helicopter arrival, have proper and adequate communications been established between the helicopter, radio operator and HLO using portable VHF sets?
- Is the helideck secured against unauthorised access during the arrival/departure of the helicopter?
- Are the helideck crew properly dressed, equipped and positioned to respond quickly to a helideck emergency, but not unnecessarily exposed to the hazards of landing/taking off helicopters?

4.8 Helicopter Refuelling (If Applicable)

- Is helicopter refuelling operations properly supervised by the HLO and a member of the flight crew?
- Prior to refuelling operations (gravity or pressure), are all personnel other than the flight crew, refuelling crew and fireguard removed from the helideck area?
- During refuelling, aircraft shutdown or rotors turning, are all the passengers disembarked from the helicopter?
- If judged the safer option due to high winds or operational necessity (supported by a Safety Case) and at the Captain's discretion, refuelling may take place with passengers remaining onboard (aircraft shutdown or rotors turning). Have the following precautions been taken?
 - Have the passengers been properly briefed to act promptly in the event of an emergency?
 - Are the cabin doors adjacent to the fuel loading points closed and on the opposite side open (and unobstructed) to provide quick escape?
 - Are passenger seat belts unfastened during the refuelling operation and a competent person positioned by the cabin door ready to supervise evacuation in an emergency?
 - Whilst refuelling operations are in progress, are proper communications established and maintained between flight crew and the refuelling team?

- Prior to refuelling the helicopter, have proper fuel quality checks been carried out by the refuelling team and accepted by the flight crew?
- When preparing equipment for refuelling, are the personnel, the fuel hose/line and the bonding lead routed and positioned clear of the helicopter hazardous zones?
- Prior to refuelling, has the refuelling equipment and aircraft been properly bonded and earthed?
- When refuelling has been completed, are the aircraft refuelling points secured/checked, and the refuelling equipment properly removed from the aircraft and correctly stowed?
- When refuelling has been completed, is all the appropriate documentation correctly completed and validated?

4.9 Inbound Journey – Check-in at Heli-admin

When other helicopter movements are taking place on the Installation during the Inspector's visit, it is preferable to check some of the following activities independently as an observer rather than as a passenger:

- Are passengers and their baggage identification, weighing, security checks (for restricted items) labelling, and manifesting carried out correctly and diligently?
- Is freight identification, packaging, weighing, labelling, security checks and manifesting carried out correctly and diligently (in particular articles that come under the Carriage of Dangerous Goods by Air Regulations)?
- Is a proper and uninterrupted safety and survival briefing given to inbound passengers prior to departure?
- Is adequate space and facilities provided for suiting up, donning survival equipment and obtaining disposable hearing protection, and are these activities properly supervised by a competent member of the helideck crew?

4.10 Boarding Inbound Helicopter, Startup (If appropriate) and Take-off

- Is the helideck adequately manned?
- Are passenger baggage handling, control and loading at the helicopter properly supervised?
- Are passenger movements from heli-admin to the helideck and onto the helicopter properly controlled and supervised by the HLO and helideck crew?
- When in the helicopter, is passenger seating, strapping-in and door closure checks properly supervised by a member of the flight crew or HLO?

- Did the flight crew give a short safety/preflight briefing to passengers prior to startup and departure. Was the content sufficient, audible and understood?
- If able to observe clearly, did the HLO do a final external helicopter and helideck check prior to communicating with the flight crew that the helideck and aircraft were clear for startup and take-off?

4.11 Disembarking and Movement into the Heliport

Has the helicopter operator/handling agent made proper arrangements at the heliport for the supervision, safety and assistance of:

- Passengers disembarking the helicopter with rotors turning or if shut down
- Escorting passengers from the helicopter across the heliport apron, particularly when other aircraft movements are in progress
- The collection and handling of baggage and freight
- The removal and proper disposal of survival equipment including the reporting of defects and deficiencies
- The collection from security of any impounded articles etc (eg mobile phones, pagers, cigarette lighters)

4.12 Adverse Weather Operations

Is the HLO fully conversant with the requirements for operating the helideck during adverse weather conditions? Does this include?

- Responsibilities and judgement for implementing the adverse weather policy for helicopter operations?
- Having company-approved information about the conditions when helideck operations require extra caution and passenger supervision when they or, should cease altogether?

4.13 Underslung Load Operations

- Are helicopter underslung load operations carried out on the Installation, MODU or vessel?
- What specific procedures are implemented by the helicopter operator/OIM/HLO to plan, manage and control underslung load operations?
- What training and competency checks have been carried out by the HLO and helideck crew for undertaking underslung load operations?

4.14 Emergency Procedures

- Do approved written procedures exist for the following helicopter emergency/support scenarios?
 - Helicopter ditching near the Installation, MODU or vessel
 - Helicopter crash on part of the Installation, MODU or vessel
 - Engine fire on the helicopter
 - Fire in the helicopter cabin
 - Fire during helicopter refuelling operations
 - Aviation fuel skid fire
 - Aviation fuel contamination
 - Obstructed helideck (eg unserviceable helicopter on helideck)
 - Partial evacuation by helicopters
 - Planned evacuation and emergency movement by helicopters
 - Inter-platform/vessel emergency support
 - Search and Rescue (SAR) operations and contingencies
 - Helicopter use for man overboard
 - Accident and medical emergency evacuation
 - Wrong deck landing
- Are the procedures, listed above, adequate and up-to-date?

4.15 Inspection and Maintenance Procedures

- Is there a daily checklist used by the helideck crew to prepare the helideck for use?
- Is the helideck daily checklist properly completed and kept as an archived record?
- How are helideck system and equipment failures/unserviceabilities reported and rectified during routine helideck operations?
- Does a check of the helideck daily checklist record repeatedly show outstanding equipment unserviceabilities or maintenance items?
- If there are equipment unserviceabilities or outstanding maintenance items recorded, do they affect the currency of the helideck for helicopter operations?
- What system is in place for controlling helideck weekly, monthly and annual planned maintenance?
- Does a check of the records clearly show that planned inspection and maintenance activities have routinely taken place as scheduled for confirming equipment condition by visual checking?

4.16 Quality Assurance Procedures

- What quality assurance procedures are in place for helicopter operations?
- What elements of helicopter operations do Quality Assurance (QA) procedures cover?

4.17 Personnel Training

- Do all HLOs have OPITO-approved training and competence record books. Are they properly maintained and up-to-date?
- Who assesses HLO ongoing performance and provides on-the-job training?
- Do all the assigned HDAs have an OPITO-approved training and competence record book? Have they been properly maintained and are they up-to-date?
- Who assesses HDA ongoing performance and who provides on-the-job training?
- Do the Radio Operators have training and competence record books? Are they properly maintained and kept up-to-date?
- Do the Radio Operators (and HLOs, if applicable) hold the necessary restricted certificates issued by CAA, ATSSS Safety Regulation Group (SRG)-approved training bodies and are individuals certified as fully trained and competent?
- Who assesses the Radio Operator's ongoing performance and provides on-the job training?
- Has the helideck crew (and other personnel assigned to helideck emergency response duties) received appropriate basic and team training?
- Do the helideck crew and other personnel assigned to helideck emergency response duties carry out regular on-the-job refresher training and drills that are noted in the Installation log? When was the last drill?
- Are the helideck crews and other personnel assigned to helideck emergency response duties regularly tested and their competence assessed? If so, how often and by whom?

4.18 Personnel Protective Equipment

4.18.1 Preparation for a Flight (Outbound and Inbound)

- Does the survival suit/thermal liner (if applicable) or lifejacket issue procedure and supervision ensure correct sizes are available, and is clean serviceable equipment issued?
- Is disposable hearing protection readily available?
- Are the facilities provided (at the heliport and offshore) adequate for suiting up?
- Is suiting up preceded by an information video, and is it well supervised?
- Where re-breathers and Personal Locator Beacons (PLBs) are issued, are the instructions given for wearing and using the equipment properly explained?
- What assistance is available to observe and correct errors made by personnel unfamiliar or having difficulties with the suiting-up procedure?

4.18.2 Removal and Stowage of Survival Equipment (on the Installation)

- If safety equipment (lifejackets, re-breathers or PLBs) is to be removed by passengers in the aircraft, is this activity supervised by the flight crew/HLO to ensure that equipment is complete and serviceable for inbound passengers?
- If aircraft safety equipment (lifejackets) is removed by passengers in heli-admin, is it collected, properly checked and replaced on the aircraft by the helideck crew?
- Is the removal of survival suits, thermal liners, re-breathers and personal locator in heli-admin properly supervised, and is proper and adequate stowage provided to ensure that suits, liners and other personal safety equipment are maintained in a serviceable condition?
- What provisions are in place for checking helicopter/passenger survival equipment serviceability and, if required, replacement offshore?

4.18.3 Helideck Landing Officer and Helideck Crew Personal Protective Equipment

- Have the task requirements for offshore helideck operations been properly assessed for the provision of Personal Protective Equipment (PPE) to the HLO and helideck crew members?
- Does the specification and scale of HLO and helideck crew members PPE meet the recommendations set out in the applicable industry guidelines?
- Where appropriate (eg guano clean-up operations on NUI helidecks), have Control of Substances Hazardous to Health (COSHH) assessments been carried out and PPE requirements established.

4.19 Communications and Meteorology

4.19.1 Weather Observation, Recording and Reporting

- Who obtains and prepares the initial and updated local weather reports for the offshore Installation?
- Is the weather observer/reporter properly trained and competent?
- What weather information is obtained and in what form is it recorded?
- Does the weather report include full coverage for aeronautical requirements and lightning activity? (Refer to CAP 437 [Ref: 46])
- How are local weather reports transmitted to the helicopter flight operations and en route flight crews?
- To what extent is the standby vessel used to provide weather observations for helicopter operations?
- If used, are standby vessel observations corrected for the Installation helideck elevation?

4.19.2 Radio Operations Procedures

- Is the Installation aeronautical 'call sign' the same as helideck and Installation identification. (Refer to Health and Safety Executive Operations Notice No: 39 [Ref: 37])
- Is a Radio Operator's log maintained on the Installation and is it up-to-date?

4.19.3 Allocated Radio and Non-directional Beacon Frequencies

This item is relevant to mobile Installations and vessels, in particular, following rig moves. Refer to Health and Safety Executive Operations Notice No: 6 and check against CAA ENR 1.15.

- Are the in-use aeronautical radios (fixed and portable VHF (HLO) units) operating on correctly allocated area frequencies?
- Is the correct NDB (Non-directional Beacon) frequency and ident for the Installation being used?

5 Auditing and Monitoring

5.1 Personnel Competence

In the Dutyholder's organisation who is directly responsible for monitoring, and auditing records and compliance with the requirements for helideck operations personnel training and competencies Is this accomplished satisfactorily?

5.2 British Helicopter Advisory Board Helideck Landing Area Certificate

Questions to be asked to establish the currency of BHAB's inspection process are:

- Has the asset been inspected by the BHAB as a part of their ongoing helideck inspection programme?
- Is there a current BHAB Helidecks Landing Area Certificate available? (refer to sample in Addendum 10)
- Are there any outstanding non-conformities on the Helideck Acceptance Certificate? If so, what action is being taken to rectify the problem and when is it due for completion?
- What limitations or restrictions have been applied in the Helideck Limitations List (HLL)?
- Have any modifications or changes to the asset been embodied that materially affect helicopter operations? Do they affect the currency of the Helideck Certificate?

5.3 Helicopter Operators' External Audits

- In the Dutyholder's organisation, who is directly responsible for monitoring and auditing the performance and compliance with requirements of the helicopter contractor and third-party aviation support operations? Is this accomplished satisfactorily?
- How frequent and by whom, is the performance of the contract by the contracted helicopter operator(s) audited by the Dutyholder?

5.4 Company Internal Helicopter Operations' Audits

- Within the Company, how frequent and by whom, is the performance of the Dutyholder's helicopter and helideck operations audited?
- Who in the Dutyholder's organisation is directly responsible for completing the work to correct non-compliances that affect helicopter and helideck operations?
- Who in the Dutyholder's organisation is directly responsible for monitoring the completion of the work to correct non-compliances that affect helicopter and helideck operations?

5.5 Helicopter Operations' Verification Processes

- Is there an 'approved' verification body(s) appointed by the Dutyholder to undertake third-party review of the helicopter and helideck operations' Safety Critical Elements (SCEs)?
- Who are they, and in what manner do they perform their work for the Dutyholder?

5.6 Accidents and Incidents

- In the Dutyholder's organisation, who is directly responsible for monitoring and auditing the performance of helicopter and helideck operations against accident and incident records? Is this accomplished satisfactorily?
- In the Dutyholder's organisation, who is directly responsible for implementing appropriate corrective actions in the event that accident and incidents highlight performance inadequacies or failures when compared against industry standards? Is this accomplished satisfactorily?

5.7 Training Programmes

- In the Dutyholder's organisation, who is directly responsible for monitoring and auditing for compliance with the training programmes for helideck operations personnel? Is this accomplished satisfactorily?
- In the Dutyholder's organisation, who is directly responsible for ensuring that appropriate corrective actions are implemented in the event that the helideck operations personnel training programme shows performance inadequacies or failures when compared against industry standards? Is this accomplished satisfactorily?

5.8 Equipment and Systems

- In the Dutyholder's organisation, who is directly responsible for monitoring and auditing the performance (serviceability and reliability), and compliance with requirements of helideck operations' equipment and systems? Is this accomplished satisfactorily?
- In the Dutyholder's organisation, who is directly responsible for ensuring that appropriate corrective actions are implemented in the event that helideck operations' systems and equipment inspection, and maintenance records show performance inadequacies or excessive numbers of unscheduled failures? Is this accomplished satisfactorily?

5.9 Design and Operability

- In the Dutyholder's organisation, who is directly responsible for monitoring and auditing the design and operability of helideck systems and equipment, and compliance with requirements during new design and construction projects and 'major' Installation modification programmes? Is this accomplished satisfactorily?
- In the Dutyholder's organisation, who is directly responsible for ensuring that appropriate corrective actions are implemented in the event that design and operability of helideck systems and equipment for new design, and construction projects and Installation 'major' modification programmes are found inadequate? Is this accomplished satisfactorily?

5.10 Communications

- In the Dutyholder's organisation, who is directly responsible for ensuring that appropriate day-to-day communications and feedback are properly maintained at all levels between all the parties involved in the provision and execution of helicopter and helideck operations?
- Are good communications and feedback apparent? If not, what are the problems and how are they affecting proper co-operation between all the parties involved with helicopter and helideck operations?

6 Performance Measurement and Review

6.1 Auditing and Monitoring Programmes

What audit and monitoring programmes are used to test and measure the quality of helicopter operations?

6.2 Training Programmes

Does the Dutyholder training programme for personnel involved in helicopter operations meet CAA and OPITO standards, and has it been subject to validation?

6.3 Personnel Competence

- What system(s) is employed to measure and record the initial training, continuation training, basic competence and ongoing performance of personnel (including contractors) involved in helicopter operations?
- Do records and personal interviews clearly demonstrate that all helideck crews (including contractors) have been identified and covered by the approved training programme and performance measurement system?
- If not, what provisions are in place to correct/rectify matters?

6.4 Helicopter Operators

- What system(s) is used to measure the safety and operational performance of the helicopter operators?
- Who provides the performance measurement of helicopter operators for the Dutyholder?
- Who evaluates and determines the validity and quality of helicopter operator performance measurement for the Dutyholder?

6.5 Accidents and Incidents

- To what extent are helicopter operations-related accident and incidents reported and recorded, and how is the data used to measure the Dutyholder's offshore helicopter operations' performance?
- How is the accident and incident data used to influence improvements to the Dutyholder's offshore helicopter operations?

6.6 Equipment and Systems

- What measurement systems are used by the Dutyholder to measure the performance (serviceability and reliability) of helideck systems and equipment?
- How is this data used to improve helideck systems and equipment serviceability and reliability, if problems are discovered?

6.7 Design and Operability

- What methods are used by the Dutyholder to measure design compliance with CAP 437 [Ref: 46] and good industry standards of new and modified helideck structures, and the ancillary systems and equipment?
- What methods does the Dutyholder use to measure the operability of new, modified and existing helideck designs?
- How is this data used to improve helideck structures, ancillary systems and equipment design and operability, if problems are discovered?

6.8 Communications

- Effective and efficient communications are a key element for achieving safe helicopter operations in an offshore environment.
- What methods are used to measure the performance of routine written, oral and radio communications in order to determine whether acceptable standards have been reached and are being maintained?

Addendum 12

Helideck and System Inspection Checklist

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Addendum 12

Helideck and System Inspection Checklist

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1 Introduction

The following topics are listed to provide the basis for a comprehensive inspection of an offshore helideck, its support systems and equipment. Most of these items are also included in BHAB Helideck inspections.

Precise technical details should be obtained by making reference to the latest issue of Civil Aviation Publication (CAP) 437 or the British Helicopter Advisory Board (BHAB) Offshore Helideck Inspect Report (OHIR) form (refer to Addendum 9 for details to obtain an up-to-date version of the OHIR form).

When intending to inspect a helideck and the support systems, it is prudent to check whether a BHAB Helicopter Landing Area Certificate has been issued and, it is still current. Unless there have been recent unreported changes (eg helideck repainted or modified), inspectors may consider limiting helideck equipment inspection to visual appraisal, maintenance record checks and random testing to allow more time to be spent on software issues.

2 General Arrangement Drawings

- Is there a full set of up-to-date helideck drawings? Are they 'as-built' and correct?
- Are there any proposed modifications to the Installation? If so, do they have potential to affect helicopter operations or the currency of the helideck certificate?
- If there are proposed modifications to the Installation that may affect helicopter/helideck operations, have the BHAB been informed?

3 Installation/Vessel Identification

- Are there sufficient signs and are they clearly visible from the air from all headings?
- Are the letters of sufficient size and is the signage unambiguous?
- Are they adequately illuminated at night and in poor visibility?

4 Helideck Surface

- Correct colour, condition and cleanliness
- Date of last repaint
- Adequate friction quality (estimate)
- Last friction test (if applicable)
- Gutter or raised curbing around entire perimeter
- Adequate drainage system installed, debris filters fitted and system clear of debris and blockages
- Sufficient aircraft tie-down points correctly located and flush with surface, bar diameter or shackles provided to fit tie-down strops (22mm maximum) and all fittings clear of debris and water
- Adequate fall provided on helideck surface to outboard of the Installation. Check for areas of excessive water 'puddling' on the surface

5 Guano Effects (Predominantly on NUIs)

- Do roosting seabirds normally affect the helideck?
- Are the helideck surface, surrounds and equipment adversely affected by guano accumulations? If so, are the accumulations unacceptable for continuing flight operations?
- Has the helideck been restricted for helicopter operations pending cleaning or repairs to surface/markings. If so, by whom and what are the restrictions applied?
- Is there an adequate water supply and the necessary equipment provided for carrying out helideck cleaning operations?
- Has a Control of Substances Hazardous to Health (COSHH) assessment been carried out to cover personnel exposure during guano cleanup and disposal operations, and have adequate Personal Protective Equipment (PPE) and washing up facilities been provided?

6 Helideck Dimensions

- Recorded helideck 'D' value:
- Do the overall helideck dimensions contain the recorded 'D' circle (Safe Landing Area (SLA))?
- Is there a parking/run-off area? What are the dimensions and is it clearly marked?

7 Helideck Markings

- Are the following markings on the helideck clearly painted and in good condition and do their locations, dimensions and colours comply with CAP 437 [Ref: 46]
 - Installation name: – clarity not compromised by company logos, block numbers etc?
 - Perimeter line?
 - Aiming circle and 'H' in centre (offset 0.1D towards the outboard edge)?
 - 'D' values on perimeter line?
 - Maximum allowable mass?
 - Chevron and 'D' value (adjacent to chevron)?
 - Prohibited landing sectors – if applicable, what is the reason for it?

8 Helideck Net

- Is a helideck net fitted? If not, is net removal accepted by BHAB/CAA and does the helideck surface friction quality continue to meet CAP 437 [Ref: 46] requirements?
- Date of last helideck friction report – completed using approved measuring equipment and trained operatives?
- When fitted, is the helideck net:
 - Compliant with CAP 437 requirements for size, material and construction?
 - Correctly positioned covering the aiming circle whilst not obscuring the Installation Name, 't' value or any other markings?
 - In good condition including fixings, strops and tensioning system?
 - Properly secured to the tie-down points and tensioned (maximum lift not above 250mm)?

9 Perimeter Safety Net

- Does the perimeter safety net cover all exposed drop down areas around the helideck, including the access/monitor platforms, where appropriate?
- Does the perimeter safety net extend outboard no more than 1500mm from the deck edge and have a slope of at least 10° with the outer rail no more than 250mm above helideck level?
- Does the design of the safety net panels:
 - Ensure adequate hammock effect with no support members or other fixings protruding that could cause harm to individuals falling onto it?
 - Use a net fixing system (to the support frame) that is securely attached to ensure that net integrity can be maintained if part of the net fixings fail (eg not a single wire/cord wrap)?
 - When was the last drop test done and did it meet the drop test requirements of CAP 437?
- Is the material used for the safety net construction:
 - Properly selected and subject to routine checks and maintenance, for the anticipated operating conditions. Does this include corrosion checks for plastic covered wire systems and cord deterioration for polypropylene and sisal systems?
 - Free from damage and deterioration (panel frames and netting) and are the panels properly aligned to ensure no gaps or excessive variations in height of the outboard rails?

10 Perimeter Lighting

- Do the perimeter lights correctly delineate the SLA?
- Are there any **red lights** used to delineate the limits of the SLA, if so, has the temporary arrangement been fully accepted by the BHAB?
- Do the perimeter lights meet CAP 437 [Ref: 46] requirements for colour (green – present standard or yellow – earlier standard), height (less than 250mm), spacing (less than 3000mm apart) and are they located coincident with the perimeter line?
- Are all the fittings correctly specified for the required electrical equipment classification and ingress protection?
- Are all the perimeter lights working, securely fixed and in serviceable condition?
- Do the lights provide sufficient illumination (refer to CAP 437) and are the lenses clean and in good condition?
- Are the lights connected to an emergency or Uninterruptible Power Supply (UPS)? Where, and by whom, are they controlled?

11 Helideck Floodlighting

- Do the floodlights meet CAP 437 requirements for height (less than 250mm if within the 210° obstacle-free sector), quantity, location and provide a sufficient and even spread of light across the safe landing area?
- Are all the fittings correctly specified for the required electrical equipment classification and ingress protection?
- Are all the floodlights working, securely fixed and in serviceable condition?
- Do the lights provide sufficient illumination without dazzling the Pilot when landing or on the helideck (refer to CAP 437), and are the lenses clean and in good condition?
- Are the lights connected to an emergency power or UPS? Where, are by whom, are they controlled?

12 Status Lights

Have status lights been installed? If so, do they meet the requirements of CAP 437 for type, visibility, positioning, restricted obstacle height, control etc?

13 General Lighting

- Does the general lighting along the access stairs and walkways to the helideck and the monitor platforms provide adequate illumination, and is it fit for purpose, clean and serviceable?
- Is the floodlighting around the Installation correctly positioned to ensure that stray light beams do not dazzle Pilots during helideck operations?
- Has light pollution around the helideck been minimised?

14 Obstruction Lighting and Markings

- Are all cranes and structures 15m above helideck level and at the highest point on the Installation, that may present a hazard to helicopter operations, properly marked with omni-directional red lights or by other means (eg base floodlighting) in accordance with CAP 437?
- Are the obstruction lights clearly visible and in working order?
- Are all the cranes and potential obstructions to helicopter operations (on the Installation and in the vicinity of the helideck) properly identified and marked in accordance with CAP 437?

15 Obstruction Environment

- Is the 210° obstruction-free sector clear of obstructions? If not, why not?
- If there are obstructions that fail to meet CAP 437 criteria (maximum 250mm above helideck level within 1000m), what are they and have they been notified to BHAB/CAA?
- In the 150° limited obstacle sectors do all obstructions (eg handrails, stored fire equipment, helifuel cabinet etc) meet CAP 437 requirements?
- Is the 180° 5:1 falling gradient to sea (from the edge of the perimeter net) clear of all obstructions, in particular temporarily located equipment and containers?

16 Turbulence

The turbulent and thermal effects caused by structures, vents, flares and various prime movers on the Installation can have a serious adverse effect on the aerodynamic performance and safe handling of helicopters during approach, landing and taking off.

These effects should have been identified and quantified during Installation design and fully accounted for in helicopter operations by applying, as necessary, appropriate limitations and restrictions as determined by the technical committee.

Any subsequent changes from the 'as-built' design and operating parameters must be viewed critically, as follows:

- Is the airgap provided beneath the helideck in accordance with CAP 437, 'as designed' and is it kept free of obstructions?
- Have any permanent or temporary structural or equipment additions or changes (eg stacked containers in the airgap or on laydown areas adjacent to helideck) been made to the Installation that may significantly alter the aerodynamic (turbulence) performance of the helideck? If so, have they been evaluated and notified to BHAB/CAA?
- Have prime mover, venting or process operating conditions been changed (eg gas turbines output or numbers online increased or decreased) to the extent that the thermal effects (hot and cold emissions) that may seriously impact helicopter operations on or around the Installation have substantially altered? If so, have they been evaluated and notified to BHAB?

17 Refuelling Package (If Installed)

- Are all transportable helifuel tanks properly stored, located and secured in a bunded area and grounded?
- Are the 'in use' transportable tanks properly connected to the system manifold, and are couplings, hoses, pipework and bonding serviceable and damage free?
- Where fixed storage tanks are installed, are they fitted with serviceable floating suction devices (optional)? If so, are they functioning correctly?
- Are all the helifuel storage tanks (fixed and transportable) properly coded, damage free, properly maintained and certified?
- Are the bunded areas used for fixed and transportable helifuel storage tanks properly designed, drained, clean, free of debris, adequately guarded from overhead loads and fire protected?
- Is the helifuel delivery system and skids including all pumps, pipework, valves, filters, gauges, vents, delivery nozzles, bonding reel and cable (including the clips and quick disconnect fitting), grounding straps, drains, control devices and lights properly maintained, clean, damage free, serviceable and fully certified?
- What provisions are made for helifuel quality sampling? Are there sufficient sample jars, water detection equipment and proper facilities for the safe disposal of fuel samples?

18 Access and Escape

- Are adequate means of access and escape to/from the helideck provided? Are all routes unobstructed, clean and mechanically sound (no loose grating, anti-slip stair treads fitted, handrails secured and complete etc)?
- Where collapsible handrails are fitted, are they serviceable and can they be properly secured in both the erected and lowered positions?
- Are there adequate notices provided at all access points to the helideck that correctly display the hazards associated with helicopters and the mandatory personnel controls during helideck operations?
- Is there an adequate system (eg frangible barrier) installed at each access point to the helideck to prevent inadvertent and unauthorised personnel access?

19 Firefighting Equipment

- Does the firefighting foam/water monitor systems on the Installation meet the design requirements of CAP 437?
- Is the firefighting foam/water monitor system and its controls maintained in good working order and ready for use with the proportioners properly set and locked for the foam concentrate (percentage) to be used?
- Is the system charged with the minimum quantity of foam concentrate? Is there backup concentrate available on the Installation?
- Is the system and backup foam concentrate properly stored and frost protected, if appropriate?
- When was the last foam concentrate and produced foam tests carried out and were satisfactory test certificates issued (normally annually)?
- When were the monitors last fully tested for water and foam operation? Was the monitor operation acceptable (time to deliver foam and sufficient throw/coverage)?
- In accordance with CAP 437, are there sufficient hydrant points, foam branches, inductors and concentrate, hoses, nozzles etc provided in cabinets adjacent to the helideck to supplement the primary foam/water system?
- Are there sufficient, serviceable **dry powder** portable (wheeled and hand) extinguishers located on the helideck?
- Are there backup units available on the Installation? If not, is the Dutyholder aware that helicopter operations will be curtailed until replacements are obtained, if any helideck extinguishers become unserviceable or are discharged?
- Are there sufficient, serviceable CO₂ portable (wheeled or hand) extinguishers located on the helideck? If not, is the Dutyholder aware that helicopter operations will be curtailed until replacements are obtained, if any helideck extinguishers become unserviceable or are discharged?
- For a Normally Unattended Installation (NUI), do the firefighting requirements meet those specified in Section 10 Paragraph 6.2?

20 Rescue Equipment

- Has at least one full set of rescue equipment to the scale required in CAP 437 been provided at a protected location within easy reach of the helideck surface?
- Is the **rescue equipment** stored in a properly secured and serviceable cabinet that is easily accessible, and is all the equipment on the inventory list available and in good condition and working order?

21 Protective Clothing and Equipment

- Are the scales and specifications (EN numbers) of the helideck crew PPE and equipment listed in CAP 437 and the UKOOA Management of Helideck Guidelines, provided (with spares) for each member of the helideck crew?
- Is helideck crew PPE in good serviceable condition and is there proper, convenient drying and storage facilities provided for the clothing and equipment when not in use?
- Is the Helicopter Landing Officer (HLO) provided with a fire-retardant waistcoat with HLO in reflective material front and back or an alternative means of easy identification?

22 Additional Helicopter Operations Equipment

- Is there a minimum of two, clean, fully charged and properly serviced self-contained Breathing Apparatus (BA) sets complete with spare cylinders, provided in protective stowage lockers adjacent to the helideck?
- Are the following items of miscellaneous helideck equipment provided in a well maintained, serviceable, ready to use condition stowed on or within easy reach of the helideck?
 - At least quantity six rubber or sand-bag type aircraft chocks?
 - Sufficient tie-down stops ie six with a Safe Working Load (SWL) of approximately 12,000 lbs (5000kg)?
 - Snow and ice clearing equipment and the appropriate fluids?
 - Aluminium ladder, two sections 2 to 3m long?
 - Helicopter starter unit, 28V dc rectifier or battery trolley? Is the NATO connector clean and serviceable?
 - Grab hook?
 - Prohibited landing marker as specified in CAP 437?

Note: If inspecting combined operations where the Installation helideck is **not in use**, the prohibited landing marker should be displayed on the helideck by placing it over the aiming circle.

- Are the following items of equipment provided (in a properly maintained, serviceable, ready to use condition) in heli-admin or an adjacent area?
 - Calibrated scales (last annual test?) suitable for accurately weighing passengers, baggage and freight?
 - Equipment and the appropriate media for showing passengers helicopter safety briefings?
 - Appropriate types of helicopter safety and emergency diagrams posted on the walls of heli-admin?

- Adequate and secure stowage for survival suits and liners etc (spare and visitor)?
- A stretcher suitable for use in helicopters?

23 Meteorological Equipment

- Is the weather recording instrumentation in use complete, serviceable and calibrated (up-to-date certificates)?
- Meteorological equipment provided on the Installation should include:
 - At least one (preferably two) illuminated windsocks, plus a spare sock. Are the windsocks in good condition and located for best effect and able to provide a good indication of the prevailing wind strength and direction to approaching flight crews?
 - A fixed anemometer with readout (windspeed and direction) in the radio room or other control point. When was it last calibrated?
 - A hand-held anemometer stowed in the radio room or other control point. When was it last calibrated?
 - An air temperature probe with readout in the radio room or other control point. When was it last calibrated?
 - A precision barometer and/or altimeter box for QNH and QFE readout in the radio room or other control point. When was it last calibrated and is the pressure corrected for helideck height?
 - Visibility and cloud base instruments (if installed) with readout in the radio room or other control point. When were they last calibrated?
 - Seastate and pitch, roll and heave measuring instruments (for use on mobile installations and vessels only) with readout in the radio room or other control point
- Do the motion measuring instruments accurately reference to the centre of the SLA and report peak levels over the last 10 minutes? When were they last calibrated?
- Where meteorological equipment sensors are located on or adjacent to the helideck, are they well clear of the obstruction and of the free and limited obstacle sectors, and unaffected by disturbances caused by helicopters and process emissions?

24 Communications Equipment

- Radio Equipment provided on the installation should include:
 - Two serviceable, CAA-type approved, fixed airband Very High Frequency (VHF) sets tuned to the correct CAA ATSSS SRG allocated frequencies for area traffic and logistics use?
 - A serviceable, CAA-type approved, fixed, NDB (Non-Directional Beacon) set tuned to the correct Installation area frequency and ident?
 - A serviceable, CAA-type approved portable airband VHF radio and headset (c/w belt and holster) for the HLO?
 - Additional serviceable, CAA-type approved, VHF handsets (c/w belt and holster) for helideck crew members?
- Is all the radio equipment as listed on the Certificate?
- Are all radio aerials, satellite dishes etc located on or adjacent to the helideck well clear of the obstruction free and limited obstacle sectors and not infringing the 180° 5:1 falling gradient?
- Where an NDB 'loop aerial' is installed around the helideck perimeter, is it correctly positioned within the limits of the perimeter safety net outer rail? Is the 'loop aerial' retrieval arrangement installed in a manner that does not intrude into the perimeter safety net?

Addendum 13

Radio Operations Procedures

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1 Normal Radio Operations Procedures

- (1) When an Installation (fixed or mobile) is expecting to receive a helicopter, the Radio Operator should send a weather status report to the helicopter operator to arrive 1 hour before the programmed take-off time.
- (2) For all offshore flights between manned Installations and vessels, the Radio Operator at the helicopter point of departure should establish positive contact with the destination Installation/vessel immediately following departure of the helicopter conveying the relevant flight details such as persons onboard and estimated time of arrival. However, in cases where in-field shuttle sectors have very short flight times, radio contact with the destination Installation should be established just prior to helicopter departure and be maintained until touchdown on the next helideck.
- (3) Nearer to the Expected Time of Arrival (ETA) of the helicopter, the Radio Operator should listen out on the appropriate radio frequency and have available, in expectation of a request from the incoming helicopter, the current Installation weather and details of any routings and load requirements.
- (4) When communications are established between the helicopter and the Installation, the ETA should be noted and the helideck crew placed on standby to receive the helicopter at the stated ETA.
- (5) Once advised that the flight watch is now placed with the Installation, the Radio Operator will be responsible for passing information on all other aircraft known to be operating in the area (eg any aircraft that is using the same airband frequency). The Radio Operator will also be responsible for providing an alerting service until such time as the helicopter flight crew advise two-way communications have been established with another agency which has taken over the flight watch.
- (6) Having accepted the flight watch, the Radio Operator should:
 - Ensure two-way communications with the helicopter flight crew are maintained at all times during flight and helideck operations
 - Effect communications handover to the Helicopter Landing Officer (HLO) in sufficient time prior to the helicopter making an approach to land (eg at least 5 minutes) and maintain a listening watch
 - On final approach the helicopter flight crew should call the HLO to obtain deck clearance (ie approximately 5 minutes before ETA or any revised ETA). In the event the HLO fails to respond to the flight crew, the Radio Operator should intervene and contact the HLO requesting him to contact the helicopter
 - The HLO should inform the helicopter flight crew that the 'deck is clear for landing'

(7) If the helicopter does not land within 5 minutes of the ETA, and two-way communications are lost such that the aircraft's position cannot be established, then alerting action will be initiated in accordance with 'emergency procedures' (refer to Addendum 16).

(8) Once the helicopter has landed at the Installation, an arrival message (refer to Note 1) should **immediately** be sent to the helicopter operator by telephone, fax or telex (refer to Note 2) using the following format. (For Southern North Sea (SNS) refer to Note 3.)

ARR – BHL52A – MONTROSE ALPHA – 1400.

(9) Prior to take-off, the flight plan and load details will be passed on by the helicopter flight crew and must be copied and read back for confirmation.

Note: The flight plan details will form the basis of the departure message (refer to point 10). The load details must be recorded and retained for 28 days.

(10) On take-off, the 'lifting call' by the flight crew must be acknowledged by the Radio Operator and thereafter an alerting service will be provided until such time as the helicopter flight crew advise two-way communications with another agency, and that flight watch has been transferred to that agency.

(11) **Immediately** after the helicopter takes off, a **departure message** (refer to Note 1) in the following format should be sent to the helicopter operator. (For SNS refer to Note 3.)

DEP – BHL52A – MONTROSE ALPHA 1402 – ABERDEEN 1530 – SOB 21 – END 0230

Notes: (1) Although there is a requirement to send both an arrival and departure message, the two may be combined if the aircraft turnaround time is less than 15 minutes. Where a multi-deck route is planned the arrival message is the most important.

(2) If the arrival/departure message is to be sent by telex, it is important that the text is in the format previously outlined and addressed to the helicopter operator only.

(3) In the SNS, there is no requirement to send an arrival message, and the departure message may be sent by the easiest method bearing in mind that due to the short distances involved, it may not arrive until after the helicopter has landed at its next destination.

2 Emergency Radio Operations Procedures

2.1 Alerting Service

The alerting **service** initiates emergency action when an agency loses and is unable to re-establish contact with, or ascertain the whereabouts of, a helicopter to which **flight watch** service is being provided.

2.2 Requirements for Emergency Action

Emergency action should be taken in the following circumstances:

- (1) When a helicopter has failed to land at the destination at the advised **ETA, plus 5 minutes, and communications cannot be re-established.**
- (2) En route, when a call has not been received for more **than 15 minutes and communications cannot be re-established.**
- (3) When a **distress call** is intercepted.

2.3 Emergency Action

Northern North Sea	Southern North Sea
<p>Contact the Watch Supervisor at Scottish Air Traffic Control Centre PRESTWICK Telephone: 0290 798000 Ext: 2763 or 4400</p>	<p>Contact the Watch Manager at London Air Traffic Control Centre WEST DRAYTON Telephone: 0895 426015</p>

2.4 Information Required

Note: The emergency call should not be delayed simply because some of the information listed below is not immediately available.

- Aircraft identification and name of Operator
- Type of aircraft
- Point of departure
- Time of departure
- Speed, level and route
- Destination and ETA
- Time of last contact and means (give frequency)
- Last reported position and method of determination
- Action taken by reporting unit
- Any other pertinent information (this may include recommended Search and Rescue (SAR) action, if appropriate)

Addendum 14

Standard Weather etc Message Lists

To encourage standard radio transmissions from Installations, Mobile Offshore Drilling Units (MODUs) and vessels, the following British Helicopter Advisory Board (BHAB) message lists provide a preferred order for operational information to be routinely transmitted to flight crews.

Weather (Log)

Location	Vessels on the move
Heading	Vessels on the move
Speed	Vessels on the move
Time	Vessels on the move
Wind	
Visibility	
Cloud	
Temperature	
QFE	
Pitch	Up/down
Roll	Left/right
Heave	
Lightning	
Significant Weather	

Flight Watch (Traffic)

Range	
HMR	Helicopter Main Route
Altitude	
SOB	Souls on Board
Endurance	
ETA	
On Deck	
Off Deck	
HMR	Helicopter Main Route
Flight Level	
TOR	Time on Route
SOB	Souls on Board
Endurance	
Pax Number	
Pax Weight	
Baggage	
Freight	
Fuel	

Lifting (Traffic)

Time	
HMR	Helicopter Main Route
Altitude	

QSY – Change To En Route Frequency (Traffic)

Time	
Altitude	
Range	
QSY to	

Addendum 15 Operating Information

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6 Eurocopter EC155 – Operating Information	15
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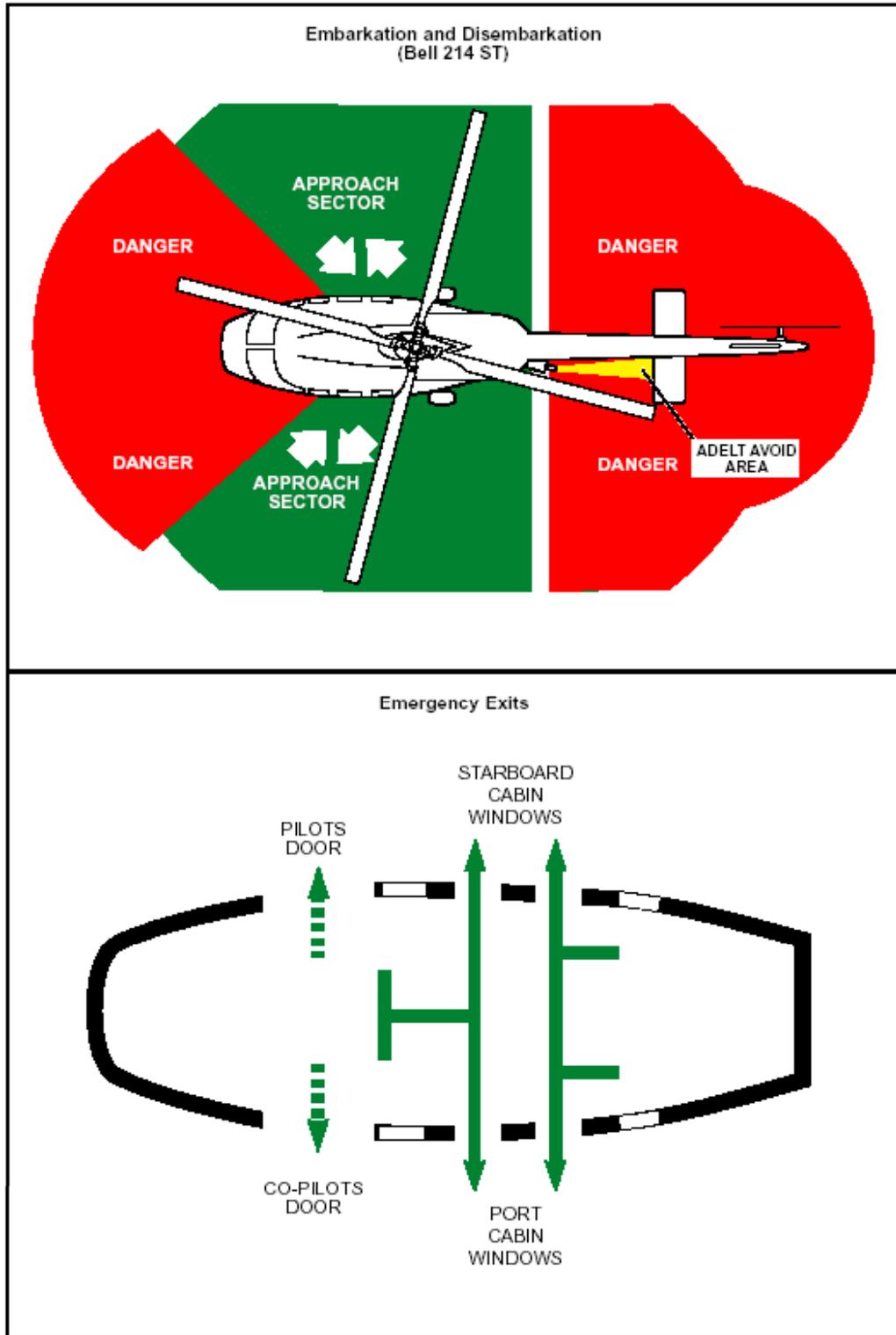
1 Bell 214 ST – Operating Information



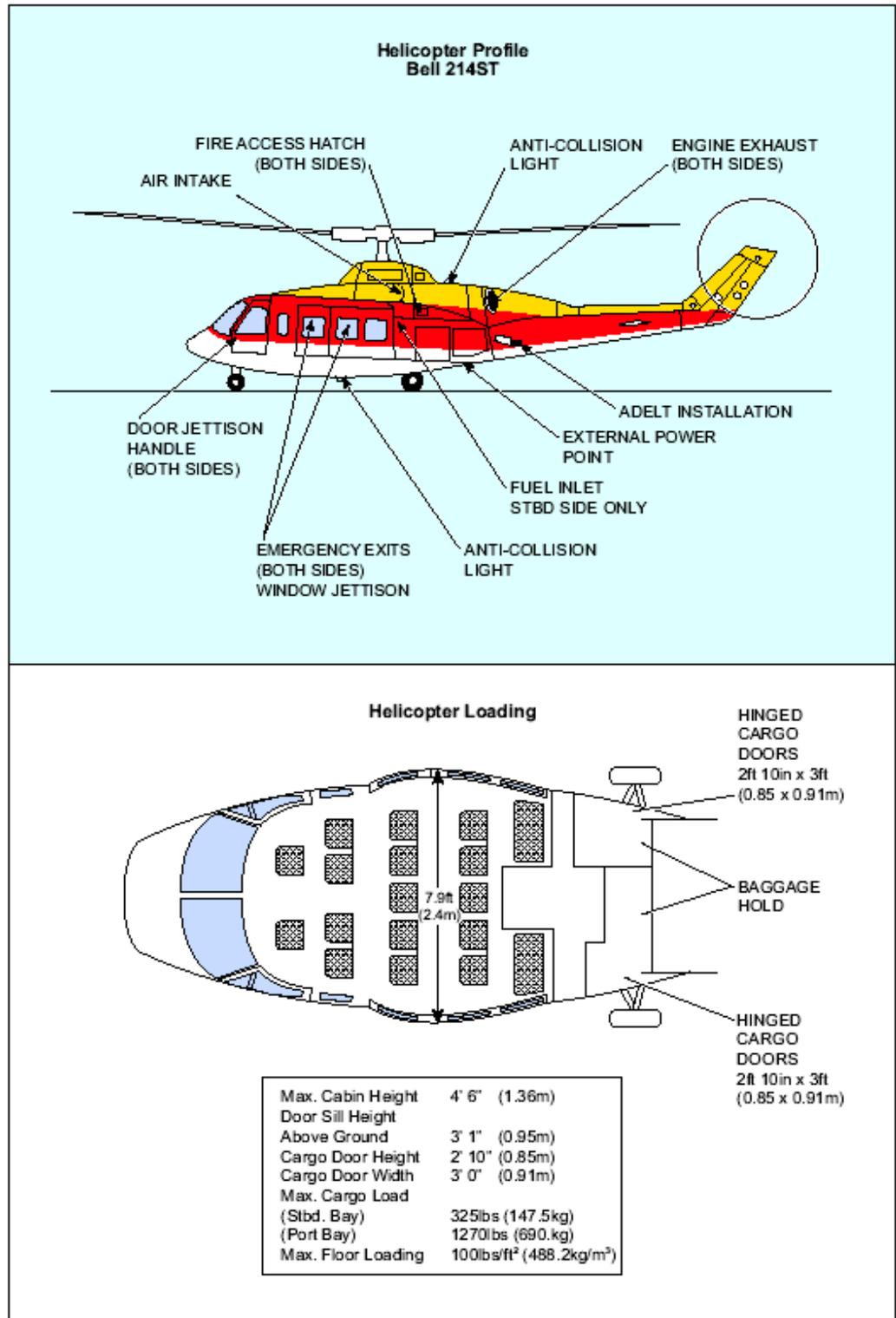
Photograph courtesy of Bristow Helicopters

1.1 Leading Particulars

Overall Length	18.95m (= D)
Maximum All Up Weight	7936kg (t = 8.0)
Maximum Passengers	18
Refuelling Method	Gravity only
Fuel Type	Jet A-1
Maximum Fuel Load	3340 lbs (1515kg) standard and small aux tanks
Undercarriage	Tricycle
Rotor Startup and Shutdown	Consult with helicopter operator or flight crew to obtain maximum windspeed for rotor startup and shutdown



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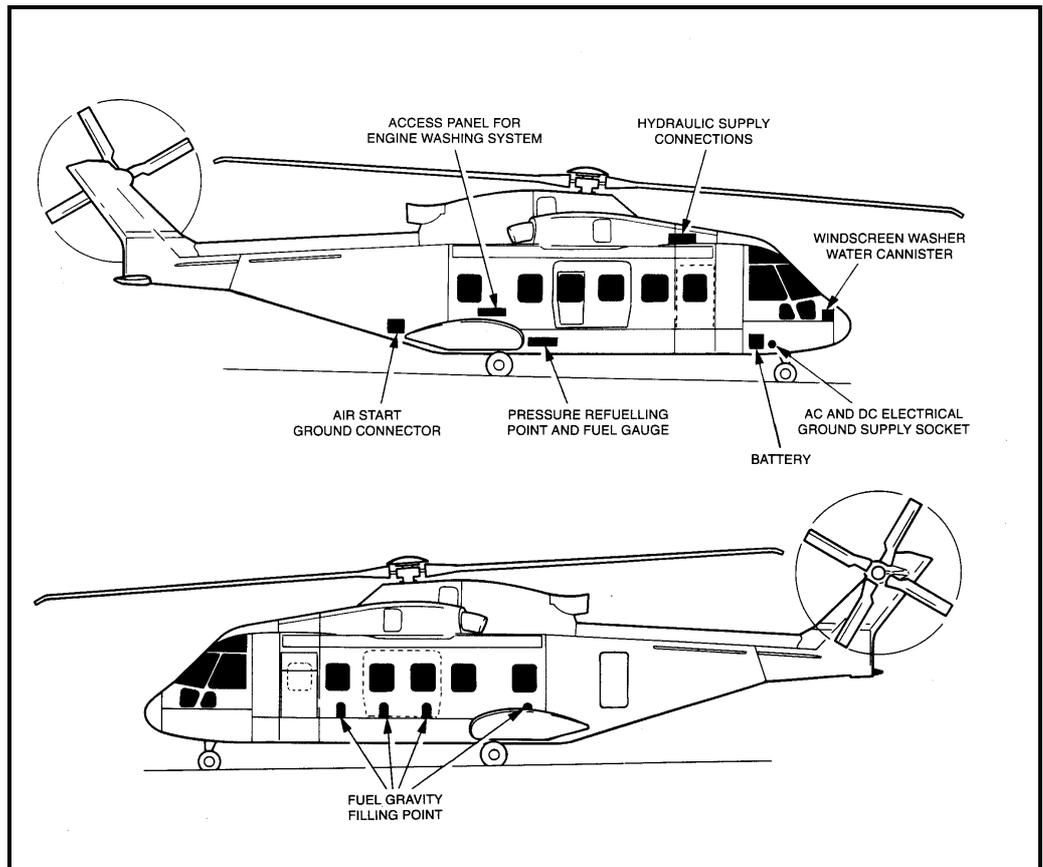
2 EH Industries EH101 Operating Information



Photograph courtesy of GKN Westland Helicopters

2.1 Leading Particulars

Overall Length	22.8m (= D)
Maximum All Up Weight	14,600kg (t = 15)
Maximum Passengers	30
Refuelling Method	Gravity and Pressure
Fuel Type	Jet A-1
Maximum Fuel Load	3360kg (with 4 tanks)
Undercarriage	Tricycle
Rotor Startup and Shutdown	Consult with helicopter operator or flight crew to obtain maximum windspeed for rotor startup and shutdown



Approach Sectors, Emergency Exits and
Loading Charts Currently Unavailable

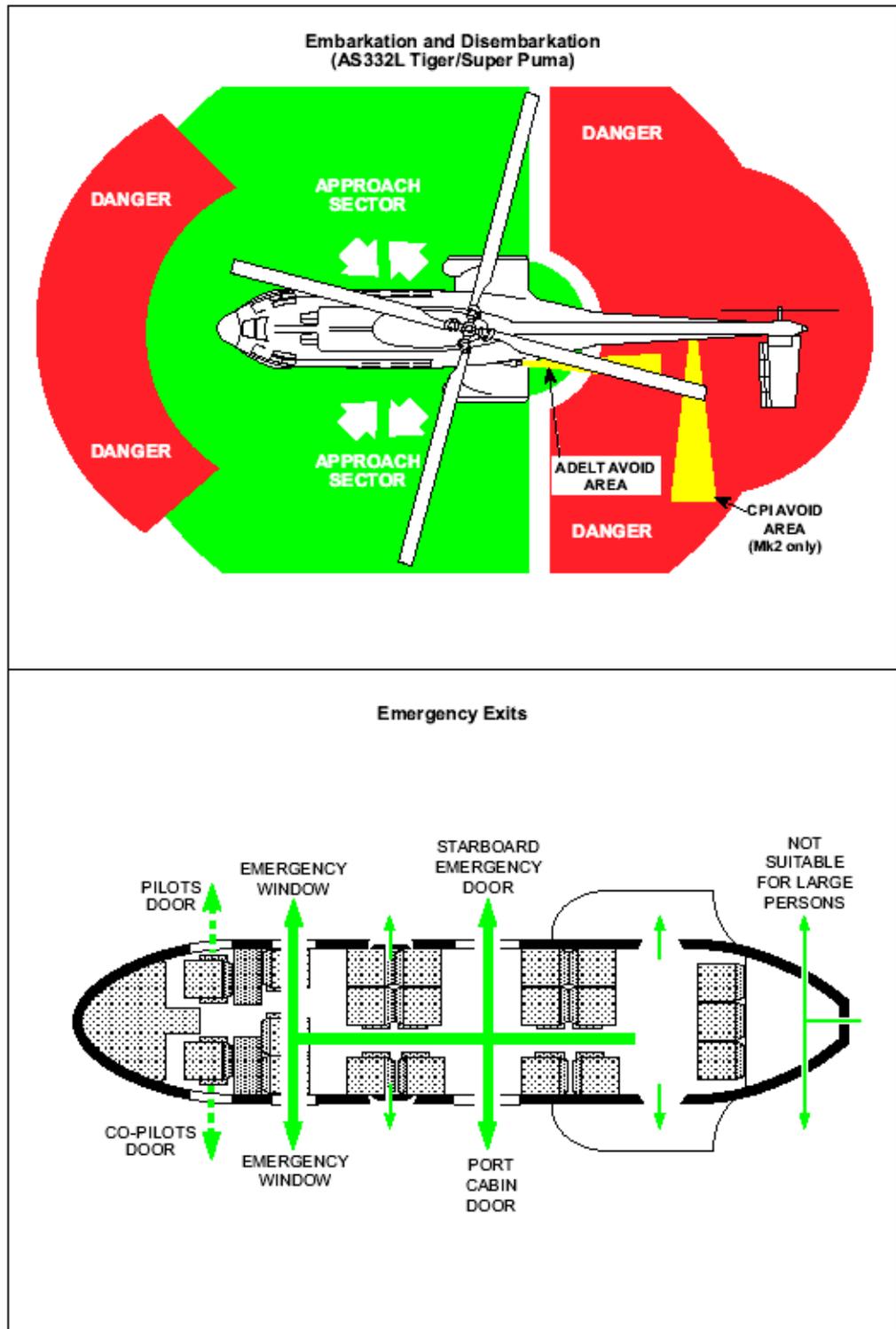
3 Eurocopter AS332 L/L1 (Tiger/Super Puma) Operating Information



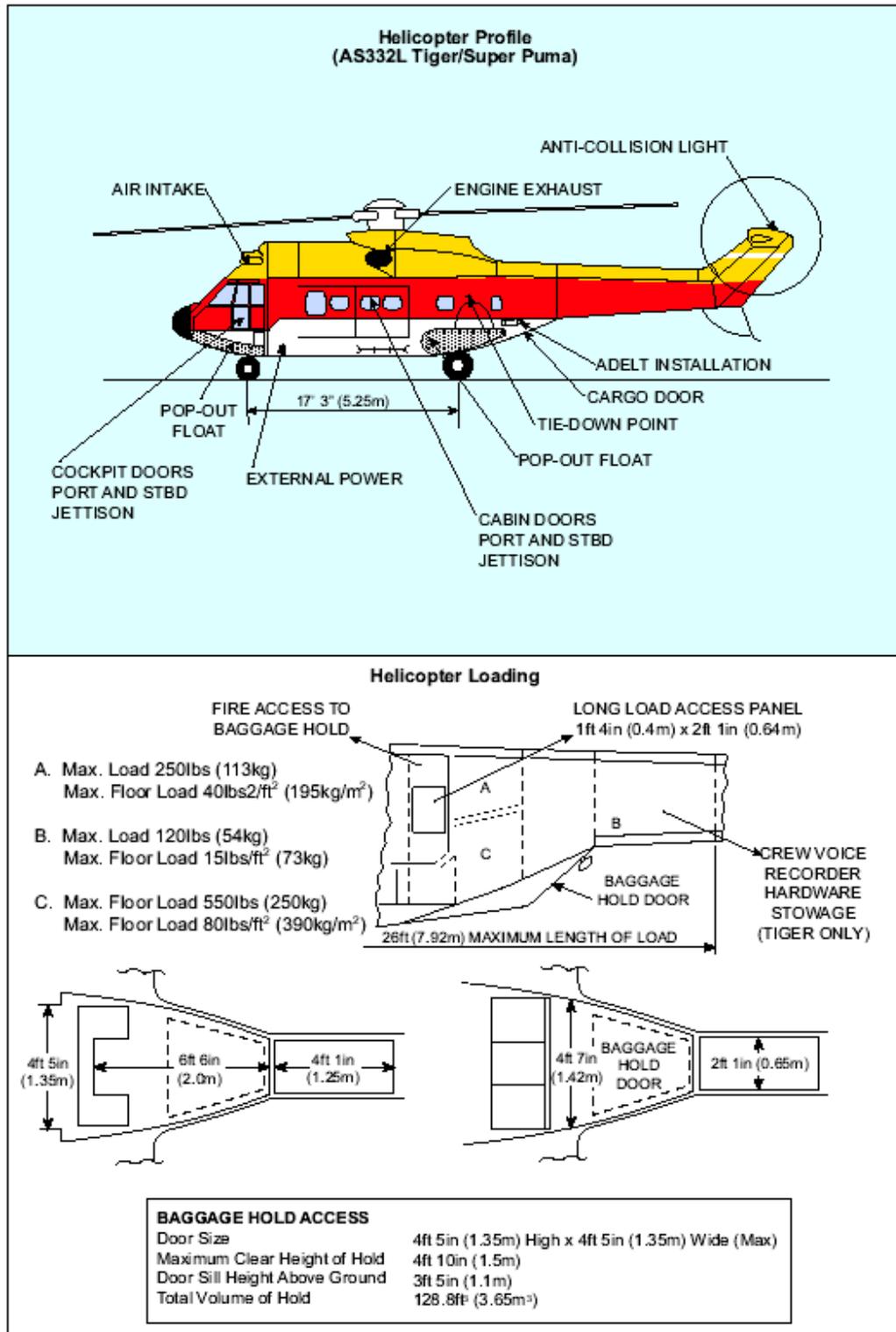
Photograph courtesy of CHC Scotia Helicopters

3.1 Leading Particulars

Overall Length	18.7m (= D)
Maximum All Up Weight	8599kgs (t = 8.6)
Maximum Passengers	18
Refuelling Method	Gravity and pressure
Fuel Type	Jet A-1
Maximum Fuel Load	4137 lbs (1877kg) standard tanks
Undercarriage	Tricycle
Rotor Startup and Shutdown	Consult with helicopter operator or flight crew to obtain maximum windspeed for rotor startup and shutdown



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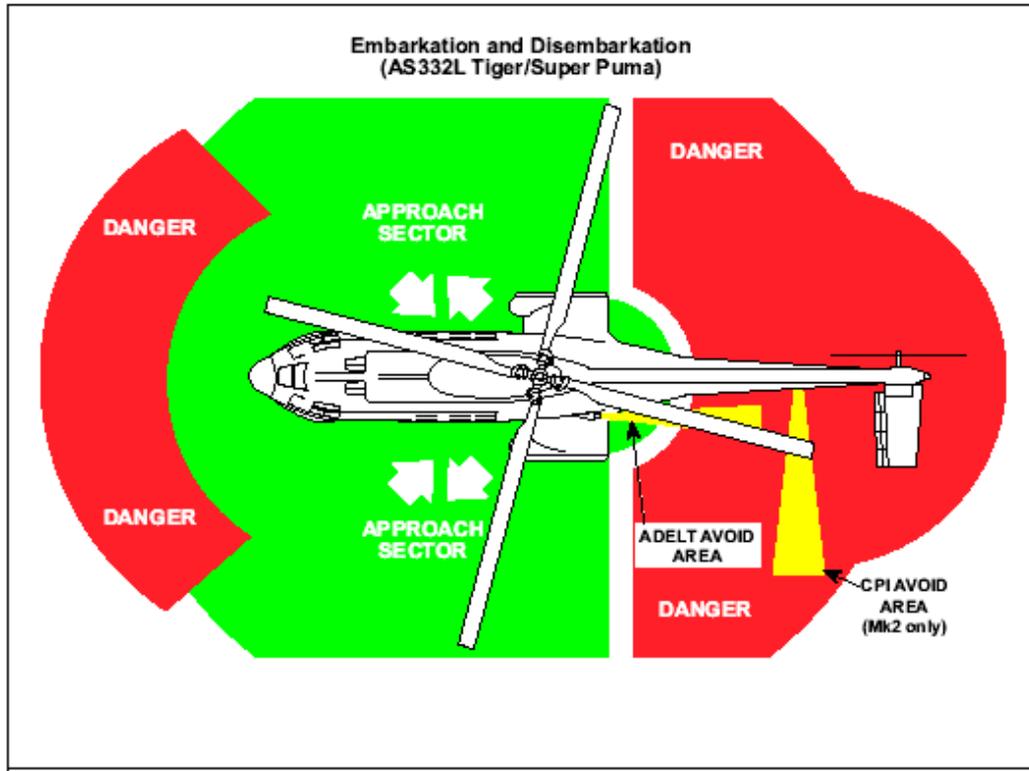
4 Eurocopter AS332L2 (Super Puma MK 2) Operating Information



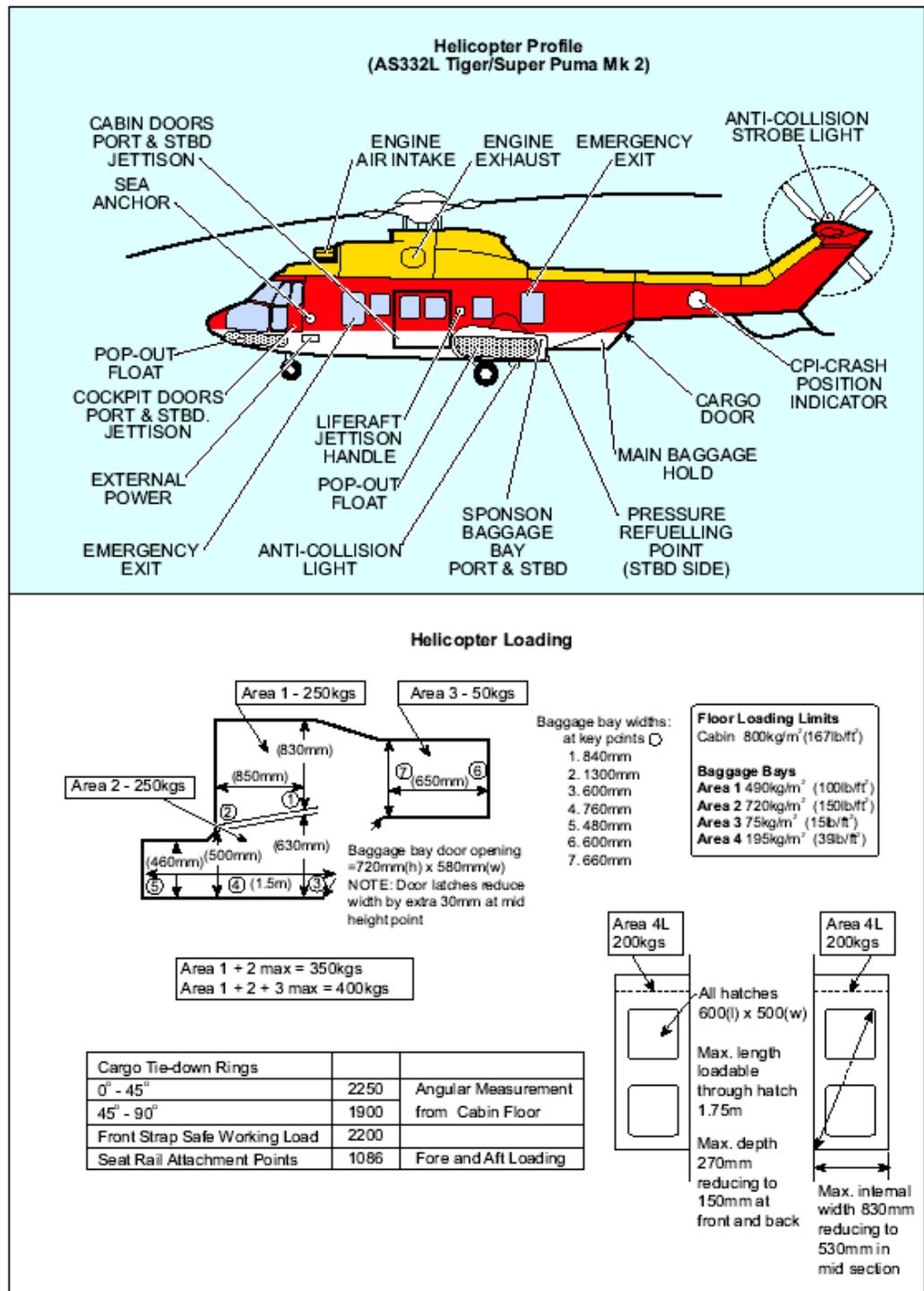
Photograph courtesy of CHC Scotia Helicopters

4.1 Leading Particulars

Overall Length	19.5m (= D)
Maximum All Up Weight	9300kgs (t = 9.3)
Maximum Passengers	19
Refuelling Method	Gravity and pressure
Fuel Type	Jet A-1
Maximum Fuel Load	1870kg – standard tanks
Undercarriage	Tricycle
Rotor Startup and Shutdown	Consult with helicopter operator or flight crew to obtain maximum windspeed for rotor startup and shutdown



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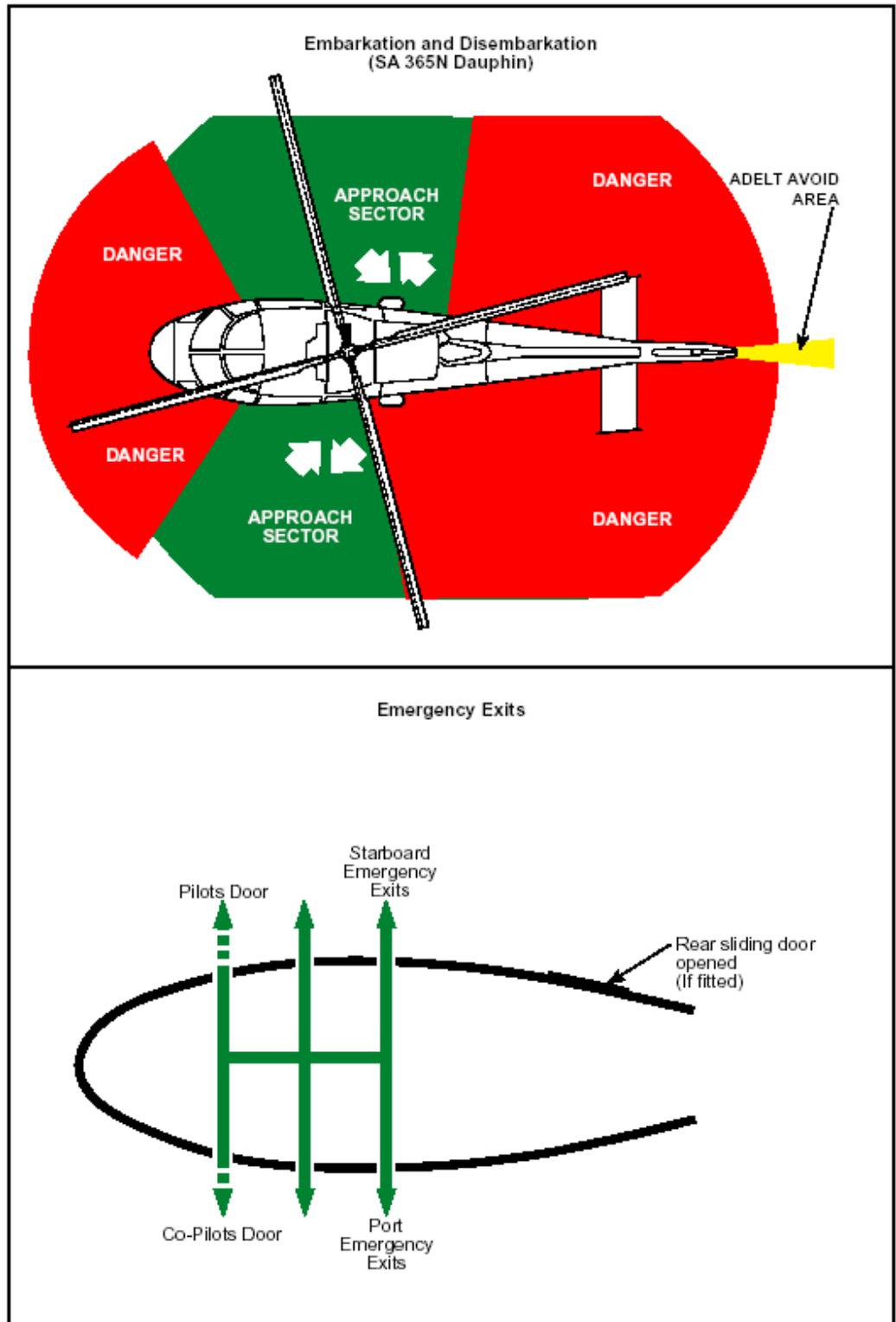
5 Eurocopter AS365N (Dauphin) Operating Information



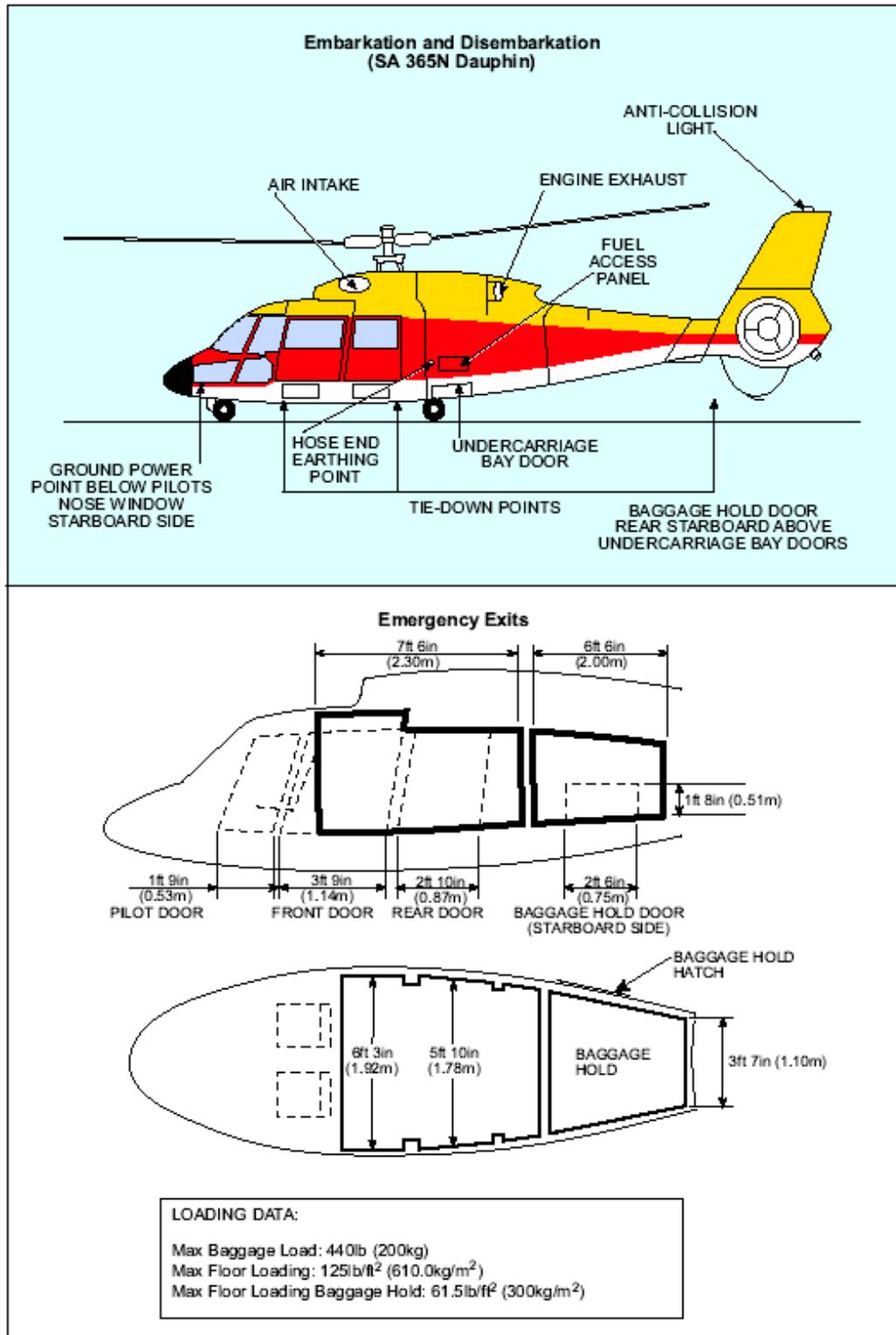
AS365N – Photograph courtesy of CHC Scotia Helicopters

5.1 Leading Particulars

	N1	N2
Overall Length	13.46m (= D)	13.68m (= D)
Maximum All Up Weight	4000kg (t = 4.0)	4250kg (t = 4.3)
Maximum Passengers	11	12
Refuelling Method	Gravity only	Gravity only
Fuel Type	Jet A-1	Jet A-1
Maximum Fuel Load	905kgs – standard tanks	897kgs – standard tanks
Undercarriage	Tricycle	Tricycle
Rotor Startup and Shutdown	Consult with helicopter operator or flight crew to obtain maximum windspeed for rotor startup and shutdown	



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6 Eurocopter EC155 – Operating Information



Photograph courtesy of Eurocopter

6.1 Leading Particulars

Overall Length	14.3m (= D)
Maximum All Up Weight	4800kgs (t = 4.8)
Maximum Passengers	12
Refuelling Method	Gravity and pressure
Fuel Type	Jet A-1
Maximum Fuel Load	993kgs – standard tanks
Undercarriage	Tricycle
Rotor Startup and Shutdown	Consult with helicopter operator or flight crew to obtain maximum windspeed for rotor startup and shutdown

Approach Sectors, Emergency Exits and
Loading Charts Currently Unavailable

7 Eurocopter EC225 – Operating Information



Photograph courtesy of Eurocopter

7.1 Leading Particulars

Overall Length	19.5m (= 'D')
Maximum All Up Weight	10,400kgs (t = 10.4)
Maximum Passengers	19
Refuelling Method	Gravity and pressure
Fuel Type	Jet A-1
Maximum Fuel Load	1595kgs – standard tanks
Undercarriage	Tricycle
Rotor Startup and Shutdown	Consult with helicopter operator or flight crew to obtain maximum windspeed for rotor startup and shutdown

Approach Sectors, Emergency Exits and
Loading Charts currently unavailable

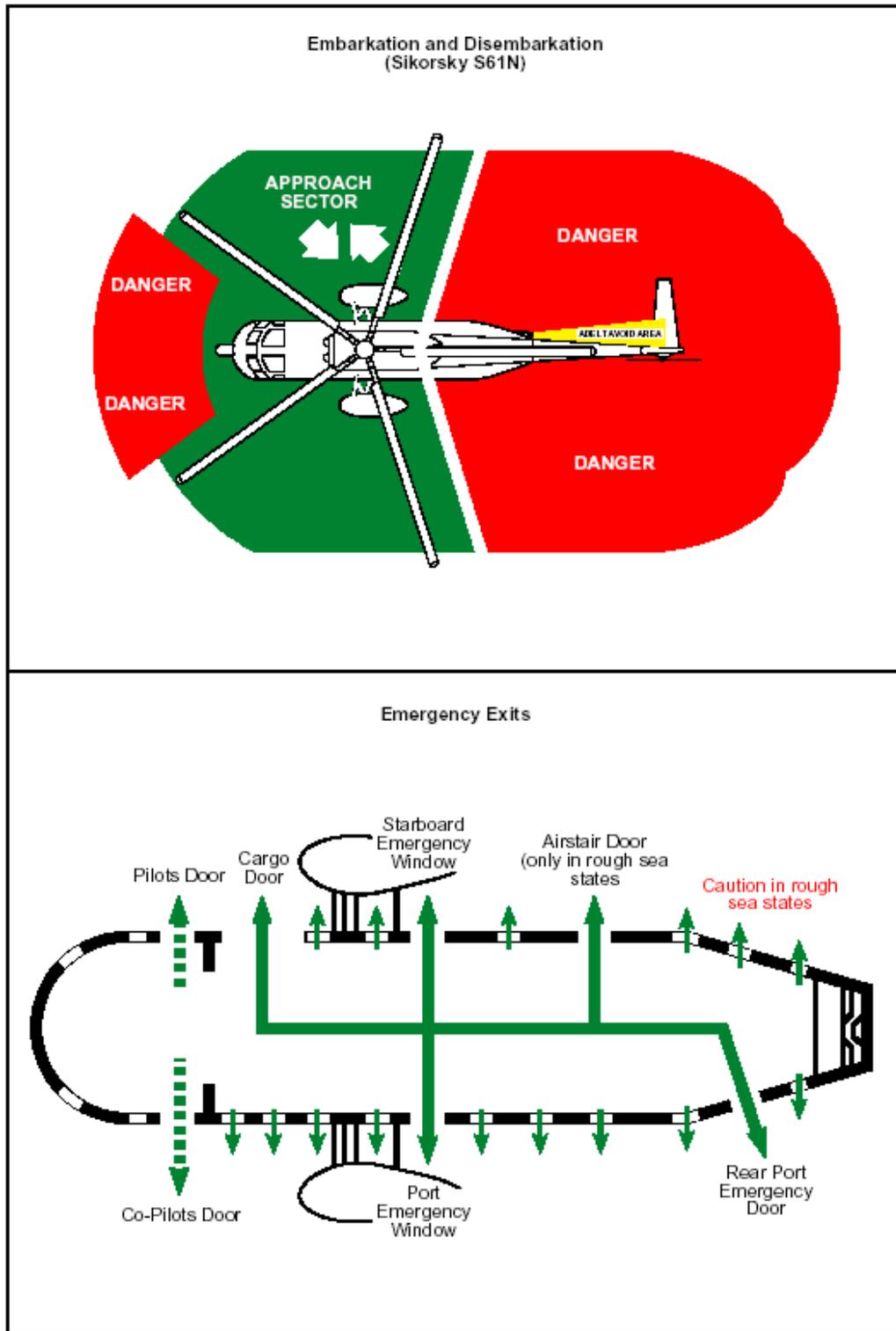
8 Sikorsky S61N – Operating Information



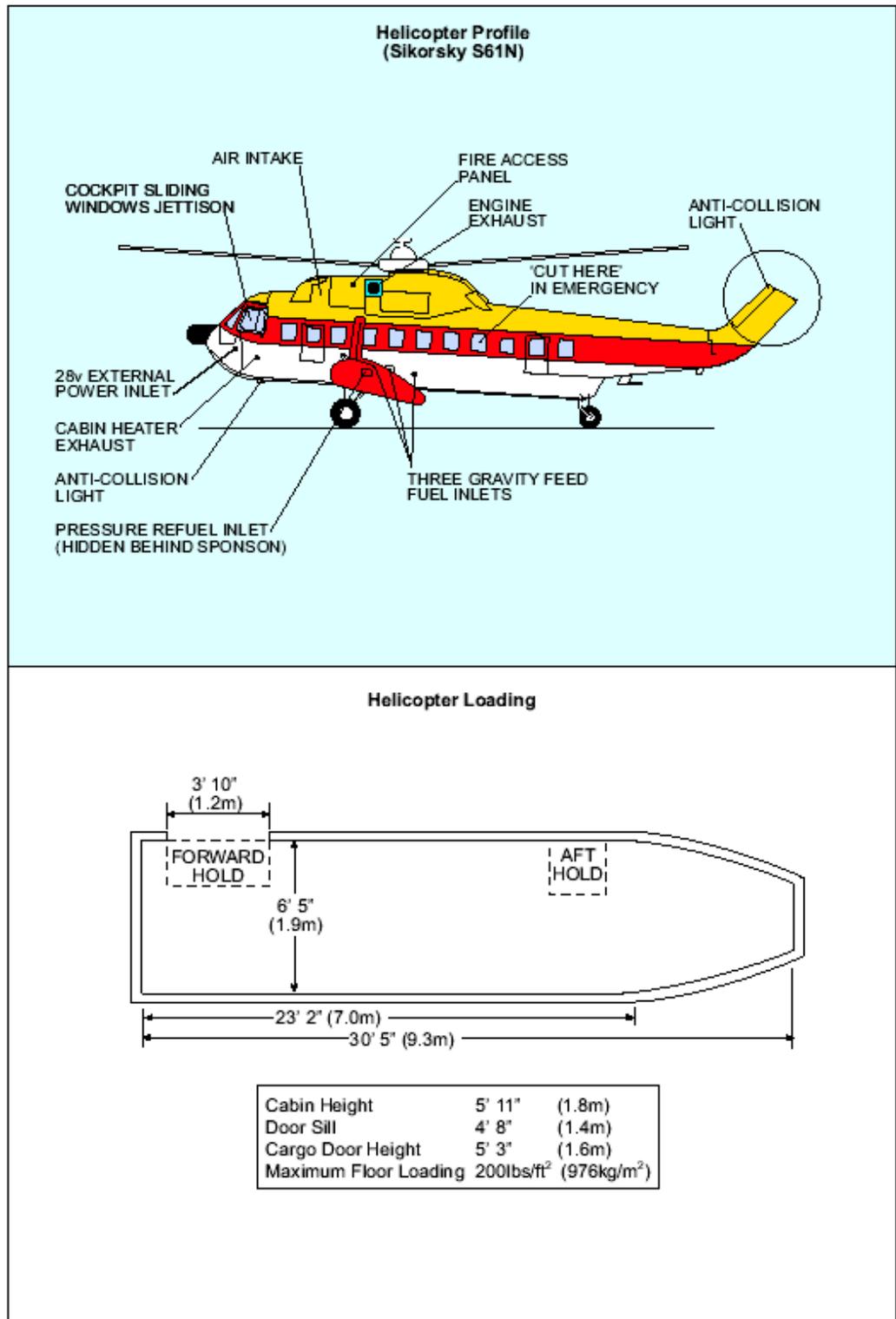
Photograph courtesy Bristow Helicopters

8.1 Leading Particulars

Overall Length	22.2m (= D)
Maximum All Up Weight	9298kgs (t = 9.3)
Maximum Passengers	19
Refuelling Method	Gravity and pressure
Fuel Type	Jet A-1
Maximum Fuel Load	4250 lbs (1928kg)
Undercarriage	Tailwheel
Rotor Startup and Shutdown	Consult with helicopter operator or flight crew to obtain maximum windspeed for rotor startup and shutdown



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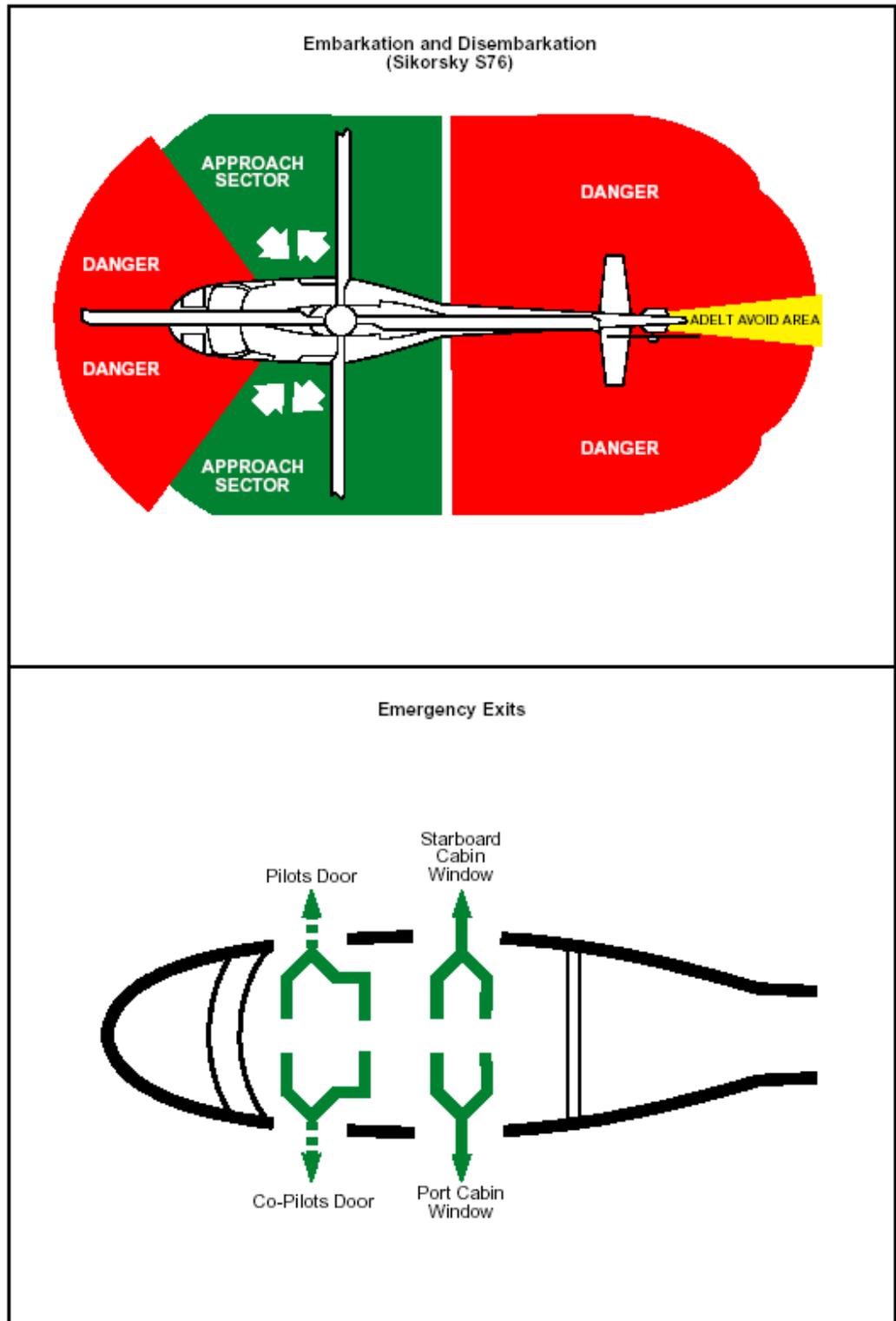
9 Sikorsky S76 – Operating Information



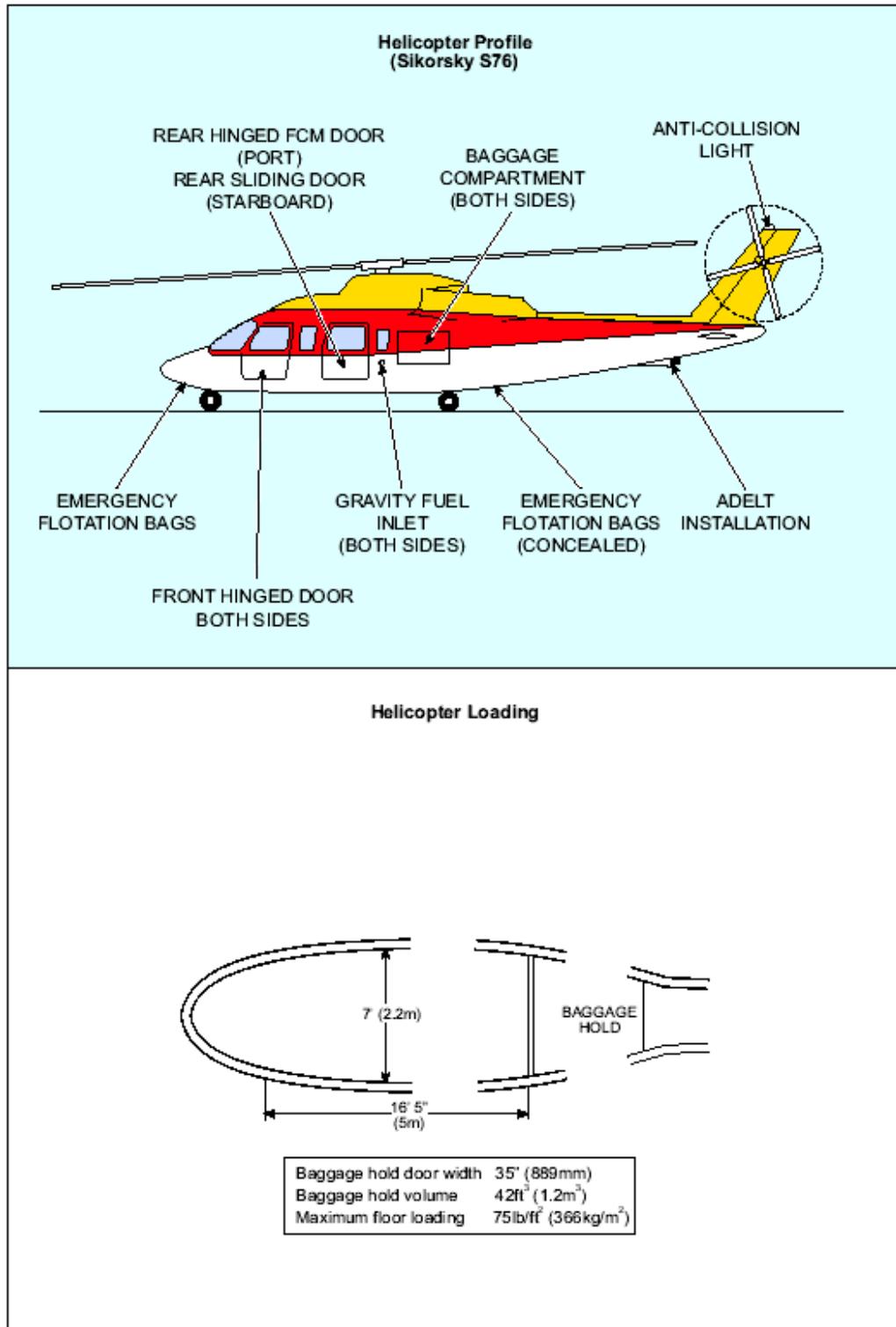
S76 A – Photograph courtesy Bristow Helicopters

9.1 Leading Particulars

	A+
Overall Length	16m (= D)
Maximum All Up Weight	5307kg (t = 5.3)
Maximum Passengers	12
Refuelling Method	Gravity only
Fuel Type	Jet A-1
Maximum Fuel Load	1850 lbs (839kg)
Undercarriage	Tricycle
Rotor Startup and Shutdown	Consult with helicopter operator or flight crew to obtain maximum windspeed for rotor startup and shutdown



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