Safety Regulation Group

Civil Aviation Authority

CAP 612

Police Air Operations Manual

Part One

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Revision History

Amendment 1/2005 **November 2005**

The Foreword has been reissued with new page numbers to avoid reissuing it each time as the number of pages within the Revision History grow.

A new Chapter 11 has been incorporated into Section 5 to introduce Night Vision Imaging Systems.

Issue 3 **November 2010**

A Glossary has been added.

The Tables have been numbered consecutively within each Section.

CAP 612 has generally been updated to simplify it, reduce duplication with other documents and harmonise it with current legislation (particularly changing from BCARs to EU-OPS/ JAR-OPS 3). The main changes as a result of this are:

- Section 2, Chapters 6 and 7 have been re-written to reflect revised aeroplane performance requirements and to refer to Performance Classes rather than Performance Groups.
- Section 2, Chapter 8 has been re-written to harmonise with CAP 789.
- Section 2, Chapter 14 (Alternate Aerodromes and Heliports) has been deleted.
- Section 2, Appendix E (Congested Area Landing Site Record Sheet) has been added.
- Section 3, Appendices B to H (summaries of performance limits) have been deleted.
- Part D, Appendix D (Example NOTECHs Marking Format) has been added.

Editorial changes, corrections and amendments convenient to be included at this time have also been incorporated.

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Glossary

AAIB	Air Accidents Investigation Branch
ACC	Area Control Centre
ACPO	Association of Chief Police Officers
ADF	Automatic Direction Finding
AEO	All-Engines-Operative
AFFF	Aqueous Film Forming Foam
AFM	Aircraft Flight Manual
AFTN	Aeronautical Fixed Telecommunications Network
AGL	Above Ground Level
AI	Attitude Indicator
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AMSL	Above Mean Sea Level
ANO	Air Navigation Order
AO	Aircraft Operator
AOC	Air Operator's Certificate
AOM	Aerodrome Operating Minima
AOU	Air Operations Unit
APS	Aircraft Prepared for Service
ARCC	Aeronautical Rescue Co-ordination Centre
ASDA	Accelerate-Stop Distance Available
ATC	Air Traffic Control
ATS	Air Traffic Services
ATSU	Air Traffic Services Unit
C of G	Centre of Gravity
CANP	Civil Aircraft Notification Procedures
CAS	Controlled Airspace
CASEVAC	Casualty Evacuation
CAT	Commercial Air Transport
CHG	Change
CRM	Crew Resource Management
CRMI	Crew Resource Management Instructor

CRMIE	Crew Resource Management Instructor Examiner
CTA	Control Area
CTR	Control Zone
DA	Decision Altitude
DAAIS	Danger Area Activity Information Service
DEP	Departure
DH	Decision Height
DLA	Delay
DME	Distance Measuring Equipment
DOF	Date Of Flight
DP	Duty Period
E & S	Emergency and Safety Equipment
EASA	European Aviation Safety Agency
ECA	Emergency Controlling Authority
EFB	Electronic Flight Bag
ELT	Emergency Locator Transmitter
ELT(S)	Survival Emergency Locator Transmitter
EOBT	Estimated Off Block Time
ETA	Estimated Time of Arrival
FATO	Final Approach and Take-Off Area
FCR	Force Control Room
FD	Flight Director
FDP	Flying Duty Period
FFFP	Film Forming Fluoroprotein
FIR	Flight Information Region
FLIR	Forward-Looking Infra-Red
FOD	Foreign Object Damage
FODCOM	Flight Operations Division Communication
FOI	Flight Operations Inspector
FPL	Flight Plan
FRC	Flight Reference Card
FSI	Flying Staff Instruction
FSO	Flight Safety Officer
FSTD	Flight Simulation Training Device
FTL	Flight Time Limitations

FTO	Flying Training Organisation
GPS	Global Positioning System
HEMS	Helicopter Emergency Medical Service
IAS	Indicated Airspeed
ICAO	International Civil Aviation Organization
IF	Instrument Flight
IFPS	Initial Flight Plan Processing System
IFR	Instrument Flight Rules
IGE	Inside Ground Effect
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
IR	Instrument Rating
ISA	International Standard Atmosphere
LASORS	Licensing, Administration and Standardisation Operating Requirements and Safety
LDA	Landing Distance Available
LDR	Landing Distance Required
LFBC	Low Flying Booking Cell
LPC	Licence Proficiency Check
LST	Licence Skill Test
LTC	Line Training Captain
MAP	Missed Approach Point
MAPSC	Maximum Approved Passenger Seating Configuration
MCC	Multi-Crew Co-ordination
MCTOM	Maximum Certificated Take-Off Mass
MDA	Minimum Descent Altitude
MDH	Minimum Descent Height
MEL	Minimum Equipment List
METAR	MET Actual Report
MLS	Microwave Landing System
MSA	Minimum Safe Altitude
MSL	Mean Sea Level
MTWA	Maximum Take-Off Weight Authorised
NDB	Non-Directional Beacon
NM	Nautical Mile
NOTAM	Notice to Airmen

NOTECHs	Non-Technical Skills
NSU	Nominated Service Unit
NVGs	Night Vision Goggles
NVIS	Night Vision Imaging Systems
OAT	Outside Air Temperature
OCH	Obstacle Clearance Height
OCL	Obstacle Clearance Limit
OEI	One-Engine-Inoperative
OGE	Outside Ground Effect
OPC	Operator Proficiency Check
OTO	Observer Training Officer
PA	Public Address
PAOC	Police Air Operator's Certificate
PAOM	Police Air Operations Manual
PAOU	Police Air Operations Unit
PAR	Precision Approach Radar
PC1	Performance Class 1
PC2	Performance Class 2
PC3	Performance Class 3
PFD	Primary Flight Display
PIC	Pilot In Command
POB	People On Board
POH	Pilot's Operating Handbook
RADALT	Radio Altimeter
RCC	Rescue Co-ordination Centre
RFFS	Rescue and Fire-Fighting Services
RTF	Radiotelephony
RVR	Runway Visual Range
SAR	Search And Rescue
SAS	Stability Augmentation System
SDR	Standard Departure Route
SFN	Special Flight Number
SOP	Standard Operating Procedure
SRP	Sector Record Page
SSR	Secondary Surveillance Radar

TAF	Aerodrome Weather Forecast
TAS	True Airspeed
TDA	Temporary Danger Area
TDP	Take-Off Decision Point
TODA	Take-Off Distance Available
TODR	Take-Off Distance Required
TORA	Take-Off Run Available
TRE	Type Rating Examiner
TRI	Type Rating Instructor
TRTO	Type Rating Training Organisation
UEO	Unit Executive Officer
UKLFS	UK Low Flying System
UTC	Co-ordinated Universal Time
VCF	Visual Contact Flight
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
VOR	VHF Omni-directional Range
VTOL	Vertical Take-Off and Landing
WAT	Weight, Altitude, Temperature

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Foreword

1 Status

1.1 CAP 612 (Police Air Operations' Manual (PAOM) Part 1)) sets out joint CAA/Home Office policy for the conduct of police air operations. It is intended to ensure a safe and effective national standard of operation in accordance with the concept of the Police Air Operator's Certificate (PAOC). It is a CAA-approved publication and can only be amended by CAA action. These rules represent the minimum acceptable standard, but individual circumstances may require PAOC holders to apply higher minima.

1.2 Applicants for a PAOC are required to produce a PAOM Part 2 that embraces information peculiar to that operator, to a standard that is acceptable to the CAA. CAP 613, the companion publication to CAP 612, gives guidance on the compilation of the PAOM Part 2.

1.3 The practices, procedures and limitations set out in the two parts of the PAOM, taken together, lay down minimum standards that shall be considered mandatory on all operating staff, except where the text is clearly advisory, permissive or purely informative. The editorial practice followed in the PAOM uses 'shall' or 'must' as the form of the operative verb when mandatory action is required and either 'should', 'may', or 'is' where the context is advisory, permissive, or descriptive.

1.4 The PAOM contains the information that will be necessary to enable the PAOC holder's operating staff to perform their duties safely.

2 Amendment Policy

2.1 A PAOC holder may forward proposals for change to the PAOM Part 1 via his assigned Flight Operations Inspector (FOI). The CAA will consult the Home Office prior to issuing any amendment.

2.2 A PAOC holder may initiate amendments to the PAOM Part 2. A copy of each such amendment shall be forwarded to the assigned FOI, either before or immediately after it comes into effect, for consideration, acceptance and incorporation into the CAA copy of the manual.

3 Gender

3.1 References to the masculine gender used for convenience in this document apply equally to the feminine gender, where appropriate.

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Section 1 Administration

Chapter 1 Basic Concepts

1 PAOM – Additional Documents

1.1 The following shall be considered part of the PAOM:

a) Aircraft Flight Manual (AFM);

b) Aircraft check lists;

c) Flying Staff Instructions (FSIs); and

d) Jeppesen, Bottlang, Aerad, Pooley's Flight Guide or any other flight guide specified by the operator in the PAOM Part 2.

2 Control, Issue and Update of the Manual

2.1 The PAOC holder shall establish a procedure for the control, issue and update of the PAOM.

2.2 The operator shall ensure that:

a) all nominated PAOM holders receive amendments when issued, in accordance with the distribution list contained in the PAOM Part 2;

b) each change shall be recorded by reference to a numbered amendment list, on a page set aside for that purpose in the PAOM Part 1 or Part 2, as appropriate;

c) the amendments shall:

i) carry an amendment number and date;

ii) be printed in context, with new information being sidelined. Manuscript amendment shall not be acceptable;

iii) accompany an amendment instruction which shall be retained behind the page on which amendments are listed as incorporated;

d) obsolete pages are destroyed;

e) each member of the operator's operating staff has access to those parts of the PAOM applicable to his duties; and

f) the documents and publications shown at Section 1 Appendix A are kept up-to-date.

A statement on PAOM amendment policy may be found in the Foreword.

3 Area of Operations

3.1 The area of operations shall be defined within the PAOM Part 2. For helicopters it will normally be AOC Region AA, which comprises the following areas:

The United Kingdom of Great Britain and Northern Ireland, including the Isle of Man, the Isle of Wight, the Hebrides, the Shetlands, the Orkneys, Isles of Scilly and any point not more than 12 NM from the high water Spring Tide line at the aforementioned land masses.

Figure 1.1 AOC Regions AA and BB (approximately)

3.2 For aeroplanes the area of operations shall normally be Region BB, an area enclosed by rhumb lines joining successively the following points:

61°00N 12°30W

61°00N 04°00E

53°00N 07°00E

48°00N 07°00E

48°00N 12°30W

61°00N 12°30W

3.3 AOC areas other than AOC Regions AA or BB may be proposed to the CAA. If accepted an alternative area shall be shown in the PAOM Part 2, under the heading 'PAOC Area of Operations'.

3.4 A map of the local area of operations is to be included in the PAOM Part 2.

4 Types of Operation

4.1 PAOC

A flight on which any person other than flight crew is carried, or a flight for the purpose of carrying cargo, or aerial work, shall be carried out in accordance with the conditions of the PAOM.

4.2 Helicopter Emergency Medical Service

See Section 5 Chapter 2.

4.3 Aerial Work

Pilot-only crew training, or aircraft testing in which engines are retarded from the normal flight position, are considered to be flights for the purpose of aerial work.

4.4 Air Tests, Trials and Proving Flights

Operators may depart from compliance with this manual for certain flights such as air tests, flights involving trials of equipment or proving flights for new techniques and procedures. The nature and purpose of any such flight shall be discussed with the CAA Flight Operations Inspectorate and the necessary clearances and authorisations shall be obtained.

Only the flight crew and engineering staff immediately involved with the purpose of the flight shall be carried on such flights, except that CAA-agreed passengers (defined in paragraph 6.3) may be carried on a flight where the engines are retarded no further than is necessary to demonstrate the required power assurance/trend.

4.5 One-Engine-Inoperative Ferry Flights – Helicopters

A one-engine-inoperative ferry flight in a multi-engined helicopter should only be considered under the most exceptional circumstances.

A one-engine-inoperative ferry flight is not permitted unless the limitations, performance and operational procedures are specified in the helicopter's AFM and the instructions pertaining to such a flight are included in the PAOM Part 2.

5 Participation in Exhibitions of Flying

5.1 No aircraft shall participate in an exhibition of flying unless the commander is able to comply with the requirements of the Air Navigation Order (ANO) 2009 Article 162 and has obtained the appropriate display authorisation from the CAA. A flypast at an exhibition of flying is considered to be participation. Attendance in a static display on the ground or carrying out a flight for the purpose of carrying passengers to or from the display is not considered to be participation.

6 Definitions

6.1 Flight Crew

The ANO defines flight crew as follows:

'Flight Crew' in relation to an aircraft means those members of the crew of the aircraft who respectively undertake to act as pilot, flight navigator, flight engineer and flight radio telephony operator of the aircraft.

All other persons on board the aircraft, including the police observer, are regarded as passengers.

6.2 Operating Staff

Operating staff are those individuals employed by the operator in connection with the conduct of a flight, whether or not as members of the flight crew. The definition includes an operator who himself performs these functions.

6.3 **CAA-Agreed Passenger**

Operations to the full extent of PAOC flexibility are restricted to those occasions wherein any passenger has been drawn from one of the following categories (referred to in the ANO as 'permitted passengers'). Such passengers shall be known as 'CAA-agreed passengers':

a) Police Officer;

b) employee of a police authority in the course of his duty;

c) medical attendant;

d) holder of a current pilot's licence who intends to act as a member of the flight crew of an aircraft flying under and in accordance with the terms of a PAOC and who is being carried for the purpose of training and familiarisation;

e) CAA Flight Operations Inspector (FOI);

f) Home Office Police Aviation Adviser;

g) employee of a fire and rescue authority under the Fire and Rescue Services Act 2004 in the course of his duty;

h) officer of revenue and customs on a joint Police/Customs operation;

i) employee of the Ministry of Defence in the course of his duty; or

j) such other person being carried for purposes connected with police operations as may be permitted in writing by the CAA.

7 Carriage of CAA Flight Operations Inspectors

7.1 The aircraft commander shall make appropriate arrangements to carry, upon request, a person known to be a CAA FOI except when, in his opinion, such carriage would adversely affect the safety or operational effectiveness of the flight.

8 Authority of Aircraft Commander

8.1 Every person in an aircraft registered in the United Kingdom shall obey all lawful commands which the aircraft commander may give for the purpose of securing the safety of the aircraft and of persons or property carried therein, or the safety, efficiency or regularity of air navigation.

9 Endangering the Safety of an Aircraft

9.1 A person shall not recklessly or negligently act in a manner likely to endanger an aircraft, or any person therein.

10 Endangering the Safety of any Person or Property

10.1 A person shall not recklessly or negligently cause or permit an aircraft to endanger any person or property.

11 Accommodation

11.1 Office space at each operating base shall be sufficient to provide a suitable working environment for the operating staff. Adequate provision shall be made for operational planning, for the storage and display of essential records and for flight planning by flight crews. If flight planning facilities for flight crews are provided by the airport authority, the space provided by the operator may be reduced but it is essential that reasonable accommodation shall be made available for flight crews to use before and between flights. The siting of the office accommodation for the unit staff and the hangarage for the aircraft shall ensure safe operation of the aircraft, particularly when moving the aircraft between the hangar and the parking position. The aircraft parking position shall be free of flight safety hazards.

12 Flight Planning and Operations Library

12.1 A Flight Planning and Operations Library shall be established at the main operating base, considered to be the place from which PAOC operations are normally mounted, which may not necessarily be co-located with the main administrative base of a commercial company which holds a PAOC. An aircraft commander operating from a site detached from the unit's main operating base shall satisfy himself before flight that he has access to all the relevant information that would be available in the Flight Planning and Operations Library.

12.2 The library, which where available may be accessed electronically, shall comprise the following:

a) PAOM;

b) AFM;

c) UK map coverage with aviation overprint:

i) 1:500,000 scale;

ii) 1:250,000 scale;

d) UK ordnance survey 1:50.000 coverage of the local force operating area as set out in the PAOM Part 2, with a powerline overprint;

e) for Visual Flight Rules (VFR) operations, (for example) Bottlang, Pooley's Flight Guide or RAF En-Route Supplement;

f) for Instrument Flight Rules (IFR) operations, (for example) Jeppesen or Aerad coverage of the unit's PAOC operating area;

g) UK Aeronautical Information Publication (AIP);

h) CAP 371, CAP 382, CAP 393, CAP 789;

j) current NOTAMs;

k) Aeronautical Information Circulars (AICs);

l) Flight Operations Division Communications;

m) spare copies of all documents required to be carried in aircraft;

n) unit directory of police and hospital landing sites; and

o) pro formae:

i) Mandatory Occurrence Report;

ii) Bird-strike Report;

iii) Airprox Report;

iv) General and Crew Customs Declaration;

v) Aircraft Commander's Voyage Report;

vi) Commander's Flight Time Limitations (FTL) Discretion Report; and

vii) Air Traffic Control (ATC) flight plan form.

12.3 The following shall be displayed in the Flight Planning area:

a) topographical air chart of the local area displaying local flying restrictions;

b) current NOTAMs relevant to the unit's operations;

c) local area weather as METARs and TAFs;

d) performance calculations as specified in the PAOM Part 2; and

e) the inventory of dangerous goods/weapons/munitions as loaded on any standby aircraft.

12.4 Prior to take-off from the main operating base, provision shall be made for observing and recording local weather conditions including cloud base and visibility (e.g. cloud base recorder or automatic met station).

Chapter 2 PAOC Holder's Organisation

1 Chain of Responsibility

1.1 A PAOC holder shall organise resources into a Police Air Operations Unit (PAOU). Where a PAOC holder operates on behalf of more than one police authority, each PAOU shall be organised autonomously. The following posts within a unit organisation have been identified as appropriate for control and discipline.

Case A – Police Force as Operator

	Function	Level of Management
a)	Unit management, discipline, operations and PAOC management	Police officer or civilian in charge of the unit. For the purposes of the PAOM, he shall be known as the Unit Executive Officer (UEO).
b)	Aviation management	Chief Pilot.
c)	Engineering management	Person Responsible for Continued Airworthiness.

Case B – Commercial Company as Operator

	Function	Level of Management
a)	Unit management, discipline of police staff and operations	As for Case A.
b)	Aviation management	Company management – a Chief Pilot shall be appointed at each Air Operations Unit (AOU).
c)	Pilot/Engineer discipline	Company management Chief Pilot.
d)	Engineering management	Person Responsible for Continued Airworthiness.

2 Management Organisation

2.1 Two simplified management organisations are illustrated at Appendix B. Operators shall set out their specific organisation in the PAOM Part 2, with an individual nominated to each declared post. No one individual shall hold more than one of the declared posts of Unit Executive Officer, Chief Pilot and Person Responsible for Continued Airworthiness.

2.2 Although the CAA may accept an organisation that differs from the examples given in Appendix B, the operator shall ensure that the responsibilities described in Chapter 3 paragraphs 3 to 7 are wholly embraced within the responsibilities of managers in the organisation.

3 Nominated Individuals

3.1 Appointments that constitute the PAOC holder's management organisation shall be shown in the PAOM Part 2 under the heading 'Nominated Individuals'. Where the terms of reference are identical to those listed in Chapter 3 it will be acceptable to cross-refer to them as such. For example:

'Unit Executive Officer (UEO)' – as given in the PAOM Part 1, Section 1 Chapter 3 paragraph 3.

Where the terms of reference differ, they shall be stated in full in the PAOM Part 2.

Chapter 3 Appointments and Responsibilities

1 Operator

1.1 The operator of an aircraft is generally deemed to be the person who at the relevant time has the management of that aircraft.

2 Chief Constable

2.1 Where a police force is the aircraft operator, the Chief Constable, who is ultimately responsible for the management of that force, shall be the most senior appointment within the AOU management organisation.

2.2 Where more than one force combine to hold a PAOC, one Chief Constable shall be nominated to hold the most senior appointment within the management organisation. It is acceptable for each of a number of Chief Constables to hold this appointment in turn, provided changes are notified in writing to the CAA at least 14 days prior to the intended change.

2.3 The Chief Constable shall determine the policy to be adopted by the unit to ensure the maintenance of PAOC standards. However, the responsibility for day to day operations and administration of the unit may be delegated to others, as flying is a specialised field of activity where responsibilities are best balanced between police control and the operating expertise of professional aviation specialists.

3 The Unit Executive Officer

3.1 A UEO shall be appointed by the Chief Constable to exercise full-time day to day control of the AOU or consortium. It is vital that the individual holds supervisory rank in the police force, typically inspector or sergeant, or has equivalent appropriate civilian experience. A qualified deputy of supervisory rank shall be established to cover the UEO's absences.

3.2 In order to fulfil this task, the UEO should be able to rely on the support of the Chief Constable to place safety first and foremost in the Unit's operational concept.

3.3 Before taking up their appointments the UEO and his deputy shall have successfully completed a recognised Home Office/ACPO/CAA UEOs training course. Any individual who completes the UEO course and is not appointed to the position of UEO or deputy within three years shall undertake another course.

3.4 The duties and responsibilities of the UEO shall be as follows:

a) to ensure that all unit flying operations are conducted in accordance with PAOM Part 1 and Part 2 requirements, procedures and instructions;

b) to supervise unit discipline and conduct;

c) to ensure that all unit documentation is amended up-to-date. Such documentation shall include the PAOM, aircraft and equipment licences and certificates, crew licences and any special permissions or exemptions;

d) to provide any information that would enable the Chief Pilot to issue FSIs;

e) to preserve all records and documentation, as required by the PAOM and ANO, such as duty hours, navigation logs and load sheets;

f) to roster police observers and medical attendants, where carried;

g) to liaise with potential users to ensure correct planning of unit operational tasks;

h) to ensure that flight crews have access to all the information that may be required for the safe and correct conduct of a flight and are briefed as such;

i) to ensure that the unit operations library is kept up-to-date (this responsibility shall include all maps, charts and flight guides, operations manuals and other documents that are needed either for planning purposes or carriage in flight);

j) to make available a flight crew briefing service that gives access to NOTAMS, AICs, AIP, the Air Navigation Order and the Regulations, and information on the weather;

k) to provide a flight planning area where crews may prepare maps and charts, and file flight plans if required;

l) to provide passenger and cargo handling facilities, located separately from the flight planning area;

m) to keep up-to-date the unit diary of future tasking;

n) to allocate tasking;

o) to ensure that all passenger and cargo manifests are properly prepared;

p) to ensure that police observers are trained and tested in accordance with national guidelines;

q) to sign the operator's certificate on the training forms as required in Part D, unless this duty has been allocated to another of the individuals nominated in the management organisation; and

r) to ensure the continuing airworthiness of the Unit's aircraft. .

NOTES: 1 When an aircraft is operating from a location other than its main operating base, it is the responsibility of the aircraft commander to ensure that the responsibilities otherwise applicable to the UEO are discharged.

2 The UEO may, with the exception of items a) and b), delegate such of these duties as he sees fit to persons capable of undertaking them, provided that written instructions on how to undertake those duties have been given to the persons concerned.

3 Where a commercial operator holds the PAOC the following responsibilities shall be transferred to the Chief Pilot:
a), b), e), g), h), i), j), k), l), o), p), q) and r).
This list of responsibilities may be altered with the agreement, in writing, of the commercial operator and the CAA.

4 The Chief Pilot

4.1 The Chief Pilot shall be responsible to the UEO or senior company manager for the following:

a) the safe, efficient and effective utilisation of the unit's aircraft, consistent with the procedures, regulations and limitations laid down in the PAOM;

b) keeping the PAOM up-to-date;

NOTE: Guidance on the Chief Pilot's powers in respect of PAOM amendment action is given in the Foreword.

c) * producing a Minimum Equipment List (MEL) for each aircraft type operated which, when agreed by the CAA, shall form part of the PAOM Part 2;

d) * issuing procedures in the PAOM Part 2, for an aircraft commander to check the serviceability of radio and navigation equipment and flight instruments, as appropriate for the type of flight to be undertaken;

e) * ensuring that all unit flight crew licences, medical certificates and the training requirements in Part D of this document are kept up-to-date;

f) * ensuring that the contents of all training checks reflect the training requirements set out in Part D of this document;

g) * issuing FSIs;

h) ensuring that the tasks allotted to a pilot are commensurate with his training, experience level and ability;

i) rostering pilots in accordance with their abilities and in compliance with the operators' approved FTL Scheme;

j) vetting commanders' FTL discretion reports; and

k) periodic vetting of post-flight documentation.

NOTE: Where the PAOC holder's organisation comprises a group headquarters and other detached units, the responsibilities marked with an asterisk (*) may be undertaken by the Group Chief Pilot.

5 Training Staff

5.1 The minimum qualifications and responsibilities of the training staff, including the Chief Training Captain, Training Captains, Line Training Captains and Crew Resource Management Instructors (CRMIs), are set out in Part D.

6 Flight Safety Officer

6.1 The Flight Safety Officer (FSO) shall be responsible to the Chief Pilot for:

a) the timely identification of practices or trends which threaten flight safety;

b) the timely processing of airprox, occurrence and bird-strike reports;

c) providing and distributing suitable literature to enhance awareness of flight safety within the unit;

d) ensuring that any accident is reported in accordance with the requirements of the ANO, and Section 1 Chapter 5 of this manual;

e) circulating within the operator's organisation the reports of incident and accident investigations; and

f) periodically checking aircraft emergency equipment for serviceability and correct scale.

7 Person Responsible for Continued Airworthiness

7.1 The operator shall employ or contract a person whose responsibility it is to ensure that all maintenance is carried out on time to a standard that satisfies the operator's airworthiness responsibilities. This person may be the Chief Engineer (person

responsible for continued airworthiness) of the approved maintenance organisation or the Chief Engineer of the police force's own maintenance unit or an engineer employed to manage the operator's maintenance.

The person responsible for continued airworthiness is regarded as one of the key personnel and shall be nominated in the operator's organisation listed in the PAOM Part 2.

7.2 **Terms of Reference**

The person responsible for continued airworthiness shall be responsible to the UEO or company management, as appropriate, for:

a) ensuring that unit aircraft are maintained and inspected in accordance with the applicable approved maintenance schedule, good engineering practices and any special requirements of the CAA, as they arise;

b) providing a timely and effective response to any notified unserviceability or role change requirement;

c) ensuring that adequate maintenance facilities are provided for all unit aircraft, in the form of hangarage, tooling, test equipment, ground support equipment and technical manuals;

d) maintaining aircraft records;

e) controlling and promulgating Aircraft Prepared for Service (APS) weights and centre of gravity indices;

f) ensuring that adequate spares are available;

g) providing a stores system and environment conducive to parts serviceability, airworthiness requirements and to the timely location and issue of required parts;

h) obtaining and retaining necessary CAA engineering organisation approval;

i) ensuring that all licensed engineering staff keep their licences current and valid;

j) obtaining CAA approval for aircraft modifications requested by the unit;

k) reviewing all Manufacturer's Service Bulletins/Information, Airworthiness Directives and other maintenance requirements that are published by appropriate authorities: advising the operator upon the applicability of such information for aircraft modification;

l) arranging for unit pilots to be trained and tested in the performance of daily and other relevant aircraft checks, including the removal and replacement of role equipment as required; and

m) ensuring that fuel purchase, storage and dispensing procedures provide fuel at the correct specification and quality.

8 Pilot Qualifications

8.1 The minimum qualification for a pilot shall be a Commercial Pilot's Licence (Helicopter) or Commercial Pilot's Licence (Aeroplane), as appropriate, which includes a rating on the type to be flown.

8.2 The age limitations for acting as aircraft commander, or co-pilot, shall be as set out in Schedule 7 of the ANO 2009.

8.3 The operator shall stipulate, in the PAOM Part 2, the minimum levels of experience acceptable for the employment of a line pilot.

9 Multi-Type Operations

9.1 The PAOC holder shall ensure that a pilot does not operate on more than one type or variant, unless the pilot is competent to do so.

9.2 Aeroplanes

9.2.1 A pilot shall not operate more than:

a) three piston-engined aeroplane types or variants; or

b) three turbo-propellor aeroplane types or variants; or

c) one turbo-propeller aeroplane type or variant and one piston-engined aeroplane type or variant; or

d) one turbo-propeller aeroplane type or variant and any aeroplane within a particular class.

9.3 Helicopters

9.3.1 PAOC holders of more than one helicopter variant or type should provide the following information in the PAOM Part 2:

a) pilot minimum experience level;

b) the process whereby a pilot qualified on one type or variant will be trained and qualified on another type or variant; and

c) any additional recency requirements that may be required.

9.3.2 If a pilot operates more than one type or variant the following provisions should be satisfied:

a) the recency requirements should be met and confirmed prior to operations on any type, and the minimum number of flights on each type within a three month period specified in the PAOM Part 2;

b) recurrent training requirements;

c) proficiency check requirements; and

d) for helicopters with a Maximum Certificated Take-Off Mass (MCTOM) exceeding 5,700 kg, or with a Maximum Approved Passenger Seating Configuration (MAPSC) of more than 19:

i) the pilot should not fly more than two helicopter types;

ii) a minimum of three months' and 150 hours' experience on the type or variant should be achieved before the pilot should commence the conversion course onto the new type or variant;

iii) a minimum of 28 days and 50 hours flying should then be achieved exclusively on the new type or variant; and

iv) a pilot should not be rostered to fly more than one type or significantly different variant of a type during a single Duty Period (DP).

9.3.3 In the case of all other helicopters, a pilot should not operate more than three helicopter types or significantly different variants.

9.4 Combination of Helicopter and Aeroplane

9.4.1 A pilot may fly one helicopter type or variant and one aeroplane type.

9.4.2 If the helicopter type is covered by paragraph 9.3.2 d) then paragraphs 9.3.2 d) ii), 9.3.2 d) iii) and 9.3.2 d) iv) should also apply in this case.

10 Pilots' Licences and Qualifications – All Pilots

Although it is the responsibility of the Chief Pilot to ensure that a pilot is qualified, current and has completed all unit requirements before undertaking a flight, each pilot is responsible for ascertaining that his licences, ratings and qualifications are in date. A pilot shall keep the Chief Pilot advised as to his training requirements, allowing sufficient time for these to be carried out in order that qualifications shall not lapse.

Chapter 4 Use of Independent Pilots

1 Before an independent pilot is employed on PAOC operations the Chief Pilot shall ensure that his qualifications and documentation are in order. Prior to commencing operations at a unit, an independent pilot (or 'floater') shall receive a familiarisation on the aircraft to be flown with specific attention being paid to items such as the instrument/nav/radio layouts, including their power systems and controls; the autopilot and its use and the operating area. If a pilot is operating by night at a PAOU new to him, he shall first undertake a flight by day at the unit. UEOs should ensure that appropriate instructions for this are contained in the PAOM Part 2.

2 The following items shall be examined:

a) Pilot's licence — signed, in date, specifying in Part 1 the type to be flown, a current Licence Proficiency Check (LPC) and containing a current instrument rating where appropriate.

b) Medical certificate — signed, in date and with no unacceptable limitations.

c) Duty hours record — made up for the previous 28 days and showing the pilot to be within the limits of the Operator's FTL Scheme.

d) Pilot's log book — complete and up-to-date.

e) Unit checks — completed, signed up and in date as follows:

i) Operator’s Proficiency Check (OPC). (Visual Meteorological Conditions (VMC) / Instrument Meteorological Conditions (IMC));

ii) Line Check;

iii) area competency check;

iv) emergency and survival procedures check including three-year items; and

v) interim Instrument Flight (IF) recency if required.

NOTE: These unit checks may have been conducted by another operator provided that a reciprocal training agreement is in place and that the other operator is identified in the PAOM Part 2.

3 To assist in the assessment of a floater pilot’s validity the following form may be used in lieu of production of original paper records. This does not absolve the UEO of his responsibilities as detailed in Chapter 3.

Particular attention should be paid to the total number of aircraft types or variants that a flight crew member may fly, which should not exceed the requirements prescribed in the PAOM Part 1, Section 1, Chapter 3 including when his services are engaged by another operator.

FLOATER PILOT CURRENCY DETAILS			
Name			
Licence No.		**Type**	
Expiry Date		**Medical Expiry Date**	
LPC (VFR) expiry		**LPC (IFR) expiry**	
VMC OPC expiry		**IMC OPC expiry**	
Line Check expiry		**Night Line expiry**	
Annual Emergency and Survival expiry			
90 day recency		**Three-yearly Emergency and Survival items expiry dates:**	
IF Training at OPC expiry			
Interim IF recency expiry		**Fire drills**	
Annual CRM Training expiry		**First aid**	
Check A Authorisation		**Emergency exits**	
		Dinghy drills	

Company Head of Training CERTIFICATE

The above information is a true reflection of the training records of Captain:

Signed: Date:

Head of Training/Group Chief Pilot/Group Operations Manager

Chapter 5 Accident and Incident Reports

1 Accident Report

1.1 Where a reportable accident occurs the aircraft commander or the operator shall inform the Chief Inspector, Air Accidents Investigation Branch (AAIB) by the quickest means possible. Where a reportable accident occurs in the United Kingdom he shall notify the local police authorities.

1.2 **Definition of a Reportable Accident**

'Reportable accident' means an occurrence associated with the operation of an aircraft which takes place between the time when any person boards the aircraft with the intention of flight and such time as all persons have disembarked therefrom, in which:

a) any person suffers death or serious injury while in or upon the aircraft or by direct contact with any part of the aircraft (including any part which has become detached from the aircraft) or by direct exposure to jet blast, except when the death or serious injury is from natural causes, is self-inflicted or is inflicted by other persons or when the death or serious injury is suffered by a stowaway hiding outside the areas normally available in flight to the passengers and members of the crew of the aircraft: or

b) the aircraft is missing or is completely inaccessible; or

c) the aircraft incurs damage or structural failure which adversely affects its structural strength, performance or flight characteristics and which would normally require major repair or replacement of the affected component.

NOTE: No report would be required if the incident involves only:

i) engine failure or damage, where the damage is limited to the engine, its cowling or accessories; or

ii) damage limited to propellers, wing tips, antennae, tyres, brakes, fairings, small dents or punctured holes in the aircraft skin.

1.3 **Details to be Reported**

The following information shall be passed in the format listed below to the Chief Inspector, AAIB, using the identifying abbreviation ACCID:

a) the type, model and the nationality and registration marks of the aircraft;

b) the name of the owner, operator and hirer (if any) of the aircraft;

c) the name of the commander of the aircraft;

d) the date and Co-ordinated Universal Time (UTC) of the accident;

e) the last point of departure and the next point of intended landing of the aircraft;

f) the position of the aircraft by reference to some easily defined geographical point and latitude and longitude;

g) i) the number of crew on board the aircraft at the time of the accident and the number of them killed or seriously injured as a result of the accident;

ii) the number of passengers on board the aircraft at the time of the accident and the number of them killed or seriously injured as a result of the accident; and

iii) the number of other persons killed or seriously injured as a result of the accident; and

h) the nature of the accident and the extent of the damage to the aircraft as far as is known.

NOTE: The AAIB 24 hour accident/incident reporting line is 01252 512299.

2 Occurrence Report

2.1 A reportable occurrence is defined as:

a) any incident relating to an aircraft or any defect in or malfunctioning of such an aircraft or any part, or equipment of such an aircraft, being an incident, malfunctioning or defect endangering, or which if not corrected would endanger, the aircraft, its occupants or any other person;

NOTE: For the purposes of the PAOM this definition includes any incident arising from the carriage of a person other than a member of the flight crew, or from the loading or carriage of dangerous goods or weapons or munitions of war.

b) any defect or malfunction in any ground facility that is used or intended to be used in connection with the operation of such an aircraft, being a defect or malfunction that endangers, or which if not corrected would endanger, such an aircraft or its occupants.

2.2 When the flight is for the purpose of public transport, or in accordance with a PAOC, reporting the occurrence shall be mandatory.

2.3 The CAA Form SRG 1601, Occurrence Report, shall be completed and forwarded to the address shown thereon within 96 hours of the occurrence.

NOTE: A list of reportable occurrences is to be found in CAP 382 – Mandatory Occurrence Reporting Scheme – Information and Guidance.

3 Airprox Report (see AIP ENR 1.14 and AIC)

3.1 The pilot of an aircraft shall file an Airprox Report when he considers a risk of collision existed between his and another aircraft.

3.2 An initial report shall be made on the air traffic frequency in use giving the information listed below, prefixing the call 'Airprox Report':

a) radio call sign and Secondary Surveillance Radar (SSR) code;

b) position and heading;

c) flight level/altitude, altimeter setting and aircraft altitude;

d) weather conditions;

e) date and time of airprox;

f) description of the other aircraft, e.g. type, registration and call sign; and

g) first sighting distance and vertical and horizontal separation at the time of the airprox.

3.3 If no Radiotelephony (RTF) frequency is available, the initial report shall be made by telephone on landing.

3.4 Within seven days CAA Form CA 1094 shall be completed by accessing the UK Airprox Board website (www.airproxboard.org.uk) and following the reporting procedure.

4 Bird-Strike Report

4.1 Any aircraft commander flying in UK airspace who believes his aircraft has collided with one or more birds is to inform the CAA, unless it has already been reported as an accident or damage occurrence through the CAA's Mandatory Occurrence Reporting system. The CAA may be informed through their on-line reporting system (www.caa.co.uk/birdstrikereporting) or by completion of CAA Form SRG 2004.

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Chapter 6 Consumption of Alcohol, Medicines and Drugs, and Smoking in Aircraft

1 Alcohol

1.1 The effects of alcohol are primarily related to levels in the blood which vary individually according to the quantity and rate of consumption and may be significant long after the last alcoholic intake. Crew members shall not commence a Flying Duty Period (FDP) with a blood alcohol level in excess of 20 mg of alcohol in 100 ml of blood. This level is one quarter of the United Kingdom legal driving limit.

1.2 Crew members shall not consume alcohol while on standby or during the FDP.

1.3 Crew members shall not consume alcohol less than eight hours prior to the specified reporting time for flight duty or the commencement of standby.

NOTE: Police Air Observers do not fall within the Railways and Transport Act that enforces the above requirements. However, Observers are strongly recommended to follow these guidelines.

2 Medicines and Drugs

2.1 No flight crew member shall take medicines or drugs not prescribed by a doctor who has been made aware of the individual's flight crew duties. If any doubt exists as to the effects of a particular medicine or drug, the crew member concerned shall consult a specialist in aviation medicine. A crew member shall report to the Chief Pilot and the UEO any limitations imposed by medical treatment that he may currently be undergoing.

3 Smoking in Aircraft

3.1 Notices indicating when smoking is prohibited shall be exhibited in every aircraft so as to be visible from each passenger seat therein. A person shall not smoke in any compartment of an aircraft at a time when smoking is prohibited in that compartment by a notice to that effect exhibited by or on behalf of the aircraft commander. See also Section 5 Chapter 4 paragraph 2.4.

NOTE: The operator may issue instructions in the PAOM Part 2 to further curb smoking.

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Appendix A Documents to be kept up-to-date

The following personnel shall be responsible for ensuring that copies of the following documents, which in part may be electronic, remain in good condition and are kept up-to-date:

1	PAOM (Parts 1 and 2)	Chief Pilot
2	AFM	Chief Pilot
3	CAP 393 – Air Navigation: The Order and the Regulations	Chief Pilot
4	CAP 371 – The Avoidance of Fatigue in Aircrews	Chief Pilot
5	JAR-FCL	Chief Pilot
6	CAP 32 – UK AIP	Chief Pilot
7	Aeronautical Information Circulars	Chief Pilot
8	Flight Operations Division Communications (FODCOMs)	Chief Pilot
9	NOTAM	Chief Pilot
10	CAP 382 – MOR Reporting Scheme	Chief Pilot
11	CAP 789 – Requirements and Guidance Material for Operators	Chief Pilot
12	All engineering publications including CAP 562 Leaflet 11-5	Person responsible for Continuing Airworthiness
13	CAP 360 Part 2 – Air Operator's Certificate – Arrangements for Maintenance	Person responsible for Continuing Airworthiness

The UEO shall make all the above publications available.

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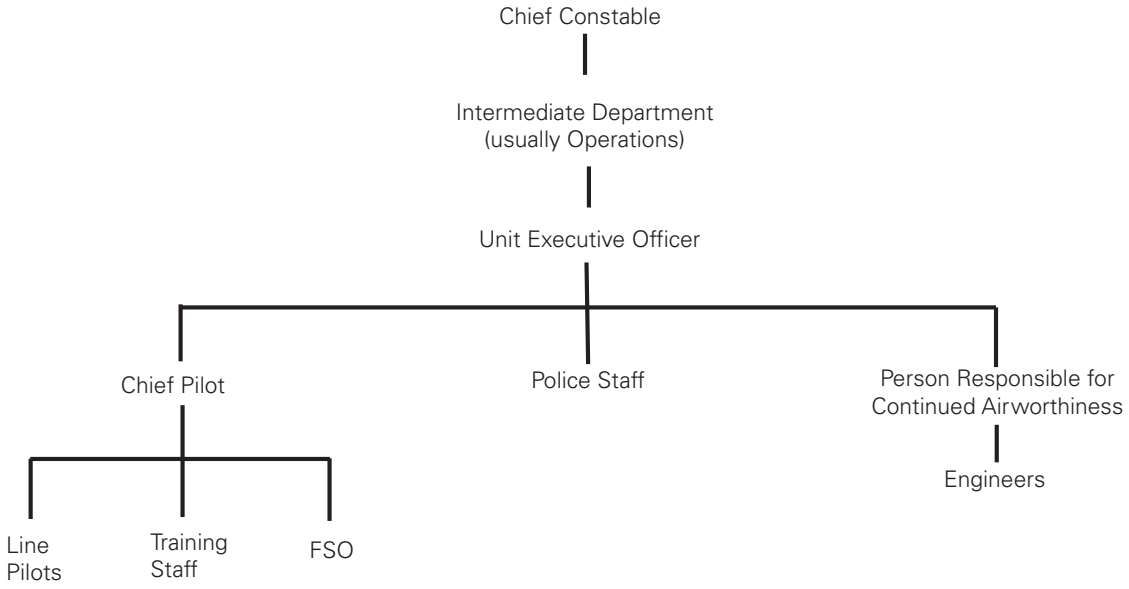
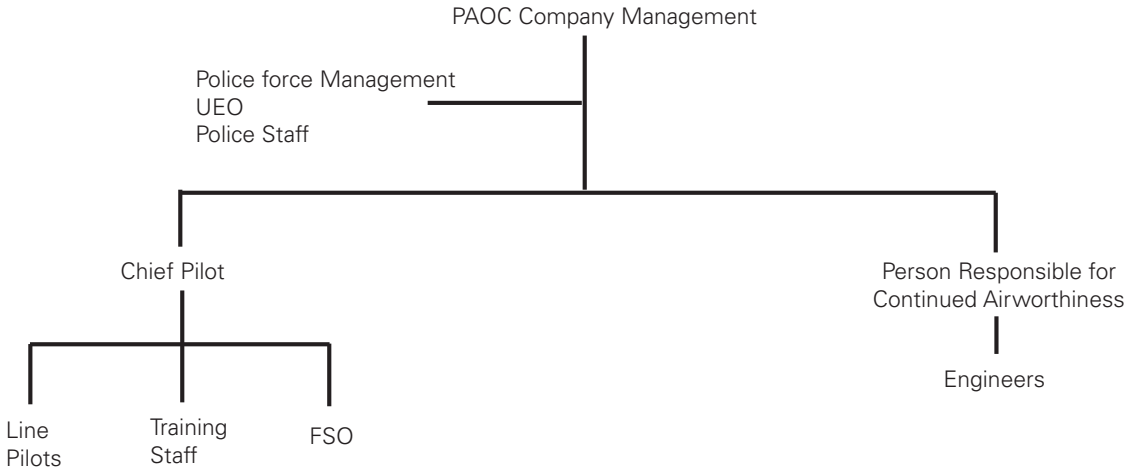
Appendix B Simplified Management Schemes

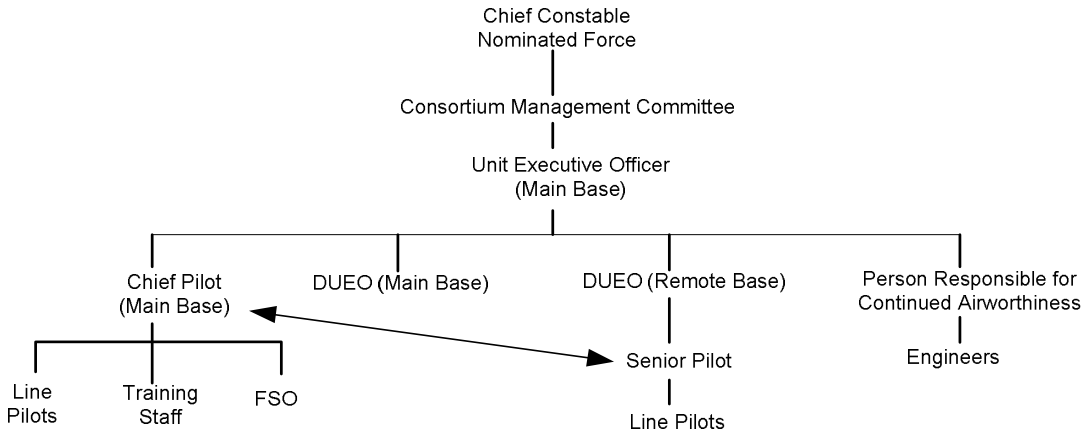
A) Police Force as Operator



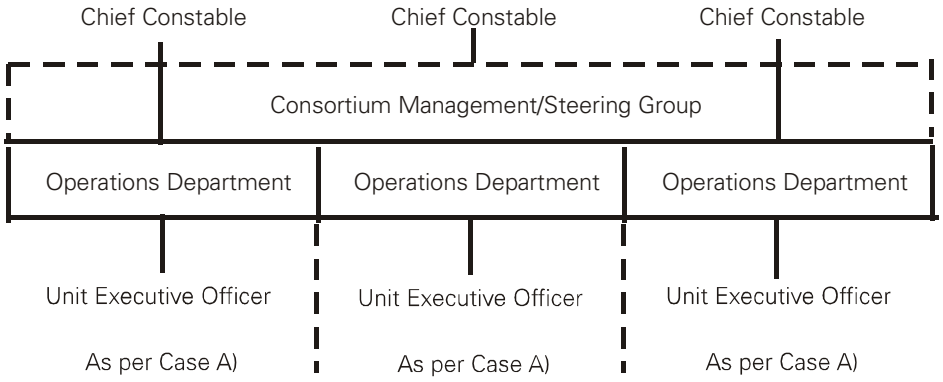
B) Commercial Company as Operator



C) Operationally Integrated Police Consortium



D) Contractual Consortium (Operationally Non-Integrated)



Section 2 Flight Planning

Introduction

1 Police air operations are usually flown at short notice. However, planning for such tasks is normally done well in advance. Aircraft may be prepared in a predetermined role and fuel loads should be adjusted to a standard that achieves a balance between range and endurance and payload. Even when tasked at short notice, or in the air, a pilot is required to calculate his requirements and capabilities within the restrictions or limitations applicable to a particular flight. A thorough daily briefing on the weather and other factors affecting flight within the operational area will be essential.

2 The information in this section is designed to give the pilot all the planning information that he may require to conduct a flight safely and efficiently.

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Chapter 1 Air Traffic Services

1 Classification of Airspace, Airspace Reservations and Air Traffic Services

1.1 The UK AIP details current classifications of airspace, airspace reservations and air traffic services, and should be referred to as necessary.

2 Low-Level Civil Aircraft Notification Procedures (CANP)

Full details of the CANP system are contained in the AIP ENR.

2.1 Introduction

2.1.1 Many military and civil aircraft operate in Class G Airspace below 2,000 ft AGL, where ground radio and radar coverage is not always available to assist pilots in avoiding collisions. Collision avoidance must necessarily, therefore, be based on the 'see and avoid' principle, assisted as far as possible by information on known activity. Whereas a variety of civil aviation activities take place within this airspace, military activity consists mainly of low flying training.

2.1.2 It is not practicable to obtain and disseminate traffic information on all civil flights below 2,000 ft AGL, nor is it possible to disseminate details of military low-level flights within the UK Low Flying System (UKLFS) to civil operators. Nevertheless, the greatest conflict of interests occurs at or below 1,000 ft AGL where the majority of military low-level operations take place and where civil aircraft may be engaged upon activities, as defined at paragraph 2.2.1, which might inhibit pilot look-out or reduce aircraft manoeuvrability. In addition, certain recreational and other civil flying activity, away from licensed aerodromes, needs to be considered.

2.1.3 A system exists to collect information on civil aerial activities for distribution to military operators to assist in flight planning. This system is known as the Low-Level CANP.

2.1.4 Before commencing any low flying sortie, military pilots receive a comprehensive brief on all factors likely to affect their flight, including relevant CANP details. Hence maximum participation in CANP by those planning to conduct the qualifying activities is essential if full benefit is to be obtained from the procedure.

2.1.5 Pilots/operators, or their representatives, intending to embark upon aerial activities described below should notify details of the flights to the Low Flying Booking Cell (LFBC) at RAF Wittering. For the purposes of CANP, direct-dial, Freephone, e-mail and Freefax facilities are available as follows:

Monday to Thursday 0700 – 2300 (Local);
Friday 0700 – 1700 (Local).

2.1.6 E-mail or fax notification is preferred for CANP requests as this allows the LFBC to e-mail, 'faxback' or telephone confirmation of e-mail or fax receipt and issue a reference number to the aircraft operating authority. Contact details are as follows:

Tel: 0800 515544;
Fax: 0800 3892225;
E-mail: cas-gmbaslfoslfbc@wittering.raf.mod.uk.

2.2 Commercial Aerial Activity

2.2.1 The following civil aerial activities at and below 1,000 ft AGL with an expected duration in excess of 20 minutes at a specific location should be notified to the LFBC:

a) aerial crop spraying;

b) underslung aerial load lifting;

c) aerial photography and filming; and

d) aerial survey/air surveillance.

2.2.2 Procedure

2.2.2.1 CANP fax and telephone messages should provide details of the intended activity in the following format:

a) type of activity;

b) location(s): preferably as a two-letter, six-figure grid reference taken from an OS 1:50,000 map, although latitude and longitude will be accepted. The name of a nearby village or town is also required;

c) area of operation(s);

d) date and time of intended operation(s): start/finish in local time;

e) maximum operating height(s) AGL;

f) number and type(s) of aircraft;

g) contact fax and/or telephone number(s); and

h) operating company and fax/telephone number(s) (if applicable).

2.3 Notification

2.3.1 The LFBC should be notified of intended operations not less than four hours before commencement of the activity. Whenever possible, pre-notification of operations due to take place up to 1300 hours (local time) should be made the previous day and those due to take place after 1300 hours (local time) should be pre-notified on the morning of the same day. It is accepted that a PAOC holder would not often be able to meet the minimum pre-notification time. Nevertheless, late notifications should still be made and every effort will be made to distribute the information as widely as possible. However, reports received less than four hours before operations are due to commence are, progressively as the time diminishes, less likely to reach all military pilots before they depart on their low-level sorties and will, therefore, only be issued as a warning to military aircrew.

Hence, while the CANP would not be practicable for police rapid reaction tasks, it should be followed in respect of pre-planned low-level operations.

2.3.2 Normally, the airspace notified under CANP should not exceed an area bounded by a 2 NM radius circle or a corridor extending 2 NM either side of intended track, from ground level to 1,000 ft AGL. Military pilots will aim to provide adequate avoidance of either the area or the activity reported under CANP, depending on the circumstances. Therefore, the lateral and vertical boundaries which define the area of activity should equate only to the parameters within which the activity is planned to take place and should not build in an allowance as a safety factor.

Every reasonable attempt should be made to inform LFBC as soon as it becomes obvious that an activity previously notified will no longer take place, irrespective of the time remaining.

2.4 Danger Areas

2.4.1 The UK AIP contains details only of those Danger Areas within the UK Flight Information Regions (FIRs) which have an upper limit in excess of 500 ft AGL. However, there are many ranges (rifle, small arms etc.) with upper limits of 500 ft or less AGL and pilots, on the basis of their local area knowledge, shall therefore satisfy themselves that they are clear of such activity when flying at or below 500 ft.

2.4.2 Listed Danger Areas are designated as being either permanently active or active only during published times. Temporary Danger Areas (TDA) may be designated by NATS at short notice.

2.4.3 A Danger Area Crossing Service is available for certain Danger Areas. Details of unit contact frequencies and availability are given for the applicable areas in the UK AIP. The contact frequencies are also printed on the 1:500 000 UK International Civil Aviation Organization (ICAO) aeronautical charts legends.

2.4.4 A Danger Area Activity Information Service (DAAIS) is available in respect of certain Danger Areas. This service complements the present methods of promulgation of information about those Danger Areas which participate in the service. The purpose of the DAAIS is to enable pilots to obtain via a Nominated Service Unit (NSU) an airborne update of the activity status of a Danger Area which is participating in the DAAIS and whose position is relevant to the flight of the aircraft. Further details of this service are published in the UK AIP.

2.4.5 **Emergencies in the United Kingdom FIR – Restriction of Flying**

2.4.5.1 Where appropriate, NATS may designate an Emergency Controlling Authority (ECA) which may find it necessary, for the safety of life and particularly for the protection of the emergency services engaged in air or surface activities, to inhibit flights by aircraft over the area of a major emergency incident. The first action normally taken is to establish a TDA around the scene of the incident. TDAs may only be established through the LATCC (Mil) D&D South (Tel: 01489 612406 – 24 hours).

2.4.5.2 Civil scene of search frequency, 123.100 MHz, should be used at major emergency incidents occurring on land, clear of existing regulated airspace. PAOUs may use this frequency to announce the establishment of Emergency Restriction of Flying Regulations.

3 Requirement to File a Flight Plan (FPL)

Full details for filing an FPL are contained in the AIP ENR and CAP 694.

3.1 Flight Rules and Categories of FPL

3.1.1 Subject to the mandatory requirements of airspace classification shown in paragraph 3.2.2, a pilot may file a VFR or IFR FPL for any flight. When flying in different types of airspace, a pilot may indicate if the aircraft will fly VFR first, then change to IFR; or vice versa.

3.1.2 There are three categories of FPL:

a) **Full** Flight Plans – the information filed on the FPL Form (CA48/RAF 2919).

b) **Repetitive** Flight Plans – (not applicable to PAOC).

c) **Abbreviated** Flight Plans – the limited information required to obtain a clearance for a portion of flight, filed either by telephone prior to take-off or by RTF when airborne.

NOTE: The destination aerodrome will be advised of the flight only if the flight plan information covers the whole route of the flight.

3.2 When to File an FPL

3.2.1 An FPL may be filed for any flight on Form CA 48 which, when completed, shall be submitted to the nearest Air Traffic Service Unit (ATSU).

3.2.2 An FPL **must** be filed in the following circumstances, unless otherwise agreed with ATC under local arrangements as set out in the PAOM Part 2:

Table 2.1 Type of FPL Required

Type of Airspace/Flight	Type of FPL
All flights within **Class A** Airspace.	Only IFR allowed
All flights within any Controlled Airspace (CAS) in IMC or at night (including those operating under Special VFR, although not required if operating under a Special VFR clearance).	IFR
All flights within any CAS, if the flight is to be conducted in accordance with IFR.	IFR
All flights within **Class B, C and D** CAS irrespective of weather conditions.	IFR or VFR
Any flight from an aerodrome in the United Kingdom, being a flight whose destination is more than 40 km from the aerodrome of departure and the aircraft Maximum Total Weight Authorised exceeds 5,700 kg.	IFR or VFR
All flights to or from the United Kingdom which will cross the United Kingdom FIR Boundary.	IFR or VFR
Any flight in **Class F** Airspace wishing to participate in the Air Traffic Advisory Service.	IFR or VFR

3.2.3 It is **advisable** to file a VFR or IFR FPL if the flight involves flying:

a) over the sea, more than 10 NM from the UK coastline;

b) over sparsely populated areas where Search And Rescue (SAR) operations would be difficult; or

c) into an area in which SAR operations are in progress. The flight plan should include the expected times of entering and leaving the area and the details must also be passed to the parent Area Control Centre (ACC). The ACC will notify Kinloss Aeronautical Rescue Co-ordination Centre (ARCC).

3.3 Abbreviated Flight Plans

3.3.1 An Abbreviated Flight Plan is the limited information required to obtain a clearance for a portion of flight, filed either by telephone prior to take-off or by RTF when airborne. This might apply in the case of a required clearance to fly in a Control Zone (CTR) or crossing an Airway. No flight plan form is submitted and the destination aerodrome will not be informed.

3.3.2 In the case of a departure from an aerodrome within a CTR, an Abbreviated FPL may be sufficient to obtain an ATC clearance to depart the aerodrome and route to the appropriate CTR/Control Area (CTA) boundary and fulfils the requirement for 'Booking Out' (see paragraph 3.4). However, some aerodromes require aircraft to follow designated noise preferential routes, which may be identified as Standard Departure Routes (SDRs) depending on the outbound track of the flight.

3.3.3 A Full FPL must be filed if the pilot requires the destination aerodrome to be notified of the flight.

3.4 Booking Out

3.4.1 Rule 17 of the Rules of the Air Regulations 2007 requires a pilot intending to make a flight to inform the ATSU at the aerodrome of departure, an action known as 'Booking Out'. Filing an FPL constitutes compliance with this Rule. The action of 'Booking Out', however, does not involve flight details being transmitted to any other ATSU.

3.5 Submitting an FPL Through the Departure Aerodrome ATSU

3.5.1 A written FPL, which is filed through the ATSU at the departure aerodrome, must be submitted on the FPL form CA48/RAF 2919. The local ATSU may assist in compiling FPLs and checking them. However, the ultimate responsibility for filing an accurate FPL rests with the pilot or Aircraft Operator (AO). If the departure aerodrome is not connected to the Aeronautical Fixed Telecommunications Network (AFTN), the pilot is responsible for arranging for the FPL to be filed with the appropriate Parent Unit.

3.6 Submission Time Parameters

3.6.1 The general ICAO requirement is that FPLs should be filed on the ground at least 60 minutes before clearance to start-up or taxi is requested. The "Estimated Off Block Time" (EOBT) is used as the planned departure time in flight planning, not the planned airborne time. Exceptionally, in cases where it is impossible to meet this requirement, pilots or AOs should give as much notice as possible, but never less than 30 minutes.

3.6.2 In order to comply with the requirements of the Integrated Initial Flight Plan Processing System (IFPS), FPLs for IFR flights should be filed a minimum of **60 minutes** before EOBT.

3.6.3 The Date of Flight (DOF) must be included in Item 18 of the FPL for all flights planned for the following day or beyond.

NOTE: IFPS will not accept FPLs submitted more than 120 hours in advance of the flight taking place.

3.6.4 An Abbreviated or Full FPL can be filed on RTF when airborne with any ATSU but normally with the appropriate FIR controller. If the FPL contains an intention to enter CAS or certain Control Zones/Control Areas, at least 10 minutes' prior warning of entry must be given. In all cases, the message should start with the words "I wish to file an airborne FPL". However, the filing of Full FPLs on the RTF is to be discouraged due to the delay likely to be caused by controller workload and congestion on the frequency. The following information should be included in the airborne flight plan:

a) aircraft identification and type;

b) position and heading;

c) level and flight conditions;

d) departure aerodrome;

e) estimated time at entry point;

f) route and point of first intended landing;

g) true airspeed; and

h) desired level on airway or advisory route.

3.7 Action When the Destination Aerodrome has no ATSU or AFTN Link

3.7.1 If a pilot has filed an FPL to a destination that does not have an active ATSU, and is not connected to the AFTN, they are required to pass the Estimated Time of Arrival (ETA), prior to departure, to a "responsible person" at the destination aerodrome. In the event of the aircraft failing to arrive at the destination aerodrome within 30 minutes of the notified ETA, the "responsible person" must **immediately** advise the Parent Unit in order that alerting action may be commenced.

3.7.2 Exceptionally, where a pilot is unable to find someone to act as a "responsible person" at the destination aerodrome, they may contact the appropriate Parent Unit prior to departure and request that it acts in this capacity. In this case, the pilot must contact the Parent Unit within 30 minutes of the ETA (calculated from the FPL and departure time), as failure to do so will trigger alerting action.

3.8 Delays, Departures, Modifications and Cancellations to a Filed Flight Plan

3.8.1 General

Having filed an FPL, pilots or AOs may require to change the existing FPL details. In most cases, a standard modification message can be sent. However, in some cases, the original FPL must be cancelled and a new FPL submitted. A second FPL cannot simply be used to amend the first.

3.8.2 Delays

3.8.2.1 ICAO requires that an appropriate delay (DLA) message must be sent if the EOBT is more than 30 minutes later than that already shown in the FPL. It is important that, in the event of a delay of 30 minutes or more to the EOBT, the pilot advises the departure aerodrome ATSU/Parent Unit, so that a DLA message can be sent.

3.8.3 Departures

3.8.3.1 It is also important that the departure (DEP) message is sent, as this activates the FPL. Although the ATSU at the departure aerodrome has the responsibility to send the FPL and DEP message by AFTN, it would be sensible to check that this has been done, especially when departing from a non-UK aerodrome. If there is no ATSU at the departure aerodrome, or the ATSU is not connected to the AFTN, the pilot must ensure that the departure time is passed to the Parent Unit for onward transmission.

3.8.3.2 A DEP message is not required if an IFR FPL has been filed with IFPS and the flight will operate solely within the IFPS Zone. DEP messages must always be sent for VFR FPLs and IFR FPLs operating outside CAS or outside the IFPS Zone.

3.8.3.3 Failure to activate the FPL could result in the destination aerodrome not being aware that alerting action should be taken.

3.8.4 Modifications

3.8.4.1 Other modifications to a filed FPL, such as a change in aircraft type, speed, level, route, etc., can be notified using a change (CHG) message. It is also important, when any changes or modifications are made to the original FPL, that a CHG message is transmitted to all the addressees that will be affected by the change or modification. In the case of FPLs filed with IFPS, and as long as the CHG message is sent to them, IFPS will do this automatically for the IFR portions of the FPL.

3.8.5 Cancelling an IFR FPL in Flight

3.8.5.1 If a pilot has begun a flight in CAS under an IFR FPL he may decide on encountering VMC that he wishes to cancel his IFR FPL and fly under VFR, provided he is not flying in Class A airspace, where all flights are subject to IFR procedures.

3.8.5.2 In classes of CAS where a choice of Flight Rules is possible in VMC, the pilot may cancel an IFR FPL by transmitting the following message to the ATSU:

"(Identification) – Cancel IFR FPL".

3.8.5.3 ATC cannot approve or disapprove cancellation of an IFR FPL but, when in possession of information that IMC is likely to be encountered along the intended route of flight, will advise the pilot accordingly as follows:

"IMC reported (or forecast) in the vicinity of ....."

3.8.5.4 The fact that a pilot reports that he is flying in VMC does not in itself constitute cancellation of an IFR FPL. Unless cancellation action is taken, the flight will continue to be regulated in relation to other IFR traffic.

4 Police Aircraft – Special Flight Numbers (SFNs)

4.1 NATS may issue an SFN to a police aircraft upon request. The SFN will serve as a code that ensures priority over other traffic. All other police aircraft would be treated on a normal priority basis. Allocated SFN and associated ATC procedures shall be set out in the PAOM Part 2. Refer to UK AIP ENR 1.1.4 paragraph 6.

5 En-Route Change from VMC/VFR to IMC/IFR

5.1 An aircraft commander flying under VFR may only enter IMC after satisfying himself that he would be able to comply with all the IFR requirements in terms of fuel planning, pilot qualification, aircraft equipment and the acceptability of the forecast weather at the destination and alternate airfields. He shall also make allowance for terrain clearance during the IMC climb to the intended cruising altitude or flight level and file an airborne flight plan if required. (See also the requirement for a navigation log in Section 2 Chapter 13, paragraph 5.)

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Chapter 2 Aircraft Equipment

1 Introduction

1.1 The ANO requires an aircraft to carry certain items of equipment, including radio and navigation equipment, that are regarded as essential for flight safety, according to the circumstances of the intended flight as set out in Schedules 4 and 5 of the said Order. All operators should hold a compliance document for each aircraft on their fleet, including dry leased aircraft, which provides a compliance statement against each requirement. Such documents should be available on request to CAA FOIs and Surveyors.

1.2 The recommended method for establishing compliance with the appropriate parts of the Schedules is by use of an equipment checklist which should be prepared by the operator who should also ensure that the checklists remain current for the types of operation undertaken.

2 Minimum Equipment List

2.1 A flight shall not commence if any of the required equipment is not carried or is unserviceable, subject to any permission in the form of an MEL that the CAA may have agreed with the operator. The MEL, including the operating limitations that would apply whenever stated items of equipment are not available for use, shall be incorporated into the PAOM Part 2.

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Chapter 4 Flight Crew and Police Observer Responsibilities

1 Use of Checklists

A set of normal and emergency checklists, which shall be controlled documents, shall be kept on board the aircraft in a location easily accessible to the pilot during flight. The contents of the checklists shall also be set out in the PAOM Part 2, or may constitute a separate volume.

1.1 Normal Checklists

Pilots shall be able to carry out from memory in the correct order all the items in the normal checklist that are required to be carried out in the air. In addition, the operator shall ensure, in aircraft flown by a single pilot, that the approach and pre-landing checks are placarded on the flight deck.

1.2 Emergency Checklists

Pilots shall be able to carry out from memory those items listed under a given emergency as 'immediate actions', which should then be confirmed as soon as possible against the checklist. The required additional actions shall be carried out according to the checklist.

2 Aircraft Commander

An aircraft commander may apply minima higher than those prescribed in this manual, if in his opinion it would be necessary to do so in order to secure the safety of his aircraft.

The aircraft commander shall ensure that the procedures set out in paragraphs 2.1, 2.2, and 2.3 are correctly carried out.

2.1 Before Flight

a) he has fully briefed himself on the meteorological situation relevant to his flight and, if required in accordance with Chapter 13 paragraph 5, has prepared a navigation log based on this information;

b) the flight can be made safely, taking account of the routeing, terrain and navigation facilities;

c) when planning an IFR flight, the aircraft commander shall calculate Minimum Safe Altitude (MSA) and minimum safe flight level in accordance with Section 4 Chapter 4 paragraph 5;

d) all relevant performance criteria can be met;

e) the destination and alternate airfields/landing sites are suitable;

f) the aircraft payload, fuel and oil requirements have been met in accordance with instructions in this manual;

g) NOTAMs affecting the proposed flight have been checked;

h) his area competency and airfield category authorisations are applicable to the task;

i) when required, an ATC flight plan has been filed with the appropriate ATSU;

j) where the task cannot be achieved without easements from normal regulations, an appropriate exemption or permission exists and a copy is carried on board;

k) a valid CAA permission exists in regard to any dangerous cargo that may be carried;

l) the aircraft is serviceable, subject to any defects that would be acceptable in accordance with the MEL. Adequate flight time shall be available before the next maintenance check is due, and the technical log has been completed in accordance with instructions at Section 6 of this manual;

m) the technical log and load sheet shall be carried in a flame-proof holder;

n) the aircraft library is in the aircraft, in good condition and up-to-date;

o) a satisfactory pre-flight inspection has been completed;

p) the safety equipment is properly stowed and appears to be serviceable;

q) all aircraft occupants are wearing survival suits when required, in accordance with Chapter 11 paragraph 4;

r) all occupants of the aircraft are properly secured in a seat by safety belts or safety harness, before take-off, subject to those exemptions permitted in Section 5;

s) all passengers have been briefed in accordance with the requirements of paragraph 7 and Section 5, when appropriate, and have been given the opportunity to read the passenger briefing card;

t) Flight Reference Cards (FRCs) or Checklists are to hand to cover all normal and emergency checks from Pre-Start to Engine Shut-Down and are used in accordance with the requirement set out in paragraph 1; and

u) in the event of a flight delay or cancellation, appropriate action is taken in regard to the welfare of passengers and rearranging the flight.

2.2 During Flight

a) where required, the Pilot Navigation Log and a copy of the ATC flight plan are carried;

b) the aircraft is operated in accordance with the FRC, limitations and handling data in the AFM;

c) all relevant permissions and exemptions are observed;

d) all occupants of the aircraft are properly secured in a seat by a safety belt or safety harness during flight in turbulent air or in any in-flight emergency during which the commander considers the precaution to be necessary, and before landing;

e) in an emergency, where practicable, passengers are instructed in the action which they should take; and

f) the Force Control Room (FCR), or other designated co-ordination agency, is aware of the aircraft's whereabouts at all times.

2.3 After Flight

a) the aircraft is safely parked and properly refuelled;

b) the technical log has been completed;

c) on completion of task, the pilot's personal log book and appropriate reports are completed: any unusual occurrences are reported to the Chief Pilot at the earliest opportunity;

d) on completion of crew DP, the Flight Time and Duty Record Sheets for each crew member are completed;

e) night stops are avoided at airfields/landing sites where security is doubtful. Where such stops are unavoidable, the commander shall make adequate arrangements to protect the aircraft; and

f) the use of any CAA-issued permission or exemption has been recorded. The police task log may be used for this purpose, when available.

3 Departure and Approach Briefings

3.1 In regard to departure and approach, the pilot shall brief his crew where appropriate on the following:

a) take-off profile to be used;

b) action to be taken in an emergency during/after take-off;

c) type of approach and landing profile to be undertaken;

d) procedure minima including any operational allowances;

e) go-around procedure to be followed; and

f) action in the event of an emergency during the approach.

4 Aircraft Commander's Voyage Report

4.1 Whenever the aircraft commander feels that an incident that occurred during any phase of the flight should be brought to the attention of the Chief Pilot, a voyage report shall be completed. The specimen voyage report form at Appendix A may be used for the purpose. The form shall be completed as part of the immediate after-flight documentation.

5 Duties of the Police Observer

5.1 When a police observer is carried he may, when satisfactorily trained in accordance with Part D (which may be amplified in the PAOM Part 2), be authorised by the aircraft commander to operate such aircraft systems and equipment as are necessary for the successful completion of the police task. The systems and equipment that the police observer may operate shall be specified in the PAOM Part 2.

6 Pilot at the Controls

6.1 A pilot wearing a fully secured and correctly adjusted harness shall occupy a pilot's station, which is equipped with a full set of flying controls, whenever the rotors of a helicopter are turning under power or the engine(s) of an aeroplane is(are) running.

7 Passenger Safety Briefing

7.1 Prior to take-off the pilot shall normally ensure that all passengers receive a safety briefing, although the task may be delegated to a person properly trained and authorised to do so. Such a person, who may be a police observer, shall report to the aircraft commander that the briefing has been carried out. Safety briefing cards, as illustrated in CAP 613, shall be available for passengers to study and the requirement for them to do so shall be brought to their attention. The briefing shall cover the following:

a) **Overland Operations**

i) safe areas from which to approach the aircraft and danger areas to be avoided;

ii) signals by which the pilot will indicate whether it is safe or not safe to approach;

iii) normal and emergency exits, the use of door handles, both in normal and emergency modes;

iv) how to secure and release seat belts;

v) actions in the event of an emergency, including the brace position to be adopted for an emergency landing; and

vi) rules on smoking.

b) **Overwater Flights**

For overwater flights, the following shall be added to the list of items for briefing prior to overland operations:

i) the location and method of donning life jackets, with instruction on how and when to inflate them;

ii) the location and removal of the dinghy or dinghies, and how and when to inflate them;

iii) the location and operation of survival equipment; and

iv) action to be taken in the event of a ditching and the avoidance of damage to flotation equipment.

NOTE: Briefing procedures for special operations may be found at Section 5.

7.2 **Passengers Embarking/Disembarking – Helicopter Rotors Running**

Unless a passenger is familiar with the procedures for boarding and leaving a helicopter with rotors running, he shall normally be escorted to and from the aircraft by the police observer.

7.3 **Passenger in a Pilot's Seat – Dual Controls**

A passenger shall not normally be carried in a pilot's seat when dual controls are fitted. If, for exceptional reasons, a passenger is carried in these circumstances he shall be fully briefed not to interfere with the controls and to safely stow articles such as cameras, bags and map boards which may restrict control movement.

Where it is necessary for this passenger to leave the aircraft with rotors running, the pilot shall brief him to avoid touching the controls and shall apply all available locks, whilst firmly holding the controls steady. The seat belt on the vacated seat shall be fastened prior to a subsequent take-off and controls shall be checked unlocked and free of fouling.

8 Start-Up Procedure

8.1 Where possible, all start-ups should be monitored by a person standing well clear of the aircraft and in full view of the pilot. This person should have a suitable fire extinguisher available and be familiar with the airframe access points for the extinguisher, in order to deal with the possibility of a fire on start-up. When starting up at an aerodrome with ATC facilities, the pilot shall call the tower for start-up clearance, unless local operating instructions state otherwise.

a) **Start-up and Marshalling Signals**

Start-up and marshalling signals shall be in accordance with Rules 62 and 63 of the Rules of the Air Regulations 2007.

b) **Manoeuvring at an Aerodrome**

A pilot shall exercise extreme caution when manoeuvring close to other aircraft. Where possible, particularly if hover taxiing, a helicopter pilot should remain well clear of other aircraft, vehicles and structures, and manoeuvre downwind of such objects.

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Chapter 5 Pre-Flight Briefing

1 Introduction

1.1 Before an aircraft commander undertakes a task he shall satisfy himself that he has obtained all the available information on the operational requirement, the area of operation, route, payload, the location and availability of fuel, weather, and the capabilities of both aircraft and crew.

1.2 Terminology for use with Section 2 (Chapters 5, 6, 7, 8 and 11) and Section 5 (Chapter 2 and Appendix A):

a) *Hostile environment*:

i) An environment in which:

A) a safe forced landing cannot be accomplished because the surface is inadequate; or

B) the aircraft occupants cannot be adequately protected from the elements; or

C) SAR response/capability is not provided consistent with anticipated exposure; or

D) there is an unacceptable risk of endangering persons or property on the ground.

ii) In any case, the following areas shall be considered hostile:

A) for overwater operations, the open sea areas North of 45N and South of 45S; and

B) those parts of a congested area without adequate safe forced landing areas.

b) *Non-hostile environment*:

i) An environment in which:

A) a safe forced landing can be accomplished; and

B) the aircraft occupants can be protected from the elements; and

C) SAR response/capability is provided consistent with the anticipated exposure.

ii) In any case, those parts of a congested area with adequate safe forced landing areas shall be considered non-hostile.

c) *Safe forced landing*: Unavoidable landing or ditching with a reasonable expectancy of no injuries to persons in the aircraft or on the surface.

d) *Congested area*: In relation to a city, town or settlement, any area which is substantially used for residential, commercial or recreational purposes.

2 Meteorological Forecast and Actual Weather Information

2.1 Weather minima for departure, en-route transit and arrival are set out in Sections 3 and 4 of this manual, for VFR and IFR operations respectively.

2.2 The operator shall obtain local weather information before the commencement of flying operations.

3 Fuel Planning

3.1 The appropriate formula from those set out in paragraph 4 below shall be applied for calculating the fuel required for a given flight.

3.2 Fuel consumption rates shall be stipulated in the appropriate aircraft type supplement of the PAOM Part 2.

3.3 Fuel planning shall take account of the nature of the terrain to be overflown; be it hostile or non-hostile.

3.4 Notwithstanding that UK Airspace is IFR at night, flights undertaken solely as visual contact flights may be conducted in accordance with the VFR fuel policy.

4 Fuel Formulae

The following fuel calculations are to be based on usable fuel.

4.1 VFR Aeroplanes

a) Fuel to the destination,

PLUS

b) fuel from destination to the planned alternate,

PLUS

c) i) a contingency reserve 5% of a) and b) above and fuel for 20 minutes, at endurance speed, for a flight over a non-hostile environment by day;

OR

ii) a contingency reserve of 10% of a) and b) above and fuel for 30 minutes, at endurance speed, for a flight over hostile terrain or water at any time, or over a non-hostile environment at night,

PLUS

d) start, run-up and taxi allowance.

4.2 VFR Helicopters/Night Visual Contact Flight

a) Fuel for the estimated time of flight to the destination shall be based on the ground speed calculated from the least favourable of prevailing and forecast winds,

PLUS

b) i) over a non-hostile environment by day and where the groundspeed can be verified en-route: a contingency reserve of 10% of a) above or 20 minutes at the average cruise consumption for the flight, whichever is the greater;

OR

ii) over a hostile environment or water, or at night, or where the groundspeed cannot be verified en-route: a contingency reserve of 20% of a) above or 30 minutes at average cruise consumption, whichever is the greater,

PLUS

c) start and taxi allowance.

4.3 **VFR Radius of Action Operations Aeroplanes and Helicopters**

a) Fuel for the duration of the task,

PLUS

b) fuel to refuelling point,

PLUS

c) i) fuel for 20 minutes, at endurance speed, for a flight over a non-hostile environment by day;

OR

ii) fuel for 30 minutes, at endurance speed, for a flight over hostile terrain or water at any time, or over a non-hostile environment at night,

PLUS

d) start, run-up (if appropriate) and taxi allowance.

4.4 **IFR Aeroplanes and Helicopters**

a) Fuel to destination,

PLUS

b) fuel for approach and overshoot at the destination,

PLUS

c) fuel from destination to alternate,

PLUS

d) a contingency reserve of 10% of a), b) and c),

PLUS

e) holding fuel for 30 minutes at endurance speed,

PLUS

f) start, run-up (if appropriate) and taxi allowance.

5 Conservation of Contingency Reserve

5.1 Contingency reserve fuel shall not be used for extending the period of time available for holding overhead the destination prior to departing for the alternate.

6 Fuel Monitoring

6.1 Fuel monitoring shall be carried out at regular intervals.

6.2 On reaching the operating area, the aircraft commander shall establish, from the appropriate fuel formula, the minimum fuel state at which he should leave the area in order to arrive at his refuelling point with the proper reserves of fuel.

6.3 The PAOM Part 2 shall include advice to the commander on the options that would require his consideration if at any stage it appeared that the fuel remaining was less than the fuel required.

7 Single Engine Diversions

7.1 If the fuel consumption of any aircraft being operated under a given set of conditions is higher following the loss of an engine, then guidance on the calculations for the necessary additional fuel shall be set out in the aircraft supplement in the PAOM Part 2.

Chapter 6 Aeroplane Performance

1 Performance Applicability

1.1 Aeroplanes operated under and in accordance with a PAOC will normally be propeller-driven aeroplanes with an MAPSC of nine or less, and a maximum take-off mass of 5,700 kg or less, and operated in accordance with Performance Class B. Such aeroplanes will normally be multi-engined but could be single-engined. When an aeroplane is classified as being of any other performance class/group, or when the appropriate performance data is unavailable, the performance requirements for that aeroplane shall be agreed with the CAA and specified in the PAOM Part 2. The requirements of this chapter are taken from EU-OPS in accordance with the ANO.

2 General

2.1 The mass of the aeroplane shall:

a) at the start of the take-off; or

b) in the event of in-flight re-planning, at the point from which the revised operational flight plan applies,

be not greater than the mass at which the requirements of the appropriate performance class can be complied with for the flight to be undertaken, allowing for expected reductions in mass as the flight proceeds, and for such fuel jettisoning as is provided for in the particular requirement.

2.2 The approved performance data contained in the AFM shall be used to determine compliance with the requirements of the appropriate performance class, supplemented as necessary with other data acceptable to the CAA as prescribed in the relevant performance class. When applying the factors prescribed in the appropriate performance class, account may be taken of any operational factors already incorporated in the AFM performance data to avoid double application of factors.

2.3 Landing distance data included in the AFM (or Pilot's Operating Handbook (POH) etc.) with credit for reverse thrust can only be considered to be approved for the purpose of showing compliance with the applicable requirements if it contains a specific statement from the appropriate airworthiness authority that it complies with a recognised airworthiness code (e.g. FAR Part 23/25, JAR-23/25, CS-23/25, BCAR Section D/K).

2.4 When showing compliance with the requirements of the appropriate performance class, due account shall be taken of aeroplane configuration, environmental conditions and the operation of systems which have an adverse effect on performance.

2.5 For performance purposes, a damp runway, other than a grass runway, may be considered to be dry.

2.6 An operator shall take account of charting accuracy when assessing compliance with the take-off requirements of the applicable performance class.

3 Terminology

3.1 Terms used in this section, and not defined elsewhere, have the following meaning:

a) *Accelerate-Stop Distance Available (ASDA).* The length of the take-off run available plus the length of stopway, if such stopway is declared available by the appropriate Authority and is capable of bearing the mass of the aeroplane under the prevailing operating conditions.

b) *Contaminated runway.* A runway is considered to be contaminated when more than 25% of the runway surface area (whether in isolated areas or not) within the required length and width being used is covered by the following:

i) surface water more than 3 mm (0·125 in) deep, or by slush or loose snow equivalent to more than 3 mm (0·125 in) of water;

ii) snow which has been compressed into a solid mass which resists further compression and will hold together or break into lumps if picked up (compacted snow); or

iii) ice, including wet ice.

c) *Damp runway.* A runway is considered damp when the surface is not dry, but when the moisture on it does not give it a shiny appearance.

d) *Dry runway.* A dry runway is one which is neither wet nor contaminated, and includes those paved runways which have been specially prepared with grooves or porous pavement and maintained to retain 'effectively dry' braking action even when moisture is present.

e) *Landing Distance Available (LDA).* The length of the runway which is declared available by the appropriate Authority and suitable for the ground run of an aeroplane landing.

f) *Maximum Approved Passenger Seating Configuration (MAPSC).* The maximum passenger seating capacity of an individual aeroplane, excluding pilot seats or flight deck seats and cabin crew seats as applicable, used by the operator, approved by the CAA and specified in the PAOM Part 2.

g) *Take-Off Distance Available (TODA).* The length of the take-off run available plus the length of the clearway available.

h) *Take-off mass.* The take-off mass of the aeroplane shall be taken to be its mass, including everything and everyone carried at the commencement of the take-off run.

i) *Take-Off Run Available (TORA).* The length of runway which is declared available by the appropriate Authority and suitable for the ground run of an aeroplane taking off.

j) *Wet runway.* A runway is considered wet when the runway surface is covered with water, or equivalent, less than specified in subparagraph (b) above or when there is sufficient moisture on the runway surface to cause it to appear reflective, but without significant areas of standing water.

3.2 The terms 'accelerate-stop distance', 'take-off distance', 'take-off run', 'net take-off flight path', 'one engine inoperative en-route net flight path' and 'two engines inoperative en-route net flight path' as relating to the aeroplane have their meanings defined in the airworthiness requirements under which the aeroplane was certificated, or as specified by the CAA if it finds that definition inadequate for showing compliance with the performance operating limitations.

4 Performance Class B

4.1 General

a) Single-engined aeroplanes shall not be operated:

i) at night; or

ii) in IMC except under special VFR.

b) Two-engine aeroplanes which do not meet the climb requirements of paragraph 4.11 shall be treated as single-engine aeroplanes.

4.2 Take-Off

a) The take-off mass shall not exceed the maximum take-off mass specified in the AFM for the pressure altitude and the ambient temperature at the aerodrome at which the take-off is to be made.

b) The un-factored take-off distance, as specified in the AFM, shall not exceed:

i) when multiplied by a factor of 1·25, the TORA; or

ii) when stop way and/or clearway is available, the following:

A) the TORA;

B) when multiplied by a factor of 1·15, the TODA; and

C) when multiplied by a factor of 1·3, the ASDA.

c) When showing compliance with paragraph 4.2 b) above, the following shall be taken into account:

i) the mass of the aeroplane at the commencement of the take-off run;

ii) the pressure altitude at the aerodrome;

iii) the ambient temperature at the aerodrome;

iv) the runway surface condition and the type of runway surface (see paragraphs 4.3 a) and b));

v) the runway slope in the direction of take-off (see paragraph 4.3 c)); and

vi) not more than 50% of the reported headwind component or not less than 150% of the reported tailwind component.

4.3 Take-Off Performance Correction Factors

a) Unless otherwise specified in the AFM or other performance or operating manuals from the manufacturers, the variables affecting the take-off performance and the associated factors that should be applied to the AFM data are shown in Table 2.2 below. They should be applied in addition to the operational factors as prescribed in paragraph 4.2 b).

Table 2.2 Take-Off Performance Correction Factors

Surface Type	Condition	Factor
Grass (on firm soil) up to 20 cm long	Dry	1·20
	Wet	1·30
Paved	Wet	1·00

NOTES: 1) The soil is firm when there are wheel impressions but no rutting.

2) When taking off on grass with a single-engined aeroplane, care should be taken to assess the rate of acceleration and consequent distance increase.

3) When making a rejected take-off on very short grass which is wet, and with a firm subsoil, the surface may be slippery, in which case the distances may increase significantly.

b) Due to the inherent risks, operations from contaminated runways are inadvisable, and should be avoided whenever possible. Therefore, it is advisable to delay the take-off until the runway is cleared. Where this is impracticable, the commander should also consider the excess runway length available including the criticality of the overrun area.

c) Unless otherwise specified in the AFM, or other performance or operating manuals from the manufacturers, the take-off distance should be increased by 5% for each 1% of upslope except that correction factors for runways with slopes in excess of 2% require the acceptance of the CAA.

4.4 Take-Off Obstacle Clearance – Multi-Engined Aeroplanes

a) The take-off flight path of aeroplanes with two or more engines, determined in accordance with this subparagraph, shall clear all obstacles by a vertical margin of at least 50 ft, or by a horizontal distance of at least 90 m plus 0·125 x D, where D is the horizontal distance travelled by the aeroplane from the end of the TODA or the end of the take-off distance if a turn is scheduled before the end of the TODA except as provided in subparagraphs b) and c) below. For aeroplanes with a wingspan of less than 60 m a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m, plus 0·125 x D may be used. When showing compliance with this subparagraph it must be assumed that:

i) the take-off flight path begins at a height of 50 ft above the surface at the end of the take-off distance required by paragraph 4.2 b) and ends at a height of 1,500 ft above the surface;

ii) the aeroplane is not banked before the aeroplane has reached a height of 50 ft above the surface, and that thereafter the angle of bank does not exceed 15°;

iii) failure of the critical engine occurs at the point on the all-engine take-off flight path where visual reference for the purpose of avoiding obstacles is expected to be lost;

iv) the gradient of the take-off flight path from 50 ft to the assumed engine failure height is equal to the average all-engine gradient during climb and transition to the en-route configuration, multiplied by a factor of 0·77; and

v) the gradient of the take-off flight path from the height reached in accordance with subparagraph iv) above to the end of the take-off flight path is equal to the One-Engine-Inoperative (OEI) en-route climb gradient shown in the AFM.

b) When showing compliance with subparagraph a) above for those cases where the intended flight path does not require track changes of more than 15º, those obstacles need not be considered which have a lateral distance greater than:

i) 300 m, if the flight is conducted under conditions allowing visual course guidance navigation, or if navigational aids are available enabling the pilot to maintain the intended flight path with the same accuracy (see paragraph 4.12); or

ii) 600 m, for flights under all other conditions.

c) When showing compliance with subparagraph a) above for those cases where the intended flight path requires track changes of more than 15°, those obstacles need not be considered which have a lateral distance greater than:

i) 600 m for flights under conditions allowing visual course guidance navigation (see paragraph 4.12); and

ii) 900 m for flights under all other conditions.

d) When showing compliance with subparagraphs a), b) and c) above, the following must be taken into account:

i) the mass of the aeroplane at the commencement of the take-off run;

ii) the pressure altitude at the aerodrome;

iii) the ambient temperature at the aerodrome; and

iv) not more than 50% of the reported headwind component or not less than 150% of the reported tailwind component.

4.5 Take-Off Flight Path Construction

4.5.1 Introduction

For demonstrating that an aeroplane clears all obstacles vertically, a flight path should be constructed consisting of an all-engine segment to the assumed engine failure height, followed by an engine-out segment. Where the AFM does not contain the appropriate data, the approximation given in paragraph 4.5.2 below may be used for the all-engine segment for an assumed engine failure height of 200 ft, 300 ft, or higher.

4.5.2 Flight Path Construction

a) All-Engines Segment (50 ft to 300 ft). The average all-engines gradient for the all-engines flight path segment starting at an altitude of 50 ft at the end of the take-off distance ending at or passing through the 300 ft point is given by the following formula:

$$Y_{300} = \frac{0.57(Y_{ERC})}{1 + \left(\frac{(V_{ERC}^2 - V_2^2)}{5647} \right)}$$

NOTE: The factor of 0·77 as required by paragraph 4.4 a) iv) is already included where:

Y_{300} = Average all-engines gradient from 50 ft to 300 ft

Y_{ERC} = Scheduled all-engines en-route gross climb gradient

V_{ERC} = En-route climb speed, all-engines, knots True Airspeed (TAS)

V_2 = Take-off speed at 50 ft, knots TAS.

b) All-Engines Segment (50 ft to 200 ft). (May be used as an alternative to subparagraph a) above where weather minima permit.) The average all-engine gradient for the all-engine flight path segment starting at an altitude of 50 ft at the end of the take-off distance ending at or passing through the 200 ft point is given by the following formula:

$$Y_{200} = \frac{0.51(Y_{ERC})}{1 + \left(\frac{(V_{ERC}^2 - V_2^2)}{3388} \right)}$$

NOTE: The factor of 0·77 as required by paragraph 4.4 a) iv) is already included where:

Y_{200} = Average all-engines gradient from 50 ft to 200 ft

Y_{ERC} = Scheduled all engines en-route gross climb gradient

V_{ERC} = En-route climb speed, all engines, knots TAS

V_2 = Take-off speed at 50 ft, knots TAS.

c) All-Engines Segment (above 300 ft). The all-engines flight path segment continuing from an altitude of 300 ft is given by the AFM en-route gross climb gradient, multiplied by a factor of 0·77.

d) The One Engine Inoperative Flight Path. The OEI flight path is given by the OEI gradient chart contained in the AFM.

4.6 En-Route – Multi-Engined Aeroplanes

a) The aeroplane shall, in the meteorological conditions expected for the flight, and in the event of the failure of one engine, with the remaining engines operating within the maximum continuous power conditions specified, be capable of continuing flight at or above the relevant minimum altitudes for safe flight stated in the PAOM to a point 1,000 ft above an aerodrome at which the performance requirements can be met.

b) When showing compliance with subparagraph a) above:

i) the aeroplane must not be assumed to be flying at an altitude exceeding that at which the rate of climb equals 300 ft per minute with all engines operating within the maximum continuous power conditions specified; and

ii) the assumed en-route gradient with one engine inoperative shall be the gross gradient of descent or climb, as appropriate, respectively increased by a gradient of 0·5%, or decreased by a gradient of 0·5%.

c) The altitude at which the rate of climb equals 300 ft per minute is not a restriction on the maximum cruising altitude at which the aeroplane can fly in practice, it is merely the maximum altitude from which the drift-down procedure can be planned to start.

d) Aeroplanes may be planned to clear en-route obstacles assuming a drift-down procedure, having first increased the scheduled en-route OEI descent data by 0·5% gradient.

4.7 En-Route – Single-Engine Aeroplanes

a) The aeroplane shall, in the meteorological conditions expected for the flight, and in the event of engine failure, be capable of reaching a place at which a safe forced landing can be made.

b) When showing compliance with subparagraph a) above:

i) the aeroplane must not be assumed to be flying, with the engine operating within the maximum continuous power conditions specified, at an altitude exceeding that at which the rate of climb equals 300 ft per minute; and

ii) the assumed en-route gradient shall be the gross gradient of descent increased by a gradient of 0.5%.

c) In the event of an engine failure, single-engine aeroplanes have to rely on gliding to a point suitable for a safe forced landing. Such a procedure is clearly incompatible with flight above a cloud layer which extends below the relevant MSA.

d) Operators should first increase the scheduled engine-inoperative gliding performance data by 0·5% gradient when verifying the en-route clearance of obstacles and the ability to reach a suitable place for a forced landing.

e) The altitude at which the rate of climb equals 300 ft per minute is not a restriction on the maximum cruising altitude at which the aeroplane can fly in practice, it is merely the maximum altitude from which the engine-inoperative procedure can be planned to start.

f) Subparagraph a) above requires that, in the event of an engine failure, the aeroplane should be capable of reaching a point from which a successful forced landing can be made. Unless otherwise specified by the CAA, this point should be 1,000 ft above the intended landing area.

4.8 Landing – Destination and Alternate Aerodromes

The landing mass of the aeroplane determined in accordance with paragraph 2.1 shall not exceed the maximum landing mass specified for the altitude and the ambient temperature expected for the estimated time of landing at the destination and alternate aerodrome.

4.9 Landing – Dry Runway

a) The landing mass of the aeroplane, determined in accordance with paragraph 2.1 for the estimated time of landing, shall allow a full stop landing from 50 ft above the threshold within 70% of the landing distance available at the destination aerodrome and at any alternate aerodrome.

   i) When approved by the CAA, the use of landing distance data factored in accordance with this paragraph based on a screen height of less than 50 ft, but not less than 35 ft, may be used (see paragraph 4.13).

   ii) When approved by the CAA, short landing operations, in accordance with the criteria in paragraph 4.14, may be used.

b) When showing compliance with subparagraph a) above, an operator shall take account of the following:

   i) the altitude at the aerodrome;

   ii) not more than 50% of the headwind component or not less than 150% of the tailwind component;

   iii) the runway surface condition and the type of runway surface; and

   iv) the runway slope in the direction of landing.

c) For dispatching an aeroplane in accordance with subparagraph a) above, it must be assumed that:

   i) the aeroplane will land on the most favourable runway, in still air; and

   ii) the aeroplane will land on the runway most likely to be assigned considering the probable wind speed and direction and the ground handling characteristics of the aeroplane, and considering other conditions such as landing aids and terrain.

d) When unable to comply with subparagraph c) ii) above for the destination aerodrome, the aeroplane may be dispatched if an alternate aerodrome is designated which permits full compliance with subparagraphs a), b) and c) above.

e) With reference to subparagraph b) iii) above, unless otherwise specified in the AFM, or other performance or operating manuals from the manufacturers, the variable affecting the landing performance and the associated factor that should be applied to the AFM data is shown in Table 2.3 below. It should be applied in addition to the operational factors as prescribed in subparagraph a) above.

Table 2.3 Dry Runway Landing Performance Correction Factors

Surface Type	Factor
Grass (on firm soil up to 20 cm long)	1·15

NOTE: The soil is firm when there are wheel impressions but no rutting.

f) Runway Slope. With reference to subparagraph b) iv) above, unless otherwise specified in the AFM, or other performance or operating manuals from the manufacturer, the landing distances required should be increased by 5% for each 1% of down slope except that correction factors for runways with slopes in excess of 2% need the acceptance of the CAA.

g) Subparagraph c) above establishes two considerations in determining the maximum permissible landing mass at the destination and alternate aerodromes.

i) Firstly, the aeroplane mass will be such that on arrival the aeroplane can be landed within 70% of the landing distance available on the most favourable (normally the longest) runway in still air. Regardless of the wind conditions, the maximum landing mass for an aerodrome/aeroplane configuration at a particular aerodrome cannot be exceeded.

ii) Secondly, consideration should be given to anticipated conditions and circumstances. The expected wind, or ATC and noise abatement procedures, may indicate the use of a different runway. These factors may result in a lower landing mass than that permitted under subparagraph i) above, in which case, to show compliance with subparagraph a), dispatch should be based on this lesser mass. The expected wind is the wind expected to exist at the time of arrival.

4.10 Landing – Wet and Contaminated Runways

a) When the appropriate weather reports or forecasts, or a combination thereof, indicate that the runway at the ETA may be wet, the landing distance available is to be equal to or exceed the required landing distance, determined in accordance with paragraph 4.9, multiplied by a factor of 1·15.

b) When the appropriate weather reports or forecasts, or a combination thereof, indicate that the runway at the ETA may be contaminated, it must be ensured that the landing distance, determined by using data acceptable to the CAA for these conditions, does not exceed the landing distance available.

c) A landing distance on a wet runway shorter than that required by subparagraph a) above, but not less than that required by paragraph 4.9 a), may be used if the AFM includes specific additional information about landing distances on wet runways.

d) Landing on Wet Grass Runways. When landing on very short grass which is wet, and with a firm subsoil, the surface may be slippery, in which case the distances may increase by as much as 60% (1·60 factor). As it may not be possible for a pilot to determine accurately the degree of wetness of the grass, particularly when airborne, in cases of doubt the use of the wet factor (1·15) is recommended.

e) Reference should also be made to the current UK AIP and AIC on contaminated runway operations.

4.11 General – Take-Off and Landing Climb

4.11.1 Take-Off Climb

a) All engines operating:

i) The steady gradient of climb after take-off must be at least 4% with:

A) take-off power on each engine;

B) the landing gear extended except that if the landing gear can be retracted in not more than seven seconds, it may be assumed to be retracted;

C) the wing flaps in the take-off position(s); and

D) a climb speed not less than the greater of 1.1 V_{MC} and 1.2 V_{S1}.

b) One engine inoperative:

i) The steady gradient of climb at an altitude of 400 ft above the take-off surface must be measurably positive with:

A) the critical engine inoperative and its propeller in the minimum drag position;

B) the remaining engine at take-off power;

C) the landing gear retracted;

D) the wing flaps in the take-off position(s); and

E) a climb speed equal to that achieved at 50 ft.

ii) The steady gradient of climb must be not less than 0.75% at an altitude of 1,500 ft above the take-off surface with:

A) the critical engine inoperative and its propeller in the minimum drag position;

B) the remaining engine at not more than maximum continuous power;

C) the landing gear retracted;

D) the wing flaps retracted; and

E) a climb speed not less than 1.2 V_{S1}.

4.11.2 Landing Climb

a) All engines operating:

i) The steady gradient of climb must be at least 2.5% with:

A) not more than the power or thrust that is available eight seconds after initiation of movement of the power controls from the minimum flight idle position;

B) the landing gear extended;

C) the wing flaps in the landing position; and

D) a climb speed equal to V_{REF}.

b) One engine inoperative:

i) The steady gradient of climb must be not less than 0.75% at an altitude of 1,500 ft above the landing surface with:

A) the critical engine inoperative and its propeller in the minimum drag position;

B) the remaining engine at not more than maximum continuous power;

C) the landing gear retracted;

D) the wing flaps retracted; and

E) a climb speed not less than 1.2 V_{S1}.

4.12 Take-Off Flight Path – Visual Course Guidance Navigation

4.12.1 In order to allow visual course guidance navigation, an operator must ensure that the weather conditions prevailing at the time of operation, including ceiling and visibility, are such that the obstacle and/or ground reference points can be seen and identified. The Operations Manual must specify, for the aerodrome(s) concerned, the minimum weather conditions which enable the flight crew to continuously determine and maintain the correct flight path with respect to ground reference points, so as to provide a safe clearance with respect to obstructions and terrain as follows:

a) the procedure must be well defined with respect to ground reference points so that the track to be flown can be analysed for obstacle clearance requirements;

b) the procedure must be within the capabilities of the aeroplane with respect to forward speed, bank angle and wind effects;

c) a written and/or pictorial description of the procedure must be provided for crew use; and

d) the limiting environmental conditions must be specified (e.g. wind, cloud, visibility, day/night, ambient lighting, obstruction lighting).

4.13 Steep Approach Procedures

4.13.1 Approval may be sought from the CAA for the application of steep approach procedures using glide slope angles of 4.5° or more, and with screen heights of less than 50 ft but not less than 35 ft, provided that the following criteria are met:

a) the AFM must state the maximum approved glide slope angle; any other limitations; and normal, abnormal or emergency procedures for the steep approach as well as amendments to the field length data when using steep approach criteria;

b) a suitable glide path reference system, comprising at least a visual glide path indicating system, must be available at each aerodrome at which steep approach procedures are to be conducted; and

c) weather minima must be specified and approved for each runway to be used with a steep approach. Consideration must be given to the following:

i) the obstacle situation;

ii) the type of glide path reference and runway guidance such as visual aids, MLS, 3D–NAV, ILS, LLZ, VOR, NDB;

iii) the minimum visual reference to be required at Decision Height (DH) and Minimum Descent Altitude (MDA);

iv) available airborne equipment;

v) pilot qualification and special aerodrome familiarisation;

vi) AFM limitations and procedures; and

vii) missed approach criteria.

4.14 Short landing operations

4.14.1 For the purpose of paragraph 4.9 a) ii), the distance used for the calculation of the permitted landing mass may consist of the usable length of the declared safe area plus the declared landing distance available. The CAA may approve such operations in accordance with the following criteria:

a) the use of the declared safe area must be approved by the aerodrome authority;

b) the declared safe area must be clear of obstructions or depressions which would endanger an aeroplane undershooting the runway, and no mobile object shall be permitted on the declared safe area while the runway is being used for short landing operations;

c) the slope of the declared safe area must not exceed 5% upward slope nor 2% downward slope in the direction of landing;

d) the usable length of the declared safe area under the provisions of this paragraph shall not exceed 90 m;

e) the width of the declared safe area shall not be less than twice the runway width, centred on the extended runway centreline;

f) it is assumed that the crossing height over the beginning of the usable length of the declared safe area shall not be less than 50 ft;

g) for the purpose of this operation, the bearing strength requirement of paragraph 3.1 e) need not apply to the declared safe area;

h) weather minima must be specified and approved for each runway to be used and shall not be less than the greater of VFR or non-precision approach minima;

i) the pilot has obtained adequate knowledge of the route to be flown and of the aerodromes (including alternates), facilities and procedures to be used; and

j) the CAA may impose such additional conditions as are necessary for safe operation taking into account the aeroplane type characteristics, approach aids and missed approach/baulked landing considerations.

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Chapter 7 Helicopter Performance

1 Helicopter Performance Classes

1.1 Performance Requirements

1.1.1 Performance requirements constitute a set of flight safety rules, designed to ensure that a helicopter embarking on a flight is dispatched at a safe weight in relation to the effects of an engine failure on the intended flight path. If the weight is properly determined and the appropriate procedures are followed, the pilot should be clear what immediate actions should be taken in the event of an engine failure at any point in the flight.

1.1.2 Certification requirements and operating rules are designed to complement each other such that the highest certification standard (i.e. JAR-27/FAR Part 27/EASA CS-27 and JAR-29/FAR Part 29/EASA CS-29 Category A) has few operational limitations whilst single engine helicopters have many.

1.2 Performance Classes

1.2.1 For performance purposes, helicopter operations are grouped into the following classes:

a) Performance Class 1 (PC1) operations means flights where, in the event of the failure of a power unit, the helicopter will be able to safely continue the flight and land at an appropriate landing area unless the power unit failure recognition occurs during take-off at or prior to reaching the take-off decision point in which case the helicopter will be able to safely land back within the area from which it has taken off.

b) Performance Class 2 (PC2) operations means flights where, in the event of the failure of a power unit, the helicopter will be able to safely continue the flight to an appropriate landing area or, where the failure occurs at a point during the take-off manoeuvre or the landing manoeuvre when it cannot do so, the helicopter will be able to carry out a forced landing.

c) Performance Class 3 (PC3) operations means flights where, in the event of the failure of a power unit at any time during the flight, the helicopter will be required to carry out a forced landing.

1.2.2 Helicopters conducting PC1 or PC2 operations are to be certificated in Category A and PC3 operations in Category A or B.

2 Applicability

2.1 A helicopter may be operated in more than one Performance Class but the choice is limited by the following constraints:

a) Helicopters operating to/from surface or elevated heliports located in a congested hostile environment are to be operated in accordance with PC1.

b) Unless otherwise prescribed by subparagraph a) above, helicopters which have an MAPSC of more than nine are to be operated in accordance with PC1 or PC2.

c) Unless otherwise prescribed by subparagraph a) above, helicopters which have an MAPSC of nine or fewer are to be operated in accordance with PC1, PC2 or PC3.

2.2 Operators are to state in the PAOM Part 2 which performance classes their aircraft are permitted to be operated in and under what conditions.

3 Phases of Flight and Terminology

3.1 As previously mentioned, the effect of compliance with performance operating rules is to limit the operating weight of the helicopter. In practice, this is achieved by dividing the flight into a number of phases. This is the case for both certification and operating requirements.

3.2 Standard flight phases are take-off, take-off flight path, en-route, approach and landing. Using Flight Manual data, an operating weight can be calculated for each phase taking account of the obstacle environment and atmospheric conditions (of wind, weight, altitude and temperature).

a) The take-off phase involves the take-off manoeuvre and ends when the helicopter is either in the prescribed (in the AFM) climb condition or has carried out a rejected take-off (Category A only). The take-off flight path begins at the end of the take-off and continues until the helicopter has achieved either 1,000 ft above the take-off surface or 1,000 ft above the en-route obstacle environment.

b) The en-route phase commences when the helicopter has reached cruising altitude and ends upon commencement of descent for landing.

c) The landing approach is in itself not a phase of flight which is dependent upon aircraft weight for obstacle clearance as the helicopter will always be required to have a positive rate of climb capability (Landing Weight, Altitude, Temperature (WAT)). Landing distances, however, are weight dependent and scheduled.

3.3 Safe Forced Landing. A safe forced landing is defined as an unavoidable landing or ditching with a reasonable expectancy of no injuries to persons in the aircraft or on the surface.

4 Performance Class 1 Operations

PC1 operating rules are intended to ensure full protection from obstacles (including the ground surface) following engine failure at any stage of the flight.

4.1 Take-Off

4.1.1 Notwithstanding any site limitations, the maximum take-off weight must always be that which will allow the specified (in Category A requirements) OEI rates of climb. This is generally known as the Take-off (and Landing) WAT weight and will be scheduled in the AFM performance data.

4.1.2 As stated in paragraph 2.1 a), PC1 is mandatory when operating to/from surface or elevated heliports located in a congested hostile environment. This will involve use of either the Category A Clear Area or Helipad procedure and be dependent on the necessary space being available. Irrespective of the presence of a congested hostile environment, a Category A procedure is always to be used and be appropriate to the space available.

4.2 Take-Off Flight Path

4.2.1 Obstacles beneath the climb-out which in the event of an engine failure at the critical time (Take-Off Decision Point (TDP)) cannot be avoided laterally must be cleared by a minimum height of 35 ft. To satisfactorily achieve this would require an accurate survey of obstacle heights and position in relation to the operating site and is therefore not considered a practical situation for ad hoc sites.

4.3 En-Route

4.3.1 The helicopter should at all times be at a weight which will allow at least a 50 ft/min rate of climb with one engine inoperative. The AFM will normally provide such data predicated on the best rate of climb speed (V_Y). The nature of Police operations, however, is that the helicopter is routinely operated at speeds below this. Unless it can be shown that a 50 ft/min climb can be achieved at such speeds, minimum operating heights shall be chosen to allow acceleration to a safe climb speed without penetrating applicable height minima. Operational reasons may, however, require operations which penetrate the height/velocity avoid area. See paragraph 8 below.

4.4 Landing

4.4.1 As for the take-off, the helicopter weight must be at most that specified in the AFM Take-Off and Landing WAT chart.

4.4.2 Dependent on the dimensions of the landing space, the appropriate Category A procedure must be used with the helicopter at the appropriate weight.

5 Performance Class 2 Operations

The concept of a PC2 operation is that it will provide PC1 safety standards except for the take-off and landing phases that will be to PC3 standards. The only differences from PC1 are therefore as follows.

5.1 Take-Off and Landing

5.1.1 The maximum take-off and landing weight shall be that which permits a rate of climb of 150 ft/min at 1,000 ft above the take-off/landing surface with one engine inoperative and the remainder operating within appropriate limits. This is referred to as the PC2 Take-Off and Landing WAT weight.

5.1.2 The take-off is to be conducted such that, following a power unit failure, a safe forced landing can be executed until the point where safe continuation of the flight is possible. The landing is to be conducted such that if the power unit fails at any point in the approach path either a baulked landing can be carried out or a safe forced landing executed.

5.1.3 The requirement to be able to carry out a safe forced landing if an engine failure occurs when the helicopter does not have a fly away capability can be achieved in a number of ways. The obstacle environment and surface condition surrounding the operating site are critical to its suitability for PC2 operations and risk assessment techniques should be developed and implemented by the operator.

5.2 Take-Off Flight Path and En-Route

5.2.1 The take-off flight path and en-route requirements are as for PC1.

6 Performance Class 3 Operations

6.1 PC3 operations are appropriate to single-engine helicopters and those multi-engine helicopters that can be operated at weights that preclude a climb capability following engine failure. The requirement to have a safe force landing capability for the whole of the flight requires the following limitations to be applied:

a) flights shall not be conducted when the cloud ceiling is less than 600 ft above the local surface or the visibility is less than 800 m and shall always be conducted with the surface in sight;

b) operations shall not be conducted to/from elevated heliports except for heliports in a non-hostile environment where operations by turbine-powered helicopters may be permitted by the CAA under certain conditions; and

c) operations shall not be conducted at night.

6.2 In addition, the maximum take-off and landing weight shall be such that the helicopter is able to carry out an Inside Ground Effect (IGE) hover with all engines operating at take-off power for the altitude and atmospheric conditions expected. This is referred to as the PC3 Take-Off and Landing WAT.

7 Compliance with the Standards

7.1 As operations to PC1 standards should ensure no risk to persons or property on the ground or to the helicopter and its occupants, such standards should be used whenever possible.

8 Helicopter Operations in the Height/Velocity Avoid Area

8.1 In order to operate effectively in the police role, a helicopter may occasionally have reason to fly within the range of heights and airspeeds known as the height/velocity avoid area. This area of operation shall normally be avoided, as an engine failure therein is likely to result in a crash or a heavy landing. When necessary to fly in the height/velocity avoid area, the commander shall observe the following requirements:

a) the operation shall not endanger persons or property on the surface;

b) aircraft weight shall be as light as practicable;

c) the number of occasions on which flight takes place in the height/velocity avoid area shall be kept to the minimum but several short periods are preferable to one sustained period;

d) operations should, if possible, be restricted to the edge of the avoid area, at a height/velocity combination that provides a high probability of achieving a safe forced landing in the event of an engine failure;

e) engine condition instruments shall be checked prior to the operation and frequently monitored during the operation;

f) reconnaissance of the surface of the search area and its surroundings should be undertaken;

g) all seat harnesses shall be tight and locked;

h) any passengers shall be CAA-agreed passengers; and

i) the number of occupants shall be kept to the minimum.

NOTE: See also Section 3, Chapter 3, paragraph 4.2.1.

Chapter 8 Aerodromes and Helipads

1 Introduction

1.1 The operator shall list all aerodromes and heliports intended to be used in his operating area in the PAOM Part 2.

2 Fixed-Wing Operating Bases

2.1 An aeroplane may operate from either a licensed or an unlicensed aerodrome by day or night provided:

a) the aircraft shall comply with the public transport performance requirements for operating in its Performance Class;

b) a system to monitor the aircraft's departure and arrival for safety shall be set out in the PAOM Part 2;

c) at an unlicensed aerodrome used as a main operating base or where the frequency of passenger carrying movements (take-offs or landings) is expected to exceed 10 per day on a regular basis, the operator shall ensure that Rescue and Fire-Fighting Services (RFFS) are provided to the scale recommended in Appendix C of CAP 793 (Safe Operating Practices at Unlicensed Aerodromes); and

d) for night operations, aerodrome lighting that illuminates the runway threshold, edges and end, and approach slope guidance lighting, shall be available during take-off and landing. However, if only runway edge lighting is available, operations shall be permitted where the length of runway so lit is at least twice as long as the Take-Off Distance Required (TODR) or Landing Distance Required (LDR), as dictated by the ambient atmospheric conditions and weight of the aircraft.

3 Helicopter Main Operating Base

3.1 A helicopter may operate from either a licensed aerodrome or unlicensed sites by day or night provided:

a) the aircraft shall comply with PC1, PC2 or PC3 by day, and by PC1 or PC2 at night;

b) a system to monitor the aircraft's departure and arrival for safety shall be set out in the PAOM Part 2;

c) for night operations, such lighting as will enable the pilot of the helicopter, in the case of landing, to identify the landing area in flight, to determine the landing direction and to make a safe approach and landing; and in the case of taking off, to make a safe take-off; and

d) although a helicopter may operate at an unlicensed aerodrome or site, the operator shall ensure that the fire-fighting equipment listed below is provided at any such location used as a main operating base, or where the frequency of passenger movements (take-offs or landings) is expected to exceed 10 per day on a regular basis:

- a 90-litre pre-mixed foam unit with hose having a minimum discharge rate of 60 litres of foam solution per minute. The foam selected should meet ICAO Performance Level B, e.g. Aqueous Film Forming Foam (AFFF) or Film Forming Fluoroprotein (FFFP) Foam;
- an 18 kg mobile dry chemical powder unit. Dry chemical powder should be of the foam-compatible type; and

- an 18 kg mobile CO_2 trolley unit equipped with an extending applicator for use on engine fires. The CO_2 trolley unit may be substituted with no less than 18 kg of other gaseous agent provided with a suitable applicator for use on helicopter engine fires.

NOTES: 1) The discharge rate of complementary agents should be selected for optimum effectiveness of the agent used.

2) Where H2 helicopters are routinely operated, the operator may need to consider additional quantities of fire-fighting media.

3) H1 helicopter: a helicopter with an overall length up to (but not including) 15 m.

4) H2 helicopter: a helicopter with an overall length from 15 m up to (but not including) 24 m.

4 Helicopter Landing Sites Selection, Categorisation and Survey Procedures

All pre-planned landing sites will fall into either a congested area or a non-congested area category. However, the following methods of survey must be applied to sites in congested areas and should be applied to sites in non-congested areas as best practice with all details being entered into the Unit Landing Site Directory.

4.1 Operations into Congested Areas

Three types of site may be identified by an operator. These are as follows:

a) **Estimated**. A site where no reliable information has been obtained, but a reasonable estimate of site size and obstacle heights is available. For example, "it is an open field with a length equivalent to three full-size football pitches with trees about 25 feet high at the end". The operator may dispatch the aircraft in accordance with the requirements of paragraph 4.6.1 below provided it is satisfied that the information is reasonably accurate, that the dimensions are appropriate to the PC1 LDR or clear area TODR (whichever is greater), and that fuel to a suitable alternate landing site or aerodrome is carried. Units must enter in the PAOM Part 2 the minimum acceptable dimensions for using estimated sites and these must be not less than the PC1 clear area LDR or TODR. In addition, they should specify the minimum acceptable size of site for helipad profiles (if applicable) to be flown on departure, following measurement of the site on arrival. The minimum acceptable size should include an allowance for the horizontal distance flown, forward of the initial hover point, during drop down following an engine failure at TDP.

   The use of estimated sites is limited to day only.

b) **Measured**. A site which has been measured to an accuracy less than that required for a surveyed site, e.g. paced out, taken from Global Positioning System (GPS) readings or from an accurate and current large-scale map. Obstacle heights may be determined by comparison with known objects such as a standard two-storey house or similar 'known' items, or may be provided from other acceptable sources such as spot heights from a large-scale chart. The dimensions should be factored by a minimum of 10% to account for any inaccuracies. Where a site is clearly an open area, e.g. a park, then it need not be measured, provided its length clearly exceeds the TODR in still air at the WAT limiting weight and there are no obstacles greater than 15 feet located at that distance.

   The use of measured sites is limited to day only.

c) **Surveyed**. A site that has been accurately measured for calculating performance and which may be used by day and by night, providing adequate lighting is available. The survey need not be done by the PAOC holder but must be done to the standard specified by them. The operator should record the date of the survey and ensure no changes that might affect the commander's helicopter performance calculations have occurred at the site since the last survey. Sites should be re-surveyed at intervals of not more than 12 months in order to remain valid as surveyed sites.

4.2 Operations into Non-Congested Areas

4.2.1 The procedures detailed in paragraph 4.1 should be followed, but LDR and TODR may be amended to allow PC2 or PC3 operations where applicable.

4.3 Performance Requirements

4.3.1 Twin-engine helicopter operations should be conducted to the highest level of performance available. Commanders of helicopters being operated in PC2 or PC3 must ensure that the take-off and landing are conducted over a surface which permits a safe forced landing to be executed in the event of an engine failure. Helicopters operating at sites where a safe forced landing is not possible must operate to PC1.

4.4 Equipment

4.4.1 The PAOM Part 2 must specify equipment required to conduct accurate surveys at surveyed heliports. Additionally, it must list the equipment required to be carried in the aircraft to measure distances and obstacle heights to a reasonable degree of accuracy at estimated and measured sites. Instructions for the use of all equipment should be provided.

4.5 Personnel

4.5.1 Any commander may self-authorise the use of a site. Initial training of 'surveyors' and their recurrent checking should be detailed in the PAOM Part 2, along with a method of recording it.

4.6 Procedures to be Followed

4.6.1 Prior to Aircraft Departure

a) Following receipt of a request to operate to site, the commander is to assess the type of site and its suitability.

b) For flights to estimated or measured sites, aircraft must be equipped with the equipment specified in paragraph 4.4.

4.6.2 On Arrival at Estimated Sites

a) On arrival above the site and before commencing an approach to a landing, the commander must be satisfied that it is adequate taking the following into account:

i) *Size*: The Final Approach and Take-Off Area (FATO) is adequate; in general there should be sufficient distance to accommodate the published landing distance from 100 feet.

ii) *Shape*: The site accommodates the approach, go-around, touchdown and lift-off area and departure route with due regard to the appropriate Performance Class.

iii) *Surrounds*: Any obstacles and wires etc. have been identified and do not infringe the approach or departure flight path.

iv) *Surface*: The surface appears satisfactory and is free from debris which may damage the helicopter and the ground is able to support a safe forced landing.

v) *Slope*: Any slope is within the helicopter's limits.

b) No performance credit may be taken for wind and approaches should be conducted with a headwind component.

c) Sites are limited to use by day only.

d) If the site lies within a congested area, prior to departure from the site it must be measured or surveyed in accordance with paragraph 4.1 b) or c); for single pilot operations it will be necessary for the helicopter to be shut down to achieve this.

4.6.3 On Arrival at Measured Sites

a) On arrival above the site, and before commencing an approach to a landing, the commander must be satisfied that it is obstacle free (in accordance with paragraph 4.6.2 a)). He must also be satisfied that the horizontal landing distance available is not less than that required for the aircraft to land from 100 feet.

b) No performance credit may be taken for wind and approaches should be conducted with a headwind component.

c) If the site lies within a congested area, and if dimensions appear to be less than originally advised, then prior to departure from the site it must be re-measured or surveyed in accordance with paragraph 4.1 b) or c). For single pilot operations it will be necessary for the helicopter to be shut down to achieve this.

d) Sites within a congested area are limited to use by day only.

4.6.4 On Arrival at Surveyed Sites

a) On arrival above the site, and before commencing an approach to a landing, the commander must be satisfied that it is obstacle free (in accordance with paragraph 4.6.2 a)). He must also be satisfied that the site has not changed in respect of its size and obstacle domain since its most recent survey.

b) Prior to commencing an approach to land at night, the commander shall ensure that sufficient lighting has been provided to enable him to identify the landing area from the air, to determine the landing direction and to make a safe approach and landing. Control of third parties on the ground should be ensured.

c) Approaches should be made with a headwind component.

4.6.5 Prior to Departure from a Site

a) If PC1 is required:

i) The commander is to calculate the maximum WAT limit for the conditions.

ii) The commander is to calculate the maximum weight at which, in the ambient conditions, the helicopter is able to clear all obstacles by a vertical interval of not less than 35 feet, assuming an engine fails at the TDP. (If a helipad profile is to be flown, allowance must be made for the horizontal distance during the drop down from TDP to 35 feet, when calculating the take-off weight.)

iii) The commander is to calculate the rejected TODR for the lowest maximum weight calculated in paragraph 4.6.5 a) i) or ii); or the maximum weight calculated for the rejected TODA.

iv) The maximum permissible take-off weight shall be the least of 4.6.5 a) i), ii) and iii) above.

v) No departure is permitted with a tailwind component.

vi) At estimated and measured sites no performance credit may be assumed for wind.

vii) At estimated and measured sites the actual horizontal and vertical dimensions used for calculating take-off performance shall be factored by 10%.

viii) At surveyed sites 50% of the headwind component of the actual wind may be used where the wind velocity and direction are obtained from within the site.

ix) Prior to a night departure, the commander shall ensure that sufficient lighting to enable a safe take-off has been provided.

b) If the helicopter is to be operated in PC2 or PC3, items 4.6.5 a) i), ii), iii) and iv) do not need to be applied. However, the commander must satisfy himself that the aircraft can, in the event of an engine failure, either conduct a safe forced landing or continue the take-off avoiding all obstacles.

4.7 Congested Area Landing Site Record Sheet

4.7.1 Details of the use of congested area landing sites are to be recorded and retained for 12 months for inspection purposes. (See Appendix E.)

4.8 Surveying Procedures

4.8.1 The information detailed at paragraphs 4.8.2 and 4.8.3 is to be included in the PAOM Part 2.

4.8.2 Equipment Required

a) Full Site Surveys:

i) Accurate distance measuring equipment, e.g. Range Finder or Measuring Wheel.

ii) Equipment capable of calculating obstacle height, e.g. Abney Level or Inclinometer.

iii) Magnetic compass.

iv) Calculator.

b) Estimated or Measured Sites Surveys:

Where possible the equipment provided should be as for Full Site surveys; however, where the conditions are obviously not limiting it is acceptable to estimate the height of obstacles and pace out the distances. In these circumstances no special equipment is required.

4.8.3 Full Survey Procedures:

a) Include Unit forms and their use.

b) Include instructions for using the equipment for the purpose of:

i) determining distances and the obstacle heights using the supplied equipment; and

ii) determining bearings using a sighting compass.

c) Measurements to be plotted on the appropriate form or diagram.

d) Completing the entry in the Unit Landing Site Directory.

e) Include the need for sites to be re-surveyed at intervals of not more than 12 months in order to remain valid as surveyed sites.

4.9 Surveyor Training and Checking

a) Personnel must be trained to survey 'surveyed' sites. All line commanders should be trained to survey estimated and measured sites.

b) Personnel must be retrained and rechecked annually in their ability to carry out a full site survey with the equipment.

c) Training records will be annotated accordingly.

d) Surveyor training and checking is to be detailed in the PAOM Part 2, Part D.

4.10 Landing site directory

Details of all surveyed landing sites are to be entered into the Unit Landing Site Directory.

4.11 Ad Hoc Landing Sites

4.11.1 There will be occasions when an ad hoc landing may need to be carried out for operational reasons. The surveying procedures applicable to an estimated site in a congested area should be used where possible but it is recognised that a shut-down and further survey may not be practical due to the operational nature of the flight. It is recommended that Vertical Take-Off and Landing (VTOL) profiles are used for approach and departure.

4.11.2 Congested area (Day) – Ad hoc congested area landings are to be carried out in accordance with procedures set out in the PAOM Part 2 and require an entry in the Congested Area Landing Site Record Sheet.

4.11.3 Congested area (Night) – Night ad hoc landings in a congested area may only be undertaken when tasked for a Casualty Evacuation (CASEVAC). They are to be conducted in accordance with procedures set out in the PAOM Part 2 and require an entry in the Congested Area Landing Site Record Sheet.

4.11.4 Non-congested – Landings may be undertaken (including at night without established ground lighting) as long as role equipment is used to assess the landing site for obstructions, wires, members of the public, uncontrolled animals and vehicles other than those used by the emergency services.

4.11.5 CAA-agreed passengers only may be flown at night.

4.12 CASEVAC Landing Sites

4.12.1 Where there is a genuinely perceived threat to a person's life, the commander may operate at a landing site which does not meet the criteria mentioned above, providing all the following requirements are met:

a) take-off and landing weights shall not exceed those specified in the AFM as being appropriate to PC2 for the altitude and the air temperature at the landing site in non-congested areas and PC1 in congested areas;

b) the site shall be large enough to accommodate the aircraft's performance requirements in terms of single-engine climb out angle, up to 1,000 ft above surface level. The area shall encompass the space required for touchdown and take-off, as follows:

Day	At least the equivalent of a circle with a diameter of twice the length of the helicopter, including rotors (2D);
Night	At least the equivalent of a circle with a diameter of three times the length of the helicopter, including rotors (3D);

c) before landing at any site within a congested area, or wherever there is evidence of people and/or loose animals, the aircraft commander shall take such steps as would be reasonable to satisfy himself that the site is under the control of a police or ambulance ground party which is supervising access and maintaining an obstruction-free operating area of the required size;

d) the aircraft commander shall make every reasonable effort to minimise the period during which there would be danger to the aircraft and its occupants and to persons and property on the surface, in the event of failure of a power unit;

e) the aircraft commander shall utilise a departure route that would present the least likelihood of striking an obstacle in the event of a power-unit failure. Where obstacle avoidance by lateral margins appears to be impracticable, the aircraft commander shall make every effort to ensure obstacle clearance by an adequate vertical margin;

f) the operator shall record all occasions of landings and take-offs in accordance with paragraph 4.11.3. The information shall include date, time, location and purpose. The record shall be retained for not less than 12 months after the event and shall be available for CAA inspection; and

g) only CAA-agreed passengers may be carried in addition to the casualty.

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Chapter 9 Documents to be Carried in an Aircraft

1 Requirements of the ANO 2009 (Articles 27 and 150 and Schedule 9)

The following documents shall be carried according to the category of flight shown subject to any alleviations in accordance with an Electronic Flight Bag (EFB) approval.

The commander shall ensure that the documents are correct for the particular aircraft, are in date and, where applicable, are the originals.

If a flight is intended to begin and end at the same aerodrome and does not include passage over the territory of any country other than the UK, the documents may be kept at that aerodrome instead of being carried in the aircraft.

1.1 On a Flight involving the Public Transport of Passengers, including a Police Observer

a) Certificate of Airworthiness;

b) radio installation licence;

c) flight crew licences;

d) copy of the load sheet, if required in accordance with Chapter 10 paragraph 2;

e) copy of the certificate of maintenance review; and

f) technical log.

1.2 On a Flight for the Purpose of Aerial Work

a) Certificate of Airworthiness;

b) radio installation licence;

c) flight crew licences;

d) copy of the certificate of maintenance review; and

e) technical log.

1.3 On an International Flight

In addition to the documents required on public transport flights or aerial work flights, as appropriate:

a) certificate of registration; and

b) procedures and visual signals for use by the commanders of intercepting and intercepted aircraft.

1.4 On a Flight Made in Accordance with a Permission Issued by the CAA

In addition to all the other documents normally required for the category of flight, a copy of the relevant permission.

1.5 On a Flight Made in Accordance with any Exemption Pursuant to the Air Navigation Order

In addition to all the other documents normally required, a copy of the relevant exemption.

2 Police Air Operations Manual and Aircraft Flight Manual

2.1 The PAOM Parts 1 and 2 and the AFM shall be carried on all flights which are being flown under the terms of a PAOC.

3 Aircraft Library and Pro-Forma

3.1 The aircraft library shall comprise paper documents, or electronic documents with CAA approval, in accordance with the following list:

a) the documents required to be carried in accordance with the ANO;

b) aircraft weight and balance schedule;

c) load sheet (where applicable);

d) credit cards and/or fuel carnets;

e) maps and charts for the intended area of operation;

f) route guide (e.g. Jeppesen, Aerad, Bottlang, Pooley's or RAF En-Route);

g) passenger safety briefing cards;

h) AFM; and

i) aircraft normal and emergency checklists.

NOTE: Items e), f), g), h) and i) shall be accessible in flight.

Chapter 10 Aircraft Loading

1 Aircraft Loading Instructions

1.1 The aircraft commander shall ensure that the loading of passengers, baggage, equipment and/or freight is carried out in accordance with the weight, Centre of Gravity (C of G) and performance limitations laid down in the AFM. Where other persons have loaded or secured items, the aircraft commander shall satisfy himself that such items have been loaded or secured correctly.

1.2 Before placing any load on the cabin floor or in the cargo bay the aircraft commander shall ensure that the maximum floor loading, as specified in the PAOM Part 2, would not be exceeded.

1.3 Items of freight shall be properly secured using lashing points or tie-down rings provided for the purpose, the loading limits of which shall be specified in the PAOM Part 2.

1.4 A cargo net or approved lashing straps of known strength shall be used to restrain the cargo. The restraint shall be capable of withstanding maximum 'g' forces as follows:

Direction of Deceleration	Fixed Wing	Rotary Wing
Forward	+9	+4
Aft	+1½	+3
Lateral	+2¼	+3
Up	+4½	+3

The aircraft floor is designed to absorb downward decelerations.

1.5 Should the nature of the load cause the floor loading limit to be exceeded, a load spreader, such as a sturdy and suitably sized piece of wood, shall be placed beneath it.

a) The load and load spreader shall be secured to obviate any possible relative motion.

b) The combined weight of the load and its spreader shall be taken into account when the requisite strength of the cargo net or lashing straps is calculated.

2 Load Sheets

2.1 Completion and Carriage

2.1.1 The requirements for the completion and carriage of load sheets, as set out in the ANO, are summarised below:

A load sheet shall be prepared for all flights, except where:

a) the aircraft's Maximum Take-off Weight Authorised (MTWA) does not exceed 1,150 kg,

or

b) the aircraft's MTWA does not exceed 2,730 kg and the flight is intended not to exceed 60 minutes in duration and is either:

i) a flight solely for training persons to perform duties in an aircraft; or

ii) a flight intended to begin and end at the same aerodrome,

or

c) the aircraft is a helicopter, the MTWA of which does not exceed 3,000 kg, and the total seating capacity of which does not exceed five persons.

2.1.2 The person supervising the loading of the aircraft, who may be the aircraft commander or a person trained and approved to do so by the operator, shall, prior to take-off, prepare and sign a load sheet in duplicate. Where the load sheet has been prepared by another person, it shall be checked and countersigned by the aircraft commander. One copy of the load sheet shall be carried in the aircraft and one copy shall remain on the ground, to be preserved by the operator for at least six months.

2.1.3 Load sheet and C of G calculations must be performed at the beginning of a rostered period in support of a series of flights under the same loading conditions. This may be done so utilising AFM drop graphs, manually or electronically supported by a hard copy with original signature or other approved electronic methods set out in the PAOM Part 2. Any electronic system must be checked for integrity at three-month intervals or whenever the weight and balance schedule is amended.

2.1.4 In the case of an aeroplane of which the MTWA does not exceed 2,730 kg, or a helicopter, if it is not reasonably practical for the copy of the load sheet to be kept on the ground, it may be carried in the aeroplane or helicopter, as appropriate, in a container approved by the CAA for that purpose.

2.2 **Required Calculations**

2.2.1 The commander of an aircraft shall, prior to take-off, ensure that the weight and C of G of the aircraft as loaded are within the limitations set out in the AFM and shall subsequently ensure that they remain so for the duration of the flight.

2.2.2 The aircraft weight and balance schedule gives the basic weight and moment arm for a specific aircraft. The person responsible for continued airworthiness shall ensure that a current copy is included in the technical log.

2.2.3 Should the aircraft configuration be changed from that in the weight and balance schedule, the aircraft commander shall ensure before flight that the weight and moment are recalculated according to the instructions contained in the AFM, or in the PAOM Part 2, as appropriate.

3 Notional/Standard Masses

3.1 The person who prepares the load sheet shall use the actual masses of goods, luggage and freight. Whenever possible the actual masses of passengers shall be used, but when this is not practical the following notional/standard masses shall be used.

Table 2.4 Standard Passenger Masses

Passenger Seats	**1 to 5**			**6 to 9**		
	Male	Female	Child	Male	Female	Child
	98 kg	80 kg	35 kg	90 kg	72 kg	35 kg

Passenger Seats	**10 to 19**		
	Male	Female	Child (2 to 12 yrs)
	86 kg	68 kg	35 kg

3.2 On flights where hand baggage is carried, unless accounted for separately, 6 kg should be added to the mass of passengers over 12 years of age.

3.3 Where survival suits are worn or carried, 3 kg per person shall be added to the above masses.

3.4 **However, where the person preparing the load sheet has reason to believe that an individual or hand baggage exceeds the standard mass, he shall establish and use the actual mass of the individual or baggage.**

4 Standard Load Plans

4.1 A standard load plan may be devised and used for a specific aircraft.

4.2 A plan may be prepared for any weight up to the aircraft's MTWA but the calculated fore/aft C of G range shall not exceed 90% of that permitted in the AFM. A copy of each standard load plan shall be included in the PAOM Part 2 together with the working method.

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Chapter 11 Safety and Survival Equipment

Even though police operations are predominately conducted over land, coastal tasks and the need to overfly lakes, reservoirs and other water features may invoke the ANO requirement to carry water survival equipment.

1 Oxygen Equipment

1.1 Unless oxygen is carried in accordance with the requirements of the ANO, Schedule 4 Scales L1 and L2, as appropriate, aircraft shall not fly at a height of 10,000 ft or more Above Mean Sea Level (AMSL).

2 Lifejackets, Life-rafts and Emergency Locator Beacons

2.1 Aeroplanes

2.1.1 Lifejackets

a) A lifejacket, equipped with a whistle and survivor locator light, is to be carried for each person on board when, flying over water beyond gliding distance from land and on all flights where in the event of any emergency occurring during the take-off or during the landing at the intended destination or any likely alternate destination, it is reasonably possible that the aeroplane would be forced to land onto water.

b) The lifejackets should be stowed in an easily accessible position, with safety belt or harness fastened, from the seat or berth of the person for whose use it is provided.

2.1.2 Life-rafts

a) Life-rafts, sufficient to accommodate all persons on board, are to be carried when flying over water at a greater distance from land suitable for making an emergency landing than that corresponding to 30 minutes at cruising speed or 100 NM, whichever is the lesser.

b) Each life-raft must contain the following equipment:

i) a means of maintaining buoyancy;

ii) a sea anchor;

iii) lifelines and means of attaching one life-raft to another;

iv) paddles or other means of propulsion;

v) means of protecting the occupants from the elements;

vi) a waterproof torch;

vii) marine type pyrotechnical distress signals;

viii) means of making sea water drinkable, unless the full quantity of fresh water is carried as specified in subparagraph ix) bb);

ix) for each four or proportion of four persons the life-raft is designed to carry:

aa) 100 grammes of glucose toffee tablets; and

bb) ½ litre of fresh water in durable containers; or (in any case in which it is not reasonably practicable to carry that quantity) as large a quantity as is practicable in the circumstances provided that in no case must the volume of water carried be less than sufficient, when added to the amount capable of being produced by means of the equipment specified at subparagraph viii) above, to provide the ½ litre of water for each 4 or proportion of 4 persons the life-raft is designed to carry; and

x) first aid equipment.

Items vi) to x) inclusive shall be contained in a pack.

2.1.3 Emergency Locator Transmitters (ELT)

a) When life-rafts are required to be carried as at paragraph 2.1.2, then two Survival ELTs (ELT(S)) must also be carried in the aircraft. These may be stowed in the life-raft(s) or elsewhere but must be accessible.

b) Aeroplanes with a Certificate of Airworthiness first issued before 1 January 2002 must carry either an ELT(S) or an Automatic ELT (ELT(A)).

c) Aeroplanes with a Certificate of Airworthiness first issued on or after 1 January 2002 must be fitted with an ELT(A).

d) All ELTs must operate in accordance with the relevant provisions of ICAO Annex 10 Volume III.

2.2 Helicopters

2.2.1 Lifejackets

a) A lifejacket, equipped with a whistle and survivor locator light, is to be carried for each person on board:

i) when conducting PC2 or PC3 operations over water beyond autorotational distance from land suitable for an emergency landing;

ii) when conducting PC1 or PC2 operations over water at a distance from land corresponding to more than 10 minutes' flying time at normal cruise speed; or

iii) on all flights when, in the event of any emergency occurring during the take-off or during the landing at the intended destination or any likely alternate destination, it is reasonably possible that the helicopter would be forced to land on water.

b) The lifejackets should be stowed in an easily accessible position, with safety belt or harness fastened, from the seat or berth of the person for whose use it is provided.

c) Lifejackets are to be worn when operating in the circumstances of subparagraph a) i) or a) iii) above.

2.2.2 Life-rafts

a) When flying over water in the circumstances of paragraph 2.2.1 a) ii) and in the case of a helicopter carrying fewer than 20 persons, a minimum of one life-raft, sufficient to accommodate all persons on board, is to be carried.

b) Each life-raft must carry the equipment detailed at paragraph 2.1.2 b).

2.2.3 **Emergency Locator Transmitters (ELT)**

a) When life-rafts are required to be carried as at paragraph 2.2.2, then two ELT(S) must also be carried on the aircraft. These may be stowed in the life-raft(s) or elsewhere but must be accessible.

b) An ELT(A) is to be fitted:

i) when conducting PC1 or PC2 operations over water more than 10 minutes' flying time from land; or

ii) when conducting PC3 operations beyond autorotational or safe forced landing distance from land.

c) All ELTs must operate in accordance with the relevant provisions of ICAO Annex 10 Volume III.

3 Helicopter Flotation Equipment

3.1 When over water, the helicopter shall be flown, except as may be necessary for the purpose of take-off or landing, at such an altitude as would enable it:

a) if it has one engine only, in the event of the failure of that engine; or

b) if it has more than one engine, in the event of the failure of one of those engines and with the remaining engine or engines operating within the maximum continuous power conditions specified in the Certificate of Airworthiness or flight manual for the helicopter;

to reach a place at which it can safely land at a height sufficient to enable it to do so.

3.2 Without prejudice to paragraph 3.1, a helicopter carrying out PC3 operations:

a) shall not fly over water more than 20 seconds' flying time from a point from which it can make an autorotative descent to land suitable for an emergency landing unless it is equipped with the required apparatus;

b) which is equipped with the required apparatus:

i) in which any non-CAA-agreed passengers are carried, shall not fly more than 20 seconds' flying time from a point from which it can make an autorotative descent to land suitable for an emergency landing for more than 20 minutes on any flight; and

ii) in which only CAA-agreed passengers are carried, shall not fly over water on any flight for more than 10 minutes so as to be more than 5 minutes' flying time from a point from which it can make an autorotative descent to land suitable for an emergency landing; and

c) shall not fly over that part of the bed of the River Thames which lies between the following points:

i) Hammersmith Bridge (512918N) (0001351W); and

ii) Greenwich Reach (512906N) (0000043W);

between the ordinary high water marks on each of its banks unless it is equipped with the required apparatus.

3.3 For the purposes of paragraph 3.2, flying time shall be calculated on the assumption that a helicopter is flying in still air at the speed specified in the flight manual for the helicopter as the speed for compliance with regulations governing flights over water.

3.4 Without prejudice to paragraph 3.1, a helicopter carrying out PC1 or PC2 operations which is not equipped with the required apparatus and in which any non-CAA-agreed passenger is carried shall not fly over any water on any flight for more than 15 minutes.

3.5 'Required apparatus' means apparatus approved by the CAA enabling the helicopter to which it is fitted to land safely on water.

4 Survival Suits – Helicopters

4.1 Survival suits shall be worn by each person on board the helicopter when a flight is intended to fly or actually flies beyond 10 minutes' flying time from land when:

a) the weather report or forecasts available to the aircraft commander indicate that the sea temperature will be less than + 10°C during the flight;

b) any part of the flight is at night; or

c) the surface wind over the route or area to be flown is forecast or is known to be 30 kt or more.

NOTE: The requirement to wear a survival suit may be waived by the aircraft commander in exceptional operating circumstances when insufficient time is available to don the equipment, provided that any passengers are CAA-agreed passengers and no more than one of the conditions specified above will be experienced during the flight. The operator shall report any use of this waiver to the CAA (assigned Flight Operations Inspector) giving reasons in writing, within seven days of the event.

5 Survival Packs

5.1 An aircraft may be forced to land in a sparsely populated area or an area of inhospitable terrain in which the passengers and crew may be faced with a survival situation. Operators shall therefore consider the circumstances in which survival packs are required to be carried, and the contents of such packs. The type and scale of equipment to be carried shall be stipulated in the PAOM Part 2, in accordance with the principles of survival, namely to provide protection, to aid location and to supply water and food.

6 Additional Items and Scales of Safety and Survival Equipment

6.1 Operators may specify additional items and scales of safety and survival equipment for carriage in aircraft, as required, in the PAOM Part 2.

7 Equipment Stowage Information

7.1 The operator shall list the items of safety and survival equipment carried in each type of aircraft operated and produce a diagram to illustrate their on-board locations. This information shall be included in the PAOM Part 2 in order to assist the aircraft commander when he checks that such equipment is present and correctly positioned.

Chapter 12 Altimeter Testing and Setting Procedures

1 Introduction

1.1 The recommended altimeter testing and setting procedure is set out in the following paragraphs. An operator may choose to adopt an alternative method, provided that it covers the same ground and is set out in the PAOM Part 2.

1.2 Aircraft shall be fitted with one or two barometric altimeters, as required by Schedule 4 of the ANO 2009.

1.3 The altimeter(s) shall be tested for serviceability and accuracy prior to the first flight of the day and prior to flight in IMC/IFR.

2 Elevation Nomenclature

2.1 A barometric altimeter indicates:

a) height when set to QFE;

b) altitude when set to QNH; and

c) flight level when set to 1013 hPa (mbar).

3 Barometric Altimeter Testing Procedure

a) Set each altimeter to aerodrome QFE and check that it reads within ± 50 ft of zero.

b) Increase and decrease the pressure datum by winding each altimeter up and down ten hPa (mbar), checking that the operation of the needle is smooth and the change in indication is approximately 270 ft up and down.

c) Reset the aerodrome QFE and check that each altimeter again reads within ± 50 ft of zero. Check also that the altimeters read within 50 ft of each other.

d) Should aerodrome QFE not be available or regional QNH not be known, set the altimeter(s) to zero. Increase the datum up and down ten hPa (mbar) and carry out the checks at b) and c) above.

e) Reset the altimeter(s) to zero and check that the reading on the pressure setting datum is approximately the same as when the altimeter(s) was first set to zero.

4 Barometric Altimeter Setting Procedure

4.1 Procedures for altimeter setting are set out in Table 2.5 below:

Table 2.5 Altimeter Setting Procedures

Phase of flight	Single Altimeter	Two Altimeters	
		Pilot's Instrument	Second Instrument
Before take-off	QFE/QNH	QFE/QNH	Aerodrome QNH
		Confirm difference is aerodrome elevation	
Leaving circuit/ Cruise below Transition Altitude	Regional QNH	Regional QNH	Regional QNH
Climb through/Cruise above Transition Level	1013 hPa (mbar)	1013 hPa (mbar)	Regional QNH
Descent at Transition Level	Aerodrome QNH	Aerodrome QNH	Aerodrome QNH
Initial Approach	Aerodrome QNH	Aerodrome QNH	Aerodrome QNH
Final Approach	QFE/Aerodrome QNH	QFE/Aerodrome QNH	Aerodrome QNH
	Confirm QNH/QFE difference equals aerodrome elevation		
Go-around	Aerodrome QNH	Aerodrome QNH	Aerodrome QNH

NOTES: 1 When in the cruise below a Terminal Area, the altimeter(s) shall be set either to the Zone QNH or to the aerodrome QNH of an associated airfield.

2 Aerodrome QFE may be used on the final approach as an alternative to aerodrome QNH, in which case it should be set on the pilot's instrument where two altimeters are fitted.

5 Radio Altimeter (RADALT) – Helicopters

5.1 An analogue RADALT, fitted with visual and audio warnings, is recommended for all flights but shall be installed for night flying and any flight involving three or more minutes' flight time over water.

5.2 Both the audio and visual warnings shall be serviceable for a flight on which the instrument is mandatory, subject to any provision in the operator's MEL.

5.3 A flight may take place with an unserviceable RADALT in the following circumstances:

a) In daylight:

i) where good nearby visual references would enable the pilot to make an accurate assessment of safe height above water. Such references may be provided by river banks, or the surroundings of small lakes and reservoirs.

b) At night over land only:

i) not below 500 ft above the highest obstacle within 5 km of the helicopter; and

ii) minimum cloud base – 1,500 ft; minimum visibility – 5 km.

5.4 The PAOM Part 2 shall specify the settings of the RADALT warning system that the pilot should select for all stages of a flight.

Chapter 13 Communications and Navigation Procedures

1 Introduction

1.1 Police aircraft are generally fitted with two sets of communications, ATC and police force radios. In the event of an ATC communications failure, or loss of communications due to screening, an aircraft commander should use the police force radio to request the police controller to advise ATC of the situation by landline.

2 Emergency Communications

2.1 Emergency Transponder Codes

Distress	7700
Communications failure	7600
Unlawful interference	7500

2.2 Distress Procedure

A distress message shall be transmitted when the aircraft is threatened by serious or imminent danger and is in need of immediate assistance. It should first be transmitted on the frequency in use. If there is no response, the aircraft commander should change frequency to 121.5 MHz and repeat the call. The content of the call shall be as follows:

a) MAYDAY, MAYDAY, MAYDAY;

b) name of station addressed (when appropriate);

c) call sign;

d) type of aircraft;

e) nature of the emergency;

f) intention of the aircraft commander;

g) present or last known position, flight level/altitude and heading;

h) pilot qualification (unrated, IMC or full instrument rating);

i) other useful information, e.g. endurance, number of people on board (POB).

The message shall end with the word 'over'.

2.3 Urgency Procedure

An urgency call should be made when the aircraft commander has a very urgent message to transmit concerning the safety of the aircraft, or of some person on board or within sight. The message shall be prefixed with the words PAN/PAN, PAN/PAN, PAN/PAN and follow the format of the distress message.

2.4 Cancellation of Distress or Urgency Messages

If the emergency or urgency situation is resolved, or for any other reason ceases to exist, a cancellation message shall be transmitted to the agencies that were initially informed. If no immediate communication is possible, the cancellation shall be passed as soon as practicable by the quickest available means.

2.5 Action in the Event of Perceiving Another Aircraft or Vessel in an Emergency Situation

The commander of an aircraft shall, on becoming aware of another aircraft or vessel in an emergency situation, transmit a distress or urgency message, as appropriate. He shall provide such assistance as can reasonably be rendered to the aircraft or vessel in difficulties.

2.6 Reporting of Hazardous Weather Conditions

2.6.1 Where a pilot encounters hazardous weather conditions, particularly when they were not forecast, he should report them immediately to the ATSU in use, requesting that the information be passed to the local meteorological office. The message shall include the following:

a) aircraft call sign;

b) position, heading and altitude, height or flight level;

c) nature and extent of conditions; and

d) action taken.

2.6.2 The following conditions are considered hazardous:

a) severe turbulence;

b) severe windshear;

c) thunderstorms;

d) moderate or severe icing;

e) standing waves; and

f) fog.

3 Navigation Procedures

3.1 Map Reading

Onshore, map reading techniques should normally provide adequate navigational capability. However, when outside his local area, or when operating in poor weather, the aircraft commander shall make sensible use of the navigational equipment available. Use of moving map GPS systems and associated navigation displays is commonplace but up-to-date database information is essential to avoid level busts and airspace infringements.

3.2 Use of VHF Omni-directional Range (VOR), Distance Measuring Equipment (DME) and Automatic Direction Finding (ADF)

The aircraft commander shall positively identify the coding of the beacon before using any information derived from radio navigation equipment. He shall also carry out periodic checks of the ADF operation by deflecting the direction needle through 90° by means of the test switch.

3.3 Use of Area Navigation (RNAV)/GPS Equipment

Unless specifically approved, RNAV and GPS equipment may only be used to back up information provided either by raw data navigation equipment or by approach aids.

3.4 Dead Reckoning

Offshore, at low level, where reception from radio navigation aids may be poor, competent dead reckoning may become essential. Accurate planning followed by careful observance of calculated headings, airspeeds and timing is required.

4 Identification of Landing Site

4.1 A pilot shall positively identify the landing site before he lands there.

5 Keeping the Navigation Log

5.1 A navigation log shall be completed for all planned IFR flights and for all VFR flights in respect of which there is a reasonable probability of a transfer to IFR during the flight.

5.2 The format of the navigation log shall be set out in the PAOM Part 2.

5.3 The navigation log shall be kept as neatly as possible and completed accurately. The completed document shall be filed and retained for at least three months.

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Chapter 15 Night Flying

1 Aircraft Equipment Requirements

1.1 An aircraft certificated for public transport by day may not necessarily be equipped for such flights by night. An aircraft shall be equipped for night flying in accordance with the appropriate scales of equipment set out in the ANO 2009 Articles 37, 38 and 39, and Schedule 4 and Schedule 5. An operator shall include relevant extracts from the schedules in the PAOM Part 2.

2 Aircraft Performance Requirements

2.1 Night flying in aircraft of certain performance groups shall be restricted in accordance with the limitations set out in Chapters 6 or 7, as appropriate.

3 Pilot Qualifications

3.1 The commander of an aeroplane shall hold an instrument rating; the commander of a helicopter is not required to hold an instrument rating if the operation does not require flight in IMC or IFR in certain categories of CAS.

3.2 Training requirements are set out in Part D.

4 Pilot Recency

4.1 Recency requirements are set out in Part D.

5 Weather Limitations and Minimum Operating Heights

5.1 Weather limitations and minimum operating heights shall be as set out in Section 3, Chapter 3.

6 Pre-Flight Checks

6.1 In addition to any AFM requirements, the pilot shall carry out the following pre-flight checks:

a) ensure that he is carrying a serviceable electric torch; and

b) in the cockpit confirm the satisfactory operation of equipment as follows:

i) cockpit lighting;

ii) warning light dimmers;

iii) navigation lights;

iv) anti-collision lights (if fitted);

v) high intensity strobe lights (if fitted);

vi) landing lights; and

vii) emergency lights.

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Chapter 16 Refuelling Procedures

1 Introduction

1.1 Turbine-engined helicopters may be refuelled either engine and rotors stopped or engine running and rotors turning – sometimes known as 'hot' refuelling: preferably, the operation should be conducted with engines and rotors stopped.

1.2 Piston-engined helicopters should normally be refuelled with engine and rotors stopped but, in exceptional circumstances such as in high winds, or in extreme operational urgency, 'hot' refuelling may be permitted.

1.3 Aeroplanes are not permitted to refuel with engines running.

2 Helicopter Refuelling – Engines Running/Rotors Turning

2.1 For all refuelling with engines running/rotors turning the commander shall ensure that the following procedures are followed:

a) he remains at the controls and in visual contact with either the person conducting the refuelling or a third person who is able to relay instructions between himself and the person conducting the refuelling;

b) in normal circumstances, the only persons permitted to be aboard the helicopter are those crew members whose presence is necessary for refuelling purposes. Patients may only remain on board during refuelling if to move them could endanger their condition. If patients do remain on board, adequate precautions shall be made to remove them in the event of fire: persons shall be positioned to remove belts and other restraints and to facilitate evacuation.

When passengers remain on board during refuelling operations, they shall normally remain strapped in. Doors on the side on which fuel is being delivered shall where possible remain closed. Doors on the opposite side should normally remain open to facilitate rapid exit in the event of an emergency, but if they are closed to maintain cabin comfort a person shall be available in a position from which he could quickly open them;

c) the aircraft is parked into wind. Adequate fire-fighting facilities shall be positioned adjacent to, and upwind of, the aircraft;

d) a marshaller or a member of the crew ensures that vehicles manoeuvring near the aircraft remain at a safe distance;

e) no person smokes on the aircraft or within 16 m (50 ft) of it;

f) all items of equipment that radiate electronic emissions are switched off or set to standby;

g) the fuel is of the correct type and, when required, a fuel contamination check has been carried out;

h) grounding wires have been connected to both airframe and nozzle before the filler cap is removed; and

i) when the refuelling is complete, the refuelling hose and earthing wires are removed and the filler cap is replaced.

NOTES: 1 Particular care should be taken when hot refuelling to avoid a spillage.

2 In the event of a major fuel spillage the pilot shall immediately shut down the aircraft. He shall then check that the refuelling hose has been removed, the filler cap replaced and the bowser withdrawn. The fuel spillage should be hosed down as soon as possible.

3 Fuel Check for Water Contamination

3.1 Fuel provided at licensed or government aerodromes is subject to a daily check and requires no further testing before uplift. However, fuel supplied by small private or little-used aerodromes or heliports should be treated with caution and, if in doubt, a fuel contamination check shall be carried out.

3.2 Checks for water contamination shall normally be carried out before the first flight of the day, in accordance with the instructions below:

a) Only approved water testing capsules or compounds shall be used to establish the absence or presence of water contamination in fuel. Water test capsules or paste shall be carried with a compatible syringe and clear glass jar of at least half pint capacity. To test for water, fuel shall be drained into the glass jar, allowed to settle and monitored visually for the presence of water or other signs of contamination.

b) A water test capsule shall be placed on the syringe. The fuel shall be drawn into the syringe from the bottom of the jar. The capsule shall then be checked for discoloration. If discoloration occurs, the fuel is unusable. The serviceability of the capsule shall be confirmed by wetting its surface with water (saliva will suffice). Discoloration at this stage indicates that the capsule has functioned correctly.

c) Any variation to the above procedure should be agreed with the CAA and set out in the PAOM Part 2.

Chapter 17 Aircraft Operations in Extreme Meteorological Conditions

1 Flight in Turbulence Associated with Thunderstorms

A pilot should avoid severe thunderstorms, even at the cost of a diversion or an intermediate landing, but if that proves impossible the following procedures shall be followed, where applicable to the class and type of aircraft being flown:

1.1 Approaching the Thunderstorm Area

a) ensure that crew members' safety belts or harnesses are firmly fastened and secure any loose articles;

b) one pilot should control the aircraft and the other (where applicable) should monitor the flight instruments continuously;

c) select an altitude for penetration bearing in mind the importance of ensuring adequate terrain clearance;

d) set the power to give the recommended speed for flight in turbulence, adjust the trim and note its position so that any excessive changes due to autopilot can be quickly assessed;

e) check all flight instruments and electrical supplies;

f) ensure that the pitot heaters are switched on;

g) check the operation of all anti-icing and de-icing equipment;

h) disregard any radio navigation indications subject to interference from static;

i) turn the cockpit lighting fully on and lower crew seats and sun visors to minimise the blinding effect of lightning flashes;

j) follow the manufacturer's recommendations on the use of the flight director and autopilot;

k) continue monitoring the weather radar in order to select the safest track for penetration;

l) be prepared for turbulence, rain, hail, snow, icing, lightning, static discharge and windshear; and

m) avoid flying over the top of a thunderstorm or directly underneath a cumulo-nimbus cloud, if possible.

1.2 Within the Storm Area

a) control the aircraft regardless of all else;

b) concentrate on maintaining a constant pitch attitude appropriate to climb, cruise or descent, by reference to the attitude indicators, carefully avoiding harsh or excessive control movements;

c) maintain the original heading;

d) do not correct for altitude gained or lost through up and downdraughts unless absolutely necessary;

e) maintain the trim settings and avoid changing the power setting except when necessary to restore margins from stall warning or high speed buffet;

f) if trim variation due to the autopilot is large, disengage the autopilot but check that the yaw damper remains engaged;

g) if negative 'G' is experienced, ignore temporary warnings such as low oil pressure; and

h) on no account climb in an attempt to get over the top of the storm.

1.3 Take-Off and Landing Problems

When there are thunderstorms over or near the aerodrome, a pilot should, where possible, delay take-off or, when approaching to land, hold in an unaffected area or divert to a suitable alternate.

NOTE: Further information on turbulence is to be found in CAP 789.

2 Flight in Wake Turbulence

2.1 Wake Vortex Weight and Separation Criteria

To avoid the wake of another aircraft (especially if it is much larger), a pilot shall observe the minimum separation criteria set out in Tables 2.6 and 2.7 below. The weight parameters employed in the UK are:

Heavy	136,000 kg or greater
Medium	40,000 kg – 136,000 kg
Small	17,000 kg – 40,000 kg
Light	17,000 kg or less

Table 2.6 Wake Turbulence Spacing Minima – Final Approach

Leading Aircraft	Following Aircraft	Minimum Separation Distance and Time Equivalent	
		NM	MIN
Heavy	Small	6	3
Heavy	Light	8	4
Medium	Small	4	2
Medium	Light	6	3
Small	Small	3	2
Small	Light	4	2
Light	Small	*	*
Light	Light	*	*

NOTES: 1 These minima apply when an aircraft is operating directly behind another aircraft or when crossing behind at the same altitude, or less than 1,000 ft below.

2 * Separation for wake vortex reasons alone is not necessary.

Table 2.7 Wake Turbulence Spacing Minima – Departures

Leading Aircraft	Following Aircraft		Minimum Spacing at the Time Aircraft are Airborne
Heavy	Small or Light	Departing from the same position	2 Minutes
Medium or Small	Light		2 Minutes
Heavy (Full length take-off)	Small or Light	Departing from an intermediate point on the same runway	3 Minutes
Medium or Small	Light		3 Minutes

NOTES: 1 On intermediate approach a minimum of 5 NM shall be applied between a Heavy and a Medium, Small or Light aircraft following or crossing behind, if the following or crossing aircraft is at the same level or less than 1,000 ft below.

2 When the separation minima normally required for IFR purposes are greater than for wake turbulence, the IFR minima shall apply.

3 Frost, Ice and Snow on Aircraft

3.1 Pre-Flight Preparations

The aircraft commander shall satisfy himself that:

a) the whole aircraft is free from deposits of frost, ice and snow, when necessary, by using a de-icing fluid. Only fluids approved for the purpose shall be used;

b) both wings, or all rotor blades, have received similar de-icing treatment;

c) engine blanks and pitot/static covers are fitted, as required, before de-icing;

d) all orifices and guards (e.g. generator cooling inlets, fuel vents, APU inlets, pressurisation inlet and outlet valves, static plates, helicopter snow guards) and exposed operating mechanisms (e.g. nose-wheel steering, emergency door and window locks, helicopter rotor heads) are cleared of snow or slush and de-iced when so recommended;

e) anti-icing and de-icing systems are operating satisfactorily, verified by visual inspection if possible; and

f) the pitot heaters work, if practicable.

3.2 Start-up, Taxi and Take-off Precautions

a) If icing conditions are present or possible, a pilot shall select engine anti-icing, carburettor heat, and/or propeller de-icing, as appropriate; and

b) a pilot shall ensure, immediately before take-off, that the wings are not contaminated by ice or snow.

3.3 In-Flight Precautions

A pilot shall avoid icing conditions for which his aircraft is not approved. Crews should check regularly and thoroughly for the build-up of ice. The pilot shall follow all AFM instructions concerning the use of anti-icing and de-icing equipment.

NOTE: For further information about frost, ice and snow on aircraft see CAP 789.

4 Operations from Runways Contaminated with Snow, Slush and/or Water

4.1 Operations from contaminated runways, by all classes of aeroplane, should be avoided whenever possible. Aeroplane performance requirements are covered in Chapter 6.

4.2 Additional information and guidance should be taken from the current UK AIP and AIC.

Chapter 18 Procedures and Signals for Intercepted Aircraft

1 The Chicago Convention allows for the interception of civil aircraft by State aircraft, which are expected to have due regard for the safety of navigation of civil aircraft. As such interceptions are, in all cases, potentially hazardous, ICAO has formulated special recommendations which all Contracting States have been urged to implement through appropriate regulatory and administrative action. The CAA recognises that police aircraft may be dispatched to identify another aircraft. Section 5, Chapter 8 details the formation flying techniques to be used and Section 2, Appendix B, Table 2.11 details the signals to be used whilst intercepting. On no account is a police aircraft to attempt forcing another aircraft to land or alter course. If this is required in the interests of national security then this must be handed to military assets.

2 Intercepted aircraft should act as follows:

a) immediately follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with the specifications in Appendix B, Tables 2.11 and 2.12;

b) notify the appropriate ATSU, if possible;

c) attempt to establish radio communication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 121.5 MHz, giving the identity of the intercepted aircraft and the nature of the flight. If no contact has been established, and if practicable, repeat this call on the emergency frequency 243 MHz;

d) if equipped with SSR transponder, select Mode A, Code 7700 and Mode C, unless otherwise instructed by the appropriate ATSU;

e) if any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the intercepted aircraft shall request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft;

f) if any instructions received by radio from any sources conflict with those given by the intercepting aircraft by radio, the intercepted aircraft shall request immediate clarification while continuing to comply with the radio instructions given by the intercepting aircraft; and

g) Radio Communication During Interception

If radio contact is established during interception but communication in a common language is not possible, attempts shall be made to convey instructions, acknowledgement of instructions and essential information by using the phrases and pronunciations set out in Appendix B (Table 2.13).

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Chapter 19 Flight Time and Duty Hours Limitations Scheme

1 Introduction

1.1 An operator is required to ensure that any crew member is adequately rested at the start of each FDP, and whilst flying is sufficiently free from fatigue to be able to function to a satisfactory level of efficiency and safety in all normal and abnormal situations. Aircraft operators are expected to appreciate the relationship between the frequency and pattern of scheduled FDPs and rest periods, giving due consideration to the cumulative effects of working long hours interspersed with minimum rest. The Air Navigation Order 2009, Part 20, requires that the operator shall have a scheme for the regulation of flight times of crews, which shall be approved by the Flight Operations Division of the CAA. The standard scheme for police air operations is based on CAP 371 – The Avoidance of Fatigue in Aircrews (4th Edition) – and is presented in the paragraphs below.

1.2 Paragraph 24 consists of a variation which an operator may follow, if he so wishes, in place of the corresponding requirements of the standard scheme. The CAA's prior approval is required for the proposed roster patterns, which shall then be set out in the PAOM Part 2.

1.3 **Applicability**

1.3.1 The FTL scheme shall apply in respect of any duty carried out by a crew member at the behest of an operator.

2 Responsibilities and Requirements

2.1 The ANO requires that a crew member shall not fly, and an operator shall not require him to fly, if either has reason to believe that he is suffering, or is likely to suffer while flying, from such fatigue as may endanger the safety of the aircraft or of its occupants.

2.2 A pilot shall inform the operator of all flight time and FDPs undertaken by him, whether professionally or privately, except flying undertaken in aircraft not exceeding 1,600 kg maximum weight and not flying for the purposes of public transport or aerial work. Aerial work includes flying instruction for which the pilot is remunerated. It is also aerial work where valuable consideration is given specifically for flying instruction, even if the pilot receives no reward.

2.3 Responsibility for the proper control of flight and duty time does not rest wholly with the operator. Crew members shall be responsible for making optimum use of the opportunities and facilities for rest provided by the operator, and for planning to use their rest periods properly so as to minimise the risk of fatigue.

2.4 A person shall not be entitled to act as a member of a flight crew of an aircraft registered in the United Kingdom if he knows or suspects that his physical or mental condition renders him temporarily unfit so to act.

2.5 A crew member shall complete his 'record of flying and duty hours' form at the end of each duty. The record shall be maintained by the operator.

3 Definitions

3.1 Unless otherwise defined below, all words, phrases, definitions and abbreviations, have identical meanings to those described in the ANO 2009 Articles 255, 256 and 257.

a) **Contactable**

A short period of time during the day, other than on a day off, during which the company requires a crew member to be contactable for the purpose of giving notification of a DP which will commence not less than 10 hours ahead. The operator shall designate, in the PAOM Part 2, the times (local) at which the contactable period starts and finishes. The maximum duration of the period shall be 2½ hours but it may be split into 2 separate periods with the agreement of the CAA.

b) **Crew/Flight Crew/Cabin Crew**

As defined in the ANO.

c) **Days Off**

Periods available for leisure and relaxation free from all duties.

A single day off shall include 2 local nights. Consecutive days off shall include a further local night for each additional consecutive day off. A rest period may be included as part of a day off.

d) **Duty**

Any continuous period during which a crew member is required to carry out any task associated with the business of an operator.

e) **Early Start Duty**

A duty is an Early Start Duty if it commences in the period 0500 to 0659 hours local time.

f) **Floater**

A pilot generally used for relief duties, and named as such in the employer's PAOM Part 2, who operates from one or a number of bases not nominated as his/her home base.

g) **Flying Duty Period (FDP)**

Any time during which a person operates in an aircraft as a member of its crew. It starts when the crew member is required by an operator to report for a flight, and finishes at on-chocks or engines off, or rotors stopped after the final sector.

h) **Home Base**

The single place nominated by the operator to the crew member from where the crew member normally starts and ends a DP, or series of DPs, and at which place, under normal conditions, the operator is not responsible for the accommodation of the crew member.

i) **Late Finish Duty**

A duty is a Late Finish when the duty finishes in the period 0100 to 0159 hours local time.

j) **Local Night**

A period of eight hours falling between 2200 and 0800 (local).

k) **Night Duty**

A duty is a Night Duty if any part of that duty falls within the period 0200 to 0459 hours local time.

l) **Positioning**

The practice of transferring crews from place to place as passengers in surface or air transport at the behest of an operator.

m) **Regular**

Regular, when applied to duties that are Late Finishes, Night or Early Starts, means a run of 4 or 5 consecutive duties, not broken by a period of 34 hours free from such duties, contained in a single period of 7 consecutive days.

n) **Reporting Time**

The time at which a crew member is required by an operator to report for any duty.

o) **Rest Period**

A period of time before starting an FDP which is designed to give crew members adequate opportunity to rest before a flight.

p) **Rostered/Planned Duty**

A DP, or series of DPs, with stipulated start and finish times, notified by the operator to crews in advance.

q) **Rostering Period**

A number of consecutive weeks, usually four but not less than two, defined by the operator.

r) **Scheduled Duty**

The allocation of a specific flight or flights or other duties prenotified to a crew member within the rostered/planned series of DPs.

s) **Sector**

The time between an aircraft first moving under its own power until it next comes to rest after landing, on the designated parking position.

t) **Split Duty**

An FDP which consists of two or more sectors, separated by less than a minimum rest period.

u) **Standby Duty**

A period during which the operator places restraints on a crew member who would otherwise be off duty. However, it shall not include any time during which the crew member is contactable for the purpose of giving notification of a duty which is due to start 10 hours or more ahead.

v) **Suitable Accommodation**

A well-furnished bedroom which is subject to minimum noise, is well ventilated, and has the facility to control the levels of light and temperature.

w) **Travelling**

All time spent by a crew member in transit between the place of rest and the place of reporting for duty.

x) **Week**

A period of 7 consecutive days starting at any set time and on any set day as specified and stated by the operator.

4 Roster Planning

4.1 The operator shall ensure that rostering staff are aware of the effects of disturbing Circadian Rhythms and sleep deprivation. The operator shall provide for crew members away from base both the opportunity and facilities for adequate pre-flight rest, in suitable accommodation.

4.2 In order to promote stability, where rosters based on the standard scheme are produced, the CAA would wish operators to continue with the present system of cyclical rosters.

4.3 Rosters are to be issued not less than 14 days in advance of the roster period.

4.4 The minimum period of notice for a change of duty, once a roster has been issued, shall be 14 days for a day off and 7 days for a change of duty. Where, due to unforeseen circumstances, these minimum periods of notice cannot be satisfied, days off and duties may be changed with the acceptance of the crew member concerned provided that the other requirements of the scheme are satisfied.

5 Flight Crews Employed on a Part-Time Basis

5.1 An operator shall ensure that any flight crew member engaged on an irregular basis shall satisfy the provisions of this FTL scheme. Furthermore, an operator shall satisfy himself that a crew member whom he permits to undertake other employment still has the opportunity to enjoy adequate pre-flight rest.

5.2 A crew member not regularly employed by the operator shall provide him with details of his previous 12 months' flying hours, 28-day duty hours and days off in the last 84-day period, before undertaking a flying duty on behalf of the operator. The operator shall ensure that the pattern and totals of those previous duty/flying hours and days off are wholly compatible with this FTL scheme.

6 Calculation of Maximum FDP

6.1 General Considerations

6.1.1 The standard reporting time prior to flight is to be a minimum of 15 minutes. Pre-flight duties are part of the FDP; a minimum of 15 minutes' post-flight duty must be allowed for post-flight activities. The time spent between reporting for a flight and the completion of post-flight duties determines the length of the subsequent rest period. The actual operator reporting time and post-flight duty times should be recorded in the PAOM Part 2 if different from above.

6.1.2 Once the reporting time has been established, an operator shall in no circumstances postpone it by employing a special dispatch crew to undertake some pre-flight duties, nor shall it be altered in order to start at a local time that would lead to a longer FDP. Report times must not be reduced in order for crew members to achieve their required rest prior to an FDP.

6.1.3 When any period of standby finishes, during which a call-out has not occurred, at least 12 hours' rest must follow prior to the next DP. Similarly, following the end of a contactable period or periods at least 10 hours must elapse prior to the next DP.

6.2 Aeroplanes

The following tables indicate the maximum length of FDP related to start times and the number of sectors to be flown.

Table 2.8 Single Flight Crew – Maximum FDP (hours)

Local Time of Start	Sectors				
	Up to and including 4 IFR or up to and including 7 VFR	5 IFR	6 IFR	7 IFR	8 or more (see Note)
0600–0659	10	9¼	8½	8	8
0700–1259	11	10¼	9½	8¾	8
1300–1759	10	9¼	8½	8	8
1800–2159	9	8¼	8	8	8
2200–0559	8	8	8	8	8

NOTE: Or any combination of VFR and IFR.

Table 2.9 Two Flight Crew – Maximum FDP (hours)

Local Time of Start	Sectors							
	1	2	3	4	5	6	7	8 or more
0600–0659	13	12¼	11½	10¾	10	9½	9	9
0700–1259	14	13¼	12½	11¾	11	10½	10	9½
1300–1759	13	12¼	11½	10¾	10	9½	9	9
1800–2159	12	11¼	10½	9¾	9	9	9	9
2200–0559	11	10¼	9½	9	9	9	9	9

6.3 Helicopters

The following table indicates the maximum length of FDP and flying hours, related to start times:

Table 2.10 Maximum FDP (hours)

Local Time of Start	SINGLE PILOT		TWO PILOT	
	Maximum FDP	Maximum Flying	Maximum FDP	Maximum Flying
0600–0659	9	6	10	7
0700–0759	10	7	11	8
0800–1359	10	7	12	8
1400–2159	9	6	10	7
2200–0559	8	5	9	6

7 Additional Limits on Flying

7.1 Repetitive Short Sectors and Demanding Roles

7.1.1 Crews flying repetitive short sectors at an average rate of 10 or more landings per hour, or when carrying out demanding roles such as hoisting and external load carrying, shall have a break of at least 30 minutes away from the helicopter within any continuous period of 3 hours.

7.2 Early Starts/Late Finishes

7.2.1 Sleep deprivation, leading to the onset of fatigue, can arise if a crew member is required to report early for duty, or finishes a duty late, on a number of consecutive days. Therefore, not more than 3 consecutive duties that occur in any part of the period 0100 to 0659 (local) shall be undertaken, nor shall there be more than 4 such duties in any 7 consecutive days. Any run of consecutive duties (late finishes or early starts) can only be broken by a period of not less than 34 consecutive hours free from such duties. This 34 consecutive hours period may include a duty that is not an Early, Late or Night duty.

7.2.2 Should a crew member be scheduled for duty that occurs during any part of the period 0200 and 0459 (local), for a minimum of 2 and a maximum of 3 consecutive nights, then the crew member shall be free from all duties by 2100 (local) before covering the consecutive night duties, such that the crew member can take a rest period during a local night.

7.3 Interrupted Rest

7.3.1 If, prior to the start of an FDP, a crew member's rest period is interrupted for operational reasons between 2300 and 0700 hours local time, the following shall apply:

If the disturbance happens earlier than 1 hour before the planned departure from the crew member's place of rest, the time elapsed between that disturbance and the departure time from the place of rest minus 1 hour is to count as part of the subsequent FDP.

NOTE: The phrase 'operational reasons' applies to such actions as contacting/being contacted by the operator, checking weather, liaison with ATC or any action pertaining to the planned flight.

8 Mixed Duties

8.1 Preliminary Duties

8.1.1 When a crew member is required to report for duty in advance of the stipulated report time for a flight, to carry out a task at the behest of an operator, the time spent on that preliminary task shall be part of the subsequent FDP.

8.2 Fixed and Rotary Wing Flying

8.2.1 When a flight crew member carries out both fixed-wing and rotary-wing flying duties, the more restrictive flight and duty time limitations shall apply. The operator shall inform the CAA of his intentions, prior to the commencement of such mixed duties.

8.3 Mixed Simulator and Aircraft Flying

8.3.1 When a flight crew member flies in a simulator, either on a check or training flight, or as a Training Captain or Instructor, and then within the same DP flies as a flight crew member on a public transport flight, all the time spent in the simulator or aircraft shall count in full towards the subsequent FDP and daily flying hour maxima. The FDP shall be calculated from the reporting time of the simulator detail.

8.4 Mixed Single Pilot/Two Pilot Operations

8.4.1 In one DP a pilot may fly as single flight crew up to the point where the total flying and duty hours reach the single flight crew FDP limit. During this time the pilot may fly either in command, or as a co-pilot on a two flight crew aircraft. The pilot may continue beyond the single flight crew FDP limit in a two flight crew operation until he reaches the two flight crew FDP and flying hour maximum, but may only fly as a co-pilot.

8.5 PAOC/AOC Operations

8.5.1 Where an operator holds both a PAOC and an AOC, and his approved FTL schemes differ for each class of operation, he shall ensure that the DP of any crew member who may be employed on PAOC activities complies with the PAOC FTL scheme in respect of duty hours, flying hours and days off for the previous 28 days and in respect of flying hours for the previous 12 months.

8.5.2 Pilots operating on both PAOC and AOC operations are to be regarded as floaters for the purpose of the PAOC FTL scheme.

9 Travelling Time

9.1 Travelling time, other than that time spent on positioning, does not count as duty.

9.2 Lengthy travelling time, between home and the home base, may induce fatigue. If the journey time from home to the home base usually exceeds 45 minutes, crew members are advised to make arrangements for temporary accommodation nearer to base.

9.3 When a crew member is required to travel from home to an aerodrome other than the home base, any travelling time over 45 minutes shall be regarded as positioning. Notional times for this positioning shall be agreed between the operator and the CAA.

10 Delayed Reporting Time

10.1 When a crew member is informed of a delay to the reporting time due to a changed schedule, before leaving the place of rest, the FDP shall be calculated as follows. When the delay is less than 4 hours, the maximum FDP allowed will be based on the original report time and the FDP will start at the actual report time. When the delay is 4 hours or more, the maximum FDP allowed will be based on the more limiting time band of the planned report time and the actual report time and the FDP will start 4 hours after the original report time.

10.2 When the company informs a crew member before leaving the place of rest of a delay in the reporting time of 10 hours or more ahead, and that crew member is not further disturbed by the company until a mutually agreed time, then that period is classed as rest. If, upon the resumption of duty, further delays occur then the appropriate criteria in this paragraph and paragraph 10.1 above will be applied to the re-arranged reporting time.

11 Positioning

11.1 Time spent on positioning, at the behest of an operator, before carrying out an FDP will count as duty. The FDP commences not later than the time at which the crew member reports for the positioning journey, or positions in accordance with paragraph 9.3.

11.2 Positioning after completion of an FDP is counted as duty, and the subsequent rest period must account for the FDP plus the positioning journey.

11.3 If, after a positioning journey, the crew member spends less than a minimum rest period at suitable accommodation provided by the operator, and then carries out an FDP, the positioning will be counted as a sector if the allowable FDP is being extended by use of a split duty.

12 Standby Duty

12.1 The time of start, end, nature of the standby duty and minimum notification time will be defined and notified to crew members. The time a standby duty starts determines the allowable FDP, except that when the actual FDP starts in a more limiting time band, then that FDP limit will apply. However, when standby is undertaken at home, or in suitable accommodation provided by the operator, during the period 2200 to 0800 hours local time and a crew member is given 2 hours' or less notice of a report time, the allowable FDP starts at the report time for the designated reporting place.

12.2 When a crew member is on standby duty, on immediate readiness at the airport or relevant operating site, then the allowable FDP is calculated using the start time of the standby duty.

12.3 If a crew member is called out from standby, the standby duty will cease at the notified start time of the FDP, that is to say when the crew member reports for duty at the designated reporting point.

12.4 The following limits apply:

Duty	**Maximum Duration**
Standby Duty (all cases)	12 hours
Standby followed by an FDP	As in Case A or Case B below.

Case A

If a crew member is called out from standby to conduct an FDP before completing 6 hours' standby duty then the total DP allowed is the sum of the time spent on standby and the FDP from paragraph 6.

Case B

If a crew member is called out from standby to conduct an FDP after completing 6 hours' or more standby duty, then the total DP allowed is the sum of all the time spent on standby and the FDP, reduced by the amount of standby worked in excess of 6 hours.

NOTES: 1 The method of adding time spent on standby to cumulative totals is defined in paragraph 20.

2 The reference to 'total DP' applies **only** to the sum of the standby time achieved and the allowable FDP obtained from paragraph 6. On the day, for cumulative duty totals and for minimum rest periods, the total duty achieved will be:

standby time achieved + FDP achieved + post-flight duties + any positioning.

13 Extension of FDP by Split Duty

13.1 Aeroplanes

13.1.1 When an FDP consists of 2 or more sectors separated by less than a minimum rest period (in this respect positioning may be counted as a sector), FDP may be extended as indicated below:

Consecutive Hours Rest	Maximum Extension of the FDP
< 3	Nil
3–10	A period equal to half the consecutive hours rest taken.

13.2 Helicopters

13.2.1 The calculation of a permitted FDP does not rely on the number of sectors flown, but to increase an FDP as allowed for in this paragraph then at least one sector must be flown before any extension is permitted. The extensions allowed are set out below:

Consecutive Hours Rest	Maximum Extension of the FDP
< 2	Nil
2–3	One hour
3–10	A period equal to half the consecutive hours rest taken.

13.2.2 Only one period of 2–3 consecutive hours of rest shall be accountable in any single FDP.

13.3 Rest Periods in Split Duty

13.3.1 The rest period shall be specified by the operator but it shall not include the time allowed for immediate post-flight and pre-flight duties, a minimum total of 45 minutes. When the rest period is 6 hours or less, it shall suffice for the operator to make available for the crew member a quiet and comfortable place, not open to the public. Where the rest period is longer than 6 hours, the operator shall provide suitable accommodation. Rest shall not be taken in the aircraft.

14 Rest Periods

14.1 Crew members shall be notified of an FDP in good time so that sufficient and uninterrupted pre-flight rest can be taken. For a crew that is away from home base, the operator shall provide adequate opportunities and facilities for pre-flight rest in suitable accommodation. When flights are carried out at such short notice that it is impracticable for the operator to arrange suitable accommodation, this responsibility shall devolve upon the aircraft commander.

14.2 The minimum rest period prior to an FDP shall be at least as long as the preceding DP, or 12 hours, whichever is the greater.

14.3 If travelling time between the aerodrome and the suitable accommodation is more than 45 minutes each way, the rest period shall be increased by the amount that the total time spent travelling exceeds 1½ hours. The room allocated to the crew member shall be available for occupation for a minimum of 12 hours.

14.4 Where the preceding DP, which includes any time spent on positioning, exceeds 18 hours, the ensuing rest period shall include a local night.

14.5 Where a crew member has been called out from a standby duty, the minimum rest period shall comprise the length of standby duty, any time spent on positioning and any FDP completed.

14.6 A crew member who informs the operator that he is finding it difficult to achieve adequate pre-flight rest shall be given the opportunity to consult an aviation medicine specialist.

15 Aircraft Commander's Discretion to Extend an FDP

15.1 An aircraft commander may, at his discretion, and after taking note of the circumstances of other members of the crew, if carried, extend an FDP beyond that permitted in paragraph 6 (Tables 2.8, 2.9, or 2.10 as appropriate) – or the rostered FDP if working to paragraph 24 – to complete a task, provided he is satisfied that the flight can be made safely.

15.2 A commander may exercise his discretion as follows:

a) Up to 1 hour after the DP was scheduled to finish (or allowable FDP has been reached) – after which it would constitute an emergency call-out.

b) To a cumulative total of 2 hours in any 7 consecutive days – after which it would constitute an emergency call-out.

NOTE: If the 1-hour limit and the 2-hour limit are exceeded within a consecutive 7-day period it constitutes 2 emergency call-outs (except where a **single** call-out exceeded the 2-hour limit).

15.3 A commander may exercise discretion to extend an FDP following a reduced rest period only exceptionally, and then only to the extent necessary to allow for unforeseen circumstances that become apparent during the last task.

15.4 Discretion that results in the 7-consecutive-day duty limit being exceeded may be used but in no circumstances may the 28-day duty limit be exceeded by discretion except in the case of the emergency call-out procedures contained in paragraph 22.

15.5 Whenever a commander extends an FDP, he shall notify the fact to the operator on a Discretion Report Form. If the extension exceeds the 7-consecutive-day limits or discretion is exercised after any reduced rest period, the operator will submit the commander's written report, together with the operator comments, to the CAA within 14 days of the event.

16 Aircraft Commander's Discretion to Reduce a Rest Period

16.1 An aircraft commander may, at his discretion, and after taking note of the circumstances of other members of the crew, if carried, reduce a rest period, but only insofar as the room allocated to the crew member shall be available for occupation for a minimum of 10 hours. The exercise of such discretion shall be exceptional and shall not be used to reduce successive rest periods. If the preceding FDP was extended, the rest period may be reduced, provided that the subsequent FDP is reduced by the same amount. In no circumstances may a commander exercise discretion to reduce a rest period below 10 hours in suitable accommodation.

16.2 Whenever a commander reduces a rest period, he shall notify the fact to the operator on a Discretion Report Form. If the reduction is more than 1 hour, the operator shall submit the commander's written report, together with comments by the operator, to the CAA, within 14 days of the event.

17 Days Off

17.1 General

17.1.1 Whenever possible, and if required by the crew member, days off shall be taken in the home environment. A planned rest period may be included as part of a day off.

17.2 All Crews

17.2.1 A single day off shall include 2 local nights and shall be of at least 36 hours' duration.

17.2.2 A crew member shall:

a) not work more than 7 consecutive days; and

b) have 2 consecutive days off following a period of 7 consecutive days' duty; and

c) have 2 consecutive days off in any consecutive 14 days, and have at least 3 days off in any consecutive 14 days; and

d) have at least 8 days off in any consecutive 4 weeks; and

e) have an average of at least 9 days off in each consecutive 4-week period, averaged over 3 such periods.

NOTE: A single day off may only be allocated when 6 or less consecutive days' duty have been worked.

18 Absolute Limits on Flying Hours

18.1 A person shall not act as a member of the flight crew of an aircraft if at the beginning of the flight the aggregate of all previous flight times exceeds the following:

a)	Single day	Tables in paragraph 6 as appropriate
b)	Any 3 consecutive days (helicopters)	18 hours
c)	Any 3 consecutive days (aeroplane)	18 hours
	(which may be increased to 21 hours at the commander's discretion provided that no more than 9 hours are flown on any single day of the period in question)	
d)	Any 7 consecutive days	30 hours
e)	Any 28 consecutive days	75 hours
f)	Any 3 consecutive 28-day periods	180 hours
g)	In any period of 12 consecutive months	600 hours

19 Cumulative Duty Hours

19.1 The maximum duty hours for crew members shall not exceed:

a) 60 hours in any 7 consecutive days.

b) 200 hours in any 28 consecutive days.

NOTE: The cumulative totals may be affected by the emergency call-out procedures set out at paragraph 22 but the 28-day limit cannot be exceeded with the use of discretion.

20 Calculation of Cumulative Duty Hours – Flight Crew

20.1 Duty hours shall be added together to make cumulative totals, as follows:

a) To count in full:

i) DPs and FDPs, with subsequent post-flight duties;

ii) all standby duty, except that specified in b) i) and ii) below; and

iii) time spent on positioning.

b) To count as half the time on duty:

i) Standby duty, when the notification time given to the crew member by the operator is treble or more than the specified minimum time for reporting (see paragraphs 6.1 and 12.1).

ii) Standby duty, when undertaken at home or in suitable accommodation provided by the operator, taking place during the period 2200 to 0800 (local), and the crew member can take undisturbed rest and is not called out for duty.

21 Duty Hours Records to be Maintained

21.1 Records for the duty and rest periods of all flying staff shall include:

a) for each crew member:

the beginning, end, and duration of each DP and FDP; operating base and functions performed thereon; duration of each rest period prior to an FDP or standby DP; dates of days off; and 7-consecutive-day totals of duty; and

b) for each flight crew member:

daily and 7-consecutive-day flying hours.

21.2 Records shall be preserved for at least 12 calendar months from the date of the last relevant entry.

21.3 A copy of each aircraft commander's discretion report of extended FDPs, reduced rest periods and emergency call-outs shall be retained for a period of at least 12 months after the event.

22 Emergency Call-Out

22.1 The following conditions apply to crew members who are requested by an operator to respond to an emergency situation by remaining on duty beyond the allowable FDP (including discretion), or during either a day off or a rest period. A pilot shall not be obliged either to make himself available or to keep fit for such a duty. However, a crew member who accepts such an emergency call-out shall be responsible for ensuring his fitness for the duty to be undertaken.

22.2 The emergency call-out duty shall not exceed a total of 5 hours. Remaining on duty during that 5 hours shall be at the sole discretion of the pilot concerned.

NOTE: Except that if a crew member is called out having achieved the minimum rest, which had included a local night, a full DP may be worked.

22.3 Should an emergency call-out occur following completion of an FDP, but prior to a crew member achieving the minimum rest period, the subsequent minimum rest period on completion of the emergency call-out FDP shall be as follows:

Initial FDP + rest achieved + emergency call-out duty.

Neither the crew member nor the operator shall have the right to reduce this rest period.

22.4 The operator shall forward a report to the CAA of all such emergency call-outs.

22.5 No pilot may undertake more than 3 emergency call-out duties in any period of 28 consecutive days, nor more than 2 emergency call-out duties per 28-day period averaged over 3 such periods.

22.6 Taking emergency call-out duty time into account, maximum duty hours shall not exceed 210 hours in any 28 consecutive days, but no more than 200 hours per 28-day period averaged over 3 consecutive 28-day periods.

22.7 Maximum duty hours in any 7-day period shall not exceed 60 hours, which may be increased to 65 hours in the event of unforeseen circumstances, such as when an emergency situation develops near the end of the normal 7-day DP.

23 Floaters

23.1 All pilots are allocated to a single home base. Where a pilot is nominated in the PAOM Part 2 as a floater, the home base may be either:

a) one of the company's operating bases; or

b) the home address of the floater

and this shall be entered in the PAOM Part 2.

23.2 When a floater is positioned to an operating base for relief duties, the first 45 minutes of the journey can be regarded as travelling and the remainder as positioning under the definitions contained in paragraph 3.

23.3 Where positioning is part of a regular pattern and the company has opted for alternative a) above, notional times shall be submitted for acceptance by the CAA.

23.4 Where a floater works on a base that has an FTL Scheme approved under paragraph 24, he shall work within the constraints of the standard scheme (contained in paragraphs 1 – 22) except that:

a) If the roster of the relieved base does not have FDPs which conform to the tables contained in paragraph 6, the floater may work to the length of the rostered FDP but **not** exceed the cumulative totals contained in paragraph 19.

b) If a floater replaces a pilot on an approved cycle of night duties that exceeds 3 but is not more than 5 then immediately after the night duty cycle he shall have a recovery period of 2 rest days – which shall include 3 local nights – plus a day off for each night worked in excess of 3.

c) If a floater works on a base that has a 12-hour night shift pattern cycle, each 12-hour night duty shall attract a day off. After the 12 hours shift duty cycle, no duties other than positioning may be carried out until such days off earned have been taken.

d) The maximum duty hours that a floater may work is limited to 100 duty hours in any 14 consecutive days, except that when a floater works on a base for at least 20 consecutive days then that base's approved FTL Scheme shall apply.

23.5 If a floater takes advantage of the easement of paragraph 23.4 above, the days off entitlement of paragraphs 17.2.2 d) and 17.2.2 e) shall be increased to:

a) at least 9 days off in any consecutive 4 weeks; and

b) an average of at least 10 days off in each consecutive 4 weeks averaged over 3 such periods.

24 Standard Variation – Approved Rosters

24.1 Introduction

24.1.1 As a standard variation to the police air operations FTL scheme, an operator may roster a repetitive pattern of duties, for both aeroplane and helicopter crews. Such rosters must be submitted for approval by the CAA and not changed without the CAA's prior approval. Short-term changes to cater for pre-planned activities must receive the prior agreement of the CAA but such changes shall be kept to a minimum.

24.2 Applicability of Standard Scheme

24.2.1 The following paragraphs of the standard scheme are applicable to this variation:

Paragraphs 1.3, 2, 3, 6, 7.1, 8.1, 8.5, 9, 11, 12, 14, 15, 16, 18, 20 and 21.

24.2.2 The provisions of paragraph 22 shall apply except that on an approved roster pattern that exceeds 60 duty hours in 7 consecutive days, the cumulative duty limits applicable to that period shall not be exceeded unless an emergency call-out occurs on the final day.

NOTE: For helicopter operations, the maximum flying hours within a DP remain those detailed in Table 2.10 at paragraph 6.3.

24.3 Allowable DP

24.3.1 An allowable DP of 10 hours per day (and after specific approval 12 hours), regardless of the starting time, is acceptable.

24.4 Start and Finish Times

24.4.1 The rostered start and finish time shall be specified. For the purposes of operational flexibility these times may occasionally be adjusted ± 2 hours, at the discretion of the crew member concerned after giving at least 12 hours' notice.

24.5 Day Off

24.5.1 Where, as part of an approved roster pattern, a scheduled duty is due to end later than 00:01, but no later than 03:00, on what is intended to be a day off, that day off may still be counted as such, provided that duty ceases not later than at the approved roster finish time. If duty is extended beyond that time, it shall be regarded as an emergency call-out, thus nullifying the day off.

24.6 Sector Limitations – Aeroplanes Only

a) **VMC**

Flights conducted entirely in VMC shall not be subject to a maximum number of sectors within the DP.

b) **IMC**

Within the 10 hours maximum DP, a crew member may normally fly a maximum of 4 IMC sectors. Thereafter the maximum DP shall be reduced by 45 minutes for each further IMC sector flown.

c) **Crew Member's Discretion**

At the discretion of the crew member concerned, he may fly additional VMC or IMC sectors, in excess of the IMC sector limit, without reducing DP below 10 hours. In such circumstances, the total flight time incurred in carrying out the added sectors shall be regarded as an emergency call-out, to be conducted in accordance with the requirements at paragraph 22 and reported as such to the CAA.

Appendix A Aircraft Commander's Voyage Report

CAPTAIN'S NAME ..... DATE .....

AIRCRAFT TYPE ..... A/C REGN .....

DETAILS OF TASK

PILOT'S NARRATIVE

CAPTAIN'S SIGNATURE .....

CHIEF PILOT'S COMMENTS

CHIEF PILOT'S SIGNATURE .....

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Appendix B Signals for Intercepted Aircraft

Table 2.11 Signals Initiated by Intercepting Aircraft and Responses by Intercepted Aircraft

Series	Intercepting Aircraft Signal	Meaning	Intercepted Aircraft Responds	Meaning
1	**DAY or NIGHT** Rocking the aircraft and flashing navigational lights at irregular intervals (and landing lights in the case of a helicopter) from a position slightly above and ahead of, and normally to the left of, the intercepted aircraft (or to the right if the intercepted aircraft is a helicopter) and, after acknowledgement, a slow level turn, normally to the left (or to the right if the intercepted aircraft is a helicopter) on to the desired heading. **NOTE 1** Meteorological conditions or terrain may require the intercepting aircraft to reverse the positions and direction of turn given above. **NOTE 2** If the intercepted aircraft is not able to keep pace with the intercepting aircraft, the latter is expected to fly a series of race-track patterns and to rock the aircraft each time it passes the intercepted aircraft.	You have been intercepted. Follow me.	**DAY or NIGHT** Rocking aircraft, flashing navigational lights at irregular intervals and following.	Understood, will comply.
2	**DAY or NIGHT** An abrupt breakaway manoeuvre from the intercepted aircraft consisting of a climbing turn of 90 degrees or more without crossing the line of flight of the intercepted aircraft.	You may proceed.	**DAY or NIGHT** Rocking the aircraft.	Understood, will comply.
3	**DAY or NIGHT** Lowering landing gear, showing steady landing lights and overflying runway in use or, if the intercepted aircraft is a helicopter, overflying the helicopter landing area. In the case of helicopters, the intercepting helicopter makes a landing approach to hover near the landing area.	Land at this aerodrome.	**DAY or NIGHT** Lowering landing gear, showing steady landing lights and following the intercepting aircraft and, if after overflying the runway in use or helicopter landing area landing is considered safe, proceeding to land.	Understood, will comply.

Table 2.12 Signals Initiated by Intercepted Aircraft and Responses by Intercepting Aircraft

Series	Intercepted Aircraft Signal	Meaning	Intercepting Aircraft Responds	Meaning
1	**DAY or NIGHT** Raising landing gear and flashing landing lights while passing over runway in use or helicopter landing area at a height exceeding 300 m (1,000 ft) but not exceeding 600 m (2,000 ft) (in the case of a helicopter, at a height exceeding 50 m (170 ft), but not exceeding 100 m (330 ft)) above the aerodrome level, and continuing to circle the runway in use or the helicopter landing area. If unable to flash landing lights, flash any other lights available.	Aerodrome you have designated is inadequate.	**DAY or NIGHT** If it is desired that intercepted aircraft follow the intercepting aircraft to an alternate aerodrome, the intercepting aircraft raises its landing gear and uses the Table 2.11 Series 1 signals prescribed for intercepting aircraft. If it is decided to release the intercepted aircraft, the intercepting aircraft uses the Table 2.11 Series 2 signals prescribed for intercepting aircraft.	Understood, follow me. Understood, you may proceed.
2	**DAY or NIGHT** Regular switching on and off of all available lights, but in such a manner as to be distinct from flashing lights.	Cannot comply.	**DAY or NIGHT** Use Series 2 signals prescribed for intercepting aircraft in Table 2.11.	Understood.
3	**DAY or NIGHT** Irregular flashing of all available lights.	In distress.	**DAY or NIGHT** Use Series 2 signals prescribed for intercepting aircraft in Table 2.11.	Understood.

Table 2.13 Phrases for Use During Interceptions

a) By Intercepting Aircraft

Phrase	Pronunciation	Meaning
CALL SIGN	KOL SA-IN	What is your call sign?
FOLLOW	FOL-LO	Follow me.
DESCEND	DEE-SEND	Descend for landing.
YOU LAND	YOU LAAND	Land at this aerodrome.
PROCEED	PRO-SEED	You may proceed.

b) By Intercepted Aircraft

Phrase	Pronunciation	Meaning
CALL SIGN	KOL SA-IN	My call sign is (call sign).
WILCO	WILL-KO	Understood. Will comply.
CAN NOT	KANN NOTT	Unable to comply.
REPEAT	REE-PEET	Repeat your instruction.
AM LOST	AM LOSST	Position unknown.
MAYDAY	MAYDAY	I am in distress.
HIJACK	HI-JACK	I have been hijacked.
LAND (place name)	LAAND (place name)	I request to land at (place name).
DESCEND	DEE-SEND	I require descent.

NOTES: 1 In the second column, syllables to be emphasised are underlined. Transmit each phrase twice.

2 The call sign required to be given is that used on RTF communications with ATSUs and corresponding to the aircraft identification in the flight plan.

3 Circumstances may not always permit, nor make desirable, the use of the phrase HIJACK.

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Appendix C Record of Flying Duty and Flying Hours

PILOT'S NAME RECORD OF FLYING DUTY AND FLYING HOURS MONTH 20

		DUTY HOURS							FLYING HOURS						
Day No	Date	Duty Period			Daily Total 28 Days Previous	Current 28 Day Total	Daily Total 7 Days Previous	Current 7 Day Total	Flying Duty Period			Daily Total 28 Days Previous	Current 28 Day Total	Daily Total	Duty carried out/Remarks, e.g. Split Duty/Discretion Report
		Start	Finish	Total					Start	Finish	Total				
B/F															
1															
2															
3															
4															
5															
6															
7															
8															
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21															
22															
23															
24															
25															
26															
27															
28															
Leave															
Sick															
Days Off															

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Appendix D Commander's Discretion Report

Operator Aircraft Type

Flight Number Commander

Date

NOTE: If discretion exercised for part crew or individuals state name and operating capacity below.

Commander*****/First Officer*****/Crew Member***** (Delete as necessary)

Part A - Extension of Flying Duty Period/Flying Hours

Voyage Details						
Schedule (Planned)				**Actual**		
	Place	UTC	Local		UTC	Local
Duty to start				Duty started		
Depart				Departed		
Arrive				Arrived		
Depart				Departed		
Arrive				Arrived		
Depart				Departed		
Arrive				Arrived		
Depart				Departed		
Arrive				Arrived		
Depart				Departed		
Arrive				Arrived		
FDP to end				FDP ended		
Scheduled FDP				Actual FDP	Hrs	Mins
Split duty:	Actual Time Off ..... On			Credit FDP	Hrs	Mins
				Max. Allowable FDP	Hrs	Mins

Amount of Commander's Discretion Exercised FDP Hrs Mins

Maximum Flying Hours Permitted ..... in 28 days/1 year period. Hours Flown .....

Part B - Reduction of Rest

Last duty started UTC/Local .....

Last duty ended UTC/Local .....

Rest earned (Hours)

Calculated earliest next available UTC/Local .....

Actual start of next FDP UTC/Local .....

Rest period reduced by .....

NOTE: All times to be recorded as date/time six-figure groups, expressed in both UTC and Local Time.

Commander's Signature ..... Date .....

Part C - Commander's Report

Signed. .....

Date .....

Operator's Remarks/Action Taken

Signed. .....

Date .....

Forwarded to CAA

Filed

Appendix E Congested Area Landing Site Record Sheet

Date	Aircraft Type and Registration	Site Name and Grid Reference	Site Length (metres)	Site Width (metres)	Obstacle Type and Height	Pressure Altitude and OAT	RTOW/ ATOW	Landing Heading	Take-Off Heading	CASEVAC (Yes or No)

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Section 3 Flight Operations – VFR

Chapter 1 Visual Flight Rules

1 The current VFR can be found in the Rules of the Air Regulations 2007 (detailed in AIP ENR 1.2.1 and CAP 393).

2 VFR flights shall be conducted so that the aircraft is flown in conditions of visibility and distance from clouds equal to or greater than those specified in Table 3.1.

Table 3.1 VFR Distance from Cloud and Visibility

Airspace Class		**Minimum Distance from cloud**	**Minimum Flight visibility**
B	FL 100 or above	Clear of cloud	8 km
	Below FL 100	Clear of cloud	5 km
C, D or E	FL 100 or above	1,500 m Horizontally and 1,000 ft Vertically	8 km
	Below FL 100	1,500 m Horizontally and 1,000 ft Vertically (Note 1)	5 km (Note 2)
F or G	FL 100 or above	1,500 m Horizontally and 1,000 ft Vertically	8 km
	Below FL 100	1,500 m Horizontally and 1,000 ft Vertically (Note 3)	5 km (Note 3)

Notes:

(1)	**Or** if at 3,000 ft AMSL or below and flying at 140 kt or less:	Clear of cloud and with the surface in sight.
(2)	**Or** if a helicopter and flying at 3,000 ft AMSL or below:	Clear of cloud and with the surface in sight in a flight visibility of 1,500 m.
(3)	**Or** if at 3,000 ft AMSL or below:	
	either: any aircraft flying at more than 140 kt:	Clear of cloud and with the surface in sight in a flight visibility of 5 km.
	or: any aircraft which is not a helicopter flying at 140 kt or less:	Clear of cloud and with the surface in sight in a flight visibility of 1,500 m.
	or: helicopters flying at a speed which, having regard to visibility, is reasonable:	Clear of cloud, with the surface in sight in a flight visibility of 1,500 m.
(4)	'With the surface in sight' means:	With the flight crew being able to see sufficient surface features or surface illumination to enable the flight crew to maintain the aircraft in a desired attitude without reference to any flight instrument and 'when the surface is not in sight' shall be construed accordingly.

3 For the purposes of an aircraft taking off from or approaching to land at an aerodrome within Class B, C or D Airspace, the visibility, if any, communicated to the commander of an aircraft by the appropriate ATC unit shall be taken to be the flight visibility for the time being.

4 The minimum heights at which aircraft may be flown are detailed in Rule 5, together with alleviations in Rule 6, of the Rules of the Air Regulations 2007.

5 Except where otherwise indicated in ATC clearances or specified by the appropriate Air Traffic Services (ATS) authority, it is not mandatory in the United Kingdom for VFR flights in level cruising flight when operated above 3,000 ft (900 m) from the ground or water, or a higher datum as specified by the appropriate ATS authority, to adopt any particular cruising level system. Such flights are advised to adopt the table of cruising levels for IFR flights as given at ENR 1.7, paragraph 6.1(b).

Chapter 2 Flights Under Special Visual Flight Rules

1 Special VFR
(See AIP ENR 1.2)

1.1 Clearance for Special VFR flight in the UK is an authorisation by ATC for a pilot to fly within a Control Zone although he is unable to comply with IFR. In exceptional circumstances, requests for Special VFR flight may be granted for aircraft with an all-up weight exceeding 5,700 kg and capable of flight under IFR. Special VFR clearance is only granted when traffic conditions permit it to take place without hindrance to the normal IFR flights, but for aircraft using certain notified lanes, routes and local flying areas the UK AIP should be consulted. Without prejudice to existing weather limitations on Special VFR flights at specific aerodromes ATC will not issue a Special VFR clearance to any fixed-wing aircraft intending to depart from an aerodrome within a Control Zone when the official meteorological report indicates that the visibility is 1,800 m or less and/or the cloud ceiling is less than 600 ft.

2 Pilot's Responsibilities

2.1 The pilot on a Special VFR flight shall:

a) comply with ATC instructions;

b) ensure that his flight conditions enable him to remain clear of cloud, determine his flight path with reference to the surface and keep clear of obstructions. The weather minima for any such flight conducted in accordance with a PAOC shall be as set out in Chapter 3, paragraphs 3 or 4, as appropriate;

c) ensure that he flies within the limitations of his licence;

d) comply with the relevant low flying restrictions of Rule 5 of the Rules of the Air Regulations (other than the 1,000 ft rule); and

e) avoid aerodrome traffic zones unless prior permission for penetration has been obtained from the relevant ATC unit.

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Chapter 3 Low Flying Operating and Weather Minima

1 Introduction

1.1 Because of the nature of police requirements, aircraft operating in accordance with the terms of a PAOC may be permitted to fly at heights below those set out in Rule 5 of the Rules of the Air Regulations 2007 and to meteorological minima below those that would be acceptable for public transport. The cloud base and visibility minima, set out in the following paragraphs, are appropriate to temperate weather conditions: where severe turbulence or heavy precipitation is forecast or experienced, the aircraft commander should consider raising the limits as a matter of prudence. However, the limits devised for operations by PAOC holders remain firmly founded in Rule 5(3)(a), which states that a helicopter shall not fly below such height as would enable it to alight without danger to persons or property on the surface, in the event of failure of a power unit. In the same circumstances, the regulation for an aeroplane is even stricter; in accordance with Rule 5(3)(d) it shall not fly over any congested area of a city, town or settlement below such height as would enable it to **alight clear of the area** and without damage to persons or property on the surface. These rules may only be waived for the purpose of saving life.

1.2 Aircraft flying under and in accordance with the terms of a PAOC are exempt from the 500 ft rule, the 1,000 ft rule and the prohibition of flying over open-air assemblies and on landing and taking off near open-air assemblies by Rule 6(e). However, in order to prevent unnecessary alarm or concern to persons on the ground, pilots shall avoid flying any closer than is operationally necessary. The following shall be observed.

2 All Aircraft – Visual Contact Flight (VCF)

2.1 A low-flying operation shall be conducted as a VCF, which is defined as flight in which the crew is in continuous visual contact with the surface. The crew shall be able:

a) by day, to assess aircraft attitude and separation from the surface by external reference; and

b) by night, to assess aircraft attitude by reference to a clearly distinguishable external horizon that may be provided either by natural lighting or by artificial and cultural lights spread deeply and widely across track.

2.2 To be regarded as being clear of cloud, for the purpose of maintaining VCF below 3,000 ft AMSL a helicopter shall remain at least 50 ft below the cloud base by day and 100 ft below the cloud base at night. The corresponding separations for aeroplanes shall be 100 ft by day and 200 ft at night.

NOTE: Cloud base in this context means the height above the surface of the lowest cloud in the immediate vicinity of the aircraft.

3 Aeroplane VCF Operations and Weather Minima

3.1 Minimum Operating Heights

3.1.1 An aeroplane that is capable of maintaining height in the cruise, following the failure of a power unit, shall not fly:

a) **Over a congested area**

BY DAY at a height below:
500 ft AGL; or
500 ft above the highest obstruction within 1 km of the aircraft.

AT NIGHT at a height below 800 ft above the highest obstruction within 5 km of the aircraft, or within 2 km where the highest obstruction is lit so as to indicate its complete size and shape and it remains visible to the pilot until he has passed abeam.

NOTE: In some circumstances the CAA may sanction flight at not less than 500 m from an obstruction. When such an agreement exists, the operator shall make an appropriate entry in the PAOM Part 2.

b) **Over a non-congested area**

BY DAY at a minimum height of 200 ft AGL, or 200 ft above the highest obstruction within 1 km of the aircraft (whichever is greater), in straight and level flight. The minimum height shall be 400 ft AGL, or 400 ft above the highest obstruction within 1 km of the aircraft (whichever is greater), in manoeuvring flight.

AT NIGHT at a minimum height of 800 ft above the highest obstruction within 5 km of the aircraft, or within 2 km where the highest obstruction is lit so as to indicate its complete size and shape and it remains visible to the pilot until he has passed abeam.

c) **Over water**

BY DAY at a minimum height of 200 ft* above surface level or 200 ft* above the highest obstruction within 1 km of the aircraft, in straight and level flight. The minimum height shall be 400 ft above surface level or 300 ft above the highest obstruction within 1 km of the aircraft, whichever is the higher, in manoeuvring flight.

* 100 ft where the pilot is using a serviceable radio altimeter.

AT NIGHT at a minimum height of 750 ft above surface level.

3.1.2 An aeroplane that is incapable of maintaining height in the cruise following the failure of a power unit shall not fly at night, or:

BY DAY at less than the height required to descend following a power failure to a height of 1,000 ft above a place at which a safe landing can be made. Such a place shall be outside a congested area.

3.2 Aeroplane Weather Minima

3.2.1 The weather minima for flights conducted under the VFR are as set out in the Rules of the Air Regulations and UK AIP and summarised in Chapter 1.

3.2.2 Rule 20(2) of the Rules of the Air Regulations 2007 stipulates that, unless it is engaged on a Special VFR flight in a control zone, an aircraft shall comply with the IFR at night. The IFR minimum height requirement may be met by flying at an altitude not exceeding 3,000 ft AMSL and remaining clear of cloud, with the surface in sight and an in-flight visibility of at least 800 m.

3.2.3 It is assumed that the aeroplane would not exceed 140 kt Indicated Airspeed (IAS).

3.2.4 Further to the conditions set out above, the weather minima presented in Tables 3.2 and 3.3 shall also apply in VCF, according to the pilot's qualifications.

Table 3.2 Weather Minima – Aeroplanes Capable of Maintaining Height in the Cruise, Following Engine Failure

Phase of Flight	**Pilot**			
	Day		**Night**	
All Phases	Instrument Rated	IMC Rated	Instrument Rated	IMC Rated
Open terrain	600 ft cloud base 3 km visibility	1,000 ft cloud base 3 km visibility	1,200 ft cloud base 5 km visibility	Not permitted
Over congested area	600 ft cloud base 3 km visibility	1,000 ft cloud base 3 km visibility	1,200 ft cloud base 5 km visibility	Not permitted
Over water	600 ft cloud base 4 km visibility	1,000 ft cloud base 5 km visibility	1,200 ft cloud base 5 km visibility	Not permitted

Table 3.3 Weather Minima – Aeroplanes Incapable of Maintaining Height in the Cruise, Following Engine Failure

Phase of Flight	**Day**	**Night**
Departure, Destination, Alternate	1,100 ft cloud base 3 km visibility	Not permitted
En-Route	Cloud base at least 1,100 ft above the height of a place outside a congested area at which a safe landing can be made, following an engine failure.	

3.2.5 Where there is a significant risk of weather deterioration, an IMC rated pilot shall commence operations only in weather conditions that are significantly better than the stated minima and shall cease operations before a breach of the minima becomes unavoidable. A timely decision to break off the operation while VCF conditions still exist would be essential in those instances of airspace classed D or E, where the IMC rated pilot is denied the option of complying with the IFR.

4 Helicopter VCF Operations and Weather Minima

4.1 Minimum Separation Distance – Scene of Search/Task

4.1.1 During normal operations a helicopter shall remain at least 1½ rotor diameters or 16 m (50 ft) (whichever is the greater distance) clear of any person, vehicle, vessel or structure. Further advice on minimum separation for persons involved in hover emplaning and hover deplaning may be found in Section 5 Chapter 5.

4.1.2 In exceptional circumstances a flight may be conducted within the above mentioned 1½ rotor diameters, or 16 m (50 ft) limit. A record of each such encroachment shall be made and preserved by the operator for a period of at least 12 months, and shall be supplied to the CAA if requested.

4.1.3 Minimum operating heights during other phases of flight are included in the 'Weather and Operating Minima' tables below.

4.2 Engine Failure Considerations

4.2.1 General

A helicopter that is not equipped with flotation gear should never have to alight on water, following an engine failure at any phase of flight.

4.2.2 Performance Class 1 and 2

When operating over a congested area the pilot shall ensure that height and speed are sufficient to prevent the aircraft descending below the minimum operating height following an engine failure. This may require an additional height increment to be applied to an aircraft in the hover.

4.2.3 Performance Class 3

The entire flight shall be conducted over terrain suitable for an emergency landing, with the following considerations:

a) Where any non-CAA-agreed passenger is carried.

   A safe forced landing can be made at any time, without danger to persons or property on the surface, or risk to the occupants of the aircraft.

b) Where all passengers are CAA-agreed passengers.

   A safe forced landing can be made at any time, without danger to persons or property on the surface, or risk of serious injury to the occupants of the aircraft.

4.3 **Helicopters in Performance Class 1 and 2 – Overland Flights**

Table 3.4 Weather and Operating Minima

Phase of Flight	**Minima**	
	CAA-agreed Passengers only	**Any Other Passengers**
Departure, Destination, Alternate	**Day:** 300 ft cloud base/1 km visibility **Night:** 500 ft cloud base/5 km visibility, which may be reduced to 2 km in certain circumstances, with CAA approval.	**Day:** 500 ft cloud base/1,500 m visibility **NOTE:** Visibility may be reduced to 1 km when helicopter is flown by two pilots. **Night:** 1,500 ft cloud base/5 km visibility.
En route (open country)	**Day:** 300 ft cloud base/1 km visibility. Not less than 16 m (50 ft) from persons, vehicles, vessels or structures. (See also paragraph 4.1.2.) **Night:** 1,500 ft cloud base/5 km visibility. 500 ft above highest obstacle within 5 km of helicopter. OR 600 ft cloud base/8 km visibility. Not within 500 ft vertically of highest obstacle within 1 km of helicopter. **NOTE 1:** Cloud base below 1,000 ft shall be acceptable only for helicopters meeting the IMC stability requirements of BCAR Section G or JAR-27/CS-27. **NOTE 2:** When the helicopter does not meet the stability requirements above, and the cloud base is between 1,000 ft and 1,500 ft, it shall operate at an IAS not less than the best rate of climb speed (Vy) for the type, unless: a) it is fitted with a Stability Augmentation System (SAS) acceptable to the CAA, or b) the commander can satisfy himself that adequate visual cues are available to ascertain the attitude of the helicopter and to discern the movement of the helicopter over the ground. The PAOM Part 2 shall contain guidance on which areas within the overall PAOC area would be suitable for flight at speeds below Vy.	**Day:** 500 ft cloud base/1,500 m visibility. Not less than 200 ft above highest obstacle within 1 km of helicopter. **NOTE:** Visibility may be reduced to 1 km when helicopter is flown by two pilots. **Night:** 1,500 ft cloud base/5 km visibility. Not less than 500 ft above highest obstacle within 5 km of helicopter. Where the helicopter fails to meet the IMC stability requirements of BCAR or JAR-27/CS-27, it shall not be flown at less than the best rate of climb speed (Vy) for the type, unless fitted with an SAS acceptable to the CAA.
Over a congested area	**Day:** 350 ft cloud base/1,500 m visibility. At least 300 ft AGL but not within 200 ft of any fixed obstacle on the surface. **Night:** 600 ft cloud base/5 km visibility, which may be reduced to 2 km in certain circumstances, with the CAA approval. 500 ft above the highest obstacle within 1 km of the helicopter. **NOTE:** Further advice on what would be conducive to gaining approval for the reduced visibility criterion is available in CAP 613.	**Day:** 500 ft cloud base/1,500 m visibility. Not less than 300 ft AGL or 200 ft above highest obstacle within 1 km of helicopter, whichever is greater. **Night:** 1,500 ft cloud base, 5 km visibility. Not less than 500 ft above highest obstacle within 5 km of aircraft. Where the helicopter fails to meet the IMC stability requirements of BCAR or JAR-27/CS-27, it shall not be flown at an IAS less than the best rate of climb speed (Vy) for the type, unless fitted with an SAS acceptable to the CAA.

NOTE: Where visibility falls below 2 km, airspeed shall be reduced so as to preserve the equivalent of 60 seconds visibility. At low airspeeds, it may be necessary to increase the operating height in order to remain outside the height/velocity avoid area, if applicable to the type of helicopter.

4.3.1 A helicopter may operate below the height of a fixed object within 1 km of its position, at night, provided that in the event of an engine failure a safe overshoot path, which does not involve more than a minimal turn, shall be available. The following criteria shall be observed:

a) The fixed object is lit so as to show its complete size and shape.

b) The fixed object remains visible to the pilot at all times.

c) The fixed object does not fall within an arc of 45° either side of the aircraft nose.

d) The prevailing wind direction falls within an arc of 45° either side of the aircraft nose.

e) The aircraft shall not approach within 100 m horizontally from an illuminated fixed object.

f) Any passenger shall be a CAA-agreed passenger.

4.4 Helicopters in Performance Class 3 – Overland Flights

Table 3.5 Weather and Operating Minima

Phase of Flight	Minima	
	CAA-agreed Passengers only	**Any Other Passengers**
Departure, Destination, Alternate	**Day:** Either 600 ft cloud base/1,500 m visibility, or 400 ft cloud base/3 km visibility. **Night:** Not permitted.	**Day:** 600 ft cloud base/1,500 m visibility. **Night:** Not permitted
En route (open country)	**Day:** Either 500 ft cloud base/1 km visibility, or 400 ft cloud base/3 km visibility. Not less than 16 m (50 ft) from persons, vehicles, vessels or structures. (See also paragraph 4.1.2.) **Night:** Not permitted.	**Day:** 600 ft cloud base/1,500 m visibility. Not less than 200 ft above highest obstacle within 1 km of the helicopter. **Night:** Not permitted.
Over a congested area	**Day:** 1,100 ft cloud base/3 km visibility. The minimum height to fly shall be 1,000 ft above surface level. The helicopter shall be able to alight without danger to persons or property in the event of an engine failure. **Night:** Not permitted.	**Day:** As for CAA-agreed passengers only. **Night:** Not permitted.

NOTE: Where visibility falls below 2 km, airspeed shall be reduced so as to preserve the equivalent of 60 seconds visibility. At low airspeeds, it may be necessary to increase the operating height in order to remain outside the height/velocity avoid area.

4.5 Helicopters in Performance Class 1 and 2 – Overwater Flights

Table 3.6 Weather and Operating Minima

Phase of Flight	Minima	
	CAA-agreed Passengers only	**Any Other Passengers**
All Phases	**Day:** 500 ft cloud base/4 km visibility, or 400 ft cloud base/6 km visibility, or 300 ft cloud base/8 km visibility. Not less than 16 m (50 ft) from persons, vehicles, vessels or structures. (See also paragraph 4.1.2.)	**Day:** 500 ft cloud base/4 km visibility, or 400 ft cloud base/6 km visibility. Not less than 200 ft above surface level or 200 ft above the highest obstacle within 1 km of the helicopter.
	Night	
	a) Where an aircraft meets the IMC stability requirements:	
	600 ft cloud base/8 km visibility. Not less than 500 ft above surface level or 500 ft above obstacles within 1 km of the helicopter.	1,500 ft cloud base/5 km visibility. Not less than 500 ft above surface level or 500 ft above the highest obstacle within 5 km of the helicopter.
	b) Where an aircraft does not meet the IMC stability requirements, range from nearest shoreline shall not exceed 5 km, IAS shall not be less than the best rate of climb speed (Vy) for the type, and:	
	1,200 ft cloud base/8 km visibility. Not less than 500 ft above surface level or 500 ft above obstacles within 1 km of the helicopter.	1,500 ft cloud base/8 km visibility. Not less than 1,000 ft above surface level or 1,000 ft above obstacles within 5 km of the helicopter.

4.6 Helicopters in Performance Class 3 – Overwater Flights

Table 3.7 Weather and Operating Minima

Phase of Flight	Minima	
	CAA-agreed Passengers only	**Any Other Passengers**
Offshore, destination and alternate	**Day:** 600 ft cloud base/4 km visibility. **Night:** Not permitted.	**Day:** 1,000 ft cloud base/8 km visibility. **Night:** Not permitted.
En route	**Day:** 600 ft cloud base/4 km visibility. Not less than 16 m (50 ft) from persons, vehicles, vessels or structures. **Night:** Not permitted.	**Day:** 1,000 ft cloud base/8 km visibility. Minimum operating height to comply with Rule 5, or as exempted therefrom. **Night:** Not permitted.

4.7 Helicopters Tracking Close Inshore

4.7.1 Helicopters flying over water within 500 m of the nearest shoreline may operate to overland en-route minima (non-congested area, where applicable), provided that the commander can maintain adequate sight of the shoreline.

4.8 Aircraft Assisting in a Search and Rescue Operation

4.8.1 Search Operations: there may be occasions when the use of police aircraft is requested to assist in land or over-sea operations. In such instances, particularly those involving searches over water or mountainous terrain, the aircraft commander must ensure that he complies fully with all PAOM requirements, including weather minima.

NOTE: A helicopter that is not equipped with flotation gear should never have to alight on water following an engine failure at any phase of flight.

4.8.2 Rescue Operations: police aircraft are not committed to the National Search and Rescue Organisation. Crews and helicopters are neither trained nor equipped for dedicated SAR missions over water or missions involving the use of specialised rescue equipment or techniques. Such operations shall therefore not be undertaken.

4.8.3 If units envisage becoming involved in such operations, appropriate material must be included in their PAOM Part 2 to include training requirements and aircraft equipment.

Chapter 4 Flight Following

1 Position Reporting

1.1 When possible, a pilot shall maintain communication with an ATSU and make it aware of routeing, operating area and future intentions, so that timely overdue action may be taken, if necessary. The normal procedure shall be as follows:

a) A position report shall be given in terms of distance and bearing from a known reporting point, major ground feature or conurbation. The use of village or local place names should be avoided as they may not be known to other aircraft.

b) A position report shall be passed to the controlling or monitoring agency, as requested by that agency, normally at 30-minute intervals onshore and 15-minute intervals offshore. Where the position is not exactly known, it shall be passed as an estimated position.

c) Any deviation from an established flight plan shall be made known immediately to the controlling or monitoring agency.

d) Should communication not be possible because of terrain factors, the pilot shall establish and maintain communication with the relevant police control room, passing the following information:

i) aircraft type;

ii) number of POB;

iii) present position;

iv) route; and

v) time of next 'operations normal' call.

NOTE: When a pilot does not receive acknowledgement of his 'operations normal' call, he should consider making RTF contact with an alternative agency, in order to avoid unnecessary overdue action. If still unsuccessful, he should consider breaking off the task and proceed to a location where air/ground communication proves feasible.

e) If all communication is lost, the aircraft shall maintain its original flight plan unless it would be unsafe to do so.

2 Action by Police Control Room

2.1 When a controller becomes aware that he has missed an 'operations normal' call, he shall immediately attempt to establish communication with the aircraft and, at the same time, contact other ground units to ascertain if any are in communication with the aircraft and can confirm that all is well. In the absence of any satisfactory information on the aircraft for 30 minutes after an expected 'operations normal' call, the controller shall initiate overdue action in accordance with a procedure that shall be laid down in the PAOM Part 2. This procedure shall include a method of alerting the ARCC at Kinloss (see UK AIP GEN 3.6).

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Section 4 Flight Operations – IFR

Chapter 1 Instrument Flight Rules

1 Introduction

1.1 Police operations are predominantly VFR and take place within a relatively small geographical area. When considering flight under IFR, commanders shall proceed with caution and take into account instrument flying recency and area competency (see Part D). IFR flight may be advantageous due to speed or fuel efficiency at higher levels, or for deployment or recovery purposes.

1.2 When flying VMC at night the mandatory IFR requirement is met by satisfying the minimum height, quadrantal and semi-circular rules when flying outside CAS. When flying VMC at night within CAS under Special VFR the minimum height rule applies, as do the flight plan and position report rules. Thus when flying in VMC at night, the requirements at paragraph 2.1 a) and b) do not apply.

2 IFR – Pilot/Aircraft Requirements

2.1 An aircraft commander may fly in accordance with IFR in IMC only when:

a) he holds a current instrument rating on type and has a current IMC OPC;

b) the aircraft is certificated for IMC/IFR operation; and

c) the aircraft is fitted with the required instrument and navigation equipment for flight under IFR and at night.

3 IFR – Air Traffic Service Requirements

3.1 An aircraft commander shall fly in accordance with IFR when:

a) in Class A airspace;

b) VMC cannot be maintained (unless Special VFR flight is permitted); and

c) at night.

4 Retention of Records – IFR Flights

4.1 The following records shall be maintained for all IFR flights and retained for at least three months:

a) relevant METARs, TAFs and route forecasts;

b) flight plans; and

c) navigation logs.

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Chapter 2 Definitions

Category 1 (Cat 1) Operation

A precision instrument approach and landing using Instrument Landing System (ILS), Microwave Landing System (MLS) or Precision Approach Radar (PAR) with a decision height of not lower than 200 ft and with a Runway Visual Range (RVR) not less than 500 m (helicopters) or 550 m (aeroplanes).

Circling Minima

The lowest height and in-flight visibility in which a circuit or partial circuit using visual reference only may be carried out within a fixed radius or sector of an aerodrome at which the landing is intended.

Cloud Base

The height of the base of the lowest observed, or forecast, cloud element in the vicinity of an aerodrome or heliport, or within a specified area of operations. The height of the base is normally measured above aerodrome elevation (reported as FEW).

Cloud Ceiling (CC)

The vertical distance from the elevation of the aerodrome to the lowest part of any cloud visible from the aerodrome which is sufficient to obscure more than half of the sky so visible (reported as BKN).

Decision Altitude/Height (DA/H)

A specified altitude/height in the precision approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.

NOTE: Decision Altitude (DA) is referenced to Mean Sea Level (MSL) and DH is referenced to the threshold elevation.

Final Approach

That part of an instrument approach procedure which commences:

- at the specified final approach fix or point; or

  (where such a fix or point is not specified)

- at the end of the last procedure turn, base turn or inbound turn of a racetrack procedure, if specified; or
- at the point of interception of the last track specified in the approach procedure

and ends at a point in the vicinity of an aerodrome or heliport from which:

- a landing can be made; or
- a missed approach procedure is initiated.

Minimum Descent Altitude/Height (MDA/MDH)

A specified height or altitude in a non-precision approach or circling approach below which descent may not be made without visual reference.

Missed Approach Point (MAP)

That point in an instrument approach procedure at or before which the prescribed missed approach procedure must be initiated in order to ensure that the minimum obstacle clearance is not infringed.

Non-Precision Approach and Landing Operations

An instrument approach and landing which does not utilise electronic glide-path guidance.

Precision Approach and Landing Operations

An instrument approach and landing using precision azimuth and glide-path guidance with minima as determined by the category of operation.

Reported RVR

The RVR communicated to the commander of an aircraft, by or on behalf of the person in charge of the aerodrome or heliport.

Runway Visual Range (RVR)

The distance in the direction of take-off or landing over which the runway lights or surface markings can be seen, calculated either by human observation or instruments.

Visual Approach

An approach by an IFR flight when either part or all of an instrument approach procedure is not completed and the approach is executed with visual reference to terrain.

Chapter 3 Instrument Flight Rules

The IFR are set out in the ANO and Rules of the Air Regulations, and detailed in the UK AIP.

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Chapter 4 IFR Operating Minima

1 Pre-Flight Checks of Instruments, Radio, Navigation and Radio Navigation Equipment

1.1 The operator shall set out, in the PAOM Part 2, the checks required to confirm the serviceability of the flight instruments, radio, navigation and radio navigation equipment before take-off on an IFR flight.

2 State Minima

2.1 In certain countries, State Minima are laid down for specific aircraft types. When these differ from the PAOC holder's minima, the more restrictive limits shall apply during operations in the State concerned.

3 Aerodrome Operating Minima (AOM)

3.1 All UK PAOC holders are required to use Subpart E of EU–OPS Commercial Air Transportation (Aeroplanes) or Subpart E of JAR–OPS 3 Commercial Air Transportation (Helicopters) respectively, as the sole code against which AOM calculations can be made.

3.2 It should be noted that for flights made at aerodromes located in the United Kingdom, AOM published in the UK AIP are now calculated upon JAR–OPS 3/EU-OPS Subpart E. UK PAOC holders must therefore specify AOM in their PAOM Part 2 and ensure that these are not less restrictive than those published in the AIP.

4 Initial Climb

4.1 The aircraft commander shall ensure, before taking off on any flight intended to enter IMC at a height below 1,500 ft above the aerodrome of departure, that the net take-off flight path shall meet the following requirements:

a) **Aeroplanes**

Adequate obstacle clearance, as calculated in accordance with Section 2 Chapter 6.

b) **Helicopters**

Adequate obstacle clearance, as calculated in accordance with Section 2 Chapter 7.

5 En-Route Minimum Safe Altitude

5.1 Aircraft operating in IMC shall fly above MSA, as calculated below, except when taking off, landing or otherwise authorised by ATC.

5.2 Calculation of MSA

MSA shall be calculated with reference to Tables 4.1, 4.2 and 4.3.

Table 4.1 Basic Consideration of Obstacles

Situation	Distance from track within which height (H) of highest obstacle or terrain shall be noted	Increments to be added to (H) to obtain MSA (add appropriate figure below and round up to next 100 ft)
Inside CAS provided track is delineated by two separate navigation aids	10 NM	Obstacles 5,000 ft or less AMSL: 1,000 ft. Obstacles higher than 5,000 ft AMSL: 2,000 ft.
Outside CAS	20 NM	As above
Radar controlled flight within 25 NM of the aerodrome of departure or intended landing (control to be monitored by reference to aircraft navigation aids)	5 NM	1,000 ft

Table 4.2 Height Increase for Flight Over High Ground and Wind Effect

Height of Ground	Wind Velocity			
	0–30 kt	31–50 kt	51–70 kt	70 kt+
2,000 ft–8,000 ft	500 ft	1,000 ft	1,500 ft	2,000 ft
Above 8,000 ft	1,000 ft	1,500 ft	2,000 ft	2,500 ft

Table 4.3 Height Increases for Low Surface Temperature

Temperature lower than ISA –15°C	Add not less than 10%
Temperature lower than ISA –30°C	Add not less than 20%
Temperature lower than ISA –50°C	Add not less than 25%

5.3 Published Sources of MSA Information

Jeppesen and Aerad route guides publish MSA above the highest known terrain and notified obstacles within degrees of latitude and longitude, in accordance with Table 4.4.

Table 4.4 MSA as Published on Charts

Chart	Elevation of Obstacle	Vertical Clearance
Aerad and Jeppesen	Up to 5,000 ft	1,000 ft
Aerad	5,001 – 10,000 ft	1,500 ft
Aerad	10,000 ft and above	2,000 ft
Jeppesen	5,000 ft and above	2,000 ft

NOTE: RAF En-Route Low Altitude Charts depict a maximum elevation within latitude/ longitude blocks. **The figure does not include a safety factor and should therefore not be confused with MSA.**

5.4 Minimum Safe Flight Level

5.4.1 The aircraft commander shall ascertain the minimum safe flight level from the MSA obtained from paragraph 5.2, and the latest forecast route QNH, using the Flight Level Graph in the UK AIP (or the RAF En-Route Document).

5.5 Drift-down Following Engine Failure

5.5.1 The aircraft commander shall ensure that any drift-down from the chosen flight level after single engine failure shall not cause the aircraft to descend below MSA or be a danger to traffic at lower levels. When in CAS, he shall also inform the controlling authority of any drift-down.

5.6 Stabilising Altitude

5.6.1 The aircraft commander shall calculate the rate of descent and the stabilising altitude attainable with one engine inoperative from the AFM. Where the stabilising altitude is found to be lower than the MSA, the aircraft commander shall select and fly an alternative route along which MSA can be maintained.

6 Descent in IMC

6.1 The aircraft shall not descend below MSA in IMC unless either of the following conditions have been fulfilled:

a) **Any Aircraft**

The commander has positively established his position as being on an approved procedure as set out in either the UK AIP, Aerad, Bottlang or Jeppesen, or on a discrete approach procedure agreed by the CAA and set out in the PAOM Part 2.

b) **Helicopters**

The commander has positively established his position over the sea at a point from which he can comply with a cloud break procedure agreed by the CAA and set out in the PAOM Part 2.

NOTE: Regardless of any radar service, it is the responsibility of the aircraft commander to maintain adequate terrain clearance.

7 Preparation for Approach

7.1 Before starting an approach, the aircraft commander shall have available the appropriate terminal approach procedure charts for the runway and approach aid to be used at the destination airfield. The charts shall then be placed in a position where they may conveniently be consulted by the aircraft commander.

7.2 The aircraft commander shall establish DA/DH (or MDA/MDH if appropriate) as follows:

a) DA/DH

i) DA/DH must be established for Cat 1 precision approaches and landings using ILS, MLS or PAR with a DH of not less than 200 ft and RVR not less than 500 m.

ii) DH for Cat 1 approaches must not be lower than the lowest of:

- that specified in the AFM (if stated);

- the minimum height to which the precision approach aid can be used without the required visual reference;
- the Obstacle Clearance Limit (OCL)/Obstacle Clearance Height (OCH) for the Category of helicopter; and
- 200 ft.

b) MDA/MDH

MDA/MDH must be established for non-precision approaches and must not be lower than the OCL/OCH for the Category of helicopter or the system minima.

7.3 On a non-precision approach the aircraft commander shall ascertain the time to run at the appropriate ground speed from the outer marker (or other main facility) to the missed approach point.

8 Sector Safety Altitude

8.1 The aircraft commander shall be aware of the sector safety altitude for a given aerodrome as shown in the Terminal Approach Procedure Charts in the UK AIP, Jeppesen or Aerad route guides.

9 Initial Approach

9.1 When the aircraft position has been positively identified at the initial approach fix and the commander has obtained ATC clearance, descent may continue to the safety altitude applicable to the approach procedure, as indicated on the appropriate terminal approach procedure chart or as required by ATC (but not below the relevant sector safety altitude). When joining a holding pattern, the commander shall not descend below sector safety altitude before becoming established in the hold.

10 Visual Approach

10.1 To comply with ATC instructions or to expedite arrival, the aircraft commander may discontinue an instrument approach in favour of a visual approach, provided that he reports that he has the aerodrome in sight and is confident that he can safely complete the approach from that point, by reference to terrain. The commander shall advise ATC of his intention to make a visual approach.

11 Approach Attempts

11.1 After making an unsuccessful instrument approach attempt at any airfield, the aircraft commander shall make a further attempt only where, if again unsuccessful, the remaining fuel would be sufficient to reach the alternate with full holding reserves. In any event, a third attempt shall not be made unless a significant improvement in meteorological conditions is forecast as imminent.

12 Approach Ban – All Aircraft

12.1 An aircraft may commence an instrument approach regardless of the reported RVR/visibility but the approach shall not be continued below 1,000 ft above the aerodrome if the relevant RVR/visibility for that runway is at the time less than the specified minimum for landing. Where RVR is not available, RVR values may be derived by

converting the reported visibility in accordance with paragraph 15. If, after passing 1,000 ft, the reported RVR/visibility falls below the applicable minimum, the approach may be continued to DA/DH or MDA/MDH. The approach may be continued below DA/DH or MDA/MDH and the landing may be completed provided that the required visual reference is established at the DA/DH or MDA/MDH and is maintained.

13 Visual Reference

13.1 A pilot may not continue an approach below MDA/MDH unless at least one of the following visual references for the intended runway or FATO is distinctly visible and identifiable to the pilot:

a) elements of the approach light system;

b) the threshold;

c) the threshold markings;

d) the threshold lights;

e) the threshold identification lights;

f) the visual glide-slope indicator;

g) the touchdown zone or touchdown zone markings;

h) the touchdown zone lights;

i) FATO/runway edge lights; or

j) other visual references accepted by the CAA.

14 Determination of Minima at British Military Airfields

(Refer to AIP AD 1.1.2.)

14.1 Military aerodromes do not use PANS-OPS design criteria but do publish a Procedure Minimum for each instrument approach procedure, shown on the Royal Air Force Approach Chart in a Table of Aircraft Categories; the words 'Procedure Minimum' are not shown. The Procedure Minimum shown in bold print is a minimum height (minimum with QFE set on the altimeter) with the minimum altitude shown in light print beside to the left. The Procedure Minimum (minimum height) will also be passed by ATC who will request the pilot's DH/MDH and intentions. The Procedure Minimum can be converted to an equivalent to OCH by following the procedures in the following paragraphs. This equivalent OCH can then be used to calculate the MDH and RVR in accordance with paragraph 3 above.

14.2 Precision Approaches, ILS and PAR, for which the absolute minimum is 200 ft above touchdown elevation, are normally based on a 3° glide-path. The glide-path angle, also shown on the chart, may be as low as 2.5°. The following increments should be made to the given Procedure Minimum to obtain the equivalent of OCH. There is no provision for the use of radio altimeters.

Table 4.5 Glide-Path Angles – DH Increments

Nominal Glide-Path Angle	Aircraft Categories			
	A	**B**	**C**	**D**
2.5°	Nil	10 ft	20 ft	30 ft
2.6°	10 ft	20 ft	30 ft	40 ft
2.7°	10 ft	20 ft	30 ft	40 ft
2.8°	20 ft	30 ft	40 ft	50 ft
2.9°	20 ft	30 ft	40 ft	50 ft
3.0°	30 ft	40 ft	50 ft	60 ft

14.3 For non-precision approaches the Procedure Minimum may be taken to be the OCH.

14.4 For circling, the OCH should be determined by adjusting the published Royal Air Force values, shown on the Approach Charts, as follows:

Table 4.6 OCH Adjustments for Circling

Aeroplane categories	Instrument (ft)
A and B	Zero
C and D	+ 100

15 Conversion of Reported Meteorological Visibility to RVR – All Aircraft

15.1 Meteorological visibility to RVR conversion must not be used for calculating take-off minima, Category II or III minima or when a reported RVR is available.

15.2 When converting meteorological visibility to RVR in all circumstances other than those in paragraph 15.1, the following Table 4.7 is to be used:

Table 4.7 Conversion of Visibility to RVR

Lighting Elements in Operation	RVR = Reported Met Visibility Multiplied by	
	Day	**Night**
High Intensity Approach and Runway lighting	1.5	2.0
Any Type of Lighting Installation other than above	1.0	1.5
No Lighting	1.0	Not applicable

Section 5 Police Operating Procedures

1 When involved on police operations, at least one qualified air observer should normally be in the aircraft (this requirement does not apply to underslung load operations).

2 This section of the PAOM provides instructions for ALL the operational roles that, in accordance with a CAA/Home Office agreement, may be undertaken by a PAOC holder. The instructions are intended to provide the correct balance of safety and operational effectiveness. Where an operator seeks a variation from any instruction in this section of the PAOM, he shall submit suitable proposals to the CAA and the Home Office. When such proposals have been agreed, the operator shall incorporate them in the PAOM Part 2.

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Chapter 1 Categories of Passenger-Carrying Operations

Passengers may be carried on either of two types of operation, as described below.

1 Normal Seating/Normal Operations

1.1 Normal seating is considered to be the configuration in which passengers are securely seated throughout the flight in a part of the aircraft designed for the purpose.

1.2 Where flight is conducted with doors open or removed, the operator shall ensure that the person immediately adjacent to the open doorway shall be familiar with the use of a dispatcher's harness and shall wear the same, secured to an approved point. It is not acceptable for a person secured only by a normal safety harness to be seated immediately adjacent to an open doorway. The aircraft commander shall ensure that all cabin equipment is satisfactorily secured before flight whenever the doors are open or have been removed.

2 Special Seating/Special Operations

2.1 Special seating is considered to be any configuration in which the passenger seating arrangements do not conform with the requirements for normal seating.

2.2 Special seating arrangements are acceptable for special operations which fall into one of the following classes:

a) the carriage of specialist teams, including firearms units who require rapid deployment and who may have in hand items of equipment that would normally be stowed;

b) the evacuation of injured persons whose treatment en-route requires unrestricted mobility on the part of medical staff carried on the aircraft; and

c) the rapid evacuation of members of the public and emergency services from a scene of potential danger.

2.3 THE OPERATOR MAY UNDERTAKE ONLY THOSE SPECIAL OPERATIONS WHICH FALL INTO THE ABOVE CLASSES, OR THOSE WHICH ARE SUBSEQUENTLY AGREED BY THE CAA AND THE HOME OFFICE.

3 Special Operations – Passenger Briefing

3.1 During special operations it shall be acceptable for the aircraft commander to delay the passenger briefing until after take-off, when it may be completed by the observer at a time acceptable to the aircraft commander. Alternatively, the briefing requirement may be met by periodic training for specialist teams, in accordance with instructions that shall be set out in the PAOM Part 2.

3.2 In addition to the briefing requirement set out in Section 2 Chapter 4 paragraph 7, any periodic training for specialist teams shall include specific advice on the following:

a) the dangers from main and tail rotors and from hot exhausts;

b) the effects of sloping ground on blade tip clearance; and

c) the brace position to be adopted by an unsecured passenger in an emergency landing or ditching.

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Chapter 2 Requirements for the Carriage of Certain Types of Passenger and of Animals

1 The Carriage of Medical Passengers

1.1 Terminology

a) **Helicopter Emergency Medical Service (HEMS) Flight**

A flight by a helicopter operating under a HEMS approval, the purpose of which is to facilitate emergency medical assistance, where immediate and rapid transportation is essential, by carrying:

i) medical personnel; or

ii) medical supplies (equipment, blood, organs, drugs); or

iii) sick or injured persons and other persons directly involved.

The CAA is empowered to decide which police air operations require a HEMS approval issued in accordance with JAR–OPS 3.

b) **CASEVAC**

A flight, the purpose of which is to give immediate assistance to a sick or injured person in life-threatening circumstances.

c) **Medical Personnel**

A medical person carried in a helicopter during a HEMS flight, including but not limited to doctors, nurses and paramedics.

1.2 General

1.2.1 Where a helicopter, operated on behalf of a police authority, provides a service under a HEMS approval to a health authority, it may undertake a HEMS flight, which shall be deemed to commence when a patient is taken on board.

1.2.2 There may be other times when a police aircraft finds itself in a position to give limited assistance such as CASEVAC – as defined in paragraph 1.1 b) above. This type of operation should only be undertaken as a measure of last resort when no other means of transportation is available (or suitable).

1.3 HEMS Flight

1.3.1 A police unit may not conduct a HEMS flight unless holding an approval, issued by the CAA. HEMS operations will be conducted in accordance with Appendix A to Section 5.

1.3.2 **HEMS Public Interest Site Operations**

Operations by a twin turbine powered helicopter with an MAPSC of six or less, conducting Police HEMS public interest operations to/from a public interest site which was established on or before 1 July 2002 and which is located in a hostile environment, may be conducted in accordance with the variations contained in Appendix B to Section 5 when specifically approved by the CAA.

1.4 CASEVAC

1.4.1 This type of operation is limited to the removal of a patient from the scene of an accident or incident under the conditions of paragraph 1.1 b) above.

1.4.2 The weather and operating minima shall be those applicable to a HEMS Operator and shall be specified in the PAOM Part 2.

1.4.3 Where possible the following conditions should be complied with:

a) As far as can be ascertained, the method of carriage does not aggravate the patient's condition.

b) The police observer or medical attendant, if available, shall occupy a position from which he can monitor and assist the patient during the flight and inform the aircraft commander of any apparent deterioration in the patient's condition.

c) Sitting Patients

Patients who can sit shall occupy a passenger seat and, where practicable, be secured by a seat belt. The seat belt may remain loose except when the aircraft commander shall instruct the observer or medical attendant to tighten the belt when required for take-off, landing, flight in turbulence or during manoeuvres.

d) Stretcher Patients

A patient needing to be carried on a stretcher fitted to the aircraft shall, where his condition permits, be secured to the stretcher by belts or a harness in the manner laid down in the AFM.

2 Prisoners

2.1 The carriage of prisoners should not be regarded as routine and special care should be given to their movement by air. A prisoner is still classed as a passenger and shall be afforded all the normal safety considerations.

2.2 The following procedures shall apply when carrying prisoners:

a) the aircraft commander shall satisfy himself that there is no likelihood of the prisoner becoming so violent that the safety of the aircraft would be jeopardised. Whenever potentially violent prisoners are to be flown, they shall be carried one at a time and accompanied by sufficient escorts to restrain them should violence occur;

b) when handcuffed, a prisoner's hands shall always be to the front, to allow the release of the seat belt in the event of an emergency landing;

c) a prisoner shall be secured to the aircraft only by means of an approved seat belt used in the normal manner;

d) at least two escorts shall accompany a prisoner and be seated in such a way that they can restrain him, while ensuring that he cannot reach the pilot or any of the aircraft flight controls or systems controls, or operate the exits; and

e) when a prisoner becomes violent, the aircraft shall be landed as soon as practicable and the prisoner moved by surface means. The prisoner shall not be moved again by air.

3 Persons Under the Influence of Drugs or Alcohol

3.1 The carriage of persons under the influence of drugs or alcohol should be avoided whenever possible because of the difficulty of accurately predicting their behaviour during flight. However, if there is no practicable alternative to movement by air, the following procedures shall be applied:

a) the aircraft commander shall establish as far as is possible to what degree the individual is under the influence of the drugs or alcohol, the substances which have been taken and their likely effects;

b) the aircraft commander shall determine, from the apparent physical and mental state of the individual, whether that person is fit to be carried in a normal seat or requires a stretcher. If any other form of restraint is considered necessary the individual shall not be carried by air;

c) at least two escorts shall accompany the person in order to provide the necessary restraint and to aid his emergency evacuation, should the need arise;

d) the aircraft commander shall ensure that a suitable receptacle is available for vomit; and

e) the aircraft commander shall land as soon as practicable if the individual shows any signs of becoming violent. Further movement of the individual should then be undertaken by surface means.

4 Physically or Mentally Handicapped Persons

4.1 When the pre-planned carriage by air of a physically or mentally handicapped person is conducted, that individual shall be accompanied by two persons, at least one of whom shall be properly qualified to care for the physically or mentally handicapped. In an emergency, where the rapid transportation of a physically or mentally handicapped person is necessary, the presence of properly qualified personnel is not required. The aircraft commander shall, however, ensure that proper control is exercised over such a passenger by utilising the police observer and another suitable individual.

4.2 The aircraft commander shall ensure compliance with the following procedure:

a) any medical attendant accompanying the handicapped person receives a full safety briefing;

b) a mentally handicapped person is not to be seated in such a way as would permit him to operate the emergency or normal exit opening mechanisms;

c) a mentally handicapped person sits between the escorts; and

d) each person is properly seated and secured by means of a seat belt.

5 Bodies and Remains

5.1 The requirement to carry bodies or remains would normally be dictated by the inaccessible nature of the location where they are found, which precluded other methods of transport. The main considerations when undertaking the task are the health and hygiene of the aircraft occupants. The condition of the bodies or remains will determine how best they should be packed and carried, in accordance with the following guidelines:

a) Bodies shall generally be carried inside the aircraft. However, if their condition is such that the interests of health and hygiene are better served by carriage outside a helicopter, the commander may do so provided:

i) the helicopter is equipped with either a hoist or an underslung load hook, whose use is covered by provisions of the AFM;

ii) the commander is currently qualified to carry out external load lifting according to the requirements set out in Chapter 6 or helicopter hoisting according to the requirements set out in the PAOM Part 2, which shall also list any special procedures to be followed;

iii) the body or remains are securely contained within a coffin or heavy duty body bag; and

iv) any passengers shall be CAA-agreed passengers only.

b) The carriage of bodies or remains inside an aircraft shall comply with the following procedures:

i) bodies and remains shall be placed securely in a body bag or coffin. Prior to being loaded onto the aircraft the integrity of the container shall be checked to ensure that it has not been damaged;

ii) the body bag or coffin shall be secured in accordance with normal loading instructions; and

iii) after any spillage of body fluids has occurred, or any part of the body has come into contact with the aircraft, a thorough wash down of the area affected shall be carried out as soon as practicable with a suitable cleansing agent.

6 Police Dogs

6.1 Whenever possible, dogs shall be embarked or disembarked with the aircraft shut down. When this is not possible the following procedures shall be followed:

a) **Embarkation**

The observer shall meet the handler and dog clear of the aircraft in order to brief the handler on the following matters:

i) the arc within which to approach the aircraft;

ii) the order in which dog and handler may enter the aircraft;

iii) the commander's 'thumbs up' signal to authorise entry into the aircraft; and

iv) the need for the handler to keep the dog under control on a short lead at all times, thus obviating the risk of the dog being able to interfere with the aircraft flight controls or systems controls.

b) **Inside the Aircraft**

i) At no time shall the handler release the lead, which shall be kept as short as possible;

ii) when properly seated, the handler shall secure his seat belt and put on a headset or helmet;

iii) the aircraft commander shall make every effort to avoid large attitude changes which may disturb or alarm the dog; and

iv) if during the flight the dog becomes agitated or unwell the aircraft commander shall land as soon as practicable. He shall ensure that any vomit or other mess created by the dog is cleaned up and the area disinfected as soon as practicable.

NOTE: There is no requirement for the animal to lie down. Dogs are more at ease when able to see out of the window.

c) **Disembarkation**

i) After landing, the dog and handler shall disembark from the aircraft when cleared to do so by the aircraft commander;

ii) the aircraft commander shall ensure that the handler has been briefed that if the dog breaks free and moves towards the tail rotor of a helicopter or the propeller(s) of an aeroplane, the handler shall not attempt to follow. The handler shall clear the aircraft within an approved arc to the front and manoeuvre the dog to that position. If the dog does not respond and poses a threat to the aircraft, the handler shall signal the aircraft commander to close down by using the 'cut engines' signal (either arm and hand placed level with the chest then moved laterally with the palm downwards);

iii) when the dog and handler have moved clear, the commander of a helicopter shall take off as soon as possible in order to allow the handler and the dog to start their task expeditiously; and

iv) the handler shall not normally unleash the dog until well clear of the aeroplane or until the helicopter has taken off.

6.2 The operator shall set out in the PAOM Part 2 any additional or type-specific guidance that he may consider necessary.

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Chapter 3 Weapons and Munitions on Normal and Special Operations

1 Introduction

1.1 A ground commander may derive great benefit from the ability of armed officers, or a firearms unit, to fly on either normal or special operations directly to the scene of an incident. When such equipment is to be carried, the overriding consideration shall be the elimination of danger to the aircraft, its occupants and persons and property on the ground.

1.2 The types and quantities of weapons and munitions that may be carried shall be determined by agreement between the operator and the CAA Dangerous Goods Office and set out in instructions within the PAOM Part 2. Where the police consider it necessary for the sake of saving life, the quantities of weapons and munitions to be carried may exceed the approved maxima but the aircraft commander shall be informed accordingly. In such circumstances the operator shall inform the CAA Dangerous Goods Office, not later than 48 hours after the event, of the total quantity of weapons and munitions that were actually carried.

NOTE: Munitions include gas/smoke canisters, stun grenades, shotgun cartridges and ammunition for rifles and side-arms.

1.3 The aircraft commander, by observation or by confirmation from the officer in charge of the police unit or the senior passenger, shall satisfy himself that all weapons and munitions that are placed on board the aircraft, whether retained by a passenger or stowed in the hold, consist only of those types and quantities which, in accordance with instructions within the PAOM Part 2, are permitted to be carried.

1.4 Where weapons are to be carried, the aircraft commander shall further satisfy himself that they are in a safe condition, as described in Table 5.1 below:

Table 5.1 Weapons – Safe Conditions

Weapon	Safe Condition
Self-loading pistol, self-loading rifle, carbine, automatic shotgun or pump action shotgun, bolt action rifle, automatic rifle.	Working parts forward and trigger released; safety catch applied where possible; magazine charged with ammunition and fitted to the weapon; NO ROUND IN THE BREACH.
Revolver.	Cylinder loaded with ammunition; weapon in a secure holster, which prevents accidental discharge.
Electro-shock weapons, e.g. TASER.	Carried by the officer, secured in an approved holster, protected against accidental activation, and not removed from said holster at any stage whilst on board the aircraft.
Incapacitant sprays, e.g. CS, PAVA.	Carried in a strongly constructed box.

2 Loaded Weapons – Conditions of Carriage and Operation

2.1 Aircraft operating in accordance with a PAOC shall not carry the following weapons in a loaded state:

a) double-barrelled shotgun;

b) single-barrelled shotgun (unless automatic or pump action);

c) baton gun;

d) CS discharger; or

e) dart gun.

2.2 The loading or unloading of a weapon on an aircraft shall not be permitted.

2.3 THE FIRING OF A WEAPON OR THE LAUNCHING OF ANY MUNITIONS FROM AN AIRCRAFT SHALL NOT BE PERMITTED.

3 Carriage of Weapons and Munitions – Normal Operations

3.1 Where all passengers are securely seated throughout the flight, the following constraints shall apply:

a) weapons shall be in a safe condition;

b) weapons and munitions shall be carried in holds, compartments, or in other areas designated by the CAA, that are inaccessible in flight, and secured in accordance with normal loading instructions;

c) neither weapons nor munitions shall be distributed among passengers until the aircraft has landed at the operational destination;

d) electro-shock weapons (e.g. TASER) shall be carried by the officer, secured in an approved holster, protected against accidental activation, and not removed from said holster at any stage whilst on board the aircraft; and

e) incapacitant sprays/smoke canisters shall be in boxes but these may be readily accessible. Boxes shall be strongly constructed, fire resistant and shall bear:

i) an 'explosives' label when containing smoke canisters; or

ii) a 'toxic' label when containing incapacitant sprays.

4 Carriage of Weapons and Munitions – Special Operations

4.1 When it is necessary for passengers on a special operation to be in possession of weapons and/or when passengers need to deploy rapidly from the aircraft, hand weapons and spare ammunition for these may be carried in readily accessible boxes or the passengers may carry the hand weapons in holsters and the ammunition in pockets; rifles and shotguns may be stowed securely within the cabin and spare ammunition for these may be carried by passengers in body belts or readily accessible boxes. Similarly, if the aircraft commander judges the situation to be urgent, incapcitant sprays may be carried by an officer providing that they are protected against accidental activation. Planning for such an operation shall normally include the following:

a) the aircraft commander shall attend a full planning meeting in order to discuss the exact role of the aircraft and to offer specialist advice; and

b) all participants shall attend a final briefing. A dry rehearsal, with engines stopped, shall take place in order to establish the viability of the plan and to resolve any identified problems.

4.2 Exceptionally where the aircraft commander judges that the urgency of the police operation precludes spending time on perfecting preparations, he may decide to dispense with the above procedures but he shall always adhere to the following:

a) prior to the passengers entering the aircraft, the commander shall ensure, by observation or by confirmation from the officer in charge of the unit, that all weapons and munitions carried on board are in a safe condition;

b) all weapons and munitions shall be contained in holsters, body belts or secured safely; gas/smoke canisters may be carried by passengers but shall be carried in such a manner as to prevent accidental activation;

c) wherever possible, passengers shall board an aircraft with engines stopped;

d) passengers shall be securely seated in the normal way unless operational considerations dictate otherwise. However, where in the judgement of the aircraft commander safety considerations outweigh operational necessity, police officers shall be securely seated during flight;

e) where passengers are not secured in passenger seats, they shall be positioned in a way that would afford them maximum protection, while not impeding egress, in the event of an emergency landing; and

f) cabin doors shall be securely closed before take-off and should normally remain closed during flight. The cabin doors may only be opened when authorised by the aircraft commander, either after landing or before hover emplaning/deplaning.

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Chapter 4 Dangerous Goods

1 Permitted Dangerous Goods

1.1 The following listed dangerous goods may be carried in an aircraft:

a) batteries (wet cell or lithium) installed in airborne equipment and spare batteries, gas cylinders, drugs and medicines;

NOTE: Dry batteries, such as those made from nickel cadmium (Nicad), are not classified as dangerous goods, providing they are protected against short-circuit.

b) explosives, either:

i) which are restricted to explosives blasting (i.e. 'plastic explosives'), detonators, detonating cord, safety fuse and lighters fuse carried by bomb disposal personnel for lifesaving purposes or for other special operations; or

ii) pyrotechnic components of air-droppable location markers;

c) kerosene or motor spirit (including petrol);

d) CS/PAVA Spray canisters; and

e) any other items classified as dangerous goods, with the written permission of the CAA.

2 Dangerous Goods – Conditions of Carriage

2.1 Any gas cylinders carried in flight shall have been manufactured for the purpose of containing and transporting gases.

2.2 Personal issue CS/PAVA Spray canisters shall not be carried except where a Permission for the Carriage of Munitions of War and Dangerous Goods has been granted by the CAA. They shall be stowed in a securely closed and labelled container approved by the CAA for that purpose, except that where the commander judges the situation to be urgent they may be carried by the constable. Transfer of the CS/PAVA Spray canister to and from the container shall take place outside the aircraft.

2.3 Any container of kerosene or motor spirit shall have been manufactured for the purpose and marked to indicate the contents or bear a 'flammable liquid' label. The quantity of kerosene or motor spirit that may be carried shall not exceed 25 litres (5.5 gallons) per container.

2.4 Smoking shall not be permitted on an aircraft when a gas cylinder is in use or when kerosene or motor spirit is being carried.

2.5 Drugs and medicines carried in an aircraft, other than the contents of the aircraft first aid kit, shall be under the control of suitably trained medical personnel or be in secure containers.

2.6 The total quantity of location markers carried in an aircraft shall not exceed six. When not in use, they shall be stowed in boxes which are strongly constructed, fire resistant and labelled with an 'explosives' label.

2.7 The explosives referred to in paragraph 1.1 b) shall be stowed at all times, whilst on the aircraft, in containers which have been designed for the transport of the explosives (such as steel boxes), which shall be labelled with an 'explosives' label. The explosives referred to in paragraph 1.1 b) i) shall be under the control of bomb disposal personnel and the aircraft commander shall ascertain the nature and quantity of what is to be carried.

2.8 Spare batteries may be carried subject to the following conditions:

a) lithium batteries shall be individually protected so as to prevent short-circuits;

b) wet cell batteries must be carried in strong, rigid packagings as follows:

i) packagings must be leak-proof, impervious to battery fluid and protected against upset by using an appropriate means of securement;

ii) batteries must be protected against short-circuits, secured upright in the packaging and surrounded by compatible absorbent material sufficient to absorb their total liquid contents; and

iii) packagings must be labelled with a 'Corrosive' label and package orientation labels.

3 Occurrences Involving the Carriage of Weapons, Munitions or Dangerous Goods

3.1 Any incident related to the carriage of weapons, munitions or dangerous goods is reportable as an occurrence. An aircraft commander should note that the carriage of dangerous goods may give rise to the possibility of a fire, leakage or spillage. While exercising his judgement in the precise circumstances, he should invariably give early consideration to landing as soon as is practicable because such events may be handled more expeditiously on the ground.

3.2 It is most unlikely that correctly packed and secured dangerous goods would themselves cause a fire but, if they should ever do so, standard aircraft fire drills should be carried out. However, a fire that flares for any reason may threaten an explosion in a load of ammunition, gas cylinders, pyrotechnics, kerosene containers or tear gas canisters. Hence, where the situation permits, dangerous goods should be moved away from the vicinity of a fire. In an extreme situation where an immediate landing is not possible, an aircraft commander should consider jettisoning the dangerous goods when to do so would not jeopardise the safety of the aircraft or of persons and property on the ground.

3.3 Wet cell batteries, kerosene and motor spirit containers might leak or spill their contents in flight. Skin contact with any leakage or spillage should be avoided, as should treatment with water – which is likely to hasten the spread of contamination or produce an undesirable reaction. The escape of kerosene or motor spirit should be contained as far as possible through the use of any material, such as cotton or paper, that may be available. However, leakage or spillage from a wet cell battery should on no account be staunched because of the danger of chemical reaction and acid contamination; instead expert assistance should be sought to treat the affected area once the aircraft is safely on the ground.

3.4 The aircraft commander shall complete a report in the technical log in the event of spillage or leakage of dangerous goods within his aircraft.

4 Aircraft Emergency During Flight Involving the Carriage of Weapons, Munitions or Dangerous Goods

4.1 The aircraft commander shall ensure that the FCR, or other designated co-ordination agency, is informed of the aircraft's load of weapons, munitions and dangerous goods, particularly gas cylinders and bomb disposal equipment, before each flight, or series of flights, in order that ground emergency services may be advised of the hazards that may be encountered at the scene of a subsequent aircraft incident.

4.2 On declaring an emergency, the aircraft commander should, where possible, inform the appropriate ATSU of the aircraft's load of weapons, munitions and dangerous goods, with a view to protecting the safety of any ground personnel, alerted by the unit, who attend the scene of an aircraft incident.

4.3 Prior to an emergency landing, if time permits, the aircraft commander shall ensure that all weapons are securely stowed, hand weapons in holsters where possible.

4.4 Should an aircraft carrying weapons or munitions or dangerous goods make an emergency landing on an aerodrome, the aircraft commander shall inform the aerodrome security agency of such weapons or munitions or dangerous goods.

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Chapter 5 Hover Emplaning and Deplaning

1 Introduction

1.1 Resources will occasionally need to be deployed at a location where it may not be possible to land. In such situations, persons, dogs and equipment may enter or leave a helicopter in the hover, provided that the aircraft commander adheres to the instructions set out below.

1.2 The overriding requirement is that there shall be no danger to third parties and minimal risk to the aircraft, crew, seated passengers and those carrying out the activity. The major consideration is engine failure, in the event of which the ensuing landing should not result in major damage. However, the full set of precautions contained in this chapter is intended to reduce the risk of such damage to an acceptable level for CAA-agreed passengers, who shall be the only passengers permitted to be on board or to vacate or to enter a helicopter during hover emplaning and deplaning. Either a single-engined or a multi-engined helicopter may be utilised, by day.

2 Responsibilities of the Aircraft Commander

The responsibilities of an aircraft commander in regard to hover emplaning or deplaning shall be as follows:

2.1 **Planning**

a) to confirm that persons or animals cannot be landed conventionally at a point sufficiently close to the location of the planned police task;

b) to ascertain that a hover at a height of at least 4 ft can be established and maintained at the site in question, taking into account the elevation and ambient temperature. To provide a power margin for handling purposes, the maximum weight of the helicopter shall be not greater than 95% of the maximum permitted weight calculated from the relevant AFM graph;

c) to note that the engine power rating to be used in assessing the hover performance requirement shall be take-off power. However, where the time spent in the hover is expected to exceed the time limit for take-off power, the maximum continuous power rating shall be used instead;

d) to ensure that the helicopter shall remain within centre of gravity limits at all times. This requirement becomes significant in regard to hover deplaning, especially from aircraft fitted with skids, when it may be possible to exceed lateral limits when a person applies weight to a skid during entry or exit; and

e) to ensure that the cabin exit door has been removed, or confirm that, if it is a sliding door, it may be opened in flight. An exit with a hinged door shall not be used.

2.2 **Briefing**

a) to ensure that all passengers are briefed on the normal and emergency aspects of the operation;

b) to ensure that all persons intending to deplane or emplane are briefed and, where possible, rehearsed for the activity. If necessary, the briefing may be undertaken by the police observer, outside the helicopter, at the emplanement site;

c) to ensure that the sequence of emplaning and deplaning, and any limitations on the number of persons who may occupy the exit/entry position at any one time, comply with the instructions that shall have been set out in the PAOM Part 2;

d) to remind passengers that, owing to the hazard presented by the main rotor, they should not jump upwards during deplaning;

e) to advise passengers to land on both feet and then to move clear of the rotor disc in the pre-briefed direction; and

f) to advise emplaning passengers:

i) not to approach the helicopter beneath the rotor disc until cleared to do so by a 'thumbs-up' signal from the aircraft; and

ii) to transfer weight from ground to helicopter in a smooth and progressive manner.

2.3 Seating/Doors

a) in transit, unless on a special operation, to ensure that all passengers are seated and secured, with doors closed where possible; and

b) to ensure that AFM limitations are observed in regard to the opening and closing of doors, and in respect of flight with doors open or removed.

2.4 Reconnaissance

To make a detailed reconnaissance of the intended drop point in order to satisfy himself that the following criteria can be met:

a) the slope and nature of the terrain raise no doubts in his mind that the helicopter would be able to remain upright after a forced landing;

b) no moving parts, such as main or tail rotors, would be brought into close proximity with any objects or terrain features that, on contact, could cause substantial damage to the helicopter or lead to loss of control. Such objects might include non-frangible structures, vehicles, or vessels. Such terrain features might include trees or rocky outcrops;

c) as helicopters are susceptible to drawing objects into the rotor, either from surrounding trees or structures, to ensure that any object appearing to present a hazard shall be avoided by at least half a rotor span;

d) to ensure positive directional control, he hovers on a heading that avoids a relative wind from astern the beam of the aircraft; and

e) no persons on the ground are within 1½ rotor diameters or 16 m (50 ft) of the helicopter (whichever distance is the greater), except those who have just disembarked from the helicopter, or those who the commander reasonably believes are intending to embark into the helicopter, or those directly concerned with controlling the hover emplaning or hover deplaning operation from the ground.

2.5 Deplaning

a) to establish and maintain a steady hover at a height from which the maximum drop to the ground for persons or animals shall be 4 ft;

b) to authorise the opening of the doors, where applicable, once the hover has been established; and

c) to ensure that no passenger unstraps before being signalled to deplane by the police observer.

2.6 **Clearing the Site**

To depart from the site as soon as all the deplaned passengers have moved clear of the helicopter and, where possible, the doors have been closed.

2.7 **Emplaning**

a) to earth the helicopter before emplaning begins in order to disperse static electricity. This can be achieved by touching one wheel or skid on the ground or, where this is impracticable, a CAA-approved weighted earthing wire can be lowered to the ground instead;

b) to establish a hover at a maximum height of 2 ft for boarding persons or animals to climb;

c) to ensure that, as passengers embark, one is seated before the next clambers on board; and

d) to ensure that all persons are strapped in their seats and the doors have been closed, where possible, before departure.

3 Supplementary Requirements for Night Operations

3.1 Hover emplaning and deplaning shall normally be carried out only in daylight. Should it become necessary to do so in darkness, the following requirements shall be met in addition to those in paragraphs 2.1 to 2.7 above:

a) the helicopter shall be multi-engined;

b) the site shall at least meet the ad hoc site criteria set out in Section 2 Chapter 8 paragraph 4.11;

c) the aircraft commander shall use the helicopter's external lights to the extent necessary for him to establish and maintain the required height in the hover; and

d) the aircraft commander shall use the landing light to flash the signal for persons on the ground to approach the helicopter.

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Chapter 6 Carriage of Underslung Loads and Use of Hoists

1 Flight with Underslung Loads

1.1 Helicopter flights with underslung loads shall be conducted in accordance with the guidance outlined in CAP 426 *Helicopter External Load Operations* and with the following criteria:

a) **Pilot**

The pilot shall hold a current certificate of special operational competency, endorsed for the carriage of underslung loads (see Part D);

b) **Loadmaster (Observer)**

A police observer may act as loadmaster, if required, provided that he has been suitably trained and successfully tested on a Special Operations Check (see Part D);

c) **Aircraft**

The aircraft shall be fully equipped and certificated for carrying underslung loads;

d) **Nets and Strops**

i) Nets and strops to be used shall have been manufactured to CAA-approved standards for underslung load operations;

ii) They shall have been checked and tested for serviceability prior to use by a person nominated by the operator for carrying out such checks and inspections. Should any doubt exist as to the structural integrity of the strop or net, the item shall not be used until it has been inspected and if necessary repaired by the item manufacturer or a qualified engineer;

iii) The placarded maximum gross load for the strop and net to be used shall not be less than the known weight of the load to be carried. Where the weight of the load has not been accurately determined, a strop and net with a placarded weight twice that of the estimated weight of the load shall be used;

e) **Load**

The Dangerous Goods Regulations apply equally to items carried as underslung loads as they do to internal loads. Flying qualities will vary from load to load, those that are rounded and heavy behaving more sedately than those that are light but slab-sided. Instability may occur, in which event the aircraft commander may benefit from taking action as follows:

i) Fore and aft movement

Where the load becomes unstable in the pitching plane, flare gently to dampen out the oscillations.

ii) Side to side movement

Where the load swings laterally, induce positive g by banking into a gentle turn.

Thereafter airspeed should be reduced to prevent the problem recurring. The optimum airspeed may be found by experiment.

1.2 Conduct of Underslung Load Operations

1.2.1 The safe and successful completion of an underslung load operation requires full preparation and planning of the task, particularly when such an operation is not regularly carried out.

1.3 Operator's Responsibilities

1.3.1 The operator shall ensure that the following resources are available, as required:

a) If no mirror is fitted for the purpose of allowing the pilot himself to monitor the load, a suitably trained loadmaster, who may be a police observer, shall be carried in the helicopter to assist with positioning the load and monitoring its behaviour in flight;

b) A hook-up man, fully briefed in regard to the signals or communications to be used, shall attend to attach any load to a hovering helicopter. Similarly, another such person may be required at the drop-off point;

c) A protective helmet, with chin strap secured, shall be worn at all times by ground personnel when conducting underslung load operations. Depending on the terrain or weather conditions, ground personnel may also be required to wear gloves, goggles and protective clothing to prevent injury from grit, ice or other debris.

1.4 Responsibilities of an Aircraft Commander

a) To complete the normal flight planning requirements set out in Section 2 Chapter 1 paragraph 3;

b) To select load pick-up and drop-off points so as to obviate danger to third parties or property on the ground and also to allow clear areas for the approach and climb-out, in the event of a load being jettisoned either deliberately or inadvertently;

c) To avoid overflying any congested areas;

d) To choose a route that minimises noise and nuisance as well as avoiding danger to persons and property.

1.5 Performance

1.5.1 The gross weight of a helicopter and its load, when engaged in underslung load operations, shall not exceed the maximum weight at which hover Outside Ground Effect (OGE) is possible, as determined from the AFM.

1.5.2 A pilot shall allow an increased power margin for safety when operating in hot and high or turbulent conditions. It is recommended that the following equation be applied:

Establish:

a) the gross weight hover IGE; and

b) the gross weight hover OGE.

Divide the difference between a) and b) by 2 and add the figure to b).

The maximum gross weight with underslung load shall be 95% of this figure.

1.6 Communications

1.6.1 The aircraft commander, loadmaster and ground personnel shall agree beforehand the method whereby instructions may be passed between them. Radio communications shall be tested prior to commencing underslung load lifting. Marshalling signals, as set out in the Rules of the Air Regulations 2007, may be used as the primary method of communications or as a backup to the radio. If they are to

be used, suitable illustrations as depicted in CAP 393 shall be set out in the PAOM Part 2.

1.6.2 The aircraft commander shall brief the loadmaster on an alternative means of communication in the event of intercom failure.

1.7 **Role Checks**

a) Prior to flight, a full serviceability check shall be carried out of the underslung load hook normal, emergency and manual releases;

b) The aircraft load monitoring mirror shall be checked and adjusted prior to flight;

c) The aircraft commander shall ensure that the weight of the load has been accurately established where possible, that the load is secure and that it is safe to fly.

1.8 **Passengers**

Only those persons with duties to perform in connection with the load shall be on board the helicopter during flight.

1.9 **Emergencies**

a) **Load Jettisoning**

Deliberate load jettisoning shall only be carried out in an emergency, the load being dropped in an open area away from persons or property.

b) **Engine Failure in the Hover**

Persons operating beneath the helicopter during load hookup or release shall be clearly briefed on which way to move in the event of engine failure in the hover, following agreement with the aircraft commander on the direction in which he would manoeuvre the helicopter.

2 Use of Hoists

2.1 When raising or lowering persons by means external to the helicopter, such as a hoist, the aircraft commander shall observe the associated limitations contained in the AFM.

2.2 No person or article shall be lowered from a helicopter in flight except by means of an apparatus approved for that purpose by the CAA.

2.3 An operator shall not undertake the specialised technique of helicopter hoist operations without a specific approval from the CAA.

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Chapter 7 Dropping of Articles

1 Introduction

1.1 Articles such as message containers, smoke generators or unbreakable lightweight equipment may be dropped from an aircraft, provided that no danger exists to third parties. The article shall be ejected cleanly so as to obviate the risk of it striking or fouling the airframe: in some aircraft configurations it may be necessary either to remove a door or to utilise a sliding door. The objective of the drop will be to deliver the article to the ground accurately. In practice the effectiveness of the exercise will depend on the location, terrain, nature of the article and the aiming procedure. Only trained police observers or other trained persons as agreed with the CAA are permitted to drop articles from an aircraft.

2 Constraints on the Dropping of Articles

2.1 All Aircraft

a) The area into which the article is to be dropped shall be, in the judgement of the aircraft commander, large enough to compensate for the increased likelihood of aiming error due to aircraft motion;

b) the dropping area shall be clear of all persons and any ground features such as trees, structures or long grass that might conceal the presence of any person;

c) when dropped, the article should be sufficiently heavy, or securely weighted if necessary, to obviate the possibility that the slipstream could dash it against the airframe or engines or carry it into the main or tail rotors of a helicopter;

d) the aircraft commander shall plan to drop the article while heading into wind, at the best combination of low height and low ground speed, to achieve the greatest aiming accuracy consistent with the safety considerations implicit in the possibility of an engine failure; and

e) the aircraft commander shall issue instructions to the observer, or other trained person, for the dropping of any article. Subsequently the article shall be dropped only in accordance with those instructions, as soon as the commander gives the executive order. To prevent the article from landing outside the safe area identified by the pilot, it shall not be released in forward flight if, for any reason, the drop does not occur immediately after that order has been issued.

2.2 Aeroplanes

The operator shall set out in the PAOM Part 2 the airframe configuration and ranges of speed and height to be adopted for the dropping of any article.

2.3 Helicopters

a) No article shall be dropped direct from a hovering helicopter to a person other than for life-saving purposes. The noise and down draught create risks to anyone directly underneath, outweighing the operational advantages of a direct drop; and

b) the helicopter should ideally be established in the hover before any object is dropped. However, some measure of forward airspeed, not exceeding 40 kt IAS (owing to the risk of striking the tail rotor) is permitted, if required for operational reasons.

NOTE: It may occasionally prove more effective to hover deplane a person who is carrying the article rather than to drop it on its own.

3 Smoke Generators – Special Considerations

3.1 A smoke generator shall be activated only when held outside the aircraft in a manner that would cause the object to fall clear, if accidentally dropped.

3.2 A smoke generator that fails to ignite shall not be brought back into the aircraft but dropped immediately. The aircraft commander shall note and report the location of the release as soon as possible, to enable the smoke generator to be retrieved or destroyed by a competent agency.

3.3 Only smoke generators of a type approved by the CAA for carriage in aircraft shall be used.

4 Message Containers

4.1 A message container shall be constructed to meet the following specification:

a) composed of lightweight, non-breakable material;

b) capable of floating in water and watertight;

c) simple to open, with clear opening instructions;

d) conspicuous appearance;

e) fitted with a brightly coloured streamer, sufficiently long to be visible when falling to the ground but short enough to obviate the risk of becoming wrapped around tail rotor or empennage; and

f) emblazoned with the words 'Police Message' and bearing instructions on what action any finder should take.

Chapter 8 Formation Flying

1 Introduction

1.1 Flying in formation with another flying machine requires the greatest caution. The fact that the pilot of the other flying machine may not be aware of the police aircraft's intentions, and might not even wish to be identified, implies that the activity shall not be regarded as close formation flying. The shortest possible time shall be spent at the minimum permitted distance from the other flying machine. Should shadowing the other flying machine subsequently become necessary, it shall be conducted from the maximum range consistent with obtaining photographic or other evidence, and maintaining visual contact.

1.2 At no time shall the police aircraft be flown in such a manner as to endanger the other flying machine nor shall the police aircraft attempt to force the other flying machine to alter height or heading, or to land. The police aircraft shall maintain sufficient separation from the other flying machine that would enable the police pilot to take safe avoiding action if the other flying machine attempts to endanger him. Should this situation arise, the police aircraft shall ensure that a safe separation distance is maintained, regardless of the need for obtaining evidence. The carriage of passengers during formation flying shall be restricted to CAA-agreed passengers.

2 Limitations

2.1 Formation Flying shall not be permitted at night, or in cloud, or when weather conditions are below the following minima:

Cloud base	500 ft
Visibility	3 km

2.2 Depending on the circumstances, the police aircraft should try to establish RTF contact with the target flying machine. Where this is achieved, the police aircraft should advise the target of the police requests and intentions.

2.3 If RTF contact is not established with the target, the police aircraft shall carry out the following procedure:

a) approach while the target is in straight flight, which may be level, or climbing, or descending. There shall be no attempt to move into station on the target while it is turning, taking off or landing;

b) establish a stand-off position behind the target, in the 4 o'clock to 8 o'clock sector, not closer than 200 m;

c) when settled in the stand-off position, range from the target may be reduced slowly and progressively to 100 m minimum, while remaining in the 4 o'clock to 8 o'clock sector;

d) move out to at least 200 m range as soon as the required evidence of registration, type identification and other visible features have been noted;

e) if the police aircraft needs to overtake the target aircraft, the police aircraft should alter heading so as to overtake the target aircraft on the latter's right, keeping well clear of it at all times; and

f) remain in VMC at all times. On no account shall the target be followed into cloud.

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Chapter 9 Powerful Searchlights, Airborne Public Address Systems and Forward-Looking Infra-Red (FLIR) Equipment

1 General

1.1 Powerful searchlights of the 'Nite Sun' type, public address systems (usually known as 'Skyshout') and FLIR equipment are commonly used on police helicopters. Since the airframe location of such equipment varies between helicopter types and occasionally between individual examples of the same type, and operating procedures vary similarly, it is not practicable to give common guidance on the use of such equipment. Consequently, operators shall set out in the PAOM Part 2 instructions on the operating techniques and the training and testing for such equipment. The testing shall normally be accomplished during the night Line Check.

2 AFM Limitations

2.1 The operating techniques shall comply with any AFM limitations and instructions in the PAOM Part 2 and shall draw attention to any associated hazards. Where the AFM does not approve the use of any item of role equipment during a public transport flight, the operator may apply to the CAA for consideration of a suitable AFM amendment. This may restrict the carriage of passengers to those agreed by the CAA.

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Chapter 10 Guidelines for Landing of Helicopters on Roads

1 Introduction

1.1 Whilst the safety of a helicopter and its passengers remains the responsibility of the Pilot In Command (PIC) the police have overall responsibility for scene management at all land-based incidents and on roads particularly in respect of the control and safety of all road users.

1.2 The aim of these guidelines is to permit helicopter-borne emergency services to fulfil their function with due regard to maintaining a realistic balance of safety.

2 Definitions

a) **Roads**

A road is a highway (including motorways and dual carriageways) and any other road to which the public has access and includes bridges over which a road passes.

b) **Secure**

An area where entry by vehicles and persons is prevented and in which the pilot can land safely at his discretion.

c) **Congested Areas**

In relation to a city, town or settlement, means any area which is substantially used for residential, industrial, commercial or recreational purposes.

3 Guidelines

3.1 Helicopters will not land on a road unless the following requirements can be complied with:

a) Whenever possible the helicopter shall first land adjacent to the road.

b) Where a landing is made on a road it must first be secured by the police (the only exceptions to this are listed in paragraph 3.1 f)).

c) Prior to landing on the road, radio or verbal communication must have taken place with the police (via the other emergency services, Rescue Co-ordination Centres (RCC) or ATC, where necessary) to confirm the road is secure and the pilot has authority to exercise his discretion to land.

d) Minimum amount of time shall be spent on the road by the helicopter sufficient to fulfil its emergency function. If required to shut down, consideration should be given to subsequent failure to start.

e) On a motorway, dual carriageway or two-way road, when the helicopter is landing and taking off, the unaffected carriageway should be closed at all times.

f) A helicopter may only land on a road at an unsecured site where the police are not in attendance when all the following criteria are met:

i) The road shall be in remote rural areas outside congested areas;

ii) There shall be no threat to persons or vehicles on the ground from the helicopter or its associated presence;

iii) The pilot must satisfy himself that there is no danger to the aircraft from persons or vehicles on the road;

iv) Only in very exceptional circumstances will this apply to motorways and dual carriageways and then only where criteria set out at Appendix A can be fully complied with;

v) This action may be exercised only when no alternative is available;

vi) Pilots should avoid landing in school or other play grounds or areas where children might be confined or suddenly emerge. The practice of using the aircraft presence or public address system to clear children from a site should not be utilised. Pilots should find an alternative site.

4 Additional Considerations

4.1 Preservation of Evidence

Police officers at the scene and pilots of helicopters must be aware of the effect of rotor downwash on loose articles and debris. This is of particular importance where such articles are crucial evidence and may require further scientific or forensic examination. The preservation of such evidence either in situ or following removal to a safe location must be taken into consideration by police officers at the scene before an aircraft lands.

4.2 Noise Levels

Police officers and other emergency service personnel must be aware that helicopters generate substantial noise, particularly during landing and take-off and that verbal communication (either personal or radio) may well be affected.

4.3 Danger from Glass

Pilots and emergency service personnel are reminded of the danger of rotor downwash dislodging broken glass and other loose debris, particularly from damaged buildings, at bomb scene incidents.

4.4 Emergency Service Vehicles

Police officers in charge at a scene should be mindful that Emergency Service vehicles need to position in close proximity to the incident, particularly the Fire and Ambulance Services, and to be aware that hoses and ancillary equipment (including lighting) could well be affected by rotor downwash. Access to the scene should therefore not be obstructed by the helicopter.

4.5 The CAA will set the requirements for recording landings made by civil aircraft on roads.

5 General Safety

5.1 Emergency Service personnel must be made aware of the dangers of working with helicopters. This should include:

a) rotor downwash and associated flying debris;

b) main and tail rotor blades;

c) hot exhausts and jet efflux;

d) noise; and

e) effects of sloping ground.

Supplement to Chapter 10

Landing at a Site on a Dual Carriageway or Motorway Which has not Been Secured

Guidance to Pilots

A landing shall only be made on a dual carriageway or motorway during daylight hours when all the following criteria can be met. No landing shall ever be made by night.

a) The helicopter shall only remain on the ground for the minimum time needed to disembark passengers and then go airborne again, until the site is secure. The aircraft shall not be shut down or loiter on the ground.

b) The carriageway is blocked and all traffic on the affected carriageway is stopped and unable to proceed along the carriageway or on a normal road.

c) Any reduction of visibility at ground level, due to mist, precipitation, spray, smoke or other effects shall be taken into account to ensure the helicopter can see and be seen in order to avoid any risk of collision with persons, vehicles or structures.

d) The chosen site must be such as to ensure that the effects of rotor downwash do not blow around even light debris at the scene. This should include grit, spilt fuel and large masses of dust or sand. Pilots shall be given minimum distance from a scene which will prevent such disturbance which must allow for the effects of wind and reasonable margins for error in distance judgement.

e) Great caution should be taken during approach, landing and take-off, to monitor the road and its surrounds to ensure previously unseen hazards do not suddenly appear which may create a danger to themselves in the aircraft.

f) Whilst this is not a comprehensive list, it identifies areas which, if addressed, will minimise risk. It may be expanded under locally agreed procedures developed by the emergency services and set out in the operator's Flight Operations Manual. This list of criteria must not be reduced.

g) The pilot must ensure that all reasonable efforts are made to inform the police control room of his intention to land at an unsecured site. This may be done through his own operational controlling agency. Unless locally required, no approval is required to carry out the landing.

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Chapter 11 Night Vision Imaging Systems (NVIS)

1 General

1.1 NVIS are a proven safety and capability enhancement for night VMC operations. In order to allow the safety benefits of this equipment to be utilised in Police operations the following requirements have been formulated and are to be adhered to by PAOC holders conducting, or intending to conduct, NVIS flying. These instructions are aimed primarily at helicopter operations, and units intending to operate aeroplanes with NVIS should seek further guidance from the CAA.

2 Terminology

2.1 Night Vision Imaging System

The integration of all elements required to use Night Vision Goggles (NVGs) successfully and safely while operating an aircraft. The system includes at a minimum: NVGs, NVIS lighting, other aircraft components, training and continuing airworthiness.

2.2 Night Vision Goggles

A head-mounted, binocular, light amplification appliance that enhances the ability to maintain visual surface references at night.

2.3 NVIS Flight

A flight in night VMC with the flight crew using NVGs in an aircraft operating under an NVIS approval.

2.4 NVIS Crew Member

A qualified crew member assigned to an NVIS flight (e.g. a police air observer).

3 Essential Requirements

3.1 An operator must apply to the CAA for both an **airworthiness approval** for the aircraft equipment, and an **operational approval** for the operating procedures.

3.1.1 Airworthiness Approval

Because of the technical nature of issues such as cockpit lighting modifications, NVG compatibility, failure redundancy etc., the operator must apply to the CAA for an airworthiness approval for *all elements* (e.g. goggles, external and internal lighting) of the NVIS before conducting flights using night vision equipment.

3.1.2 Operational Approval

3.1.2.1 In addition to the airworthiness approval, the operator must obtain an operational approval from the CAA, through the assigned FOI, before conducting NVIS operations. The UK CAA adopts the same underlying principle as other authorities in that *the use of NVGs will not enable any mode of flight that cannot be flown under the existing non-visually aided regulations*. In other words, operational approvals will be issued on the basis that they shall not permit any operational credit (e.g. weather limitations or heights to fly), nor introduce any additional hazard.

3.1.2.2 The operational approval procedure will assess the successful integration of all elements of the NVIS by an AOU. It will involve accepting detailed training and operational procedures and, if considered appropriate, observing demonstration flights. An approval for helicopter operations may be issued in two stages:

a) Stage I – an initial approval will restrict NVIS operations to not below 500 ft above the surface, except in an emergency. This is intended to introduce the safety benefits of NVIS, whilst limiting the potential for increased risk within the obstacle plane.

b) Stage II – a Stage II approval is intended for those Units with a requirement to conduct operations down to surface level. It is considered that further experience and training are required, and competence to conduct these operations will be recognised by a Stage II approval.

4 Operating Considerations

4.1 The Crew

4.1.1 Selection

4.1.1.1 The PAOM Part 2 is to include criteria for the selection of crew members for the NVIS task. Commanders are to have at least 20 hours' PIC night VMC flying before commencing training.

4.1.1.2 For a Stage II operational approval, NVIS crew members shall be required to demonstrate annually a satisfactory eyesight standard (equivalent to JAR-FCL Class 2).

4.1.2 Qualification

4.1.2.1 Successful completion of training in accordance with the procedures contained in the PAOM Part 2.

4.1.2.2 For 'non-Visual Contact Flight' (see PAOM Part 1, Section 3, Chapter 3, paragraph 2), including overwater flight out of sight of land, the pilot must hold a valid Instrument Rating (and the aircraft must be certificated for IMC flight).

4.1.3 Recency

All pilots and NVIS crew members conducting NVIS operations must have completed 30 minutes' night NVIS flight within the previous 90 days. Recency may be re-established on a night NVIS proficiency check in an aircraft or a Flight Simulation Training Device (FSTD) approved for the purpose.

4.1.4 Crew Composition

The minimum crew is to be stated in the PAOM Part 2, but must not be less than one pilot and one crew member, both NVIS qualified.

4.2 NVIS Operating Minima

4.2.1 The operator must ensure that the PAOM Part 2 contains:

a) A statement that the weather and operating minima for NVIS operations are the same as non-NVIS flight as detailed in the PAOM Part 1 Section 3.

b) The procedures for assessing in-flight unaided visibility to ensure that the weather limitations are not exceeded.

c) The procedures for the transition to/from NVIS-aided flight.

4.3 Additional NVIS Equipment

4.3.1 Operators are to ensure the availability of, and the PAOM Part 2 should specify the use of, an 'NVG adjustment kit or eye lane', such as a Hoffman Box or similar.

4.3.2 Operators are to ensure the availability and use of a suitable method of determining the night illumination level in the area of operations (e.g. the Met Office PC-based MONIM facility or similar).

4.4 Continuing Airworthiness

4.4.1 Procedures for continuing airworthiness must contain the information necessary for carrying out ongoing maintenance and inspections on NVIS equipment elements, and must include:

a) Aircraft transparencies.

b) NVIS lighting.

c) NVGs.

d) Any additional equipment that supports NVIS operations (e.g. eye lane equipment, torches etc.).

NOTE: Any subsequent modification or maintenance (e.g. light emitting or reflecting device, transparencies and avionics equipment) must be in full compliance with the NVIS certification and approval.

5 Training and Checking

5.1 General

5.1.1 An applicant for an NVIS operational approval shall prepare a suitable training programme incorporating ground and flight training elements. Guidance on suitable material should be sought from the CAA. The individual programme proposed should be tailored to the Unit circumstances and be submitted to the CAA for approval.

5.1.2 The CAA will agree the adequacy of the proposed training programme taking into account any specific characteristics of the applicant Unit (e.g. previous military experience, operating environment etc.).

5.1.3 Instructional and checking staff used by a Unit shall be required to be accepted by the CAA. An NVIS flight instructor shall have qualifications and experience acceptable to the CAA.

5.2 Flight Crew Members

5.2.1 The appropriate flight crew member training applies with the addition of the following items:

a) NVIS working principles, eye physiology, night vision, limitations and techniques to overcome these limitations.

b) Preparation and testing of NVIS equipment.

c) Preparation of the aircraft for NVIS operations.

d) Normal and emergency procedures, including all NVIS failure modes.

e) Maintenance of conventional night flying recency.

f) Crew co-ordination aspects specific to NVIS operations.

g) Practice of the transition to and from NVG procedures.

h) Awareness of the potential hazards relating to the operating environment.

i) Risk analysis, mitigation and management.

5.2.2 The appropriate flight crew member checking applies, with the addition of the following items:

a) Night Proficiency Checks as appropriate, including emergency procedures to be used on NVIS operations.

b) Line Checks, with special emphasis on:

i) Local area meteorology.

ii) NVIS flight planning.

iii) NVIS in-flight procedures.

iv) Transitions to and from NVGs.

v) Normal NVIS procedures.

vi) Crew co-ordination.

5.3 NVIS Crew Member

5.3.1 The appropriate crew member training and checking applies (e.g. police observer, HEMS crew member) with the addition of the following items:

a) NVIS working principles, eye physiology, night vision, limitations and techniques to overcome these limitations.

b) Duties in the NVIS role, with and without NVGs.

c) The NVIS installation.

d) Operation and use of the NVIS equipment.

e) Preparing the aircraft and specialist equipment for NVIS operations.

f) Normal and emergency procedures.

g) Crew co-ordination aspects specific to NVIS operations.

h) Awareness of the potential hazards relating to the operating environment.

i) Risk analysis, mitigation and management.

6 Operations Manual

6.1 An applicant for an NVIS operational approval shall prepare a suitable PAOM Part 2 instruction in accordance with current guidelines and tailored to the individual circumstances.

6.2 The outline content is:

a) Equipment to be carried and its limitations (rule for all required NVGs to be of same type, generation and model).

b) MEL entry covering the equipment specified.

c) Risk analysis, mitigation and management, including:

i) Maintenance of a master obstacle map.

ii) Restriction on over water operations (i.e. not out of sight of land unless the aircraft is IMC certified and the pilot Instrument Rated and current).

d) Pre- and post-flight procedures and documentation.

e) Crew composition.

f) Crew co-ordination procedures, including:

   i) Flight briefing.

   ii) Procedures when one crew member is wearing NVGs; and/or procedures when two or more crew members are wearing NVGs.

   iii) Procedures for the transition to and from NVIS flight.

   iv) Use of RADALT on an NVIS flight.

   v) Inadvertent IMC and aircraft recovery procedures, including unusual attitude recovery procedures.

g) The NVIS training syllabus.

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Appendix A Helicopter Emergency Medical Service

1 Terminology

1.1 **D.** The largest dimension of the helicopter when the rotors are turning.

1.2 **Ground emergency service personnel.** Any ground emergency service personnel (such as policemen, firemen, etc.) involved with HEMS and whose tasks are to any extent pertinent to helicopter operations.

1.3 **Helicopter air ambulance flight.** A flight, usually planned in advance, the purpose of which is to facilitate medical assistance, where immediate and rapid transportation is not essential, by carrying:

a) medical personnel; or

b) medical supplies (equipment, blood, organs, drugs); or

c) ill or injured persons and other persons directly involved.

1.4 **Helicopter SAR flight.** A flight, the purpose of which is to give immediate assistance to persons threatened by grave and imminent danger, or hostile environment.

1.5 **HEMS crew member.** A person who is assigned to a HEMS flight for the purpose of attending to any person in need of medical assistance carried in the helicopter and assisting the pilot during the mission. This person is subject to specific training as detailed in paragraph 5.2 below. In the case of Police operations, these duties can be split between the Police Observer and the Medical passenger. In this case the Medical passenger will address the requirement of paragraphs 5.2 d) and l).

1.6 **HEMS dispatch centre**. A place where, if established, the co-ordination or control of the HEMS flight takes place. It may be located in a HEMS operating base.

1.7 **HEMS flight.** A flight by a helicopter operating under a HEMS approval, the purpose of which is to facilitate emergency medical assistance, where immediate and rapid transportation is essential, by carrying:

a) medical personnel; or

b) medical supplies (equipment, blood, organs, drugs); or

c) ill or injured persons and other persons directly involved.

1.8 **HEMS operating base.** A heliport at which the HEMS crew members and the HEMS helicopter may be on standby for HEMS operations.

1.9 **HEMS operating site.** A site selected by the commander during a HEMS flight for landing and take-off.

1.10 **Medical Passenger.** A medical person carried in a helicopter during a HEMS flight, including but not limited to doctors, nurses and paramedics. This passenger shall receive a briefing as detailed in paragraph 5.3 below.

1.11 A HEMS mission normally starts and ends at the HEMS operating site following tasking by the HEMS dispatch centre, or authorised tasking authority. Tasking can also occur when airborne, or on the ground at locations other than the HEMS operating base. It is intended that the following elements be regarded as integral parts of the HEMS mission:

a) flights to and from the HEMS operating site when initiated by the HEMS dispatch centre;

b) flights to and from a heliport for the delivery or pick-up of medical supplies and/or persons required for completion of the HEMS mission; and

c) flights to and from a heliport for refuelling required for completion of the HEMS mission.

All these flights are subject to the applicable requirements and alleviations of this HEMS Appendix.

2 Operations Manual

2.1 An operator must ensure that the PAOM Part 2 includes a supplement specifying operational considerations specific to HEMS operations. Relevant extracts from the PAOM Part 2 shall be made available to the organisation for which the HEMS is being provided.

3 Operating Requirements

3.1 The Helicopter

PC3 operations shall not be conducted over a hostile environment.

3.2 Performance Requirements

a) **Take-off and Landing**

i) Helicopters conducting operations to/from a heliport at a hospital which is located in a hostile environment shall be operated in accordance with PC1 except when the operator has been granted the relevant approval by the CAA to operate in accordance with Appendix B.

ii) Helicopters conducting operations to/from a HEMS operating site located in a hostile environment shall as far as possible be operated in accordance with PC1. The commander shall make every reasonable effort to minimise the period during which there would be danger to helicopter occupants and persons on the surface in the event of failure of a power unit.

iii) The HEMS operating site must be big enough to provide adequate clearance of all obstructions, having minimum dimensions equal normally to at least 2D. For night operations, the site must be illuminated (from the ground or from the helicopter) to enable the site and any obstructions to be identified, and for an unsurveyed site have dimensions of at least 4D in length and 2D in width.

iv) Guidance on take-off and landing procedures at previously unsurveyed HEMS operating sites shall be contained in the PAOM Part 2.

3.3 The Crew

Notwithstanding the requirements prescribed in Part D of the PAOM Part 1, the following apply to HEMS operations:

a) **Selection**

The PAOM Part 2 shall contain specific criteria for the selection of flight crew members for the HEMS task, taking previous experience into account.

b) **Experience**

The minimum experience level for commanders conducting HEMS flights shall be:

i) Not less than:

- 1,000 hours PIC of aircraft or 100 hours PIC of helicopters and 1,000 hours as co-pilot in HEMS operations of which 500 hours is as PIC under supervision; and
- 500 hours relevant operating experience in helicopters (relevant experience is that which is gained in a similar operational environment and should take into account the geographical characteristics); and
- 50 hours night flying in helicopters including 20 hours PIC, for those pilots engaged in night HEMS operations.

ii) Successful completion of training in accordance with paragraph 5 of this Appendix.

c) **Recency**

All pilots conducting HEMS operations shall have completed a minimum of 30 minutes' flight by sole reference to instruments in a helicopter or in an FSTD within the last six months. For the purpose of this requirement, recency may be obtained in a VFR helicopter using vision limiting devices such as goggles or screens.

d) **Crew Composition**

i) **HEMS Day Flight**

The minimum crew by day shall be one pilot and one HEMS crew member. The latter should be seated in the front seat (co-pilot seat).This can be reduced to one pilot only in exceptional circumstances (such as at an accident site if the pilot is required to bring back medical supplies from the hospital whilst the HEMS crew member remains to give assistance to ill or injured persons).

ii) **HEMS Night Flight**

The minimum crew by night shall be two pilots. However, one pilot and one HEMS crew member may be employed in specific geographical areas defined by the operator in the PAOM Part 2 to the satisfaction of the CAA taking into account the following:

- adequate ground reference;
- flight-following system providing contact with the helicopter throughout its operational area for the duration of the HEMS mission;
- reliability of weather reporting facilities;
- HEMS MEL;
- continuity of a crew concept;
- minimum crew qualification, initial and recurrent training;
- operating procedures, including crew co-ordination;
- weather minima; and
- additional considerations due to specific local conditions.

3.4 HEMS Operating Minima

a) Performance Class 1 and 2 Operations

The weather minima for the dispatch and en-route phase of a HEMS flight are shown in the following Table 5.2. In the event that during the en-route phase the weather conditions fall below the cloud base or visibility minima shown, VMC-only capable helicopters must abandon the flight or return to base. Helicopters equipped and certificated for IMC Operations may abandon the flight, return to base or convert in all respects to a flight conducted under IFR, provided the flight crew are suitably qualified.

Table 5.2 HEMS Operating Minima

Two Pilots		**One Pilot (Note 3)**	
DAY			
Ceiling	**Visibility**	**Ceiling**	**Visibility**
500 ft and above	See Section 3 Chapter 3 paragraph 4.3	500 ft and above	See Section 3 Chapter 3 paragraph 4.3
499–400 ft	1,000 m (Note 1)	499–400 ft	2,000 m
399–300 ft	2,000 m	399–300 ft	3,000 m
NIGHT			
Cloud base	**Visibility**	**Cloud base**	**Visibility**
1,200 ft (Note 2)	2,500 m	1,200 ft (Note 2)	3,000 m

NOTES:

1 Visibility may be reduced to 800 m for short periods when in sight of land if the helicopter is manoeuvred at a speed that will give adequate opportunity to observe any obstacles in time to avoid a collision.

2 Cloud base may be reduced to 1,000 ft for short periods.

3 In the case of single pilot HEMS operations where the HEMS crew member is not seated in the front seat (co-pilot seat) the minimum visibility shall be 5,000 m.

b) Performance Class 3 Operations

The weather minima for the dispatch and en-route phase of a HEMS flight shall be a cloud ceiling of 600 ft and a visibility of 1,500 m. Visibility may be reduced to 800 m for short periods when in sight of land if the helicopter is manoeuvred at a speed that will give adequate opportunity to observe any obstacle and avoid a collision.

4 Additional Requirements

4.1 Helicopter Medical Equipment

4.1.1 The installation of all helicopter dedicated medical equipment and, where appropriate, its operation including any subsequent modifications shall be approved.

4.1.2 An operator shall ensure that procedures are established for the use of portable equipment on board.

4.2 Helicopter Communication and Navigation Equipment

Helicopters conducting HEMS flights shall be provided with communications equipment, in addition to that required by the PAOM Part 1, capable of conducting two-way communication with the organisation for which the HEMS is being provided and, where possible, to communicate with ground emergency service personnel. Any such additional equipment will require airworthiness approval.

4.3 HEMS Operating Base Facilities

4.3.1 If crew members are required to be on standby with a reaction time of less than 45 minutes, dedicated suitable accommodation shall be provided close to each operating base.

4.3.2 At each operating base the pilots shall be provided with facilities for obtaining current and forecast weather information and shall be provided with satisfactory communications with the appropriate ATSU. Satisfactory facilities shall be available for the planning of all tasks.

4.4 Refuelling with Passengers on Board

When the commander considers refuelling with passengers on board to be necessary, it can be undertaken either rotors-stopped or rotors-turning provided the following requirements are met:

a) door(s) on the refuelling side of the helicopter shall remain closed;

b) door(s) on the non-refuelling side of the helicopter shall remain open, weather permitting;

c) fire-fighting facilities of the appropriate scale shall be positioned so as to be immediately available in the event of a fire; and

d) sufficient personnel shall be immediately available to move patients clear of the helicopter in the event of a fire.

5 Training and Checking

5.1 Flight Crew Members

a) PAOM Part 1 training with the following additional items:

   i) meteorological training concentrating on the understanding and interpretation of available weather information;

   ii) preparing the helicopter and specialist medical equipment for subsequent HEMS departure;

   iii) practice of HEMS departures;

   iv) the assessment from the air of the suitability of HEMS operating sites; and

   v) the medical effects air transport may have on the patient.

b) PAOM Part 1 checking with the following additional items:

   i) VMC proficiency day and/or night checks as appropriate including flying landing and take-off profiles likely to be used at HEMS operating sites; and

   ii) Line Checks with special emphasis on the following:

   - local area meteorology;
   - HEMS flight planning;
   - HEMS departures;
   - the selection from the air of HEMS operating sites;

- low level flight in poor weather; and
- familiarity with established HEMS operating sites in operator's local area register.

5.2 **HEMS Crew Member**

The HEMS crew member/Police Observer shall be trained annually in the following subjects:

a) duties in the HEMS role;

b) navigation (map reading, navigation aid principles and use);

c) operation of radio equipment;

d) use of onboard medical equipment (except when a medical passenger is carried who will address this requirement);

e) preparing the helicopter and specialist medical equipment for subsequent HEMS departure;

f) instrument reading, warnings, use of normal and emergency checklists in assistance of the pilot as required;

g) basic understanding of the helicopter type in terms of location and design of normal and emergency systems and equipment;

h) crew co-ordination;

i) practice of response to HEMS call-out;

j) conducting refuelling and rotors-running refuelling;

k) HEMS operating site selection and use;

l) techniques for handling patients, the medical consequences of air transport and some knowledge of hospital casualty reception (except when a medical passenger is carried who will address this requirement);

m) marshalling signals;

n) underslung load operations as appropriate;

o) hoist operations as appropriate;

p) the dangers to self and others of rotors-running helicopters including loading of patients; and

q) the use of the helicopter inter-communications system.

5.3 **Medical Passengers**

Prior to any HEMS flight, or series of flights, medical passengers shall be briefed on the following:

a) familiarisation with the helicopter type(s) operated;

b) entry and exit under normal and emergency conditions both for self and patients;

c) use of the relevant onboard specialist medical equipment;

d) the need for the commander's approval prior to use of specialised equipment;

e) method of supervision of other medical staff;

f) the use of helicopter inter-communication systems; and

g) location and use of onboard fire extinguishers.

5.4 Ground Emergency Service Personnel

An operator shall take all reasonable measures to ensure that ground emergency service personnel are familiar with the following:

a) two-way radio communication procedures with helicopters;

b) the selection of suitable HEMS operating sites for HEMS flights;

c) the physical danger areas of helicopters;

d) crowd control in respect of helicopter operations; and

e) the evacuation of helicopter occupants following an on-site helicopter accident.

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Appendix B HEMS Public Interest Site Operations

1 Approval

1.1 The Approval for operations being conducted in accordance with this Appendix will specify:

a) the public interest site(s);

b) the type(s) of helicopter; and

c) that the operation is Police HEMS.

2 Terminology

2.1 Public interest site (Police HEMS) - A ground-level or elevated site other than a HEMS operating base or a HEMS operating site, specified by the operator and used exclusively for operations in the public interest and limited to HEMS operations.

2.2 Public interest operations – public transport operations in the public interest. Such operations include, but are not limited to, HEMS and lighthouse operations.

3 Public Interest Site Alleviation

3.1 Operations to/from a public interest site may be conducted in accordance with PC2 and are exempt from the need to ensure that:

a) the take-off is conducted such that a safe forced landing can be executed until the point where safe continuation of the flight is possible; and

b) if the critical power unit fails at any point in the approach path:

i) a safe baulked landing can be carried out; or

ii) the helicopter can perform a safe forced landing,

provided that the operator has been granted the relevant approval by the CAA and that:

- for operations in a non-congested hostile environment, the helicopter mass does not exceed the maximum mass specified in the AFM for an all-engines operative OGE hover in still air with all power units operating at an appropriate power rating; and
- for operations in a congested hostile environment, the helicopter mass does not exceed the maximum mass specified in the AFM for a climb gradient of 8% in still air, at the appropriate take-off safety speed (V_{TOSS}) with the critical power unit inoperative and the remaining power units operating at an appropriate power rating.

4 Operation

4.1 Site-specific procedures must be established in the PAOM Part 2 to minimise the period during which there would be danger to helicopter occupants and persons on the surface in the event of a power unit failure during take-off and landing at a public interest site.

4.2 The PAOM Part 2 shall contain, for each public interest site, a diagram or annotated photograph showing the main aspects, the dimensions, any non-conformance with ICAO Annex 14, the main risks and the contingency plan should an incident occur.

Section 6 Aircraft Maintenance Support

1 The maintenance of all aircraft operated under and in accordance with the terms of a PAOC shall be carried out to the public transport standard. Accordingly, a PAOC holder's maintenance support arrangements shall conform with the requirements of CAP 562 *Civil Aviation Airworthiness Information and Procedures (CAAIP)*, Leaflet 11-5.

2 An aircraft operated for the purposes of a PAOC is regarded as a State aircraft and is exempted from meeting the requirements for Commercial Air Transport (CAT) operations under (EC) Regulation No. 216/2008 and the relevant implementing rules. Such aircraft may, however, be types that are type certificated by the European Aviation Safety Agency (EASA). Whilst operating on a PAOC, such aircraft will be required to meet all relevant continuing airworthiness requirements for the type established by EASA, the State of Design and the State of Registry.

3 The CAA is presently working on revised national continuing airworthiness and maintenance organisation approval requirements, which will closely align with EASA Part-M and Part-145.

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Chapter 1 Requirements for the Acceptance of Maintenance Arrangements

1 Administration

1.1 The operator shall satisfy the CAA of his maintenance support arrangements. He may have his own organisation for maintenance, or he may contract it out to another organisation, but he remains responsible for the safe operation of his aircraft when maintenance has been contracted out. He shall therefore satisfy himself with the standards of airworthiness achieved by the contractor, through monitoring the contractor's response to the provisions of the maintenance agreement, employing such technical resources as are necessary to achieve the task.

1.2 The grant or variation of a PAOC, or acceptance of any changes made to maintenance arrangements, are conditional on an acceptable assessment of the arrangements specified in CAP 360 Part 2, taking into account the provisions of CAAIP Leaflet 11-5. Acceptance of arrangements for maintenance support would be notified by means of Form AD480A – Acceptance of Maintenance Support Arrangements for Holders of a PAOC.

2 Operator's Responsibility to Notify Changes

2.1 The operator shall inform his allocated CAA Regional Office of his intention to make any changes in his maintenance arrangements, as follows:

a) any matter included in the CAA Form AD480A;

b) the number of aircraft operated, where that would affect the ability of the maintenance organisation to provide full support;

c) the location of operating bases if maintenance arrangements are thereby affected; and

d) a change of the supporting maintenance organisation itself, when a minimum of 28 days' notice shall be required.

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Chapter 2 Technical Log

1 Flight Crew Responsibilities

1.1 The ANO 2009 Article 27 requires a technical log to be kept for all aircraft operated by a PAOC holder. Except as permitted by paragraph 5, the aircraft commander shall enter the following details in the technical log, at the end of every flight:

a) the times when the aircraft took off and landed;

b) particulars of any defect known to him if it affects the airworthiness or safe operation of the aircraft, or if no such defect is known to him he shall make an entry to that effect;

c) such other particulars in respect of the airworthiness or operation of the aircraft as the CAA may require; and

d) his signature and the date.

1.2 If a number of consecutive flights occur within the same period of 24 hours at the same aerodrome with the same aircraft commander, he may postpone completion of the technical log until the end of the last flight. However, if a defect becomes known to him in the air, the aircraft commander shall enter the same at the end of the flight in question.

2 CAA Requirements

2.1 In addition to the particulars required by the ANO, as indicated in paragraph 1.1, the technical log shall contain the following documents:

a) Sector Record Pages (SRPs);

b) provision to record acceptable deferred defects which are awaiting rectification;

c) a valid certificate of maintenance review; and

d) a maintenance statement.

3 Sector Record Page and Deferred Defects Log

3.1 Guidance on the compilation of the SRP is given in CAP 360 Part Two, Chapter 8. Operators shall devise the format of an SRP using this guidance, which shall be submitted to the CAA for acceptance. The operator shall issue, in the PAOM Part 2, instructions on the manner in which aircraft commanders shall make the required entries in the SRP and, where appropriate, in the deferred defects log.

4 Protection of SRP

4.1 The aircraft commander shall make all entries on an SRP in duplicate. He shall remove one copy of each entry from the technical log for retention on the ground, before the next flight commences. In the case of an aeroplane not exceeding 2,730 kg MTWA, or a helicopter, if it is not reasonably practicable for a copy of the SRP to be kept on the ground, it may be carried in the aeroplane or helicopter in a container accepted for the purpose by the CAA.

5 Completion of SRP – Helicopters

5.1 An SRP need only be completed when a helicopter flight is terminated as follows:

a) during an operation with the same aircraft commander and rotors are stopped or refuelling is commenced with rotors running; or

b) there is a change of aircraft commander; or

c) landing occurs at the main base,

provided that:

i) the operator of the helicopter uses a system which accurately records airborne time; and

ii) the aircraft commander completes the technical log after landing at the end of a flight on which a defect occurred to affect the airworthiness or safe operation of the helicopter.

Chapter 3 De-Icing and Anti-Icing on the Ground

1 Certification for Flight in Icing Conditions

1.1 A small number of helicopter types are certificated for flight in limited icing conditions tied to operations in offshore areas where meteorological characteristics are known to provide a layer of air at a temperature above freezing. Details are contained in the AFM and its approved supplements. The fact that a helicopter is fitted with anti- or de-icing equipment does not mean that it has been certificated for flight in icing conditions. Particularly in the case of smaller twin-engined helicopters it may mean simply that flight tests have shown that, when installed, the equipment has had no adverse effects on the helicopter's normal flight characteristics.

1.2 Whether or not a helicopter type has been certificated for flight in icing conditions, it is not certificated for take-off or flight when carrying ice, snow or frost deposits accumulated on the ground. Helicopter commanders are therefore to ensure that anti- and de-icing operations appropriate to the conditions are carried out on the ground before departure, and that pre-flight inspection indicates that all significant deposits of hoar frost, ice and snow have been removed before any attempt is made to take off.

2 Ground De-Icing

2.1 Depending on the facilities available at the heliport, and on the helicopter type, removal may be achieved by brushing, the application of fluids, or a combination of these methods. Flight crews should familiarise themselves with the methods locally available, and with those areas of their helicopter from which the removal of deposits is vital, or which may be adversely affected by the incomplete or careless removal of snow or slush (e.g. rotor heads, pitch change linkages, engine intakes or pitot static ports).

NOTE: The PAOM Part 2 shall contain aircraft type specific instructions for ground de-icing.

3 De-Icing Fluids

3.1 There are a number of different fluids available, the use of which is defined by The Association of European Airlines (AEA). These include thickened (ISO types II, IIa and IV) and unthickened types (ISO Type 1). Thickened fluids are designed to stay on the aircraft surfaces for longer, to extend the period of protection from accretions or re-freezing of residues.

3.2 Guidelines on the various types of fluids available, and their approximate holdover times, are given in the current AIC (Pink) and appropriate FODCOMs on winter operations.

4 General Precautions

4.1 Normally, unless the helicopter is being de-iced by the approved contractor at its main base, the flight crew may be required either to undertake de-icing operations themselves, or to supervise those carried out by, or on behalf of, a handling agency. In either case, care should be taken to ensure that whether removed by broom, squeegee or the application of fluid spray, deposits are swept away from pitch change

mechanisms, rotor heads and system intakes, and that the sprays themselves are not directed to these areas. Since the de-icing fluid may be further diluted by the melting deposits which it is designed to remove, re-freezing may occur if the solution runs onto other parts of the helicopter, and close attention should be paid to this possibility. Care should be taken to prevent de-icing fluid from accumulating around cockpit transparencies, on which it may cause smearing and loss of vision as speed is increased during a subsequent take-off.

4.2 When de-icing operations have been completed, ideally as close to the departure time as possible, a careful walk-round inspection of the helicopter is to be completed in order to confirm that rotor heads and control linkages have been cleared of deposits, and that intake and drain holes are free of any obstruction. Controls should be moved over their full range, and turbine engine compressors rotated by hand to ensure that they have not become frozen in position. Undercarriage components should be checked for freedom from accumulation of snow or ice, and (where applicable) microswitches and uplocks for normal functioning.

5 Further Precautions

5.1 Recent developments in ground de-icing techniques include the need to evaluate the prevailing weather conditions closely and adjust holdover times accordingly. Significant factors may include:

a) The protection against icing (holdover time) afforded by the application of de-icing fluid can be shortened by high winds or jet blasts causing damage to the de-icing fluid film which forms to protect the aircraft surface.

b) Wing skin temperatures can be significantly lower than the Outside Air Temperature (OAT). It can therefore be a more representative guide to the de-icing requirements, de-icing fluid/water mixing ratio and subsequent holdover times.

6 Technical Log

6.1 The commander is to confirm that whenever de-icing has taken place an appropriate entry has been made and signed in the technical log, and that in particular the start and completion times of the de-icing process have been entered. If there is any subsequent departure delay, or further deterioration in the weather conditions, he should use this information, together with the published approximate holdover times, to make a judgement on the need for further de/anti-icing.

Part D Training

1 Administration

1.1 General

1.1.1 This section is issued in compliance with JAR-FCL. It complies with the applicable elements of the UK ANO for the time being in force and with the terms and conditions of an AOC/PAOC.

1.1.2 The training section is primarily for the use and guidance of those personnel who have been appointed to carry out training and/or checking duties in respect of flight crew.

1.1.3 Where an AOC/PAOC holder operates, or intends to operate, different types or variants of aircraft, the individual training requirements and test forms must indicate clearly to which type or variant of aircraft they apply.

1.2 Mandatory Requirements

1.2.1 Chief Pilots are responsible for maintaining a record of the expiry dates of checks, tests and training.

1.2.2 OPCs and Instrument Rating Revalidation flight checks may be carried out in total or in part on an approved flight simulator, during positioning flights or on specially detailed training flights. Abnormal or emergency procedures requiring the application of part or all of abnormal or emergency procedures, and the simulation of IMC by artificial means, are not to be simulated during public transport or police flights. Exceptionally the CAA may agree to the carriage of passengers who shall be nominated by category in the PAOM Part 2.

1.3 Training Records

1.3.1 Once training and a check or test has been completed, the authorised person conducting the training or check is to ensure that the forms have been completed correctly and a copy is retained on the individual flight crew member's file.

1.3.2 Given the diversity of operations and aircraft types, together with the desirability to use standard forms, it may be necessary for Training Captains to either delete or amend certain terms when completing check and training forms. In some cases, a particular procedure may not be applicable, in which case the remarks column should read 'NOT APPLICABLE'.

1.3.3 Any items not completed should be indicated as 'NOT CHECKED' and any subsequent restrictions pertaining should be noted in the remarks section on the front of the form. If an item is unsatisfactory, a cross (X) should be entered, together with an explanation.

1.3.4 An accurate account of training progress must be maintained, using appropriate forms, and showing all ground and air exercises completed, including flying times. A narrative should include all relevant factors of performance, such that any change of instructor, for whatever reason, can take place without problem.

1.3.5 All forms, both for training and checking, MUST be available to the aircrew member concerned, to confirm accuracy of reporting and concurrence with reports.

1.4 Storage and Retention of Forms

1.4.1 Records shall be retained for a period of three years.

1.5 OPC and Line Check Questionnaires

1.5.1 It is a requirement that at least 75% of the questions asked during a check shall be different from those asked during the preceding check. Questions may alternate between oral and written at each check, but a record must be kept of the questions asked. Questions relating to aircraft limitations and equipment should be 'closed book', whereas questions relating to general procedures and the Operations Manual may be 'open book'.

1.6 Operation on more than one Type or Variant

See Section 1, Chapter 3, paragraph 9.

1.7 Circumstances in which an IR is Required

1.7.1 The holder of a pilot licence shall not act in any capacity as a pilot of an aircraft, except as a pilot undergoing skill testing or dual training, under IFR unless the holder has an Instrument Rating (IR) appropriate to the type of aircraft issued in accordance with JAR-FCL or has a special rating or licence endorsement which permits flight under IFR solely within that State.

1.8 Periods of Validity

1.8.1 Operator Proficiency Check

1.8.1.1 The period of validity of an OPC shall be six calendar months in addition to the remainder of the month of issue. If issued within the final three calendar months of validity of a previous OPC, the period of validity shall extend from the date of issue until six calendar months from the expiry date of that previous OPC.

1.8.1.2 An OPC conducted at night shall qualify a pilot for day and night, and pilots of multi-engine helicopters shall complete a night section at alternate OPCs.

1.8.1.3 Non-Instrument Rated helicopter pilots who are required to conduct routine night operations shall carry out an Instrument Night Qualification section (Appendix A paragraph 2.1.2) at each OPC.

1.8.2 Line Check

1.8.2.1 The period of validity of a Line Check shall be 12 calendar months, in addition to the remainder of the month of issue. If issued within the final three calendar months of validity of a previous Line Check the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of that previous Line Check. The Line Check must be conducted on the aircraft.

1.8.2.2 For operations conducting VCF at night, pilots shall be required to conduct a night sector as part of a Line Check.

1.8.2.3 For Police Operations this check should normally be conducted on one or more operational flights within a seven-day period.

1.8.3 Annual Emergency and Safety Equipment (E & S) Check

1.8.3.1 The period of validity of an Annual E & S Check shall be 12 calendar months in addition to the remainder of the month of issue. If issued within the final three calendar months of validity of a previous Annual E & S Check, the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of that previous Annual E & S Check.

1.8.4 Triennial Emergency and Safety Equipment Check

1.8.4.1 The Triennial E & S Check training shall consist (as applicable) of Wet Dinghy Drill, First Aid Training, Emergency Exit Jettison, Fire Extinguisher Drill and Smoke Protection Equipment Drill. A PAOM Part 2 entry shall state which of these drills are applicable.

1.8.4.2 The period of validity of a Triennial E & S Check shall be three calendar years in addition to the remainder of the month of issue. If issued within the final three calendar months of validity of a previous Triennial E & S Check, the period of validity shall extend from the date of issue until three calendar years from the expiry date of that previous Triennial E & S Check.

1.8.4.3 There is no requirement to complete the various items at one time, and a separate check form may be used for each element.

1.8.5 Crew Resource Management (CRM)

1.8.5.1 Pilots and observers shall complete the major elements of the full CRM awareness course over a three-year recurrent cycle, fulfilled by annual recurrent ground training.

1.8.6 Ground and Refresher Training

1.8.6.1 Each flight crew member shall undergo ground and refresher training every 12 calendar months. If carried out within the final three calendar months of validity of previous training, the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of previous training.

1.8.7 Pilot Qualification to Operate in Either Pilot's Seat

1.8.7.1 Commanders whose duties also require them to carry out the duties of co-pilot, or commanders required to conduct training or examining duties, shall complete their proficiency checks respectively from left-hand and right-hand seats, on alternate proficiency checks, provided that when the type rating proficiency check is combined with the OPC the commander completes his training or checking from his normally occupied seat.

1.8.7.2 When operating in the co-pilot's seat, the checks required for operating in the commander's seat must, in addition, be valid and current.

1.8.8 Area/Role/Route Competence Qualification

1.8.8.1 The period of validity of the Area/Role/Route Competence qualification and any special competency checks shall be 12 calendar months in addition to the remainder of the month of issue.

1.8.8.2 Area/Role/Route Competence qualification shall be revalidated by operating in the area, in the role or on the route, within the period of validity described above, and as part of the annual Line Check. If revalidated within the final three calendar months of validity of a previous Area/Role/Route Competence qualification, the period of validity shall extend from the date of revalidation until 12 calendar months from the expiry date of that previous Area/Role/Route Competence qualification.

1.8.8.3 Items which cannot be carried out during a routine Line Check must be completed on a separate flight, as close as possible to the date of the Line Check.

1.8.9 Recent Experience

1.8.9.1 A pilot shall not operate an aircraft unless he has carried out at least three take-offs, three circuits and three landings as pilot flying in an aircraft or an approved flight simulator of the type to be used, in the preceding 90 days. The 90-day period may be extended up to a maximum of 120 days by flying on the line under the supervision of a nominated commander.

1.8.10 Recent Experience – Single Pilot Operations under IFR

1.8.10.1 In addition to the requirements specified above, a pilot shall not conduct single pilot operations under IFR in IMC unless he has carried out three instrument approaches during the preceding 90 days on the aircraft type in the single pilot role. This requirement may be replaced by an IFR instrument approach check on the aircraft type.

1.8.11 Recent Experience – Single Pilot Operations at Night (Helicopters)

1.8.11.1 A pilot shall not conduct single pilot operations at night unless he has carried out at least three take-offs, three circuits and three landings as pilot flying at night during the preceding 90 days on the aircraft type, a similar type or an approved FNPT II/III or FTD 2/3.

1.8.11.2 In addition, pilots who do not hold a valid helicopter IR on type (including a current IMC OPC) shall, within 90 days (+/- 30 days) following the instrument flying training conducted by a Type Rating Examiner (TRE), conduct at least one hour of instrument flying practice on the aircraft type or a similar type or an approved FNPT II/III or FTD 2/3, which shall include:

a) climbing and descending turns on to specified headings;

b) level flight, control of heading, altitude and speed;

c) level turns with 30 degrees bank, 180 to 360 degrees left and right; and

d) emergency let-down procedures.

1.8.11.3 This instrument flying practice may be conducted as mutual instrument flying practice, in day or night VMC, by pilots qualified on type. (See Rules of the Air Regulations 2007 Rule 23 requirement in Part D paragraph 2.3.7.)

1.8.12 Instrument Rating

1.8.12.1 The IR is valid for 12 months plus the remainder of the month of issue. If issued within the final three calendar months of a previous Rating, the period of validity shall extend from the expiry date of that previous Rating. The IR will normally be revalidated at the same time as the Type Rating.

1.8.12.2 If the privileges of the IR have not been exercised for more than seven years from the date of initial issue or revalidation date, the holder will be required to retake the IR theoretical knowledge examination.

1.8.13 Type Rating

1.8.13.1 Type ratings are valid for 12 months plus the remainder of the month of issue. If issued within the final three calendar months of a previous Type Rating, the period of validity shall extend from the expiry date of that previous Type Rating. The Instrument Rating may be combined with the Type Rating but need not be completed during the same flight.

1.8.13.2 Reference should be made to the current version of JAR-FCL 2 and Licensing, Administration and Standardisation Operating Requirements and Safety (LASORS) for the renewal of expired ratings.

1.9 Training Staff – Qualifications and Responsibilities

1.9.1 Training staff shall be listed by name in the PAOM Part 2. Any person may hold a number of the nominated training appointments. An operator may nominate training/testing staff employed by another operator provided that such staff are suitably qualified and familiar with the training requirements of the operator on whose behalf they are carrying out the training/testing. Any such arrangements between operators shall be described in the PAOM Part 2.

1.9.2 The qualifications and responsibilities to be associated with each appointment are set out in the following paragraphs:

1.9.3 **Line Training Captain (LTC)**

1.9.3.1 Minimum qualifications:

a) At least CPL(A) or CPL(H) as appropriate with relevant PIC rating;

b) 1,000 hours PIC on aeroplanes or 1,000 hours PIC on helicopters, as appropriate;

c) 50 hours PIC on type;

d) at least six months' experience on relevant air operations, or three months and 75 flying hours on relevant air operations;

e) currency in respect of the operating roles in which he will be required to train or test; and

f) be qualified as a CRMI (Line).

1.9.3.2 Responsibilities:

a) Line and Role Training (Pilot);

b) Line Check and Area/Role/Route Competency Check (Pilot and Observer);

c) Emergency and Survival Procedures training (Pilot and Observer); and

d) Training and Special Operations Check (Pilot and Observer), as authorised by the Chief Training Captain.

1.9.4 **Training Captain**

1.9.4.1 Minimum qualifications:

a) As for an LTC; **and**

b) current TRE/Type Rating Instructor (TRI) qualification on type(s) in question; **and**

c) at least six months' or 100 flying hours' experience on relevant air operations; **and**

d) current helicopter IR (unless conducting non-IF training and checks).

1.9.4.2 Responsibilities:

a) As for an LTC; and

b) type conversion training and Licence Skill Test (LST) under the auspices of a Type Rating Training Organisation (TRTO) or Flying Training Organisation (FTO); **and**

c) differences and familiarisation training; **and**

d) OPC and LPC; **and**

e) any Special Operations Check (Pilot and Observer).

1.9.5 **Chief Training Captain**

1.9.5.1 Minimum qualifications:

a) As for a Training Captain; and

b) 2,000 hours PIC on helicopters or aeroplanes as appropriate.

1.9.5.2 Responsibilities:

a) The preparation of a course of ground instruction and flying training for each aircraft type under the auspices of a TRTO/FTO as applicable;

b) the preparation and management of the Unit conversion, recurrent ground and refresher training and checking programme. The syllabi shall be included in the appropriate section of the PAOM Part 2;

c) ensuring that all the flight crew training and checking requirements are completed;

d) advising the Chief Pilot on training requirements for current roles and any changing needs;

e) Advising the Chief Pilot that pilots are qualified to carry out the operational roles of the Unit;

f) overseeing the training staff;

g) nominating TREs to set out and conduct examinations for specified aircraft types;

h) issuing and amending Training Instructions as required; and

i) compiling and retaining training records.

1.9.6 **Police Observer Training Officer (OTO)**

1.9.6.1 Minimum qualifications:

a) 12 months' experience as an observer on police air operations; and

b) be qualified as a CRMI (Line).

1.9.6.2 Responsibilities:

a) Preparation of a course of ground and flying training for each aircraft type. The syllabus shall be included in the appropriate section of the Operations Manual;

b) Line and Area/Role/Route Competency Check (Observer);

c) Emergency and Survival Procedures Check (Observer);

d) role equipment training;

e) training in care of passengers;

f) Special Operations Check (Observers); and

g) maintenance of observer training records.

1.9.7 **CRMI/Crew Resource Management Instructor Examiners (CRMIE)**

1.9.7.1 Full requirements for CRM training and instructor/examiner qualifications are laid down in CAP 737 *Crew Resource Management (CRM) Training*. The following types of CRMI exist:

a) CRMI (Ground);

b) CRMI (Base/Simulator); and

c) CRMI (Line).

1.9.7.2 Each Unit must have access to a CRMI (Ground) who will conduct initial and recurrent ground training. Training Captains (TREs) will be authorised by CAA Training Inspectors as CRMI (Base/Simulator) for the purpose of incorporating CRM assessment at the OPC. A Senior LTC is to be appointed as a CRMIE (Line) to qualify all other LTCs and OTOs in Unit CRM assessment at the Line Check. It is envisaged that Units may contract in Ground training staff and possibly qualify LTCs by workshop at regional level using an experienced CRMIE (Line) employed by another operator.

1.9.7.3 The CRMI (Line) qualification may be gained through a workshop run by CRMIE (Line) concentrating upon facilitation skills and application of the Unit's Non-Technical Skills (NOTECHs) marking system.

2 Training General

2.1 Conversion Training and Checking

2.1.1 General

2.1.1.1 A flight crew member shall complete a Type Rating course which satisfies the applicable requirements of JAR-FCL when changing from one type of aircraft to another for which a new type rating is required.

2.1.1.2 Type rating training, when required, may be conducted separately or as part of the conversion training. When the type rating training is conducted as part of conversion training, the conversion training programme will include all the licensing requirements.

2.1.1.3 The amount of training required will be determined after due note has been taken of the flight crew member's previous training.

2.1.1.4 The Conversion course shall include:

a) ground training covering all aircraft systems and emergency procedures (with or without simulator or other training device);

b) E & S training and checking (completed before flying training on the aircraft commences);

c) CRM and Multi-Crew Co-ordination (MCC) Training for multi-pilot operations;

d) flying training (simulator and/or aircraft);

e) LST/OPC;

f) instrument flying training;

g) autopilot management and the use of upper modes of the autopilot where fitted;

h) line flying under supervision, Line Check and Area/Role/Route Check; **and**

i) Special Operational Competency Training.

2.1.1.5 The conversion course shall be conducted in the order set out above. When a flight crew member has not previously completed an operator's conversion course, in addition to the sequence above, the flight crew member shall undergo general First Aid training and, if applicable, ditching procedures training using the equipment in water.

2.1.1.6 Once a flight crew member has commenced a conversion course he shall not undertake flying duties on another type of aircraft until the course is completed or terminated. In the case of a flight crew member changing aircraft type, the OPC may be combined with the type rating skill test required by JAR-FCL.

2.1.1.7 It is the responsibility of all Training Staff to ensure that training is conducted at approved and licensed sites, and that due care is taken in the selection of appropriate places for specific exercises, such as sloping ground, engine-off landings, rejected take-offs, etc.

2.1.2 Ground Training

2.1.2.1 Ground training shall comprise a properly organised programme of ground instruction by training staff with adequate facilities, including any necessary mechanical and visual aids. However, if the aircraft concerned is relatively simple, private study may be adequate if suitable manuals and/or study notes are provided. The course of ground instruction shall incorporate formal tests on such matters, where applicable, as aircraft systems, performance and flight planning etc.

2.1.2.2 Ground training will include the following items:

a) **Passenger Handling**

Other than general training on dealing with people, emphasis will be placed on the following:

i) advice on the recognition and management of passengers who appear or become intoxicated with alcohol, under the influence of drugs or aggressive;

ii) methods used to motivate passengers and the crowd control necessary to expedite an evacuation;

iii) awareness of the types of dangerous goods which may or may not be carried in a passenger cabin, including the completion of a dangerous goods training programme; and

iv) the importance of correct seat allocation with reference to mass and balance. Particular emphasis will also be given on the seating of persons of reduced mobility and the necessity of seating able-bodied passengers adjacent to unsupervised exits.

b) **Discipline and Responsibilities**

Amongst other subjects, emphasis will be placed on discipline and an individual's responsibilities in relation to:

i) his ongoing competence and fitness to operate as a crew member with special regard to FTL requirements; and

ii) security procedures.

c) **Passenger Briefing/Safety Demonstrations**

Training will be given in the preparation of passengers for normal and emergency situations.

d) **Maintenance Tasks**

Instruction in the Maintenance Tasks likely to be carried out when away from base in order to complete a Certificate of Release to Service.

e) **Dangerous Goods**

Training in the recognition and handling of dangerous goods as applicable to police operations.

2.1.3 **Emergency and Safety Equipment Training**

2.1.3.1 E & S training shall take place whenever practicable in conjunction with observers doing similar training with emphasis on co-ordinated procedures and two-way communications.

2.1.3.2 For new crew members, or as applicable on conversion, the following shall be addressed:

a) Aeromedical topics including:

i) instruction on first aid topics in general and as appropriate to the aircraft type and crew complement;

ii) guidance on the avoidance of food poisoning;

iii) the possible dangers associated with the contamination of the skin or eyes by aviation fuel and other fluids and the immediate treatment;

iv) the recognition and treatment of hypoxia and hyperventilation;

v) survival training and guidance on hygiene appropriate to the areas operated; and

vi) incapacitation of flight crew members.

b) Training will also include:

i) the importance of effective co-ordination between flight crew and observers;

ii) the use of smoke protection equipment and protective clothing where carried. In the case of the first type of aircraft so equipped, training shall be associated with experience of movement in a cosmetic smoke filled environment;

iii) actual fire-fighting using equipment representative of that carried in the aircraft; and

iv) the operational procedures of security, rescue and emergency services.

c) Survival training appropriate to the areas of operation including the use of any survival equipment carried.

d) A comprehensive drill to cover all ditching procedures will be practised where flotation equipment is carried. This will include practice of the actual donning and inflation of a lifejacket, together with a demonstration or film of the inflation of life-rafts and associated equipment. This practice will, on an initial conversion course, be conducted using the equipment in water, although previous certificated training with another operator or the use of similar equipment will be accepted in lieu of further wet-drill training.

e) Instruction on the location of E & S, correct use of all appropriate equipment, and procedures that could be required of air crew in different emergency situations.

f) On completion of E & S training the flight crew member will undergo the E & S Check specified in paragraph 2.3.4.

2.1.4 Ground CRM Training

2.1.4.1 Initial Operator's CRM Training

Pilots and Observers shall complete an operator's initial ground CRM course. The initial course should be completed before operational flying. Flight crew joining a Unit who can produce a certificate of completion of an approved initial CRM course will be exempt from this training requirement.

2.1.5 Flying Training

2.1.5.1 Flying training will be structured and sufficiently comprehensive to familiarise the flight crew member thoroughly with all aspects of limitations and normal operation of the aircraft, including the use of all cockpit equipment, and with all emergency procedures and must be carried out by a suitably qualified TRI or TRE. Unless the training programme has been carried out in a flight simulator approved for zero flight time conversions, the training required will include an element of proficiency training on an aircraft, including at least three take-offs, circuits and landings. All pilots must successfully complete an OPC with a TRE before they are assigned to line duties. This will include all elements of an IR test where it is likely that the pilot will be required to operate under IFR in IMC.

2.1.5.2 Single Engine Training in Multi-engine Helicopters

The following information is relevant to all types:

a) Pre-flight briefings are to include the correct handling technique and the intended actions by the Training Captain;

b) Unless fitted with a single-engine training mode (e.g. FADEC), having initiated a single engine condition, the Training Captain is to accelerate the retarded engine slightly, so as to ensure immediate response to power demand. Additionally the Training Captain should keep his hand on the throttle/engine lever whilst the helicopter is in single engine mode when below 500 ft;

c) The reject take-off area should be firm, level and unobstructed;

d) Training weights should be adjusted to be as safe but as realistic as possible; and

e) Where OEI simulations cannot be simulated safely by retarding a throttle, OEI may be simulated using All-Engines-Operative (AEO) with a restricted torque figure. The restricted torque figure and procedure shall be briefed by the Training Captain prior to flight.

2.1.5.3 **Single Pilot Operations under IFR**

Pilots required to conduct single pilot operations under IFR will be given additional training with respect to cockpit procedures as follows:

- Engine management and emergency handling;
- use of normal and emergency checklist;
- ATC communications;
- cockpit procedures in respect of departure and approach;
- autopilot management; **and**
- simplified in-flight documentation.

2.1.6 **Flying Tests and Checks**

2.1.6.1 The following mandatory tests and checks will be carried out on, or prior to, completion of the conversion training and prior to commencing line flying under supervision:

- E & S Check;
- LPC – (Type Rating);
- OPC – VMC and IMC as applicable;
- IR (Initial or add type) or instrument flying training for non-rated pilots; **and**
- Initial Line and Area/Role/Route Check (see Appendix B paragraph 4).

2.1.6.2 The E & S Check shall be completed before the candidate first flies the aircraft.

2.1.6.3 The LST must be carried out by a different TRE to the one who conducted the conversion training.

2.1.6.4 The Initial Line Check shall be completed on a non-operational flight, by day and by night, in order to qualify. Dusk conditions are not appropriate.

2.1.6.5 When adding a new type to an IR, two hours as pilot by sole reference to instruments on the relevant type is required before taking the test. Time spent in an approved simulator is acceptable and the test may be carried out in an aircraft or simulator.

2.1.7 **Line Flying under Supervision**

2.1.7.1 Line flying under supervision provides the opportunity for a flight crew member to carry into practice the procedures and techniques he has been made familiar with during the conversion course. At the end of line flying under supervision the respective flight crew member should be able to perform a safe and efficient flight conducted within the terms of reference of his crew appointment.

2.1.7.2 After completing the necessary training under supervision, a Line Check will be completed. The syllabi for line checking and training can be found in Appendix B.

2.1.8 Certificate of Special Operational Competency – Pilot and Observer – Police Operations

2.1.8.1 Pilots and Observers likely to operate at times in roles that involve the use of special equipment and techniques, including hoisting, underslung loads and flights making use of equipment such as night vision goggles, are likely to require a level of training beyond that normally demonstrated in periodic tests.

2.1.8.2 Before being declared able to undertake such roles, a pilot/observer shall complete an appropriate course of training and pass the test for a Certificate of Special Operational Competency. For the pilot the test shall be conducted by a Training Captain. The periodicity shall be as for the Line Check.

2.2 Differences and Familiarisation Training (JAR–FCL)

2.2.1 Differences Training

2.2.1.1 A flight crew member shall complete differences training when:

a) operating another variant of an aircraft of the same type currently operated; **or**

b) a change of equipment and/or procedures on types or variants currently operated requires the acquisition of additional knowledge.

2.2.1.2 A differences course will always conclude with a test. The test may be a once-only requirement or may involve recurrency. The appropriate annotation will be included in the Type Conversion Training Supplement. Any such training shall be included in the PAOM Part 2.

2.2.2 Familiarisation Training

2.2.2.1 A flight crew member shall complete familiarisation training when:

a) operating another aircraft of the same type or variant; or

b) a change of equipment and/or procedures on types or variants currently operated requires the acquisition of additional knowledge.

NOTE: This familiarisation training is required prior to operating another aircraft of the same type that has differences in the equipment fit, equipment layout or equipment type. The familiarisation training does not necessarily have to include a flight. Any such training shall be included in the PAOM Part 2.

2.3 Recurrent Training

2.3.1 General

2.3.1.1 A flight crew member shall undergo recurrent training that is relevant to the type or variant of aircraft on which he is certificated to operate.

2.3.2 Ground and Refresher (Annual)

2.3.2.1 The ground and refresher training shall include:

- aircraft systems;
- operational procedures and requirements;
- Accident/Incident and Occurrence review; and
- maintenance tasks likely to be carried out when away from base in order to complete a Certificate of Release to Service.

2.3.2.2 Knowledge of ground and refresher training shall be verified by a questionnaire or other suitable method.

2.3.3 **Aircraft/Flight Simulator**

2.3.3.1 Recurrent training and checking provides an opportunity for the practice of emergency procedures which rarely arise in normal operations and are part of a structured programme of recurrent training which may be combined with the OPC. This training will be carried out in a flight simulator whenever possible.

2.3.3.2 Where there is an AFM limitation on the use of certain emergency power ratings, procedures to permit realistic engine-failure training, and demonstrations of competence without actual use of the emergency power ratings, will be as approved by the CAA.

2.3.3.3 Because of the unacceptable risks when simulating emergencies such as tail rotor failure, icing problems, certain types of engine problems (i.e. during continued take-off or go-around, total hydraulic failure etc.), or because of environmental considerations associated with some emergencies (e.g. fuel dumping), those emergencies will preferably be covered in a simulator. If no flight simulator is available those emergencies may be covered in the helicopter using a safe airborne simulation, bearing in mind the effect of any subsequent failure, and discussion on the ground. The use of 'touch drills' is an acceptable means of compliance.

2.3.4 **Emergency and Safety Equipment**

2.3.4.1 **General**

The E & S training programme may be combined with E & S checking and shall cover the location and use of all E & S carried on the aircraft. The training and checking shall be conducted in an aircraft or a suitable alternative training device.

2.3.4.2 **Annual**

Every year the E & S training programme must include the following:

a) donning of a lifejacket (where required);

b) donning of smoke protection equipment if carried;

c) handling of fire extinguishers;

d) instruction on the location and use of all E & S carried;

e) security procedures; and

f) dangerous goods transportation procedures.

These items will be included in the Annual E & S or Line Check, as appropriate.

2.3.4.3 **Triennial**

Every three years the programme of training must include the following:

a) operation of all types of exits;

b) actual fire-fighting using equipment representative of that carried in the aircraft on an actual or simulated fire except that, with Halon extinguishers, an alternative method acceptable to the CAA may be used;

c) training and demonstration of the effects of smoke in an enclosed area where smoke protection equipment is carried;

d) handling of pyrotechnics where fitted;

e) demonstration and practice in the use of the life-rafts where fitted; and

f) first aid.

2.3.5 **Crew Resource Management (Annual)**

2.3.5.1 Every pilot and observer is to undergo annual recurrent ground CRM training so that all areas of the initial operator's CRM course are covered over a three-year rolling period.

2.3.6 **Single Pilot Operations (Fixed and Rotary Wing)**

Pilots required to conduct single pilot operations under IFR will be given additional training with respect to cockpit procedures as follows:

a) engine management and emergency handling;

b) use of normal and emergency checklist;

c) ATC communication;

d) cockpit procedures in respect of departure and approach;

e) autopilot management; and

f) simplified in-flight documentation.

2.3.7 **Instrument Night Qualification Requirement – Unrated Helicopter Pilots**

2.3.7.1 A helicopter pilot who does not hold a helicopter IR shall have completed a syllabus of simulated instrument flying training intended to instil a level of competence that would enable a pilot who has inadvertently entered IMC to safely regain VMC. The training shall be repeated at six-monthly intervals as part of the OPC. The syllabus shall include:

a) transition to instrument flight during climb-out;

b) climbing and descending turns on to specified headings;

c) level flight, control of heading, altitude and speed;

d) level turns with 30 degrees bank, 180 to 360 degrees left and right;

e) recovering from unusual attitudes;

f) autorotation and recovery to level flight;

g) limited panel (main Attitude Indicator (AI) failure or Primary Flight Display (PFD)); and

h) emergency let-down procedures.

2.3.7.2 Any such flight shall be conducted by a TRE who holds a current helicopter IR. The training may have been completed either in an approved FNPT II/III or FTD 2/3, or on a helicopter of similar type. At least one hour's flight time shall be devoted to simulated instrument flying training, longer if airspace factors prevent its timely completion. This training shall be recorded separately from the OPC.

2.3.7.3 The conditions for simulated instrument flight shall meet the requirements of Rule 23 of the Rules of the Air Regulations 2007, summarised as follows:

a) the aircraft is fitted with serviceable dual controls;

b) a safety pilot is carried; and

c) any mechanical or optical devices intended to reduce the external field of view of the handling pilot shall not impede the field of view of the safety pilot; if the view is impeded an additional crew member shall be carried.

2.3.8 Instrument Training Additional Requirements – Helicopters

All unrated helicopter pilots are required to complete the following exercises during the Instrument Night Qualification training flight.

2.3.8.1 Unusual Attitudes

2.3.8.1.1 The method of simulation of unusual attitudes in an aircraft will be as follows:

a) a Training Captain will be in command;

b) the exercise shall be conducted in VMC (day or night);

c) minimum height will be 1,500 ft above surface level;

d) HASEL checks will be completed;

e) IF screens or suitable hood devices should be used; and

f) a simulated ground level, at least 1,000 ft above the surface, should be designated.

2.3.8.1.2 Guidance in the method of practice of unusual attitudes in a helicopter will be as follows:

a) the pilot under training will follow through lightly on the controls, and either look away or close his eyes;

b) the Training Captain will manoeuvre the aircraft and then hand control to the pilot under training, who will respond "I have control"; and

c) the pilot under training will recover the aircraft and resume a designated flight path.

2.3.8.1.3 Normal recovery action from an unusual attitude is as follows:

a) wings to level;

b) attitude check to regain balanced flight; and

c) adjust power to regain IAS, height, select heading.

As a general rule unusual attitudes resulting in a climb should be recovered to level flight, and those of a descending nature should be recovered to the climb.

2.3.8.1.4 The method of practice in a simulator may vary from the above in that no simulation of ground level is necessary and the inducing of an unusual attitude can be carried out by either pilot on his fellow crew member. The exercise can also be carried out under IMC.

2.3.8.2 Loss of Visual Contact

2.3.8.2.1 In order to practise the transition from visual references to instruments at a critical stage of flight, the following IF take-off procedure is to be utilised during IF training and checks in a helicopter:

a) the Training Captain will lift the helicopter to the hover and then hand over control to the pilot flying who may use lateral references to maintain a steady position;

b) the Training Captain will complete hover checks and monitor the profile throughout;

c) the pilot flying will initiate a transition to forward flight from the hover then transfer his scan to the instruments and continue the departure from low level.

2.3.8.3 Emergency Let-Down Procedure Following Inadvertent Entry into Cloud

2.3.8.3.1 During recurrent training, inadvertent entry into cloud should be discussed and emergency let-down procedures practised.

2.3.8.3.2 Procedures, which take into account local factors, shall be contained in the appropriate section of the PAOM Part 2.

2.4 Recurrent Checking

2.4.1 General

2.4.1.1 A flight crew member will undergo recurrent checking relevant to the type or variant of aircraft on which he is certificated to operate. Line Checks, area, role and route competency and recent experience requirements are intended to ensure the crew member's ability to operate under normal conditions, whereas other checks, and E & S training, are primarily intended to prepare the crew member for emergency procedures.

2.4.1.2 The Line Check is performed in the aircraft. All other training and checking will be performed in the aircraft, an approved flight simulator or, in the case of E & S training, in a suitable alternative training device. The type of equipment used for training and checking should be representative of the instrumentation, equipment and layout of the aircraft type operated by the crew member.

2.4.1.3 The E & S training programme may be combined with E & S checking and shall cover the location and use of all E & S carried on the aircraft.

2.4.1.4 The Training Captain will always be in command during the course of an LPC/OPC. He may assume the function of the pilot monitoring in a multi-pilot aircraft. Where possible the Training Captain should occupy the jump seat or a passenger seat, in order to observe a crew performance during a Line Check.

2.4.2 Operator Proficiency Check

(See Appendix A)

2.4.2.1 Each flight crew member shall undergo the OPC as part of a normal flight crew complement to demonstrate competence in carrying out normal and emergency procedures. Part of the check will be conducted without external visual reference when the flight crew member is required to operate under IFR or at night. It is a requirement for pilots to demonstrate all certified take-off and landing profiles relevant to the operation during OPCs.

2.4.2.2 In addition to the checks prescribed above, the requirements of JAR-FCL must be completed every 12 months (Type Rating and Instrument Rating combined renewal) and may be combined with the OPC. The OPC must be conducted by a TRE. The TRE must occupy a pilot's seat when conducting an OPC in an aircraft.

2.4.3 Line Check

2.4.3.1 The Line Check (Appendix B) is considered a particularly important factor in the development, maintenance and refinement of high operating standards, and can provide a valuable indication of the usefulness of training policy and methods. The requirement is for a test of ability to perform satisfactorily a complete line operation from start to finish, including pre-flight and post-flight procedures, use of the equipment provided and for an involvement of an overall assessment of the ability to perform the duties required. The task chosen shall be such as to give adequate representation of the scope of a pilot's normal operations. The Line Check is not intended to determine competence on any particular task. Each flight crew member shall undergo a Line Check on the aircraft to demonstrate his competence in carrying out normal line operations as described in the PAOM Part 2. The crew will be assessed on their CRM skills.

2.4.3.2 For Police Operations, if a pilot flies more than one aircraft type, he shall be required to pass the line/area competency check in only one of those where the types are considered similar. Successive checks should use each type in turn. Accepted similar types, as assessed by the CAA, shall be set out in the appropriate part of the PAOM Part 2.

2.4.3.3 When appropriate (e.g. in transit) pilots should be encouraged to make full use of the upper modes of the autopilot and their ability to manage the autopilot should be examined during the Line Check. Operators are to establish Standard Operating Procedures (SOPs) covering the use of autopilot upper modes for aircraft fitted with such systems. The method of use of the upper modes shall be set in the appropriate part of the PAOM Part 2 SOPs.

2.4.4 Failure to Attain the Required Standards

2.4.4.1 Pilot

a) A pilot who has failed a periodic flying test or ground examination shall not carry out an operational flight until he has passed a subsequent test.

b) The Chief Training Captain shall decide what further training and testing is required by a pilot who has failed a periodic flying test or ground examination, or is making inadequate progress during training.

2.4.4.2 Police Observer

a) An observer who has failed a periodic flying test or ground examination shall not carry out an operational police flight until he has passed a subsequent test.

b) The OTO shall consult the UEO to decide what further training and testing is required by an observer who has failed a periodic flying test or ground examination, or is making inadequate progress during training.

Appendix A Operator Proficiency Check

1 General

1.1 The purpose of the OPC is twofold. Firstly, it fulfils the legal requirement for flight crew to be tested on a regular basis and their continued competence to be verified and recorded. Secondly, it provides flight crew with the opportunity to demonstrate competence in carrying out normal, abnormal and emergency procedures which rarely arise in normal operations.

1.2 The OPC may be completed on one or more flights and may involve the use of a simulator. **All elements must be completed within a period of 28 days.**

1.3 The applicant shall pass all elements of the OPC. The schedule to this Appendix specifies the minimum content of the OPC but operators are to ensure that the check reflects their operation and standards. It is acceptable to combine the OPC with the LPC or LST when due and also to conduct recurrent training prior to recurrent checking. Training Captains should consult the current version of CAA Standards Document No. 24 for aeroplanes and No. 28 for helicopters for further guidance.

1.4 Further training may be required after a failed check. There is no limit to the number of checks that may be attempted. Items with a periodicity of more than six months are to be included in the OPC on a rotational basis. Training Captains should refer to the previous record of checks on a pilot's file in deciding the contents of a check and select suitable drills and procedures. The objective is for each pilot to accomplish all listed items at sensible time intervals and in a conscientious manner. The OPC File Form is to be held on every pilot's file to record check content.

1.5 All type certificated profiles are to be covered in the emergency procedures for take-off and landing. Engine failure manoeuvres carried out in a helicopter must be simulated.

1.6 The requirements of JAR-FCL must be completed every 12 months and may be combined with the OPC.

1.7 OEI flight under certain phases of flight is to be conducted as detailed in the following schedules.

1.8 Where screens are used for the purpose of IFR training and/or checking, the Training Captain must have an unobstructed view or a third crew member will be required to enhance lookout.

1.9 It may not be possible to complete an OPC in one flight. Aircraft unserviceability, unavailability, weather and ATC may cause limitations and restrictions. The OPC is not complete until all elements have been achieved. It may be necessary to consult the notes above concerning failed items during the Check, and the pilot may not be able to exercise the privileges of his licence until further training is given.

1.10 It may be necessary to change Training Captains during an OPC and it is essential for a thorough hand-over to be completed as follows:

The first Training Captain is to tick those items of the Check that have been satisfactorily completed and sign to that effect in the remarks column of the OPC File Form. The second Training Captain is to indicate the remaining items completed. He will then complete the OPC Form at the conclusion of the check.

1.11 Tracking replaces the term 'Airways'. The tracking element may be carried over from one aircraft type to another. The date of tracking validity will automatically be that of the completion of the OPC/LPC. Under JAR-FCL, Airways flight will not form part of the Initial IR or the IR renewal skill test. Tracking will be assessed during approaches using VOR beacons or Non-Directional Beacons (NDBs).

1.12 The date of validity of an OPC will be calculated from the date of completion of the final element of the check, which includes the Questionnaire.

1.13 Engine-off landings must be completed satisfactorily on alternate OPCs in single-engine helicopters. Where impractical, the check can be considered valid if suitable emphasis is placed on autorotations with power recoveries. The check form should be annotated accordingly.

1.14 The following schedule indicates items to be included in the OPC.

2 Schedule

2.1 Section A – Emergency Procedures and Manoeuvres

2.1.1 General

	Procedure	Periodicity	Periodicity for Police Operations
1	Engine failure	6 months	6 months
2	Hydraulic system failure, approach and land	6 months	6 months
3	Engine failure during take-off before decision point	6 months	6 months
4	Engine failure during take-off after decision point*	6 months	6 months
5	Engine failure during landing before decision point*	6 months	6 months
6	Engine failure during landing after decision point	6 months	6 months
7	Autopilot control system malfunction*	6 months	6 months
8	Autorotation and power recovery to a designated area* (rotary)	6 months	6 months
9	Engine bay fire*	12 months	12 months
10	Instrument and cockpit light failure – approach and landing at night	12 months	12 months
11	Engine re-light*	18 months	18 months
12	Ditching and crash procedures	18 months	18 months
13	Engine control system malfunctions – approach and landing	18 months	18 months
14	Electrical system failures*	18 months	18 months
15	Fuel system failures*	18 months	18 months
16	Oil system failures*	18 months	18 months
17	Airframe or electrical fire*	36 months	36 months
18	Undercarriage system failures*	36 months	36 months
19	Main gearbox failure* (rotary)	36 months	36 months
20	Flying control malfunctions*	36 months	36 months
21	Tail rotor and yaw system failures (rotary)	36 months	36 months
22	Pitot/static system failures*	36 months	36 months
	Additional Items for Police Operations		
23	Engine Failure in the high hover (rotary)	N/A	6 months
24	Engine Failure (appropriate flap extended) whilst turning in the low speed configuration (aeroplanes)	N/A	6 months

NOTE: Items marked * may be completed in IMC or simulated IMC.

2.1.2 Instrument Night Qualification – Unrated Helicopter Pilots

A helicopter pilot who does not hold a helicopter IR shall complete the following syllabus of instrument flight training in IMC or simulated IMC:

		Periodicity	Periodicity for Police Operations
1	Transition to instrument flight during climb-out	6 months	6 months
2	Climbing and descending turns on to specified headings	6 months	6 months
3	Level flight, control of heading, altitude and speed	6 months	6 months
4	Level turn with 30 degrees bank, 180 to 360 degrees left and right	6 months	6 months
5	Recovering from unusual attitudes	6 months	6 months
6	Autorotation and recovery to level flight	6 months	6 months
7	Limited panel (main AI or PFD)	6 months	6 months
8	Emergency let-down procedures	6 months	6 months

2.2 Section B – Written/Oral

1	Type technical	6 months
2	Limitations	6 months
3	Aircraft equipment	6 months
4	Operations Manual amendments and Circulars	6 months

The above subjects are to be covered by questions and discussion and an overall pass mark of 70% is to be achieved. Completed answer sheets are to be assessed by the Training Captain and retained in the individual's file until the next OPC. It is acceptable to complete an oral check provided a written check is completed at the next OPC.

2.3 Section C – General Procedures

1	Pre-flight checks and inspection	6 months
2	Knowledge and use of normal checklists and procedures	6 months
3	Crew co-ordination and briefings	6 months
4	Starting and shut-down procedures	6 months
5	Taxi and hover taxi	6 months
6	Hover manoeuvres including crosswind	6 months
7	Use of aircraft equipment	6 months
8	Basic flying accuracy and smoothness	6 months
9	Steep turns	6 months
10	Climbing and descending turns to specific headings (SP)	6 months
11	Take-offs – various profiles (SP)	6 months

SP – Single pilot, single- and multi-engine aircraft.

Where appropriate, items should be flown with and without the use of autopilot or other stability enhancing equipment. The assessment of flight crew performance should be based on the general conduct of the flight, adherence to standard procedures and CRM.

2.4 Section D – Instrument Flight (Rated Pilots)

1	Navaid and instrument checks	6 months
2	Instrument departure	6 months
3	Basic flying, accuracy and smoothness	6 months
4	Altimeter setting procedures	6 months
5	ATC liaison	6 months
6	Conforming to ATC clearances	6 months
7	Use of anti-icing equipment	6 months
8	Non-precision approach to minima	6 months
9	Approach with malfunction of flight control/Flight Director (FD) system	6 months
10	Recovery from unusual attitudes	6 months
11	Precision approach to minima – one engine inoperative	6 months
12	Go-around on instruments from minima with one engine malfunctioning	6 months
13	Simulated IMC autorotation (rotary)	6 months
14	Tracking	12 months
15	Holding procedure	12 months
16	Aborted take-off (SP)	12 months
17	Radio, navaid and instrument failure	36 months

SP – Single pilot, single- and multi-engine aircraft.

NOTE: The non-precision approach may include an engine malfunction.

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Appendix B Line Check and Line Training

1 Introduction

1.1 A Line Check shall be conducted by a Line Training Captain. It consists of the sections listed in paragraph 2.1.

2 Content of Check

2.1 a) **Section A** Pre-flight, including:

i) weather assessment and minima;

ii) flight planning and fuel/load computation;

iii) load and balance and performance calculations;

iv) route diversion and destination appraisal; and

v) external checks and pre-flight procedures.

b) **Section B** Handling, including:

i) start-up, ground procedures and taxi (as relevant to type);

ii) take-off and departure procedures;

iii) cruise procedures and fuel management;

iv) arrival procedures;

v) approach and landing techniques; and

vi) site procedures.

c) **Section C** General, including:

i) adherence to ATC;

ii) use of checklists;

iii) use of radios;

iv) altimeter settings;

v) anti-ice and turbulence procedures;

vi) meteorology and alternates;

vii) briefings and crew supervision;

viii) operational decisions;

ix) documentation;

x) CRM;

xi) use of area navigation aids;

xii) Route Manual charts and procedures; and

xiii) passenger/freight management.

d) **Section D** Area and role competence, including:

i) knowledge of special areas and procedures;

ii) adherence to appropriate rules and navigation procedures;

iii) situational awareness; and

iv) climatic characteristics including performance criteria.

e) **Section E** Area and role competence for Police Operations shall include:

i) handling;

ii) map reading;

iii) police role equipment;

iv) low flying;

v) search techniques;

vi) in-flight door opening;

vii) landing sites (Landing site directory and Ad Hoc);

viii) special seating*;

ix) hover emplane and deplane*;

x) CASEVAC role change*;

xi) carriage of dogs*;

xii) carriage of weapons and munitions*;

xiii) thermal and video cameras*;

xiv) searchlight*;

xv) airborne public address*;

xvi) tracker*;

xvii) Downlink/Retractable aerials*; and

xviii) aerial photography*.

NOTE: * May be completed either by a theory or practical check.

2.2 In addition to the technical content of the Line Check, non-technical (CRM) skills will also be assessed using a suitable NOTECHs marking format. An example form can be found at Appendix D.

2.3 Sections A, B and C constitute Part 1 of the check, and Sections D and E (where appropriate) Part 2. An annual Line Check will cover Parts 1 and 2 of the Line Check form.

2.4 For pilots who hold a valid type Line Check and are detached to a different area of operations it is permissible for a Training Captain or Chief Pilot on site to validate the Part 2 – Area Competence section only. This can be in the form of either a flight, where the nature of the operation is significantly different to that at the pilot's base, or simply a thorough ground brief, when the operation is of a straightforward nature. A Line Check form will be required irrespective of how the Part 2 is completed. In either case, validity of the Line Check will be from the date of the Part 1, when a complete check will be required for revalidation purposes.

2.5 The Line Check form **must** show a Night section date for recency purposes, otherwise the pilot will be restricted 'Day Only'. The date of a valid Night section from another current type is acceptable and may be entered.

3 Line Training Sequences (Including Initial Line Training)

3.1 Introduction

3.1.1 Pilots undergoing line training may be totally unfamiliar with their new operating environment, or they may be experienced in a role and be simply undergoing type conversion. Training Captains should adapt the syllabus accordingly.

3.1.2 Pilots will have completed the following requirements before line training begins:

a) approved conversion course including OPC; and

b) inclusion of aircraft type in the appropriate licence.

3.2 Ground Syllabus

The following subjects will be covered:

Landing sites	Heliport dimensions
	Identification of sites
	Landing and take-off techniques
	Obstacle clearances
	Sloping ground landings
	Emergency area dimensions
	Crash and rescue equipment
	Lighting requirements
	Aircraft operating weight
Overland operations	Nature of task
	Standard routes
	Global Positioning System (GPS, area navigation and flight planning)
	Map preparation and reading
	Nature of terrain
	Manoeuvring and limited power technique
	Power assessment
	Diversions, bad weather and safe routes
	Let-down aids and procedures
	Weather minima and forecasting
	Minimum heights
	Position reporting
	Radio and navigation procedures
	Freight handling
	Standard fuel loads and reserves
	Autorotation techniques
	Rescue organisation

Aircraft equipment	Radio and navaid installations
	Emergency packs
	Emergency locator beacons
	Load configurations
	Passenger handling including Public Address (PA) and visual signals
	Crash procedure and evacuation
	Cargo tie-downs
	Particle separators
	Aircraft blanks
	Gust locks
	Tie downs
Aircraft performance	Local climate and topography
	Prediction of performance
	Limitations of temperature and height
	Relevance of avoid curve areas
	Foreign Object Damage (FOD), dust and debris
	Compressor washing
	Power assurance procedures
	Topping and acceleration checks
Practical instruction	Fuel testing
	Air/ground distress signals
	Fire, smoke and light signals
	Survival techniques
	Aircraft overnight security
	Documentation
	Calculating payloads/load sheets

For specialist roles, variations will be covered in the appropriate part of the PAOM Part 2.

4 Initial Line Training and Initial Line Check

4.1 The initial line training is carried out on a flight, with only CAA-approved passengers. It is mainly concerned with the operational role including landing and take-off techniques and practice at sites which afford restricted access and space and with significant obstacles. The conduct of route flying which involves knowledge of topography is also essential. The instruction should include the following:

Departure from base	Standard take-off techniques
	Conforming with track and altitude conventions
	ATC liaison

En route	Use of radio, navaids and maps
	Position reporting and Communications
	Appreciation of weather and wind
	CRM
Destination	Visual let-down
	Approach and landing techniques
	Manoeuvring and obstacle clearance
	ATC liaison
	Take-off techniques
	Limited power techniques
	Confined area techniques
	Fuel uplifts
	Departure procedures
Return to base	Let-down procedures including bad weather
	Parking areas
	Documentation and security

4.2 A trainee pilot must complete a round trip, representative of the routine task, as a minimum requirement. The Training Captain responsible must use his judgement to include those elements which are considered essential for the initial Line Check and to decide on the appropriate number of sectors flown. He will take into account the variety and nature of the likely destinations that the pilot will experience.

4.3 **Police Operations**

4.3.1 Pilots new to police operations will require Initial line training in the use of the aircraft for particular operations such as pursuits and surveillance, also in the operation of standard police role equipment such as thermal imaging/T.V. systems, searchlights and public address systems. This training shall be of not less than three hours' duration of which not less than one hour shall be at night; this period may include the Initial Line Check. Line consolidation flying consisting of four sectors (normally of not less than 40 minutes in length) should then follow; the last of these sectors may constitute the Final Line/Area Competency Check.

4.3.2 Pilots new to units with operating areas containing unfamiliar environments such as mountainous terrain, or airspace with complex ATC structures, shall require a period of line consolidation training prior to commencing operational flying at the Unit. The nature and extent of the training will depend on the individual pilot's background and experience.

4.4 **GPS**

4.4.1 A pilot must undergo training in the use of GPS equipment before operating an aircraft that is equipped with GPS. This training will consist of:

a) the theory of how GPS works; and

b) the practical use of the aircraft equipment.

4.4.2 The theory lecture will cover:

a) the derivation of position information;

b) a review of the errors in the system;

c) how these errors can be reduced; and

d) an explanation of differential GPS.

4.4.3 The practical lecture will cover:

a) use of the equipment and controls;

b) the information available to the operator;

c) how the databases are accessed; and

d) how to add/amend waypoints and routes.

Appendix C Periodic Training and Testing – Police Observers

1 Line/Area Competency Check

1.1 A Police observer shall pass a Line/Area Competency Check in the aircraft operated by, and in the area of operations of, the Unit to which the observer is attached on completion of initial training and local procedures courses. The check will include the operation of police role equipment normally fitted to the aircraft. The observer shall be required to pass a further check following completion of a period of supervised continuation training or within six months of the first check, whichever is the earlier. The period of validity of a Line Check/Area Competency Check shall be 12 calendar months, in addition to the remainder of the month of issue. The Line Check form must show a night section where the observer is required to operate at night. The date of a valid night section from another current type is acceptable for this purpose.

1.2 Where, in the course of normal operations, a police observer flies in more than one aircraft type, he shall be required to pass the Line/Area Competency Check in only one of these where the types are considered similar; successive checks should use each type in turn. Where the aircraft types are considered dissimilar, the police observer shall undergo a test in each type at normal intervals. The check shall be carried out by an OTO and may be combined with a pilot Line/Area Competency Check. It shall be recorded on a pro-forma. The test of the OTO shall be carried out by another OTO, the UEO (if a qualified police observer) or a Line Training Captain or TRE of the Unit.

1.3 The examiner shall pay particular attention to the use of role equipment and associated operating procedures, when such are set out in the PAOM Part 2, as applicable between the pilot(s), observers and other task specialists.

1.4 Non-technical skills shall be assessed using a form similar to that found at Appendix D.

1.5 CAA-agreed passengers may be carried.

2 Emergency and Safety Equipment Check

2.1 An observer shall be required to pass the operator's E & S Check prior to commencing initial training and local familiarisation and procedures courses. The period of validity of an E & S Check shall be 12 calendar months, in addition to the remainder of the month of issue.

2.2 The test shall be carried out by either an OTO or a Training Captain and shall consist of oral, written and practical examinations. The test of the OTO shall be carried out by another OTO, the UEO (if a qualified police observer) or an LTC or TRE of the Unit.

2.3 A copy of the questions and answers that relate to each written examination shall be preserved for at least three years.

2.4 For each aircraft type, the record, content and period of validity of the check are identical to those that apply to a pilot.

2.5 Additionally, the examiner shall pay attention to the quality of the observer's briefing to passengers and his regard for the in-flight safety of passengers.

2.6 The Triennial E & S Check shall be conducted on a three year basis as specified in paragraph 1.8.4 of Part D.

3 Certificate of Special Operational Competency

3.1 A police aircraft is likely to operate at times in roles that involve the use of special equipment and techniques, including hoisting, carriage of underslung loads and flights making use of equipment such as NVGs. Before being declared able to undertake such roles, an observer shall complete an appropriate course of training and pass the test for a Certificate of Special Operational Competency. The training and test shall be conducted by the OTO, an LTC or TRE of the Unit. The test of the OTO shall be carried out by another OTO, the UEO (if a qualified police observer), an LTC or TRE of the Unit. The certificate shall remain valid for 12 months.

4 Reserve and Part Time Air Observers

4.1 Police air observers who have received initial training but are not full-time members of an AOU (i.e. acting in a reserve role or in a force which has yet to establish a permanent AOU) shall be subjected to the same Line/Area Competency Checks, E & S Checks and tests for a Certificate of Special Operational Competency as detailed for full-time air observers. They shall receive appropriate and sufficient training in preparation for the checks and tests.

5 Police Observer

5.1 Initial Training

5.1.1 On completion of the Initial Air Observers Training Course the observer shall be required to pass a ground examination.

5.2 Ground Examinations

5.2.1 The operator shall preserve each completed examination paper for a period of at least two years.

5.3 Type Conversion

5.3.1 The OTO shall ensure that the observer under training is familiar with the basic passenger briefing and emergency procedures and has passed the E & S Check prior to starting training in an operational role.

NOTE: The training syllabus contained in the Police Air Observers Manual of Guidance should be followed, although it may be modified to suit local requirements.

5.4 Special Operations Training

5.4.1 As for a pilot, an observer requires training in special operational roles such as flight operations using NVGs, hoisting or the carriage of underslung loads. The OTO shall arrange for suitable training and testing to take place and be recorded on a Certificate of Special Operations Competency.

5.4.2 The training/testing syllabus shall be set out in the PAOM Part 2.

6 Police Observer Training Officer

6.1 Minimum qualifications:

Twelve months' experience as an observer on police air operations and to be qualified as a CRMI (Line).

6.2 **Responsibilities:**

a) Preparation of a course of ground and flying training for each aircraft type. The syllabus shall be included in the PAOM Part 2;

b) Line/Area Competency Check (Observer);

c) E & S Check (Observer);

d) Role equipment training;

e) Training in care of passengers;

f) Special Operations Check (Observer); and

g) Maintenance of observer training records.

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Appendix D Example NOTECHs Marking Format

Table D.1 The NOTECHs Behavioural Markers

Categories	Elements	Example Behaviours
Co-operation	Team building and maintaining	Establishes atmosphere for open communication and participation.
	Considering others	Takes condition of other crew members into account.
	Supporting others	Helps other crew members in demanding situation.
	Conflict solving	Concentrates on what is right rather than who is right.
Leadership and Managerial Skills	Use of authority and assertiveness	Takes initiative to ensure involvement and task completion.
	Maintaining standards	Intervenes if task completion deviates from standards.
	Planning and co-ordinating	Clearly states intentions and goals.
	Workload management	Allocates enough time to complete tasks.
Situation Awareness	System awareness	Monitors and reports changes in system's states.
	Environmental awareness	Collects information about the environment.
	Anticipation	Identifies possible future problems.
Decision-Making	Problem definition/diagnosis	Reviews causal factors with other crew members.
	Option generation	States alternative courses of action. Asks other crew member for options.
	Risk assessment/option choice	Considers and shares risks of alternative courses of action.
	Outcome review	Checks outcome against plan.

Table D.2 The NOTECHs Rating Scale

Very Poor	Observed behaviour directly endangers flight safety.
Poor	Observed behaviour in other conditions could endanger flight safety.
Acceptable	Observed behaviour does not endanger flight safety but needs improvement.
Good	Observed behaviour enhances flight safety.
Very Good	Observed behaviour optimally enhances flight safety and could serve as an example to other pilots.

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