KEMENTERIAN PERHUBUNGAN
DIREKTORAT JENDERAL PERHUBUNGAN UDARA

KEPUTUSAN DIREKTUR JENDERAL PERHUBUNGAN UDARA
NOMOR : PR 29 DJPU TAHUN 2024
TENTANG
PEDOMAN TEKNIS OPERASIONAL BAGIAN 120-09
(*ADVISORY CIRCULAR PART 120-09*)
TENTANG OPERASI PENERBANGAN PADA AREA PEGUNUNGAN TROPIS

DENGAN RAHMAT TUHAN YANG MAHA ESA

DIREKTUR JENDERAL PERHUBUNGAN UDARA,

Menimbang :

a. bahwa dalam Peraturan Keselamatan Penerbangan Sipil Bagian 91, Bagian 121, dan Bagian 135 telah mengatur mengenai operasi penerbangan pada Area Pegunungan;
b. bahwa berdasarkan pertimbangan sebagaimana dimaksud pada huruf a, perlu menetapkan Keputusan Direktur Jenderal Perhubungan Udara tentang Pedoman Teknis Operasional Bagian 120-09 (*Advisory Circular Part 120-09*) tentang Operasi Penerbangan Pada Area Pegunungan Tropis;

Mengingat :

1. Undang-Undang Nomor 1 Tahun 2009 tentang Penerbangan (Lembaran Negara Republik Indonesia Tahun 2009 Nomor 1, Tambahan Lembaran Negara Republik Indonesia Nomor 4956) sebagaimana telah diubah dengan Undang-Undang Nomor 6 Tahun 2023 tentang Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 2 Tahun 2022 tentang Cipta Kerja Menjadi Undang-Undang (Lembaran Negara Tahun 2023 Nomor 41, Tambahan Lembaran Negara Republik Indonesia Nomor 6856);
2. Peraturan Presiden Nomor 23 Tahun 2022 tentang Kementerian Perhubungan (Lembaran Negara Republik Indonesia Tahun 2022 Nomor 33);
3. Keputusan Menteri Perhubungan Nomor KM 18 Tahun 2002 tentang Persyaratan-Persyaratan Sertifikasi dan Operasi Bagi Perusahaan Angkutan Udara Niaga Berjadwal dan Angkutan Udara Niaga Tidak Berjadwal sebagaimana telah diubah terakhir dengan Peraturan Menteri Perhubungan Nomor PM 63 Tahun 2017 tentang Perubahan Kesepuluh Atas Keputusan Menteri Perhubungan Nomor KM 18 Tahun 2002 tentang Persyaratan-Persyaratan Sertifikasi dan Operasi Bagi Perusahaan Angkutan Udara Niaga Berjadwal dan Angkutan Udara Niaga Tidak Berjadwal (Berita Negara Republik Indonesia Tahun 2017 Nomor 1099);

4. Peraturan Menteri Perhubungan Nomor PM 28 Tahun 2013 tentang Peraturan Keselamatan Penerbangan Sipil Bagian 121 (*Civil Aviation Safety Regulation Part 121*) tentang Persyaratan-Persyaratan Sertifikasi dan Operasi Bagi Perusahaan Angkutan Udara yang Melakukan Penerbangan Dalam Negeri, Internasional dan Angkutan Udara Niaga Tidak Berjadwal (*Certfication and Operating Requirements: Domestic, Flag and Supplement Air Carriers*) (Berita Negara Republik Indonesia Tahun 2013 Nomor 512) sebagaimana dirubah terakhir dengan Peraturan Menteri Perhubungan PM 61 Tahun 2017 tentang Perubahan Keempat Atas Peraturan Menteri Perhubungan Nomor PM 28 Tahun 2013 tentang Peraturan Keselamatan Penerbangan Sipil Bagian 121 (*Civil Aviation Safety Regulation Part 121*) tentang Persyaratan-Persyaratan Sertifikasi dan Operasi Bagi Perusahaan Angkutan Udara yang Melakukan Penerbangan Dalam Negeri, Internasional dan Angkutan Udara Niaga Tidak Berjadwal (*Certfication and Operating Requirements: Domestic, Flag and Supplement Air Carriers*) (Berita Negara Republik Indonesia Tahun 2017 Nomor 1097);
5. Peraturan Menteri Perhubungan Nomor PM 94 Tahun 2015 tentang Peraturan Keselamatan Penerbangan Sipil Bagian 91 (*Civil Aviation Safety Regulations Part 91*) tentang Pengoperasian Pesawat Udara (*General Operating and Flight Rules*) (Berita Negara Republik Indonesia Tahun 2015 Nomor 766) sebagaimana telah diubah dengan Peraturan Menteri Perhubungan Nomor PM 81 Tahun 2017 tentang Perubahan Atas Peraturan Menteri Perhubungan Nomor PM 94 Tahun 2015 tentang Peraturan Keselamatan Penerbangan Sipil Bagian 91 (*Civil Aviation Safety Regulations Part 91*) tentang Pengoperasian Pesawat Udara (*General Operating and Flight Rules*) (Berita Negara Republik Indonesia Tahun 2017 Nomor 1294);
6. Peraturan Menteri Perhubungan Nomor PM 95 Tahun 2021 tentang Peraturan Keselamatan Penerbangan Sipil Bagian 139 tentang *Aerodrome* (Berita Negara Republik Indonesia Tahun 2021 Nomor 1438);
7. Peraturan Menteri Perhubungan Nomor PM 17 Tahun 2022 tentang Organisasi dan Tata Kerja Kementerian Perhubungan (Berita Negara Republik Indonesia Tahun 2022 Nomor 815);

MEMUTUSKAN:

Menetapkan : PEDOMAN TEKNIS OPERASIONAL BAGIAN 120-09 (*ADVISORY CIRCULAR PART 120-09*) TENTANG OPERASI PENERBANGAN PADA AREA PEGUNUNGAN TROPIS.

PERTAMA : Menetapkan Pedoman Teknis Operasional Bagian 120-09 (*Advisory Circular Part 120-09*) tentang Operasi Penerbangan Pada Area Pegunungan Tropis sebagaimana termuat dalam Lampiran I dan Lampiran II yang merupakan bagian tidak terpisahkan dari Keputusan Direktur Jenderal ini.

KEDUA : Penetapan Pedoman Teknis Operasional Bagian 120-09 (*Advisory Circular Part 120-09*) sebagaimana dimaksud dalam Diktum PERTAMA merupakan pedoman bagi Pemegang Sertifikat selain Pemegang Sertifikat pengoperasian pesawat udara tanpa awak (*Remotely Piloted Aircraft Systems/RPAS Operator Certificate)* dalam melakukan operasi penerbangan pada Area Pegunungan tropis.

KETIGA : Pada saat Keputusan Direktur Jenderal ini berlaku, Pemegang Sertifikat wajib menyesuaikan ketentuan terkait persyaratan pengoperasian Area Pegunungan paling lama 6 (enam) bulan sejak Keputusan Direktur Jenderal ini ditetapkan.

KEEMPAT : Direktur Kelaikudaraan dan Pengoperasian Pesawat Udara dan Kepala Kantor Otoritas Bandar Udara melakukan pengawasan terhadap pelaksanaan Keputusan Direktur Jenderal ini.

KELIMA : Keputusan Direktur Jenderal ini mulai berlaku pada tanggal ditetapkan

Ditetapkan : Jakarta
Pada tanggal : 9 Agustus 2024

DIREKTUR JENDERAL PERHUBUNGAN UDARA

ttd

M. KRISTI ENDAH MURNI

Salinan sesuai dengan aslinya
Kepala Bagian Hukum,

Gali Sarjono K.

LAMPIRAN I
KEPUTUSAN DIREKTUR JENDERAL PERHUBUNGAN UDARA
NOMOR : PR 29 TAHUN 2024
TENTANG
PEDOMAN TEKNIS OPERASIONAL BAGIAN 120-09 (*ADVISORY CIRCULAR PART 120-09*) TENTANG OPERASI PENERBANGAN PADA AREA PEGUNUNGAN TROPIS

ADVISORY CIRCULAR

AC 120 – 09

TROPICAL MOUNTAINOUS AREA FLYING OPERATIONS

Amendment : 0
Date : 9 August 2024

KEMENTERIAN PERHUBUNGAN REPUBLIK INDONESIA
DIREKTORAT JENDRAL PERHUBUNGAN UDARA
JAKARTA- INDONESIA

AMENDMENT RECORD LIST

Amendment No.	Issue Date	Reference
Original	9 August 2024	

PENDAHULUAN

1. MAKSUD : Pedoman Teknis Operasional ditetapkan dalam rangka memberikan pedoman kepada Pemegang Sertifikat selain Pemegang Sertifikat pengoperasian pesawat udara tanpa awak (*Remotely Piloted Aircraft Systems/RPAS Operator Certificate)* dalam menentukan kategori area pegunungan dan program pelatihan mengenai operasi VFR di area pegunungan. Pedoman Teknis Operasional ini harus didistribusikan kepada masyarakat khususnya yang berkepentingan di penerbangan sipil.

2. ACUAN : Pedoman Teknis Operasional ini harus digunakan sesuai dengan peraturan yang berlaku.

3. PEMBATALAN : -

4. AMANDEMEN : Amandemen Pedoman Teknis Operasional ini harus disetujui oleh Direktur Jenderal Perhubungan Udara.

DIREKTUR JENDERAL PERHUBUNGAN UDARA

ttd

M. KRISTI ENDAH MURNI

Salinan sesuai dengan aslinya
Kepala Bagian Hukum,

Gatot Sarjono K.

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CHAPTER I GENERAL

1.1 Definition

In this Circular, what is meant by:

1. AB Initio Pilot Pilot from the beginning, is an industry term that describes airline-oriented flight training programs that take you from zero experience through commercial pilot
2. Aerodrome means an area in the mainland and/or water face with certain borders being used as a site for landing and taking off aeroplane.
3. Airport means an area in the mainland and/or water face with certain borders being used as a site for landing and taking off of aircrafts, getting on and off of passengers, load and unloading of cargo/goods, and intra and inter-mode transfers of transportation, equipped with aviation safety and security facilities, and basic and other supporting facilities.
4. Helicopter Landing and Takeoff (Heliport), hereinafter referred to as Heliport. Heliport means a place for landing and taking off helicopters on land (surface level Heliport), on top of buildings (elevated Heliport), on offshore/ship platforms (helideck), and on shipboard.
5. Runway means a rectangular area designated at an airport for the aeroplance takeoff or landing.
6. Key Point means proper location and altitude to be used during approach and landing to help attain stabilized approach or decision point.
7. Local Person means a person appointed by the certificate holder to provide information related to weather, safety and runway conditions.
8. Mountainous Area means an area of various terrain profile where the changes of terrain elevation exceed 2000 ft within a distance of 10 NM.
9. Mountainous Area Category means the category of mountainous areas that is determined by using several parameters based on the results of the percentage index calculation where the area has at least one aerodrome.
10. Multi Entry/Departure means the process of approach for landing or departure at an aerodrome that may be through in more than one direction.
11. Multi Entry/Departure Curved means the process of approach for landing or departure at an aerodrome that may be through in more than one direction with curve.
12. Operating Experience means time spent at a line operating aircraft in satisfactory performance of operational duties under supervisor pilot.
13. Certificate Holder means Air Operator Certificate, Operating Certificate, or Remotely Piloted Aircraft Systems/RPAS Operator Certificate.
14. Single Entry/Departure Single Entry/Departure means the process of approach for landing or departure at an aerodrome that may only be through in one direction.
15. Single Entry/Departure Curved means the process of approach for landing or departure at an aerodrome that may only be through in one direction with curve.
16. Supervisor Pilot means an experienced PIC on appropriate mountainous area category and have current qualification from both left- and right-hand seats on appropriate make and model who has written assignment from the certificate holder for supervisory other pilot who conduct operating experience on mountainous area category.

17. Director General means Director General of Civil Aviation.
18. Directorate General means Directorate General of Civil Aviation.

1.2 Abbreviations

a.	AC	Advisory Circular
b.	ACL	Authorization, Condition and Limitation
c.	AOB	Angle of Bank
d.	CASR	Civil Aviation Safety Regulation
e.	CFIT	Controlled Flight into Terrain
f.	DGCA	Directorate General of Civil Aviation
g.	EFATO	Engine Failure After Takeoff
h.	FTD	Flight Training Device
i.	LS	Landing Site
j.	MLDW	Maximum Landing Weight
k.	MORA	Minimum Obstacle Range Altitude
l.	MTOW	Maximum Take-off Weight
m.	OPSPEC	Operations Specifications
n.	PIC	Pilot in Command
o.	RFFS	Rescue and Fire Fighting System
p.	SIC	Second in Command
q.	SOP	Standard Operating Procedure
r.	TAWS	Terrain Awareness and Warning System
s.	TDZ	Touchdown Zone
t.	VFR	Visual Flight Rules

1.3 Applicability

1.3.1. This Advisory Circular applicable to Certificate Holder other than Remotely Piloted Aircraft Systems/RPAS Operator Certificate operating in mountainous areas with VFR conditions as an additional guide to define mountainous area category, pilot's requirements and training program.

1.3.2 Certificate Holder other than Remotely Piloted Aircraft Systems/RPAS Operator Certificate are recommended to insert the provisions of this advisory circular into the Operation Manual required by CASR Part 91. 509; Part 121.135 and Part 135.135.

CHAPTER II OPERATION OF VISUAL FLIGHT RULES (VFR) IN THE MOUNTAINOUS

2.1. General

This chapter describes the standardization of flight crew qualifications in mountainous areas. It covers mountainous area categorization, operational evaluation procedures, requirements for PIC qualifications and chief pilot for certificate holders whose operate in mountainous areas.

2.2. Mountainous Area Category

Considering the airports are surrounded by terrain that requires pilots to maneuver safely, the DGCA designates mountainous area category for mountainous operation.

2.2.1. The parameters used to determine of mountainous area category for aeroplane are as follows:
   a. Aerodrome Elevation;
   b. Runway Length;
   c. Runway Width;
   d. Availability of entry approach / departure point;
   e. Runway Surface;
   f. Number / amount of longitudinal slope of the runway;
   g. Runway slope (longitudinal);
   h. Air Traffic Services;
   i. Weather Information Service; and
   j. Establish a stabilized approach (key point).

2.2.2. Based on the parameters as referred to in point 2.2.1, mountainous areas can be divided into 4 (four) categories determined based on the results of the index presentation calculation.

2.2.3. The mountainous area category as referred to in point 2.2.2, includes:
   a. Mountainous Area Category 1: have an index percentage of 25-40%;
   b. Mountainous Area Category 2: have an index percentage of 41-60%;
   c. Mountainous Area Category 3: have an index percentage of 61-80%; and
   d. Mountainous Area Category 4: have an index percentage of 81-100%.

2.2.4. To determine percentage index of the mountainous area category according to the table listed in Appendix A.

2.2.5. Operations of rotorcraft are more flexible than aeroplane, so the categorization of mountainous areas for helicopter operation is not specified in this AC.

2.2.6. The Certificate Holder whose operates rotorcraft in mountainous area shall conduct an evaluation for the heliport to be used.

2.3. Operational Evaluation

In order to achieve the highest level of safety, certificate holders shall ensure several factors to analyze aerodrome that will be part of aircraft operations. The evaluation at least but not limited to the following:

2.3.1. Aerodrome Physical Characteristics
   1) Runways
      1) runway length;
      2) runway width;

3) longitudinal and transverse slope;
4) stopways and clearways;
5) surface of runway;
6) runway marking;
7) remeasure runway azimuth for take-off and landing;
8) check coordinate and elevation
   a) Determine the midpoint coordinate of the runway, and
   b) Remeasure the elevation of runway by comparing the elevation at the touch down zone (TDZ) and the elevation at the end of runway.

2) Runway strips
1) runway strip width and length;
2) graded areas;
3) longitudinal and transverse slopes of runway strips;
4) object on runway strips;
5) taxiway and apron;
6) windshock position*;*
7) wingtip clearance;
8) determine Maximum Landing Weight (MLDW) and Maximum Take-Off Weight (MTOW) in accordance with performance of the aircraft being operated;
9) evaluate availability RFFS category in each aerodrome*;*
10) observe hazards:
   a) sun glare;
   b) sun shadow);
   c) obstacle);
   d) wind;
   e) weather phenomenon;
   f) threats/notes; and
   g) surface condition
   ensure the material surface of the runway to be evaluated (example: gravel, grass, clay, asphalt, soft edges).

3) Determine the route guidance to the destination aerodrome and obstacle limitation;
4) Determine Key Point;
5) Determine proper key point location and altitude to be used during approach and landing to help attain stabilized approach or decision point;
6) Determine maximum ground speed at key point (tailwind component).
7) Determine the wind curfew in accordance with Appendix IIC.

2.3.2. Helicopter Landing Site Evaluation

a. Mountainous landing sites are often in ridges, saddles or otherwise over irregular, sloping surfaces which reduce ground effect benefits.

b. The certificate holder should identify the following points (often referred to as the 5 S's), in order to determine the best approach path and missed approached route:

1) Size
Is the LS sufficient – to get this size aircraft in (aircraft dimensions) – and what type of approach shall be required to fly (e.g. a large area – single angle approach, a medium sized area – a double angle approach, or a small area – a

vertical approach) and what type of taking-off I will decide to perform?

2) Shape
What shape is the LS in relation to the wind velocity (w/v) or direction of approach/departure.
Note: in light wind conditions it may not be necessary for the wind to dictate the direction of approach/departure, and a safer approach/departure route may be identified avoiding built up areas, wooded areas. Pilots should be cautious about flying into reduced visibility caused sun glare or shadows cast in the LS.

3) Surrounds
Outer – Establishing a safe area to fly over (defensively and environmentally) whilst conducting the recce, including establishing any markers to be used for the circuit.
Inner – Establish the hazards in the immediate LS area and any forward and lateral markers to be used in the LS to establish the center of the area for the maneuvering/landing especially if a vertical approach is to be used.

4) Slope
Identify any perceivable slope in the LS. This is normally confirmed by coming to a slightly higher than normal hover whilst maneuverings in the LS. It is advisable to assume the ground is uneven and use sloping ground techniques when landing on any unprepared surface.

5) Surface
Identify the nature of the LS surface to ensure suitability for landing including checking sufficient aircraft ground clearance - long grass can hide obstacles such as tree stumps which are hazardous to low skidded aircraft. This is normally confirmed by coming to a slightly higher than normal hover whilst maneuvering in the LS. Extreme caution should be used when landing on surfaces covered by loose snow or sand which normally required specialized landing techniques such as a 'zero speed' landing.

In the case where a helicopter landing site is used more than twice, the certificate holder must comply with the heliport operational requirements in accordance with CASR Part 139.

2.3.3. Operational Factors Evaluation

a. Opspec & ACL.
Ensure that aircraft operations are in accordance with Opspec & ACL.

b. Single Pilot or Multi Pilot Operation.
Determine and implement the Standard Operating Procedure (SOP) for both single pilot operation and Multi Pilot Operation in Mountainous Flying Operation.

c. Aircraft Performance.
Determine aircraft to be operated for every mountain category based on aircraft performance.

d. Aircraft Equipment.
Priority using their aircraft with the most advance navigation and TAWS equipment to operate in the high-risk mountain category.

e. Enroute and Terrain.
Identify safe routes, operational flight plan, MORA/Grid MORA, Approach Procedure and Missed Approach Procedure.

2.4. Pilot Requirements

2.4.1. General

Certificate Holder shall ensure the experience and pilot skills are sufficient at each mountainous area category.

a. Assignment of pilot duties
Certificate Holder shall ensure the assigned flight crew at mountainous area have appropriate qualifications according mountainous area category requirements.

b. Pilot-in-command mountainous Operating Experience on specific aircraft type
   1) This section prescribes the minimum experience on the make and model of aircraft type prior to a pilot being designated to act as pilot in command on an air operation in mountainous.
   2) The pilot may begin mountainous area operating experiences after he/she has completed the initial mountainous area training and after the successful completion of the flight crew competency check. This provision enables the operating experiences may be carried out on a revenue flight.
   3) The section is specific as to what constitutes mountainous operating Experience. Operating Experience should be completed on air operations (air transport or commercial transport operations), or for a new type being introduced into an operation, proving flights or ferry flight time can be used.
   4) However, any other certificate holder's flight that is completed under the authority of the certificate holder could be considered to be an air operation provided the full flight is conducted in accordance with the operator's manual requirements including such things as weather planning, passenger briefing, fuel & trip planning, weight & balance, flight following, and decision making.
   5) The pilot undertaking this mountainous operating experience is required to perform the duties of the pilot in command under the supervision of a pilot who has been authorized in writing by the certificate holder. The supervisor pilot is the designated pilot in command, and he/she logs pilot in command time. The pilot being supervised also logs pilot in command time but annotates it in the pilot logbook "under supervision.

c. For multi-pilot aircraft, the supervisor pilot must occupy a crew seat while supervising flying and in order to allow him to exercise his/her responsibilities should have a set of dual controls fitted.

d. For single pilot aircraft, the designated supervising pilotsupervisor pilot in command is not required to occupy a crew member seat but must still supervise the pilot in command under supervision and be in a positionable to fulfill his duties.

There is no need for an operatora certificate holder to create “two pilot procedures” as long as the operation remains a single pilot.

e. For aircraft operation in mountain aerodrome areas are highly recommended for multi pilots’ aircraft operation.

2.4.2. Aeroplane Pilot’s Requirements

a. The minimum requirements for aeroplane PIC that may fly at aerodrome mountainous in this category are:

1) Mountainous Area Category 1

a) Jet engine aeroplane with MTOW more than 5.700kg

i. have minimum 200 flight hours on type;
ii. obtain line indoctrination with instruction minimum 20 flight hours and released by check pilot; and
iii. after completing point ii, pilot may obtain Operating Experience as PIC accompanied by Supervisor Pilot (or Flight Instructor if the certificate holder doesn’t have Supervisor Pilot) for a minimum of 80 hours.

b) Propeller aeroplane with MTOW more than 5.700kg

i. have minimum 200 flight hours on type;
ii. Obtain line indoctrination with instruction minimum 50 flight hours and released by check pilot; and
iii. after completing point ii, pilots may obtain Operating Experience as PIC accompanied by Supervisor Pilot (or Flight Instructor if the certificate holder doesn’t have Supervisor Pilot) for a minimum of 100 flight hours.

c) Propeller aeroplane with MTOW at or less than 5.700kg

i. have minimum 100 flight hours on similar make and model of aircraft type;
ii. obtain line indoctrination with instruction and release by check pilot:
- minimum 100 flight hours, for pilot have mountainous flying experience as SIC or pilot without mountainous flying experience; or
- minimum 50 flight hours, for pilot have mountainous flying experience as PIC.

iii. after completing point ii, pilots may obtain Operating Experience as PIC accompanied by Supervisor Pilot (or Flight Instructor if the certificate holder doesn’t have Supervisor Pilot) for a minimum of 100 flight hours.

2) Mountainous Area Category 2

a) For pilots with mountainous flying experience:

i. had experienced aerodrome mountainous area category 1 at least 300 flight hours;
ii. obtain line indoctrination with instruction minimum 50 hours and released by check pilot; and
iii. after completing point ii, pilots may obtain Operating Experience as PIC accompanied by Supervisor Pilot (or Flight Instructor if the certificate holder doesn’t have Supervisor Pilot) for a minimum of 100 flight hours.

b) For pilots without Mountainous Flying Experience:

i. have minimum 100 flight hours on similar make and model of aircraft type;
ii. obtain line indoctrination with instruction minimum 100 Hours and released by check pilot; and

iii. after completing point ii, pilots may obtain Operating Experience as PIC accompanied by Supervisor Pilot (or Flight Instructor if the certificate holder doesn't have Supervisor Pilot) for a minimum of 100 flight hours.

3) Mountainous Area Category 3
   a) had experienced mountainous category 2 at least 300 flight hours;
   b) obtain line indoctrination with instruction minimum 50 flight hours and released by check pilot; and
   c) after completing paragraph c) (2) above, pilots may obtain operating experience as PIC accompanied by Supervisor Pilot (or Flight Instructor if the certificate holder doesn't have Supervisor Pilot) for a minimum of 100 flight hours.

4) Mountainous Area Category 4
   a) had experienced mountainous category 3 at least 300 flight hours;
   b) obtain line indoctrination with instruction minimum 50 flight hours and released by check pilot; and
   c) after completing paragraph c) (2) above, pilots may obtain operating experience as PIC accompanied by Supervisor Pilot (or Flight Instructor if the certificate holder doesn't have Supervisor Pilot) for a minimum of 100 flight hours.

After the PIC qualified on appropriate mountainous area category, certificate holder responsible for assignment of PIC for each aerodrome on appropriate mountainous area category by their risk assessment.

b. Requirements for SIC aeroplane that may fly at mountainous area are:
   1) Prior to a pilot being designated to act as second in command on an air operation in mountainous, he/she should have accomplished ground training program for a minimum experience on the make and model of aeroplane type and release by check pilot according to operation manual.
   2) Ground training program mentioned in point 1) as describe on Appendix B.

2.4.3. Helicopter Pilot's Requirements

Minimum requirements for helicopter pilot to operate in mountainous area as follows:

a. Initial mountainous area operation (5000 feet or less)
   1) Had minimum 50 hours flight time on appropriate type make and model.
   2) Obtain Mountainous Area Flight Training minimum 15 Hours including 10 (ten) takeoff - landing and released by check pilot.

b. Advance mountainous area operation (above 5000ft):
   1) have experience flying in mountainous area for at least 100 hours or 200 hours total flight time without mountainous area experience; and
   2) trained by Flight Instructor and been released for the additional route qualification by check pilot

2.5. Chief Pilot Requirements

2.5.1. Chief Pilot at least meet the minimum requirements as follows:

a. have knowledge of the contents of the certificate holder's manuals, operations specifications, and the provisions necessary to the proper performance of his duties;
b. have sufficient knowledge in mountainous areas operation;
c. must meet the requirements set out in CASR Part 119.51; and
d. have mountainous flying experience at least 500 flight hours for aeroplane or 100 flight hours for helicopter.

2.5.2. If The Chief Pilot did not have mountainous flying experience, the certificate holder must assign the deputy chief pilot who have mountainous flying experience as mentioned at 2.5.1. d.

CHAPTER III TRAINING PROGRAM

3.1 Training Overview

3.1.1 Pilots operating in mountainous areas must have adequate skills, experience and training for safe operations.

3.1.2 Pilots who will operate in mountainous areas must receive specialized mountainous area training consists of ground and flight training, the flight training can be done during line indoctrination.

3.1.3 Pilot as mentioned in paragraph 3.1.2 must have completed aircraft type or make and model training before obtaining mountainous area training.

3.1.4 If accepted by the director, mountainous areas training can be conducted in the flight training device as long as it represents the suitability of the type of aircraft being operated. However, this flight time does not count towards the pilot's total experience.

3.2 Training Program: Mountainous Area Specific Requirements

3.2.1 This section places the responsibility on the operator to establish a training program as required by CASR Part 121 and 135 that will ensure pilots are trained and competent to perform their assigned duties.

3.2.2 This section combines all the elements of subpart in the above CASRs into a pilot training program that is unique to the particular operation. This is a mandatory requirement for the operator and should be used to combine the requirements from throughout the sections as much as practicable.

3.2.3 This training program is used as an additional guidance for operators to carry out operation in mountainous after the operator accomplish the operation manual and training program that approved by DGCA.

3.2.4 The Certificate Holder should provide the guideline operating procedure and mountainous area training for SIC and/or PIC that he/she operate in mountainous area category.

3.2.5 Mountainous area training should include:

a. the processes required to successfully operate in mountainous area;
b. provides Flight Instructors with the necessary documentation and guidance for completion of the mountainous training syllabus; and
c. Standardization to ensures maintains a high, and transparent training in mountainous area..

3.2.6 The Mountainous Area Training aims include but not limited to:

a. Mountain flying theory.
b. Information on topography of mountainous area
c. Instruction on the operational concepts used in mountain flying environments.
d. Discussions on compliance with general certificate holder's standards and non-compliance issues
e. Emergency scenario discussions
f. Expectations of a Second in command and Pilot in command in mountainous area.

3.2.7 The specific training program for mountainous area operation

a. Initial Mountainous Area Training

1) The Certificate Holder shall prepare a training program for pilots who will be conducting flights in mountainous area.
2) The certificate holder must develop a syllabus that includes training in all the listed elements, that are applicable to the intended operations, that have an impact in preparing pilots to successfully complete the competency check before commencing operations.
3) initial mountainous area training is structured in a logical manner that progresses the crew member through the program.
4) The ground and flight training program contained within appendix II B to this AC provides an acceptable option for mountainous area training program.

b. Recurrent Training
1) The Certificate Holder must ensure all crew members are trained, current, and proficient for each aircraft.
2) The recurrent training would normally be generated from such things as incidents, accidents, areas of weakness identified during routine competency or proficiency checks, random quality checks or any other indicator that could identify a training need.
3) Recurrent training required in this AC is a minimum of Ground Training that can be conducted in addition to the aircraft type recurrent training program.

c. Transition Training
1) The Certificate Holder must assess the need for transitional training and then provide appropriate transitional training when change occurs.
2) The change as mentioned above includes:
a) changing from one aircraft type or make and model to another;
b) new procedures or new equipment are introduced; and/or
c) PIC with mountainous flying experience from another certificate holder.
3) The Certificate Holder is responsible for ensuring that pilots can safely operate different aircraft type or make and model in the mountainous area category.

d. Upgrading Training Program
1) The DGCA recommend an aircraft to be flown by two pilot operations. DGCA Highly recommends for AB Initio Pilot had total flight hours in mountainous area of at least 800 hours in single engine land to be eligible to enter program of mountainous area category in chapter II.

2) Where a flight crewmember has been previously trained and certified to act as a second-in-command of an aircraft, no certificate holder shall assign that person to act as the pilot-in-command and that person shall not act as pilot-in-command of that aircraft unless that person has completed the initial technical ground and flight training as required by CASR 121 or 135.

e. Mountainous Area Recency Experience
1) No person may act as PIC of mountainous area category 3 and 4, unless within the preceding 90 days, he has made three

take-offs and three landings in appropriate mountainous area category

2) If the conditions in the above paragraph are not met, the PIC must operate the aircraft in the appropriate mountainous area category supervised and released by instructor.

f. Flight Instructor Qualifications

The Certificate Holder must ensure that they have Instructor for mountainous area. The following are additional requirements beyond those specified in CASR Part 121 or 135 as a Flight Instructor operating in mountainous areas:

1) Any person acting as a flight instructor aeroplane category in the flight crew mountainous flying training program must have:
   a) at least 700 hours flying experience as PIC in mountainous area;
   b) minimum 200 hours total flight time as PIC in specific Make and Model;
   c) qualified as supervisor pilot and have had minimum 50 hours total flight time as supervisor pilot on appropriate mountainous area category; and
   d) demonstrated competence to a company check pilot on appropriate mountain area category an appropriately qualified flight examiner and on successful completion have had their logbook endorsed.
2) Any person acting as a flight instructor helicopter in the flight crew mountainous flying training program must have:
   a) minimum 500 hours total flight time as PIC;
   b) at least 50 hours flying experience as PIC appropriate type or make and model in mountainous area; and
   c) demonstrated competence to a company check pilot and on successful completion have had their logbook endorsed.

g. Check Pilot Qualifications

Chek Pilot must meet the appropriate requirements as mentioned in:

1) Staff Instruction 8900-3.11 Check Pilot, Instructor, And Supervisor Program; and
2) qualifications in point f. 1) for aeroplane; or
3) qualifications in point f. 2) for helicopter.

3.3 Training Records

3.3.1 The Certificate Holder must maintain accurate records of training for crew members.

3.3.2 Training records mentioned in point 3.3.1 includes the training details of each pilot from commencement of such training, demonstrating that each appropriate element of training program has been completed.

3.3.3 These records as mentioned in point 3.3.1 should be held along with the pilot's operational competency, and route assessment in the certificate holder's training files.

APPENDIX A - TABLE OF DETERMINING MOUNTAINOUS AREA CATEGORY

No	Parameter	Criteria 1	Criteria 2	Criteria 3	Criteria 4
		(Point)	*(Point)*	*(Point)*	*(Point)*
1	Elevation	≤2000 ft	2001-4000 ft	4001-6000 ft	≥6001 ft
		(1)	*(2)*	*(3)*	*(4)*
2	Runway length	≥1000 m	751-999 m	501-750 m	≤500 m
		(1)	*(2)*	*(3)*	*(4)*
3	Runway Width	≥21 m	16-20 m	11-15 m	≤10 m
		(1)	*(2)*	*(3)*	*(4)*
4	Available Runway (Entry/ Departure Point)	Multi Entry/ Departure	Multi Entry/ Departure (curved)	Single Entry/ Departure	Single Entry/Departure (curved)
		(1)	*(2)*	*(3)*	*(4)*
5	Runway Surface	Asphalt/ Paved	Hard Grass/ Gravel	Grass	Clay
		(1)	*(2)*	*(3)*	*(4)*
6	Number Runway Slope (Quantity longitudinal slope)	1 Slope	2 Slope	3 Slope	≥4 Slope
		(1)	*(2)*	*(3)*	*(4)*
7	Runway Slope (Longitudinal)	≤2%	3-14%	15-19 %	≥20 %
		(1)	*(2)*	*(3)*	*(4)*
8	Air Traffic Services	Aerodrome Control Tower (TWR)	Aerodrome Flight Information Services (AFIS)	Aeronautical Station	Local Person or NIL
		(1)	*(2)*	*(3)*	*(4)*
9	Weather Information Services	Available by service provider (BMKG)	Available by Automatic Weather Observation System (AWOS)	Available by representative certificate holder	Available by Local Person
		(1)	*(2)*	*(3)*	*(4)*
10	Establish Stabilized Approach (Key Point)	1000 ft AGL	500-999 ft AGL	300-499 ft AGL	<300 ft AGL
		(1)	*(2)*	*(3)*	*(4)*
Total Point					**40**

Tabel A.1 – Parameter of Determining Mountainous Category for Aeroplane

1) Mountainous Area Category 1: have an index percentage of 25-40%.
2) Mountainous Area Category 1: have an index percentage of 41-60%.
3) Mountainous Area Category 1: have an index percentage of 61-80%.
4) Mountainous Area Category 1: have an index percentage of 81-100%.

To calculate index percentage, the formula is: $\frac{\textit{(Result Point) x 100}}{\textit{Total Point}}$

Example:

No	Parameter	XXX Aerodrome	Result	YYY Airstrip	Result
1	Elevation	6950 ft	4	5370 ft	4
2	Runway length	835 m	2	445 m	3
3	Runway Width	17 m	2	21 m	3
4	Available Runway (Entry/ Departure Point)	Multi entry / departure (curved)	2	Single entry / departure (curved)	4
5	Runway Surface	asphalt	1	clay	4
6	Number Runway Slope (quantity longitudinal slope)	1 slope	1	4 slopes	4
7	Runway Slope (Longitudinal)*	1%	1	17%	3
8	Air Traffic Services	Local Person	4	Local Person	4
9	Weather Information Services	Available by Local Person	4	Available by Local Person	4
10	Establish Stabilized Approach (Key Point)	500 ft AGL	2	500 ft AGL	2
Total Point			21	23	35
Index Percentage Formula			(23) x 100 / 40 = 57,5 %		(35) x 100 / 40 = 87,5 %
Aerodrome Mountainous Category			2		4

Tabel A.2 - Example of Determining Mountainous Area Category for Aeroplane

Note (*)

$$\text{Runway Slope (Longitudinal)} = \frac{(\text{Highest Runway Elevation} - \text{Lowest Runway Elevation}) \times 100}{\text{Runway Length}}$$

Example: YYY Airstrip

Highest Runway Elevation : 5370 Ft → 1636.8 m
Lowest Runway Elevation : 5120 Ft → 1560.6 m
Runway Length : 445 m

$$\text{Runway Slope (Longitudinal)} = \frac{(1636.8 - 1560.6) \times 100}{445}$$

$$= 17\ \%$$

APPENDIX B - TRAINING PROGRAM

A. Mountainous Area Training Program – Aeroplane

1. General
   a. Preamble/Philosophy
      1) The practical exercises listed reflect the application of the ground training principles.
      2) The flight course requirement and content are to be applied to the operator's local mountainous area of operations.
      3) The intention of maximizing opportunity for experiencing varied meteorological and flight conditions should be demonstrated.
      4) The operator may consider contracting out parts or all of the flying program where they either, or:
         1) Lack the appropriately qualified or experienced staff.
         2) Feel their staff to be better serviced by experiencing part or all the training in a more challenging region.
      5) Every opportunity should be taken within the limitations of the training instructors experience and skill to test the trainee's decision making. This should take the form of flying the chosen option e.g. saddle crossing, and then assessing and flying the alternative(s) to encourage experiencing the effectiveness or lack of effectiveness in their decisions. Until the variables are experienced the pilot lacks the resources to make the best decision in the circumstances that prevail.
      6) It should be noted that while during this training the trainee may be taken outside their comfort zone. Under no circumstances should the instructor exceed their own limitations.
      7) Emphasis should be placed on recognizing threats pertaining to the terrain and associated weather, including the appropriate mitigation strategies. Likewise developing strategies to trap errors and minimize potential for entry into an 'undesired aircraft state' should be emphasized.
      8) The flying program will in most cases place trainees in circumstances they have not previously experienced. It will also be a workload that tests their concentration and ability to operate at an optimum level. Instructors should therefore be aware of the workload they are placing the pilots under, and therefore timetable initial training with this in mind.
      9) The most dangerous position a pilot can experience in mountain flying is when they are forced to react and therefore rely on their skill to retrieve an otherwise hazardous circumstance.
      10) The appropriate approach is that through training and experience the pilot learns to understand and appreciate the significant factors to anticipate and as a result always have a pre-planned, calculated set of options or if necessary, escape.
      11) Initial training will involve the pilot responding reactively when experiencing the results of either their own decisions, good or bad, or the simulated experiences provided by the instructor. A measure of the trainees' progress will be the degree to which they begin anticipating and have pre-planned options available should their decision not be the best.

b. Visual reference awareness (Physiological effects)
Some or all the following physiological effects may be expected to affect many pilots operating helicopters at high attitudes and in mountainous country, particularly those with little experience in this type of flying:
1) It is often necessary to fly below the level to surrounding peaks, thus obscuring the true horizon, and cross reference to the flight instruments is essential to avoid using false data from the surrounding terrain, e.g., leveling the aircraft by reference to a mountain ridge. Under these conditions the assessment of ground slope is difficult, and the aircraft should be flown laterally level by reference to instruments;
2) There is a tendency for pilots to suffer from vertigo when there is no definite horizon, and whilst hovering at 5000 feet with a definite horizon may produce no adverse effects, an approach to a pinnacle with a sheer drop on all sides may lead to disorientation. Similarly, taking off from a peak, where the ground falls away sharply on all sides, may cause apprehension and, consequently, reduced pilot performance; and
3) The normal dangers associated with flying near the ground are magnified by the terrain, where the pilot may find the ground not only close beneath him, but almost all around him.

c. Steeper *than Normal Bank*
The escape route when flying along a valley is normally to perform a 180° turn. Therefore, if continued flight along the valley is deemed inappropriate, e.g., due to low clouds, DVE or obstacles, an early decision to turn back is essential to ensure a successful turn. Pilot must be able to make a steeper than normal turn while maintaining safe distance with nearest terrain in any given speed.

2. Mountainous Area – Ground Training

a. Runway Analysis
1) Runway Length;
2) Runway Width;
3) Runway Surface;
4) Longitudinal Runway Slope;
5) Visual Marking Aids; and
6) Windsock.

b. Terrain Awareness Warning System (TAWS) (refer to AC 120-CSEA 001 and AC 120-04)
1) Theory of Operation: and
2) Operating Procedure

c. Consider survival kits, their use and contents relative to basic principles of survival and to the area of operations including:
1) Location;
2) Water;
3) Food;
4) Shelter;
5) Will to survive; and
6) Survival principles after unplanned landing, including basic first aid principles and skills.

d. Use of survival equipment:
   1) Location
      Have items that will facilitate being found, that enhance your visibility compared to the surroundings i.e.:
      a) bright ground sheet / tent fly / clothing;
      b) candy's crystals, food coloring;
      c) flares;
      d) mirrors / reflection items;
      e) torch;
      f) ability to ignite fuel / oil as smoke producer;
      g) candle;
      h) fire axe to break pattern of vegetation for searchers;
      i) lightweight camp shovel (snow ops); and
      j) whistle.

   2) Water
      a) Survival kit container as receptacle; and
      b) Ability to heat and provide warm drink.

   3) Food
      Basic dry freeze type food and means of providing warm food more from principle of preventing hypothermia than satiating hunger.

   4) Shelter
      Items that will facilitate use of resources available to shelter from the elements including parts of aircraft:
      a) Ground sheet / tent fly;
      b) survival blankets;
      c) duct tape; and
      d) light rope / string.

   5) Will to survive.
      a) Awareness that if each survivor retains the will to survive their chances are greater regardless of the availability of the other principles. This alone will make the most difference: and
      b) Have available Mountain Survival guidance material.

e. Flight following/ELT.
   1) Options for flight following in a mountainous environment; and
   2) Limitations and uses of ELT in a mountainous environment

f. Human Factor
   1) Workload; and
   2) Hypoxia

g. Situational Awareness
   1) Threats;
   2) Space;
   3) Inertia;
   4) Drift;
   5) altitude, including pressure and density altitude;
   6) gaining or losing height;
   7) turning radius and effects of speed, configurations, wind, turbulence, weight, visibility;
   8) weather patterns;

9) sun/shadow;
10) scale – GA aircraft is but a dot on the landscape;
11) merging terrain;
12) clear air effect;
13) legal requirements;
14) recognition of height above terrain;
15) appreciation of the need for anticipation versus reaction;
16) moral responsibilities – consideration of people & stock;
17) appropriate clothing & footwear;
18) passenger safety & comfort;
19) potential landing options;
20) distances for position reports;
21) traffic;
22) illusions, especially terrain gradient;
23) fuel remaining;
24) daylight remaining;
25) potential for stalling in the turn;
26) effect of poor visibility configuration on fuel management;
27) potential dehydration effects; and
28) white water content in rivers as indicator of valley gradient.

h. Difficult Conditions
1) cloud, showers, white out, bright out - effects on visibility, disorientation, illusion, workload;
2) merging terrain – foreground with distant;
3) dirty windscreen versus clean;
4) precipitation on screen affecting judgement;
5) gradient of snow-covered areas, depth perception;
6) sun/shadow effects; and
7) effects of difficult conditions on aircraft management including:
a) distractions;
b) fuel;
c) icing;
d) visual reference;
e) attitude control;
f) altitude / hypoxia;
g) aviate, navigate, communicate;
h) below VHF radio coverage levels;
i) SARTIME management;
j) Orientation;
k) decision making, including pilot attitudes;
l) temperature extremes, temperature factors;
m) turbulence;
n) air movements including significant up or down flow; and
o) wires and obstacles e.g., wind farms.

i. Preflight
1) Flight Planning
The most important consideration when planning flights in tropical mountainous terrain is to ensure that the proposed climb/cruise/descent profile is matched to aircraft performance capabilities, given the known weather situation. The single most effective way of resolving this issue when airborne is to have extra fuel available to maneuver around weather or terrain or turn back.

2) Dispatch/Flight Release

Prior to dispatch the following information should be made available to the pilots; as without it, they will not be properly informed about all the risks associated with their intended operation:

a) Airport/aerodrome facilities including destination and alternates;
b) Navigation and communications facilities and procedures;
c) NOTAMs and other operational information;
d) Terrain and obstructions;
e) Weather information;
f) Loading information including dangerous goods;
g) Airworthiness;
h) Crew qualifications, flight time limitations and rest requirements; and
i) Medical fitness – physiological and psychological.

3) Supervision

Although limitations in communications facilities and operational support in tropical mountainous terrain create a situation where crew members operate relatively autonomously, supervision of their activities is an essential element of operational control and risk mitigation. This can be achieved, in part, through pre-flight briefing, as well as post flight debriefing, data analysis, reporting and ad-hoc or scheduled proficiency checks.

4) Preflight Check

The following key issues should be addressed during the preflight inspection and checks:

a) Loading – pay particular attention to ensure that only the manifested cargo has been loaded.
b) Fuel – check that the correct type and amount has been loaded.
c) Pay attention to where people are standing to ensure they are clear of propellers and subsequent prop wash during the application of power on initial taxi as well as during take-off.

5) Briefing

Preflight briefing should include the following elements:

a) Considerations – identify and assess threats to a safe departure, which may include:
   (1) Terrain and obstructions;
   (2) Adverse weather;
   (3) Airport conditions;
   (4) NOTAMs;
   (5) Aircraft maintenance status;
   (6) Company procedures; and
   (7) ATC and other ground support threats.
b) Normal operations:
   (1) ATC clearance or tracking information;
   (2) Ground maneuverings—power and braking requirements;
   (3) Runway characteristics--orientation, elevation, slope, width, surface,
   (4) obstructions, expected illusions;
   (5) Performance data—flap settings, power settings, take-off speeds and other relevant items;
   (6) Departure plan, including terrain; and
   (7) Navigation and altimetry.

c) Contingency planning:
(1) Rejected take-off considerations including abort point;
(2) Engine failure after take-off, including escape route; and
(3) Fuel considerations.

j. Take off
1) Density altitude;
2) Aircraft Performance;
3) Speed;
4) Control;
5) Rotate;
6) Runway Slope and surrounding terrain;
7) Path; and
8) Safe Altitude.

k. Enroute (Climb, Cruise and Descend)
1) Horizon
Knowledge
a) define horizon;
b) identification of real or imaginary horizon;
c) superimposing a usable horizon on any variable background ie. visualizing where real horizon sits as if terrain or obstacles were transparent;
d) illusions associated with inaccurate horizon definition; and
e) hazard potential associated with these illusions and poor horizon definition.

2) Wind Awareness
a) forecast conditions including synoptic;
b) 'Fluid-flow' concept of air between, over, and around terrain;
c) significance of direction relative to terrain;
d) wind patterns less than 15kts;
e) wind patterns greater than 15kts;
f) local patterns and effects;
g) upper winds compared to lower winds i.e. comparison of wind in valley with wind at altitude;
h) indication of wind velocity at altitude i.e., snow, drift, lift/sink patterns, VSI indications, wave, cloud movement;
i) lift, sink, rotor, wave, turbulence, gusts;
j) cloud types as indicators of potential flying conditions; and
k) indicators of lower-level wind, for example:
(1) tussocks;
(2) water ripples / lanes on stationary water and wind shadows on water;
(3) poplars;
(4) willows;
(5) crop;
(6) smoke / dust;
(7) drift, and drift indicators;
(8) G/S versus A/S;
(9) cloud shadows as indicator of upper wind and its influence on lower-level wind ;
(10) applicability of Va and Vno katabatic / anabatic winds in a valley; and
(11) choice of flying low versus flying high.

3) Contour/constant altitude flying.
   a) horizon identification / appropriate nose attitude;
   b) awareness of space and position;
   c) appreciation of inertia;
   d) appreciation of available escape options;
   e) right of way;
   f) lookout - high wing versus low wing, left versus right, blind corners, color schemes;
   g) recognizing lift / sink;
   h) Groundspeed versus Airspeed relationship; and
   i) flying constant altitude to recognize any changing gradient of valley floor.

4) Valley Turns
   Knowledge
   a) use of full width anticipating need for 180° turn;
   b) minimize angle of bank to minimize Vs increase;
   c) lower airspeed to reduce turn radius;
   d) use of poor visibility configuration;
   e) reduced flap to maintain performance i.e., 10° flap as opposed to 20°;
   f) need for power to combat drag;
   g) check turns before valley narrows;
   h) large valley – position anywhere right of center;
   i) confined valley – any need to move over to make turn means one is not correctly positioned (Human Factors 5 – 7.5 seconds reaction time);
   j) effect of sudden shadow / sun effects;
   k) clear screen;
   l) steep gliding turns and effects of changing horizon, narrowing valley;
   m) roll out position – never in middle of valley;
   n) always positioned to anticipate not react;
   o) if on wrong side...easy decision to change sides, if in middle potential for indecision and lack of space;
   p) if airspeed decays with full power lower nose to convert height to airspeed; and
   q) emphasis “caution flying up a valley haven't previously flown down" philosophy.

5) Saddle Crossings
   Knowledge
   a) concept of saddle, pass, spur, ridge;
   b) compromise of many variables;
   c) anticipation/assessment of lift and sink;
   d) VSI indications;
   e) appreciation of wind direction relative to terrain;
   f) approach 45° with escape route downhill, downstream;
   g) desirable approach left to right;
   h) escape option ‘obstacle free’ to use minimum bank angle;
   i) knife edge saddle versus prolonged commitment area saddle;
   j) level attitude - maintain airspeed regarding Va;
   k) not in climb attitude - airspeed and lookout are compromised;
   l) not in descent – airspeed and control limited by Va;

m) anticipate turbulence;
n) use of parallax to assess sink and safe height to cross i.e. more terrain visible behind as approaching saddle therefore higher than saddle; less terrain visible therefore lower and turn away early; including technique for assessment of 500' clearance; and
o) decision making including:
(1) planning of initial flight path to a mountain range or ridge;
(2) options;
(3) approaches to the saddle/pass/ridge/spur;
(4) commitment point;
(5) escape routes;
(6) position and options after crossing;
(7) position reports for traffic information; and
(8) proximity to cloud including potential for lift.

6) Route Finding
Knowledge
a) water only flows downhill;
b) identify flow and follow to larger river, lake, sea, roads, town etc;
c) awareness of valley alignment relative to compass;
d) awareness of sun position;
e) map folding: hold in one hand thumb on moving position whilst holding control– column/stick to facilitate peripheral vision; and
f) effective pre-flight planning.

l. Approach and Landing
1) Approach Briefing;
2) Key Point;
3) Decision to Continue or Go Around;
4) Stabilized Approach;
5) Nose Attitude;
6) Rate of Descend;
7) Runway slope and surrounding terrain;
8) Touchdown Point;
9) Centerline; and
10) Ground Maneuvering.

m. Post Flight
1) Debriefing; and
2) Reporting.

n. Cautions and Emergencies
Knowledge
1) Performance comparisons including:
a) utility category versus MTOW;
b) effects on turn radius;
c) rates of climb;
d) handling of sink; and
e) altitude/power considerations.
2) New aircraft rating differences including:
a) often faster/heavier;
b) greater turn radius required;
c) more anticipation needed; and
d) higher workload (e.g., extra controls and instruments).

3) CFIT accidents – most occur by:
   a) loss of visual reference (horizon);
   b) stall in turn;
   c) attempting to out-climb terrain;
   d) poor decision making, resulting in reaction instead of anticipation; and
   e) lack of decision making resulting in inaction.
4) Forced Landing and Precautionary Landing considerations including:
   a) limited options;
   b) priority ~ make a plan; confined spaces may affect the ideal;
   c) tendency to crowd landing area;
   d) consider climatic/seasonal wind effects for calculated gamble on wind i.e. Anabatic versus Katabatic;
   e) consider valley gradient;
   f) awareness of mind sets and illusions;
   g) consider early Mayday or Pan call;
   h) habitation in remote area; look for airstrip/fertilizer bins;
   i) consider elevation;
   j) use of lift conditions to glide down valley closer to potentially more suitable option and habitation;
   k) riverbeds - consider landing downstream; surface may be smoother; and
   l) beaches:
      (1) stoney patches usually indicate firm sand;
      (2) steep indicates soft sand;
      (3) flat, damp sand usually means firm sand;
      (4) debris, especially following period of poor weather;
      (5) no lagoon area above high tide line;
      (6) x/w potential;
      (7) sand type; quartz, iron, coal etc; and
      (8) always a gamble.

3. Mountainous Area – Flight Training

a. Pre-flight
Exhibits knowledge of the elements related to preflight inspection, include which items must be inspected, the reasons for checking each item, and how to detect possible defects. Inspects the airplane with reference to an appropriate checklist. Verifies that the airplane is in condition for safe flight.

b. Take-off and Climb
Exhibits knowledge of the elements related to normal, cross wind, short-field takeoff and maximum performance climb.
1) Positions the flight controls for the existing wind conditions, sets flaps as recommended.
2) Clears the area; taxies into takeoff position utilizing maximum available takeoff area and aligns the airplane on the runway center/takeoff path.
3) Selects an appropriate take-off path for the existing conditions (ASES).
4) Applies brakes (if appropriate) while advancing the throttle smoothly to takeof power.

5) After clearing the obstacle, establishes the pitch attitude, accelerates and maintains, during the climb.

c. Enroute (Climb, Cruise and Descend)
   1) Horizon
      a) Exercise:
      Maintaining a constant height and/or contour flying in areas of varying terrain (e.g., slope, surface covered by vegetation /snow) where defined horizon is lacking.
      b) Aim:
      To consistently identify a usable imaginary horizon any, superimpose on any background.
      c) Technique:
         (1) Fly at a constant altitude (terrain contour line) maintaining a constant wing tip distance from the terrain;
         (2) Develop co-ordination of elevator, aileron, rudder, and power using outside reference confirming with instruments;
         (3) Fly constant height above a descending valley floor to appreciate gradient and shifting horizon perspective; and
         (4) Fly at a constant altitude above a rising valley (or terrain) to appreciate gradient and horizon effects.
      d) Principles to experience:
         (1) consistent nose attitude;
         (2) awareness of space and position;
         (3) appreciation of inertia;
         (4) maintenance of escape options;
         (5) legal position / right of way;
         (6) lookout technique with blind corners;
         (7) minor lift / sink where attitude is difficult to maintain;
         (8) maintenance of attitude versus altitude;
         (9) G/S versus A/S relationship;
         (10) anticipation versus reaction;
         (11) illusions created by varying slope and or gradient of terrain;
         (12) effect of ballooning out in turns and restricting options in confined space;
         (13) use of throttle in lift / sink;
         (14) wind conditions < 15 knots compared to > 15 knots;
         (15) comparison of upper winds with valley winds;
         (16) assessing wind using lift, sink, drift, tussocks, water, trees etc;
         (17) applicability of Va (maximum maneuvering speed);
         (18) katabatic and anabatic conditions;
         (19) cloud patterns and resultant cues to turbulence, lift, sink, rotor, wave;
         (20) terrain texture differences i.e.. bush, forest, tussock, rock, sand, snow etc;
         (21) precipitation on screen affecting judgment; and
         (22) awareness that by the time an instrument shows a change of attitude or altitude such change has been long evident by outside visual cues. VSI indications to confirm.

      Note: Reasonable accuracy of superimposing an imaginary horizon on variable terrain may require approximately 5 hours disciplined flight experience.

e) Completion Standards:
   (1) in calm conditions with ill-defined horizon:
      (a) 1/4 ball;
      (b) +/- 50 feet;
      (c) smooth, coordinated control inputs; and
      (d) clean windscreen.
   (2) in turbulent conditions i.e., where attitude not altitude is priority:
      (a) chooses the most comfortable flight path;
      (b) maintains the most consistent attitude;
      (c) consistently verbalizes options available;
      (d) maximizes comfort by co-ord elevator, aileron, rudder and throttle while respecting Va;
      (e) anticipates such conditions by securing loose items before flight; and
      (f) clean windscreen.

2) Valley Turns

a) Exercise (can be use simulator or FTD):
Using valleys with as many variables that are available practice mainly level, but also climbing and descending turns.

b) Aims:
   (1) To appreciate the safe level turn radius using different configurations in valleys with an ill-defined horizon;
   (2) To make check turns to ensure operating space is available before valley narrows to the extent escape is compromised;
   (3) To learn appropriate positioning in both large and confined valleys;
   (4) To appreciate effects of a changing horizon perspective and reducing radius in descending turns in confined space; and
   (5) To appreciate lack of performance in climbing turns with changing horizon in confined space and the need to identify best flight path to maximize space and lift to improve performance.

c) Technique:
   (1) Practice level 180° turns using full width of valley in cruise configuration;
   (2) Practice level 180° turns using poor visibility configuration;
   (3) In narrowing valley make check turns to evaluate turn radius and exit options with appropriate escape space available;
   (4) Compare position for flying a large valley with that of a confined valley ie. anywhere right of center in large valley;
   (5) Make steep descending turns into a valley ensuring correct anticipated position for roll out;
   (6) Make efficient climbing turns from the valley to climb out of valley system or to position for saddle crossing;
   (7) From beside a vertical face (if available) experience the aircraft turning radius through 180° in both cruise and poor visibility configurations.

d) Principles to experience:
   (1) Establishing and maintaining level turns with ill-defined horizon in as many combinations of the following variables available:
      (a) steep valley walls - up to vertical;
      (b) varying slopes in valley walls;
      (c) varying terrain effects as background for ill-defined horizon e.g., Bush, forest, tussock, rock, snow etc;
      (d) varying valley floor gradient;
      (e) deep valleys, shallow valleys;
      (f) wind with rugged terrain compared to smoothly contoured terrain;
      (g) calm conditions, windy conditions, turbulence;
      (h) clear, cloudy, and precipitation conditions;
      (i) bright sun glare behind ridges and suddenly exposed;
      (j) deep shadow effects;
      (k) white-out horizons.

   (2) If needed to move over in a valley in order to make turn, then weren't correctly positioned. Ref. Human Factors 5-7.5 seconds to respond.
   (3) Planned entry, sufficient power to control speed, minimum Angle of Bank (AOB) to minimize stall speed, use the space available.
   (4) High wing - lean forward to anticipate horizon.
   (5) Anticipation of roll out position to not compromise options available.
   (6) Steep gliding turns:
      (a) changing horizon perspective;
      (b) narrowing valley;
      (c) roll out position - never in the middle.
   (7) If airspeed decays with full power lower nose to convert height to A/S
   (8) Awareness of higher performance aircraft effects:
      (a) less time;
      (b) inertia;
      (c) greater turn radius;
      (d) workload.
   (9) Difference of conditions in valley lower regions compared to above valley ie. at altitude greater wind can often be experienced with more severe turbulence. Recognizing the ‘shear level’.
   (10) Awareness of greater power requirement at MTOW especially in poor visibility configuration

e) Completion Standards:
   (1) Calm conditions:
      (a) +/- 50 feet;
      (b) 1/4 ball;
      (c) smooth, co-ord control inputs;
      (d) roll into appropriate AOB for valley size to use space available with no pressure;
      (e) correct start position - max space available;
      (f) correct finish position - options available;

(g) power use appropriate to maintain safe speed but not excess speed.

(2) Turbulent conditions:
(a) maximizes comfort;
(b) maintains speed not above Va but with margin above Vs;
(c) ensures margins for safe turning radius and escape options;
(d) controls attitude without disrespecting altitude;
(e) anticipates circumstances of unsafe turning radius;
(f) keeps escape options available.

3) Saddle Crossings

a) Exercise:
To consider variables associated with any saddle/ pass/ ridge/ spur and assess best compromise options for safe crossing.

b) Aim:
To recognize and assess options for the best approach, crossing and positioning after crossing.

c) Technique:
(1) Assess lift/sink sides of saddle;
(2) Approach 45° or less to provide escape downhill, downstream with minimum AOB required;
(3) Desirably fly left to right for best visibility;
(4) If obstacle obstructed or in serious sink, then right to left;
(5) Choose "knife edge" saddle versus an area of prolonged commitment;
(6) Approach level Va under control;
(a) not in a climb – no A/S back up and poor visibility;
(b) not in a descent – limited Va control; anticipate turbulence.
(7) Use PARALLAX to assess sink and height in relation to pass.
(a) should see more terrain behind as approaching – therefore higher;
(b) less terrain - therefore lower.

d) Principles to experience:
(1) benefits of early planning of approach;
(2) left to right versus right to left;
(3) best option often a compromise of several variables;
(4) best approach combined with best escape, both before and after crossing;
(5) choice of saddle offering minimum commitment time crossing ie. "knife edge" preferred with face of the saddle as flat as possible compared to concave face which requires greater angle of bank during turn away;
(6) identify a commitment point up to which escape away is available;
(7) use of parallax to recognize 500' clearance to cross, including height recognition/calculation technique;
(8) retaining height after crossing in case return is necessary;

(9) both calm conditions and conditions of lift and sink where good decision making is required and reliance on aircraft performance is not available;
(10) wind direction relative to terrain;
(11) anticipating terrain with potential for viable saddle option when saddle not initially visible;
(12) where decision making is lacking, providing instructors experience, judgement and skill is not compromised, ensure pilot under training is put into reactive scenarios to improve anticipation and decisions e.g. simulating "In significant sink, turn away now!" i.e.. Take pilot to their commitment point and then test their escape option;
(13) making appropriate position calls for other traffic.

e) Completion Standards:
Chooses the best approach and escape. Accurately assesses parallax and height relative to saddle. Maintains speed and attitude control throughout maneuver with smooth coordinated control inputs. Chooses best positioning after crossing to maintain options of escape or return.

4) Route Finding

a) Exercise:
Using real or simulated circumstances of disorientation to develop strategies for reorienting in place and time awareness.
b) Aims:
(1) To recognize and experience disorientation;
(2) To identify cues and steps for re-orienting;
(3) To keep evaluating with an open mind and not continue to convince oneself of a false scenario.
c) Technique:
At some point during training exercises, where orientation in place and time awareness may be a challenge for the pilot under training, simulate the scenario to develop strategies for re-orientation.
d) Principles to experience:
(1) water only flows downhill - identify the flow direction;
(2) small streams lead to larger flows, lakes or ocean which ultimately means roads, power lines, towns etc;
(3) much white water means steep gradient to valley floor;
(4) valley alignment (compass rose);
(5) sun position going in, versus going out, assuming time covered is not significant;
(6) map folding and holding to maximize peripheral vision and therefore LOOKOUT while referring to map;
(7) high level – use peaks;
(8) low level – use valleys.

e) Completion Standards:
Maintains situational awareness to a degree that provides training instructor with confidence. Any disorientation is momentary and has little or no effect on flight path and flight safety.

d. Approach and Landing
   1) Approach Briefing;
   2) Key Point;
   3) Decision to Continue or Go Around;
   4) Stabilized Approach;
   5) Nose Attitude;
   6) Rate of Descend;
   7) Runway slope and surrounding terrain;
   8) Touchdown Point;
   9) Centerline;
   10) Ground Maneuvering.

e. Post Flight
   1) Debriefing;
   2) Reporting.

f. Cautions and Emergencies
   1) Exercise:
      To experience simulated forced landings and precautionary landings in mountainous areas.

   2) Aim:
      To practice emergencies where options may be limited, where terrain and or weather are intrusive to the ideal.

   3) Technique:
      In real or simulated circumstances provide as much variety from the ideal simulated forced landing or precautionary landing as local resources permit, where the selected landing site means descent below the ridge line is required i.e. real horizon reference is unavailable.

   4) Principles to experience:
      a) Lack of real horizon;
      b) Variables:
         - height available;
         - distance from options/gliding distance;
         - option types e.g., strips, paddocks, clearings, beaches, sand bars, roads, etc;
         - conditions of wind, turbulence, and precipitation;
         - conditions of load and performance;
         - conditions of visibility including light/sun/shadow effects.
      c) priority - make plan - confined spaces may affect;
      d) climatic / seasonal wind effects e.g. for a calculated gamble use anabatic / katabatic;
      e) use of lift conditions/avoidance of sink for glide range considerations;
      f) valley gradient;
      g) illusions and mind sets;
      h) need for early mayday - what frequency, consider 121.5, ELT/tracking system activation;
      i) habitation in remote areas - look for airstrip/fertilizer bins;
      j) consider elevation;
      k) consider wires;

l) contents of survival kit and uses relative to principles of survival.

5) Completion Standards:
   a) Can safely 'select, assess, plan and execute' for a real or simulated precautionary landing and forced landing onto a variety of the options within the area of company operations;
   b) Demonstrates threat and error management, sound decision making and situational awareness minimizing the risk of any emergency or of mismanagement of any emergency;
   c) Knows the contents and potential uses of the aircraft survival kit.

B. Specialist Applications in Mountainous Regions – Aeroplane

Particular flight operations by their nature have a specialist application to the mountain flying principles and techniques. Such operations would be reflected in the training program and would include, but be not limited to the following for:

1. Amphibian/Float Aircraft
   Taxiing, sailing, docking, beaching, mooring, step taxi and turns, glassy / rough water take offs and landings, fresh / salt water, normal take off and landings, cross wind take off and landings, assessment of unfamiliar landing areas, operation in confined space, pressure/density altitude effects.

2. Airstrip
   a. Ground briefing:
      1) Strip owners name, contact details, permission;
      2) Obstructions:
         a) Wires;
         b) Trees;
         c) Buildings;
         d) Fences;
         e) stock and their behavior;
         f) terrain.
      3) wind and local effects;
      4) surface conditions including:
         a) seasonal variables;
         b) following adverse weather conditions;
         c) stock effects ie. frozen turds, rabbit holes, hollows from stock use;
         d) ruts.
      5) preferred landing and takeoff directions;
      6) length, width, best path;
      7) approx. MTOW for safe takeoff;
      8) EFATO options;
      9) availability of ATS communications and nearest ground contact;
      10) elevation / density altitude;
      11) awareness of performance i.e., 2 POB versus MTOW;
      12) slope versus wind;
      13) one-way options.

b. In Flight Procedures – positioning aircraft for assessing:
   1) Wind;
   2) surface conditions;
   3) vector in use;
   4) approach and overshoot variables;
   5) obstacle clearance;
   6) safe circuit height and direction;
   7) use of flap on approach / take off / turbulence;
   8) approach speeds / profiles;
   9) touchdown precision;
   10) decision points:
      a) missed approach;
      b) overshoot;
      c) abort/commit for takeoff and landing.
   11) use of braking;
   12) ground handling/taxiing/turning;
   13) illusions;
   14) slope verses wind.

C. Mountainous Area Training Program– Helicopter

1. General
   Helicopter basic mountain flying training completed as part of CPL(H) training is only intended to introduce the pilot to the basic techniques and principles of operating a helicopter through or within mountainous area and is normally only conducted in benign weather conditions. Therefore, it is not necessarily sufficient to prepare a helicopter pilot to conduct all commercial operations in a mountainous environment.
   Mountain operations cover a wide scope of tasks and environments so training may be conducted in stages and divided into "core" advanced skills, which all commercial helicopter pilots flying in a mountainous environment should possess; and "specialist" skills only required for specific situations, operations or environments.

2. Mountainous Area - Ground Training
   A certificate holder's approved theory course should cover the following core topics:
   a. Aircraft Handling
      1) Horizon Awareness;
      2) Eight And Altitude Considerations.

   b. Weather Patterns And Wind Awareness
      1) Mountain Weather;
      2) Wind Awareness.

   c. Transit Flying
      1) Pre-Flight Planning;
      2) Flying Techniques.

   d. Approach And Landing To Unprepared Site
      1) Reconnaissance;
      2) Power Checks;
      3) Wind Direction & Demarcation Line;
      4) Approach Direction And Angle;
      5) Committal Point And Escape Route;

6) Aiming Point/Hover Or Touchdown Point;
7) Typical Terrain Features;
8) Main/Tail Rotor Awareness.

e. Take Off From Unprepared Site
1) Power Checks;
2) Take-Off And Climb-Out.

f. Emergencies
1) Controlled Flight Into Terrain;
2) Forced/Precautionary Landings.

g. Human Factors
1) Situational Awareness;
2) Aircraft Management;
3) Airmanship;
4) Aviation Medicine;
5) SAR Aspects.

3. Mountainous Area - Flight Training

a. Visual reference awareness (Physiological effects)
Some or all of the following physiological effects may be expected to affect the majority of pilots operating helicopters at high attitudes and in mountainous country, particularly those with little experience in this type of flying:
1) It is often necessary to fly below the level to surrounding peaks, thus obscuring the true horizon, and cross reference to the flight instruments is essential to avoid using false data from the surrounding terrain; e.g. leveling the aircraft by reference to a mountain ridge. Under these conditions the assessment of ground slope is difficult, and the aircraft should be flown laterally level by reference to instruments.
2) There is a tendency for pilots to suffer from vertigo when there is no definite horizon, and whilst hovering at 5000 feet with a definite horizon may produce no adverse effects, an approach to a pinnacle with a sheer drop on all sides may lead to disorientation. Similarly, taking off from a peak, where the ground falls away sharply on all sides, may cause apprehension and, consequently, reduced pilot performance.
3) The normal dangers associated with flying near the ground are magnified by the terrain, where the pilot may find the ground not only close beneath him, but almost all around him.

b. Steeper than Normal Bank
The escape route when flying along a valley is normally to perform a 180° turn. Therefore, if continued flight along the valley is deemed inappropriate, e.g. due to low clouds, DVE or obstacles, an early decision to turn back is essential to ensure a successful turn. Pilot must be able to make a steeper than normal turn while maintaining safe distance with nearest terrain in any given speed.

c. Approach And Landing to Unprepared Site
Approach path:
The following factors will affect the choice of the approach path
1) The approach should be made as nearly into the wind as possible;

2) Position and strength of expected downdraughts;
3) Obstructions on the approach and the expected approach angle;
4) In the case of an abortive approach, the availability of an escape route short of the LZ and within 30 degrees of the approach, preferably on the side which permits the turn to be made with the torque;
5) The availability of a similar escape route over the LZ for overshoot.

No firm rules can be laid down since the conditions prevailing at the time are over-riding. However, a precision approach into wind onto a fairly well rounded feature, based on the factors outlined below should normally be possible in most wind conditions.

1) Airspeed

   A declarative flight attitude should be selected at the outset and the airspeed reduced so that zero ground speed is achieved at the point of touchdown.

2) Rate of Descent

   A slow rate of descent should be held so that the minimum collective lever check is required to arrest the descent. The reduction of airspeed on the approach, and thus transitional lift, requires the gradual application of power, but since the transition is gradual, yaw control can be applied with greater precision. Transition should not be hurried in case all the margin held in reserve against an overshoot is used and an uncontrolled landing results.

3) Angle of Approach

   The angle of approach to be used varies from approximately 4 degrees in still air conditions to a steep angle in turbulent conditions. Generally the shallow angle of approach is favored and ensures the minimum rate of descent. Where strong winds and sharp features are involved, the amount of turbulence and downdraughts in the lee of the feature may necessitate an angled or crosswind approach.

d. Take Off From Unprepared Site

Whilst most pilots operating at sea level would consider a take-off an easy task with half a kilometer or so of gently sloping marshy land or rock studded ground falling away in front of them, at altitude this could be an invitation to overload and disaster.

A stable low hover should always be established to check power requirements before committing the helicopter to take-off.

A very good habit to cultivate is to initially depart with a vertical climb so a return to IGE hover is possible should power be a limiting factor.

Often, increased wind effect can be obtained by moving well forward on the pad for take-off. If there is not enough power available to initiate a vertical climb - the aircraft is too heavy – so leave something behind for another trip.

e. Low Speed Maneuver

1) Exercise:

   Low speed maneuver and hovering at high altitude (above ~ 5,000ft).

2) Aims:
   a) To experience low speed maneuver and hovering at high altitude (above ~ 5,000ft);
   b) To familiar with the use of the performance charts and (as with the pressure altitude vs density altitude calculation) the use of these charts.

3) Principles to experience:
   a) Low atmospheric pressure, high temperature, and high humidity all result in decrease in air density and increase in density altitude;
   b) Control effectiveness reduces with increasing density altitude. This will become apparent with sluggishness in the control;
   c) As the air is less dense, rotor response will be slower. Cyclic movements will be larger and rotor disc response slower when operating at higher altitude;
   d) To achieve the total rotor thrust required for flight, collective pitch setting will increase with increasing density altitude. Ultimately less collective will be available to control descent, and autorotation performance is also degraded;
   e) Engines are generating less power and the rotor blades are creating less lift at higher density altitude;
   f) The tail rotor also requires an increase in pitch to counter torque and will be less efficient with an increase in density altitude.

4) Completion Standards:
   Maintains situational awareness to a degree that provides training instructor with confidence

f. Route Finding
   1) Exercise:
      Using simulated circumstances of disorientation to develope strategies for reorienting in place and time awareness.

   2) Aims:
      a) To recognize and experience disorientation;
      b) To identify cues and steps for re-orienting;
      c) To keep evaluating with an open mind and not continue to convince oneself of a false scenario.

   3) Technique:
      At some point during training exercises, where orientation in place and time awareness may be a challenge for the pilot under training, simulate the scenario to develop strategies for re-orientation.

   4) Principles to experience:
      a) Always have an escape route;
      b) Never enter a narrow valley without being certain that there is an escape route available;
      c) water only flows downhill - identify the flow direction;
      d) downstream leads to bigger rivers, lakes, roads and towns for assist in re orientation;
      e) Significant white water in a stream or river indicates a steep gradient;

f) valley alignment (compass rose);
g) sun position going in, versus going out, assuming time covered is not significant;
h) map folding and holding to maximize peripheral vision and therefore LOOKOUT while referring to map;
i) Recognize when make 1800 turn will be through sink, turbulence and tailwind.

5) Completion Standards:
Maintains situational awareness to a degree that provides training instructor with confidence

g. Emergencies

1) Exercise:
To experience simulated auto rotation, Lost of Tail Rotor Effectiveness and Settling with Power at High Altitude

2) Aim:
To practice emergencies where options may be limited, where terrain and or weather are intrusive to the ideal.

3) Technique:
In real or simulated circumstances provide as much variety from the ideal simulated emergency action as local resources permit, where the selected landing site means any open area available

4) Principles to experience:
a) Identifying Settling with power and LTE as early as possible;
b) The rotor rpm in autorotation is higher at higher density altitude. Therefore, more collective is required to control rpm in autorotation and less is available on touchdown;
c) Variables:
(1) height available;
(2) distance from options/gliding distance;
(3) option types eg. strips, paddocks, clearings, beaches, sand bars, roads, etc;
(4) conditions of wind, turbulence, and precipitation;
(5) conditions of load and performance;
(6) conditions of visibility including light/sun/shadow effects;
(7) priority - make plan - confined spaces may affect.
d) climatic / seasonal wind effects eg. for a calculated gamble use anabatic / katabatic;
e) illusions and mind sets;
f) need for early mayday - what frequency, consider 121.5, ELT/tracking system activation;
g) habitation in remote areas - look for airstrip/fertilizer bins;
h) consider elevation;
i) consider wires;
j) contents of survival kit and uses relative to principles of survival.

5) Completion Standards:
a) Can safely ‘select, assess, plan and execute’ for a real or simulated precautionary landing and forced landing onto a variety of the options within the area of company operations.

b) Demonstrates threat and error management, sound decision making and situational awareness minimizing the risk of any emergency or of mismanagement of any emergency.
c) Know the contents and potential uses of the aircraft survival kit.

D. Training for Specialist Applications in Mountainous Regions - Helicopter

A certificate holder's approved specialist training should cover the following topics as applicable for the operations outlined in the operator's manual.
Advanced Operations
1. High altitude considerations (above ~ 5,000ft);
2. Snow/ice conditions;
3. Applied (non-agricultural) operations.

E. Records
The following checklist or similar provides a guideline to the means of documenting the training program:
1. Core Competency Checklist;
2. Training Log;
3. Logbook Certification;
4. Specialist Applications Checklist.

APPENDIX C WIND CURFEW POLICY

Wind curfew airstrip is an airstrip that regularly experiences hazardous wind conditions. The Curfew listed is based on operational experience and will be revised necessary.

Restricted airstrip is an airstrip which occasionally experiences wind conditions that requires extra caution. Details for each airstrip are included in the "wind" section of each applicable airstrip chart. All new airstrips are considered Restricted for a minimum of one year in order to give sufficient time to collect wind data. No pilot should land at airstrip in question, or plan to depart for that airstrip if it is experiencing the restriction listed.

Wind Condition:

1. CALM, indicated by "dead" or slight movement of the wind sock
2. LIGHT BREEZE, Steady wind sock direction, but not exceeding 15-20 deg reflection from vertical position. NO STRONG GUST!
3. WIND, Wind sock blowing steady at more than 15-20 deg deflection from vertical position
4. GUST or TURBULENCE, usually indicated by quick, erratic movements whipping of the wind sock beyond 15-20 deg from vertical position

Operational restrictions for wind curfew airstrip:

1. Flight scheduling will be based on wind curfew
2. Landing will be permitted after curfew as follow:
   a. Pilot with less than 500 hours in mountainous area or less than 15 landings (in type) at the particular airstrip, may land only under calm condition after consulting the Chief Pilot, the Assistant Chief Pilot, and an Instructor Pilot current at that airstrip or the Program Manager.
   b. Pilot with more than 500 hours in mountainous area and more than 15 landing (in type) at that particular airstrip may land in calm conditions after consulting another pilot (preferably a pilot with current operational experience at that airstrip).
   c. In an emergency where winds exceed the above criteria, landings may be made only after approval by the Chief Pilot, assistant Chief Pilot, and Instructor Pilot current at that airstrip or the Program Manager.