



**CIVIL AVIATION AUTHORITY  
SRI LANKA**


# **MANUAL OF ALL WEATHER OPERATIONS**

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**(LOW VISIBILITY TAKEOFF, CATEGORY 11 and 111 OPERATIONS)**

ISSUED WITH THE APPROVAL OF THE DIRECTOR GENERAL OF CIVIL AVIATION AND CHIEF EXECUTIVE OFFICER  
CIVIL AVIATION AUTHORITY OF SRI LANKA


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# **MANUAL OF ALL WEATHER OPERATIONS**


**(LOW VISIBILITY TAKEOFF, CATEGORY 11 and 111 OPERATIONS)**

CONTROL NUMBER : **MASTER**

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## HISTORY OF REVISIONS

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01	Recent experience requirements for Low visibility Operations	December 2013
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## FOREWORD

ICAO Doc 9365 “Manual of all weather operations” requires additional criteria to be met prior to granting authorization to conduct Category 11 and 111 operations.

The intention of this manual is to provide instructions in respect of Maintenance and Operation of the aircraft in Category 11 and Category 111 weather conditions and for the conduct of low visibility take offs.

In addition this manual contains instructions in respect of certification of Aerodromes to be eligible to conduct Category 11 and Category 111 operations.

This manual assumes that the Operator (aircraft or aerodrome) is certified as a Category 1 operator prior to being evaluated as a Category 11 or Category 111 operator.

Therefore this manual confine only to additional requirements of Category 11 and Category 111 operations.

All Civil Aviation Authority, Sri Lanka personnel delegated with the responsibility of certifying Operators for Category 11 and Category 111 operations shall comply with all provisions in this manual during the certification process.


All Civil Aviation Authority, Sri Lanka personnel delegated with the responsibility of certifying Aerodrome operators for Category 11 and Category 111 operations shall comply with all provisions in this manual during the certification process.

Any interpretation regarding the contents of this manual by Director General of Civil Aviation, Sri Lanka shall be considered final.




H.M.C. Nimalsiri  
Director General of Civil Aviation and Chief Executive Officer  
Civil Aviation Authority  
Sri Lanka

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## ACRONYMS / ABBREVIATIONS

AC 120-28D	-	(FAA advisory circular) Criteria for approval of category 111 weather minima for takeoff, landing, and rollout
AC 120-29A	-	(FAA advisory circular) Criteria for approval of category 1 and category 11 weather minima for approach
AH	-	Alert Height
AFCS	-	Automatic Flight Control System
ALS	-	Automatic landing system
Cat 1	-	Category 1 precision instrument approach
Cat 11	-	Category 11 precision instrument approach
Cat 111	-	Category 111 precision instrument approach
CDFA	-	Continuous Descent Final Approach
CS- AWO	-	EASA document on certification specifications, including airworthiness codes and acceptable means of compliance, for all weather operations (« CS-AWO »)
DA / H	-	Decision Altitude / Height
EASA	-	European Aviation Safety Agency
ECAC	-	European Civil Aviation Conference
EVS	-	Enhanced Vision System
Ft	-	Feet
HUD	-	Head up display
HUDLS	-	Head up guidance landing system
ILS	-	Instrument landing system
LVP	-	Low visibility procedures
LVTO	-	Low visibility take off
M	-	Meters

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- RVR        -        Runway visual range
- SAP        -        Stabilised approach
- SMGCS    -        Surface movement and guidance and control system
- SVR        -        Slant visual range

## DEFINITIONS

*Throughout this manual, the use of the male gender should be understood to include male and female persons.*

### Aeroplane categories — All weather operations

➤ Classification of aeroplanes


The criteria taken into consideration for the classification of aeroplanes by categories is the indicated airspeed at threshold (VAT) which is equal to the stalling speed (VSO) multiplied by 1,3 or VS1G multiplied by 1.23 in the landing configuration at the maximum certificated landing mass. If both VSO and VS1G are available, the higher resulting VAT shall be used. The aeroplane categories corresponding to VAT values are in the Table below:

Aeroplane Category	VAT
A	Less than 91 kt
B	From 91 to 120 kt
C	From 121 to 140 kt
D	From 141 to 165 kt
E	From 166 to 210 kt

The landing configuration which is to be taken into consideration shall be defined by the operator or by the aeroplane manufacturer.

➤ Permanent change of category (maximum landing mass)

- (i) An operator may impose a permanent, lower, landing mass, and use this mass for determining the VAT if approved by the Authority.
- (ii) The category defined for a given aeroplane shall be a permanent value and thus independent of the changing conditions of day to day operations.

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### **Alert Height (AH)**

A height defined for operational use by pilots (100 ft. or less above the highest elevation in the touchdown zone) above which a CAT III approach would be discontinued and a missed approach initiated if a failure occurred in one of the required redundant operational systems in the airplane or in the relevant ground equipment. Below this height, the approach, flare, touchdown, and, if applicable, rollout may be safely accomplished following any failure in the airplane or associated CAT III systems not shown to be extremely improbable. This height is based on characteristics of an aircraft and its particular fail-operational airborne CAT III system.

### **Automatic flight control system (AFCS) with ILS coupled approach mode**

Airborne equipment which provides automatic control of the flight path of the aeroplane by reference to the ILS.

### **Automatic landing system**

The airborne equipment which provides automatic control of the aeroplane during the approach and landing.

### **Continuous descent final approach (CDFA)**

A specific technique for flying the final-approach segment of a nonprecision instrument approach procedure as a continuous descent, without level-off, from an altitude/height at or above the Final Approach Fix altitude / height to a point approximately 15 m (50 feet) above the landing runway threshold or the point where the flare manoeuvre should begin for the type of aeroplane flown.

### **Decision Altitude / Height (DA /H)**

Decision Altitude / Height (A/H) is a specified height at which a missed approach must be initiated during a precision approach if the required visual reference to continue the approach to land has not been established.

The Decision Altitude is referenced to the mean sea level (MSL) and Decision Height is referenced to the threshold elevation.

The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path.

### **Enhanced vision system (EVS)**


An electronic means of displaying a real-time image of the external scene through the use of imaging sensors.

### **Fail-Operational flight control system**

A flight control system is fail-operational if, in the event of a failure below alert height, the approach, flare and landing, can be completed automatically. In the event of a failure, the automatic landing system will operate as a fail-passive system.

### **Fail-Passive flight control system**

A flight control system is fail-passive if, in the event of a failure, there is no significant out-of-trim condition or deviation of flight path or attitude but the landing is not completed

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automatically. For a fail-passive automatic flight control system the pilot assumes control of the aeroplane after a failure.

### **Fail-operational hybrid landing system**

A system, which consists of a primary fail-passive automatic landing system and a secondary independent guidance system enabling the pilot to complete a landing manually after failure of the primary system.

A fail operational hybrid landing system may consist of a fail passive automatic landing system with a monitored head up display which provide guidance to enable the pilot to complete the landing manually after failure of the automatic landing system.

### **Flight control system**

A system which includes an automatic landing system and/or a hybrid landing system.

### **Head-up display (HUD)**

A display system which presents flight information into the pilot's forward external field of view and which does not significantly restrict the external view.

### **Head-up guidance landing system (HUDLS)**

The total airborne system, which provides head-up guidance to the pilot during the approach and landing and/or go-around. It includes all sensors, computers, power supplies, indications and controls. A HUDLS is typically used for primary approach guidance to decision heights of 50 ft.

### **Hybrid head-up display landing system (hybrid HUDLS)**

A system ,which consists of a primary fail-passive automatic landing system and a secondary independent HUD/HUDLS enabling the pilot to complete a landing manually after failure of the primary system.

Typically, the secondary independent HUD/HUDLS provides guidance which normally takes the form of command information, but it may alternatively be situation (or deviation) information.

### **ILS critical area**


An area of defined dimensions about the localizer and glide path antennas where vehicles, including aircraft, are excluded during all ILS operations. The critical area is protected because the presence of vehicles and / or aircraft inside the boundaries will cause unacceptable disturbance to the ILS signal in space.

### **ILS sensitive area**

An area extending beyond the critical area where the parking and / or movement of vehicles, including aircraft, is controlled to prevent the possibility of unacceptable interference to the ILS signal during ILS operations. The sensitive area is protected to protection against interference caused by large moving objects outside the critical area but still normally within the airfield boundary.

### **Instrument approach and landing operations**

Instrument approach and landing operations using instrument approach procedures are classified as follows.

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- **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.

- **Categories of precision approach and landing operations (ICAO definition)**

- **Category 1 (Cat 1) operation**

A precision instrument approach and landing with a decision height not lower than 60 M (200 ft) and with either a visibility not less than 800 M , or a runway visual range not less than 550 M.

- **Category 11 (Cat 11) operation**

A precision instrument approach and landing with a decision height lower than 60 M (200 ft) but not lower than 30 M (100 ft), and a runway visual range not less than 300 M.

- **Category 111 A (Cat 111 A) operation**

A precision instrument approach and landing with:

- a) A decision height lower than 30 M (100 ft), or no decision height; and
- b) A runway visual range not less than 175 M

- **Category 111 B (Cat 111 B) operation**

A precision instrument approach and landing with:

- a) A decision height lower than 15 M (50 ft), or no decision height; and
- b) A runway visual range less than 175 M but not less than 50 M

- **Category 111 C (Cat 111 C ) operation**

A precision instrument approach and landing with no decision height and no runway visual range limitation.

### **Low visibility procedures (LVP)**


Procedures applied at an aerodrome for the purpose of ensuring safe operations during Category II and III approaches and low visibility take-offs.

### **Low visibility take-off (LVTO)**

A take-off where the runway visual range (RVR) is less than 400 m.

### **Required visual reference**

In respect of an aircraft on an approach to a runway, means that section of the approach area of the runway of those visual aids that, when viewed by the pilot of the aircraft, enables the pilot to make an assessment of the aircraft position and the rate of change of position, relative to the nominal flight path.

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### **Rollout control system**

A system which provides either automatic control or instrument guidance for manual control of lateral steering for rollout until manual control of the aircraft by visual reference is assured.

### **Runway visual range (RVR)**

In respect of a runway, means the maximum horizontal distance, as measured by an automated visual landing distance system and reported by an air traffic control unit for the direction of takeoff or landing, at which the runway, or the lights or markers delineating it, can be seen from a point above its centre line at a height corresponding to the average eye of pilots at touchdown.

“RVR ‘A’ ”, in respect of a runway, means RVR detection equipment that is located adjacent to the runway threshold;

“RVR ‘B’ ”, in respect of a runway, means RVR detection equipment that is located adjacent to the runway midpoint.

NOTE: In practice, runway visual range cannot be measured directly from the position specified in the definition but is an assessment of what a pilot would see from that position.

### **State of the Aerodrome**

The State in whose territory the aerodrome is located.

### **State of the Operator**

The State in which the Operator has his principle place of business or, if he has no such place of business, his permanent address.

### **State of the Registry**

The State on whose register the aircraft is entered.

### **Stabilised approach (SAp)**


An approach which is flown in a controlled and appropriate manner in terms of configuration, energy and control of the flight path from a pre-determined point or altitude/height down to a point 50 feet above the threshold or the point where the flare maneuver is initiated if higher.

### **Touchdown zone**

The portion of the runway, beyond the threshold, where it is intended landing aeroplanes first contact the runway.


### **Visual approach**

An approach, when either part or all of an instrument approach procedure is not completed and the approach is executed with visual reference to the terrain.

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## Chapter - 1 INTRODUCTION AND CERTIFICATION

### 1.1 LOW VISIBILITY OPERATIONS

- 1.1.1 In this manual, Low visibility operations means all procedures applied for the purpose of ensuring safe aircraft operations during Category II, III approaches and low visibility take-offs.
- 1.1.2 Certification of aerodromes, aircraft systems and crews for low visibility operations by Civil Aviation Authority, Sri Lanka shall be as per criteria contained in this manual.
- 1.1.3 All certifying staff of Civil Aviation Authority, Sri Lanka shall comply with provisions in this manual when certifying operators to conduct “Low visibility operations”.
- 1.1.4 Any questions not covered herein, or any point of apparent conflict requiring resolution, should be referred to Director General of Civil Aviation, Sri Lanka.

### 1.2 LOW VISIBILITY OPERATIONS — GENERAL OPERATING RULES

- 1.2.1 An operator shall not conduct Category II or Category III operations unless:
  - (a) Each aeroplane concerned is certificated by a regulatory authority of a contracting state for operations with decision heights below 200 ft, or no decision height, and accepted by Civil Aviation Authority, Sri Lanka for such operations as per paragraph [2.1.1](#) of this manual (or Civil Aviation Authority, Sri Lanka has certified the aeroplane for such operations as per paragraph 2.1.5 of this manual).
  - (b) A suitable system for recording approach and/or automatic landing success and failure is established and maintained to monitor the overall safety of the operation;
  - (c) The operations are approved by Civil Aviation Authority of Sri Lanka.
  - (d) The flight crew consists of at least two pilots.
  - (e) Decision height is determined by means of a radio altimeter.
  - (f) Only RVR values are used for low visibility operations.
- 1.2.2 An operator shall not conduct low visibility take-offs in less than 150 m RVR (Category A, B and C aeroplanes) or 200 m RVR (Category D aeroplanes) unless approved by the Civil Aviation Authority, Sri Lanka.

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### 1.3 APPLICATION FOR LOW VISIBILITY OPERATIONS


- 1.3.1 These instructions are intended for application to aerodromes situated in Sri Lanka and to aircraft registered in Sri Lanka flying for the purpose of commercial transport.
- 1.3.2 In no case, Category II/III certification shall be given in the case of a single pilot operation.
- 1.3.3 Conformity with these instructions will be prerequisite for an operator intending to include Category II/III operations in the AOC / Operations Specifications.
- 1.3.4 Commercial operators of foreign registry, who operate a scheduled or regular service into Sri Lanka and whose aircraft, equipment and crews meet or exceed the criteria described in this manual, may apply to Civil Aviation Authority, Sri Lanka for authority to conduct Category II/III operations in aerodromes situated in Sri Lanka deemed suitable.
- 1.3.5 In all such cases, approval for Category II/III operations in the state of registry shall be a prior condition for approval to conduct Category II/III operations in Sri Lanka.

### 1.4 APPROVAL CRITERIA

- 1.4.1 Requests for landing operations in the CAT II/III range of weather minima will be considered if the following criteria (set out in greater detail in the chapters in this manual) are met:
  - (a) The aircraft has suitable flight characteristics, an approved list of equipment and acceptable continuing maintenance program;
  - (b) The aircraft is operated by a qualified crew in conformity with laid down procedures; and
  - (c) The aerodrome is suitably equipped and maintained.

### 1.5 LOW VISIBILITY OPERATIONS — INITIAL CERTIFICATION PROCEDURE

- 1.5.1 General.
- 1.5.2 The following procedures shall apply to the initial introduction and approval of low visibility operations by an AOC holder of Civil Aviation Authority, Sri Lanka.
- 1.5.3 Operational demonstration.
- 1.5.4 The purpose of the operational demonstration is to determine or validate the operator's use and effectiveness of the applicable aircraft flight guidance systems,

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including HUDLS if appropriate, training, flight crew procedures, maintenance program and manuals applicable to the Category II/III program being approved.


- (a) At least 30 approaches and landings must be accomplished by the operator in line operations using the Category II/III systems installed in each aircraft type if the requested DH is 50 ft or higher. If the DH is less than 50 ft, at least 100 approaches and landings will need to be accomplished unless otherwise approved by the Authority. All approaches for the purpose of these demonstrations shall be conducted in Category 1 or better weather conditions.
- (b) If an operator has different variants of the same type of aircraft utilising the same basic flight control and display systems, or different basic flight control and display systems on the same type of aircraft, the operator must show that the various variants have satisfactory performance, but the operator need not conduct a full operational demonstration for each variant. The Authority may also accept a reduction of the number of approach and landings based on credit given for the experience gained by another operator with an AOC issued by Civil Aviation Authority, Sri Lanka using the same aeroplane type or variant and procedures.
- (c) If the number of unsuccessful approaches exceeds 5 % of the total (e.g. unsatisfactory landings, system disconnects) the evaluation program must be extended in steps of at least 10 approaches and landings until the overall failure rate does not exceed 5 %.

#### 1.5.5 Data collection for operational demonstrations.

Each applicant must develop a data collection method (e.g. a form to be used by the flight crew) to record approach and landing performance. The resulting data and a summary of the demonstration data shall be made available to the Authority for evaluation.

#### 1.5.6 Data analysis.

Unsatisfactory approaches and/or automatic landings and all equipment failures shall be documented and analyzed.

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## 1.6 TRANSITIONAL PERIODS

### (a) Operators with no previous Category II or III experience

An operator without previous Category II or III operational experience may be approved for Category II operations, having gained a minimum experience of six months of Category I operations on the aeroplane type.


### (b) Operators with previous Category II or III experience.

An operator with previous Category II or III experience may obtain authorization for a reduced transition period by application to the Authority.

- 1.6.1 An operator authorized for Category II or III operations using auto-coupled approach procedures, with or without auto-land, and subsequently introducing manually flown Category II or III operations using a HUDLS shall be considered to be a “New Category II/III operator” for the purposes of the demonstration period provisions.

## 1.7 ELIGIBLE AERODROMES AND RUNWAYS

- 1.7.1 Each aeroplane type/runway combination must be verified by the successful completion of at least one approach and landing in Category II or better conditions, prior to commencing Category III operations.
- 1.7.2 For runways with irregular pre-threshold terrain or other foreseeable or known deficiencies, each aeroplane type/runway combination must be verified by operations in Category I or better conditions, prior to commencing Category II, or Category III operations.
- 1.7.3 If an operator has different variants of the same type of aeroplane in accordance with subparagraph 1.7.4 below, utilizing the same basic flight control and display systems, or different basic flight control and display systems on the same type of aeroplane in accordance with subparagraph 1.7.4 below, the operator must show that the variants have satisfactory operational performance, but the operator need not conduct a full operational demonstration for each variant/runway combination.
- 1.7.4 For the purpose of paragraph [1.7](#), an aeroplane type or variant of an aeroplane type is deemed to be the same type/variant of aeroplane if that type/variant has the same or similar;
- (a) Level of technology, including the;
- (i) FGS and associated displays and controls

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- (ii) The FMS and level of integration with the FGS
- (iii) Use of HULDS

(b) Operational procedures, including:

- (i) Alert height;
- (ii) Manual landing/automatic landing;
- (iii) No decision height operations;
- (iv) Use of HUD/ HUDLS in hybrid operations.

(c) Handling characteristics, including:

- (i) Manual landing from automatic or HUDLS guided approach;
- (ii) Manual go-around from automatic approach;
- (iii) Automatic/ manual roll out.

1.7.5 Operators using the same aeroplane type/class or variant of a type in accordance with paragraph [1.7.4](#) above may take credit from each others' experience and records in complying with this paragraph 1.7.


## 1.8 LOW VISIBILITY OPERATIONS - CERTIFICATION STANDARDS

1.8.1 Following are the certification standards for;

- (a) Precision approach - Category 11
- (b) Precision approach - Category 111
- (c) Low visibility take off (LVTO)

## 1.9 PRECISION APPROACH — CATEGORY II OPERATIONS

1.9.1 A Category II operation is a precision instrument approach and landing using ILS or MLS with;

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- (a) A decision height below 200 ft but not lower than 100 ft; and
- (b) A runway visual range of not less than 300 m.

### 1.9.2 Decision height.

An operator must ensure that the decision height for a Category II operation is not lower than:

- (a) The minimum decision height specified in the AFM, if stated;
- (b) The minimum height to which the precision approach aid can be used without the required visual reference;
- (c) The OCH for the category of aeroplane;
- (d) The decision height to which the flight crew is authorised to operate; or
- (e) 100 ft.


### 1.9.3 Visual reference.

A pilot may not continue an approach below the Category II decision height determined in accordance with subparagraph 1.9.2 above unless visual reference containing a segment of at least three consecutive lights being the centre line of the approach lights, or touchdown zone lights, or runway centre line lights, or runway edge lights, or a combination of these is attained and can be maintained. This visual reference must include a lateral element of the ground pattern, i.e. an approach lighting crossbar or the landing threshold or a barrette of the touchdown zone lighting unless the operation is conducted utilizing an approved HUDLS to touchdown.

### 1.9.4 Required RVR.

The lowest minima to be used by an operator for Category II operations are:

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## RVR for Category II approach v. DH


Category 11 minima		
DH (Feet)	Auto coupled / approved HUDLS to below DH (Note 1a)	
	RVR Aeroplane category A,B,C	RVR Aeroplane category D
100 - 120	300M	300 / 350M (Note 2a)
121 - 140	400M	400M
141 and above	450M	450M
<p>Note 1a : The reference to “auto coupled to below DH / approved HUDLS” in this table means continued use of the automatic flight control system or the HUDLS down to height of 80% of the DH. Thus airworthiness requirements may, through minimum engagement height for the automatic flight control system, affect the DH to be applied.</p> <p>Note 2a : 300 meters may be used for a category D aeroplane conducting an auto land.</p>		

## 1.10 PRECISION APPROACH — CATEGORY III OPERATIONS

### 1.10.1 General

### 1.10.2 Category III operations are subdivided as follows.

- (a) Category III A operations.
- (b) Category III B operations.

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### 1.10.3 Category III A operations.

A precision instrument approach and landing using ILS or MLS with:

- (a) A decision height lower than 100 ft; and
- (b) A runway visual range not less than 200 m.

### 1.10.4 Category III B operations.

A precision instrument approach and landing using ILS or MLS with:

- (a) A decision height lower than 100 ft, or no decision height; and
- (b) A runway visual range lower than 200 m but not less than 75 m.

*Note:* Where the decision height (DH) and runway visual range (RVR) do not fall within the same category, the RVR will determine in which category the operation is to be considered.

### 1.10.5 Decision height

For operations in which a decision height is used, an operator must ensure that the decision height is not lower than:


- (a) The minimum decision height specified in the AFM, if stated; or
- (b) The minimum height to which the precision approach aid can be used without the required visual reference;
- (c) The decision height to which the flight crew is authorised to operate.

### 1.10.6 No decision height operations

Operations with no decision height may only be conducted if;

- (a) The operation with no decision height is authorised in the AFM;
- (b) The approach aid and the aerodrome facilities can support operations with no decision height; and



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- (c) The operator has an approval for CAT III operations with no decision height.

*Note:* In the case of a CAT III runway it may be assumed that operations with no decision height can be supported unless specifically restricted as published in the AIP or NOTAM.


#### 1.10.7 Visual reference

- (a) For Category IIIA operations, and for category IIIB operations conducted either with fail-passive flight control systems, or with the use of an approved HUDLS, a pilot may not continue an approach below the decision height determined in accordance with subparagraph [1.10.5](#), above unless a visual reference containing a segment of at least three consecutive lights being the centerline of the approach lights, or touchdown zone lights, or runway centre line lights, or runway end lights or a combination of these is attained and can be maintained.
- (b) For Category IIIB operations conducted either with fail-operational flight control systems or with a fail operational hybrid landing system (comprising eg; HUDLS) using a decision height, a pilot may not continue an approach below the Decision Height, determined in accordance with subparagraph [1.10.5](#), above, unless a visual reference containing at least one centerline light is attained and can be maintained.

#### 1.10.8 Required RVR

The lowest minima to be used by an operator for Category III operations are:

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## RVR for Cat III operations v. DH and roll-out control/guidance system

Category 111 minima			
Category	Decision height (feet) (Note 2)	Roll out control / Guidance system	RVR (M)
111A	Less than 100 ft	Not required	200M
111B	Less than 100 ft	Fail passive	150M (Note 1)
111B	Less than 50 ft	Fail passive	125M
111B	Less than 50 ft or No decision height	Fail operational (note 3)	75M
<p>Note 1 : For aeroplanes certificated in accordance with <a href="#">CS - AWO</a> 321 (b) 3 or equivalent <a href="#">FAA requirement</a></p> <p>Note 2: Flight control system redundancy is determined under <a href="#">CS - AWO</a> or equivalent <a href="#">FAA requirement</a> by the minimum certificated decision height.</p> <p>Note 3: The fail operational system referred to may consist of a fail operational hybrid system</p>			

### 1.11 CERTIFICATION FOR LOW VISIBILITY OPERATIONS

1.11.1 An authorization for Category 11 / 111 operations will not be included in an AOC / Operations Specifications, until the applicant has;

- (a) Demonstrated that his flight crew have carried out an approved program of training as per Chapter 3 of this manual;
- (b) Laid down detailed procedures and instructions for crew in the operations manual for the operation of the aircraft in low visibility operations as per Chapter 3 of this manual;

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- (c) Laid down detailed procedures and instructions for Pilot in Command and flight operations officers (if required as per the operator Operations Specifications) in respect of flight dispatch in low visibility operations as per Chapter 3 of this manual;
- (d) Demonstrated that his aeroplane and its equipment, maintenance program including qualifications of maintenance staff meet requirements of Chapter 2 of this manual.
- (e) The operator and his personal have completed satisfactorily all evaluations as required in this manual.

## 1.12 INTERIM CATEGORY 11 MINIMA

1.12.1 When the above requirements have been met, pilots of the applying carrier who have successfully undergone an evaluation will be initially authorized for interim Category II minima.


1.12.2 Interim Category 11 minima will be a value between Category 1 minima and the lowest limit of Category 11 operations as per this manual.

1.12.3 Approval for the lowest limit of Category 11 minima will be subject to;

- (a) Accumulation of adequate operational experience by the operator in operating as per Interim Category 11 procedures as determined by the Authority
- (b) Analysis of pilot reports of ground and airborne system performance with satisfactory results
- (c) Accumulation of adequate operational experience by flight crew in operating as per Interim Category 11 minima as determined by the Authority
- (d) Accumulation of adequate operational experience by maintenance staff as per Interim Category 11 procedures as determined by the Authority


## 1.13 INTERIM CATEGORY 111 MINIMA

1.13.1 Authorization for Category 111 operations must precede adequate experience as a Category 11 operator. The adequate experience level will be determined by the Authority on a case by case basis.

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1.13.2 Initially approval will be for Interim Category 111 operations and the lowest limit of Category 111 limits will be authorized with accumulation of adequate operational experience.

1.13.3 Category 111B authorization shall precede adequate experience as a Category 111A operator.

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## Chapter - 2 THE AEROPLANE AND ITS EQUIPMENT

### 2.1 ACCEPTANCE OF CERTIFICATION CONDUCTED BY A CONTRACTING STATE


- 2.1.1 Authorization granted by a contracting state (state of manufacture only) for an aircraft to conduct Category 11 and Category 111 operations shall be accepted by Civil Aviation Authority, Sri Lanka.
- 2.1.2 Certification as required in paragraph 2.1.1. above should comply with;
- a) EASA document on certification specifications, including airworthiness codes and acceptable means of compliance, for all weather operations (« [CS-AWO](#) »).
  - or
  - b) [FAA AC 120-28C](#), Criteria for Approval of Category III Landing Weather Minima, or 120-29, Criteria for Approving Category I and Category II Landing Minima
- 2.1.3 All procedures as required by the contracting state (refer to paragraph [2.1.1](#)) for the conduct of Category 11 and Category 111 flight operations and maintenance shall be adopted without any deviation by Civil Aviation Authority, Sri Lanka.
- 2.1.4 Category 11 and Category 111 approval shall be made by an appropriate document included in the aircraft flight manual. This document shall include any additional requirements of Civil Aviation Authority, Sri Lanka.

### 2.2 CERTIFICATION BY CIVIL AVIATION AUTHORITY, SRI LANKA FOR LOW VISIBILITY OPERATIONS

- 2.2.1 Any request for the initial certification of an aircraft to conduct Category 11 and Category 111 operations shall be considered by Civil Aviation Authority, Sri Lanka on a case by case basis.
- 2.2.2 For all initial Certification of Category 11 and Category 111 operations Civil Aviation Authority, Sri Lanka shall publish requirements in conformity to ICAO Doc 9365 – Manual of All weather operations for compliance.

### 2.3 MAINTENANCE OF CATEGORY II, CATEGORY III AND LVTO EQUIPMENT.

- 2.3.1 Maintenance instructions for the on-board guidance systems must be established by the operator, in liaison with the manufacturer, and included in the operator's aeroplane maintenance program which must be approved by the Authority.
- 2.3.2 The maintenance program must ensure that the airborne equipment necessary for low visibility operations continues to operate in service to the required

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performance level and should cover following areas and any other requirement specified by Civil Aviation Authority, Sri Lanka.

- (a) Maintenance procedures
- (b) Maintenance and calibration of test equipment
- (c) Initial and recurrent training of maintenance staff
- (d) Recording and analysis of airborne equipment failures

## 2.4 CONTINUOUS MONITORING


2.4.1 After obtaining the initial authorisation, the operations must be continuously monitored by the operator to detect any undesirable trends before they become hazardous. Flight crew reports may be used to achieve this.

2.4.2 The following information must be retained for a period of 12 months.

- (a) The total number of approaches, by aeroplane type, where the airborne Category II or III equipment was utilized to make satisfactory, actual or practice, approaches to the applicable Category II or III minima; and
- (b) Reports of unsatisfactory approaches and/or automatic landings, by aerodrome and aeroplane registration, in the following categories:
  - (i) Airborne equipment faults;
  - (ii) Ground facility difficulties;
  - (iii) Missed approaches because of ATC instructions; or
- (c) Other reasons.
- (d) An operator must establish a procedure to monitor the performance of the automatic landing system or HUDLS to touchdown performance, as appropriate, of each aeroplane.

2.4.3 All applicable system component failures shall be recoded and analyzed.

2.4.4 For Category 111 operations, monitoring system should use data from the flight data recorder for analysis for unsuccessful approaches.

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## Chapter - 3 OPERATION OF THE AIRCRAFT

### 3.1 LOW VISIBILITY OPERATIONS — OPERATING PROCEDURES

#### 3.1.1 General

#### 3.1.2 Low visibility operations include:


- (a) Manual take-off (with or without electronic guidance systems or HUDLS/Hybrid HUD/HUDLS);
- (b) Auto-coupled approach to below DH, with manual flare, landing and roll-out;
- (c) Approach flown with the use of a HUDLS/Hybrid HUD/HUDLS and/or EVS;
- (d) Auto-coupled approach followed by auto-flare, auto landing and manual roll-out; and
- (e) Auto-coupled approach followed by auto-flare, auto landing and auto-roll-out, when the applicable RVR is less than 400 m.

*Note 1:* A hybrid system may be used with any of these modes of operations.

*Note 2:* Other forms of guidance systems or displays may be certificated and approved.

### 3.2 PROCEDURES AND OPERATING INSTRUCTIONS


- 3.2.1 An operator must establish Standard Operating Procedures (SOP) and instructions to be used for low visibility take-off, approaches utilising enhanced vision system (EVS), Category II and III operations. These procedures must be included in the Operations Manual and contain the duties of flight crew members during taxiing, take-off, approach, flare, landing, roll-out and missed approach as appropriate.
- 3.2.2 The precise nature and scope of procedures and instructions given depend upon the airborne equipment used and the flight deck procedures followed. An operator must clearly define flight crew member duties during take-off, approach, flare, roll-out and missed approach in the Operations Manual. Particular emphasis must be placed on flight crew responsibilities during transition from non-visual conditions to visual conditions, and on the procedures to be used in deteriorating visibility or when failures occur. Special attention must be paid to the distribution of flight deck duties so as to ensure that the workload of the pilot making the decision to land or execute a missed approach enables him to devote himself to supervision and the decision making process.

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3.2.3 An operator must specify the detailed operating procedures and instructions in the Operations Manual. The instructions must be compatible with the limitations and mandatory procedures contained in the Aeroplane Flight Manual and cover the following items in particular:

- (a) Checks for the satisfactory functioning of the aeroplane equipment, both before departure and in flight;
- (b) Effect on minima caused by changes in the status of the ground installations and airborne equipment;
- (c) Procedures for the take-off, approach, flare, landing, roll-out and missed approach;
- (d) Procedures to be followed in the event of failures, such as engines, electrical system, hydraulics and flight control system.
- (e) Pilot assessment of aircraft position and monitoring of the automatic flight control system, the effects of the failures of any required portion of the flight control system or instrument used with the system, and action to be taken in the event of inadequate performance or failure of any portion of either the system or the associated instruments warnings (to include HUD/HUDLS/EVS and other non normal situations);
- (f) The minimum visual reference required;
- (g) The importance of correct seating and eye position;
- (h) Action which may be necessary arising from a deterioration of the visual reference;
- (i) Allocation of crew duties in the carrying out of the procedures according to subparagraphs (a) to (d) and (f) above, to allow the Commander to devote himself mainly to supervision and decision making;
- (j) The pilot in command shall be the pilot flying (PF) during all low visibility operations. He shall take the decision to land or carry out a missed approach during Category 11 / 111 approach. The other crew members has the task of monitoring the approach and make appropriate call outs as tabulated in standard operating procedures.
- (k) The requirement for all height calls below 200 ft to be based on the radio altimeter and for one pilot to continue to monitor the aeroplane instruments until the landing is completed;




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- (l) The requirement for the Localizer Sensitive Area to be protected;
  - (m) The use of information relating to wind velocity, wind shear, turbulence, runway contamination and use of multiple RVR assessments;
  - (n) Standard Operating Procedures to be used for:
    - (i) Category 11 and 111 approaches
    - (ii) Approaches utilising EVS; and
    - (iii) Practice approaches and landing on runways at which the full Category II or Category III aerodrome procedures are not in force;
  - (o) Operating limitations resulting from airworthiness certification; and
  - (p) Information on the maximum deviation allowed from the ILS glide path and/or localiser.
- 3.2.4 The operations manual shall specify conditions to be satisfied prior to conducting a LVTO, Category 11 / 111 approach, and suitable addition to the pre take off / approach briefing.
- 3.2.5 The operations manual shall also specify the situations when a missed approach should be initiated during operations in Category 11 / 111 weather conditions.
- 3.2.6 The operations manual must also specify actions to be taken in the event of engine failure. These instructions will, under such circumstances, forbid the commencement or continuation of an approach to Category II/III limits, unless an operator demonstrates to Civil Aviation Authority, Sri Lanka that exceptions to this general rule are justified for specific situations and aircraft types. If exceptions are approved, the operations manual will clearly describe the agreed situations under which a Category II/III approach may be conducted with one engine inoperative.

### 3.3 RESPONSIBILITIES OF PILOT IN COMMAND

- 3.3.1 The commander shall satisfy himself that;
- (a) The status of the visual and non-visual facilities is sufficient prior to commencing a low visibility take-off, an approach utilising EVS or a Category II or III approach;

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- (b) Appropriate LVPs are in force according to information received from Air Traffic Services, before commencing a low visibility take-off or a Category II or III approach; and
- (c) The flight crew members are properly qualified prior to commencing a low visibility take-off in an RVR of less than 150 m (Category A, B and C aeroplanes) or 200 m (Cat D aeroplanes), an approach utilising EVS or a Category II or III approach.
- (d) The operator has appropriate authorization from the state of registry and the state of aerodrome to carry out a low visibility take-off or a Category II or III approach to the aerodrome intended.
- (e) The aircraft is properly certified and all required equipment are serviceable for the intended low visibility take-off or a Category II or III approach (refer to paragraph 3.4)

### 3.4 LOW VISIBILITY OPERATIONS — MINIMUM EQUIPMENT


- 3.4.1 An operator must include in the Operations Manual the minimum equipment that has to be serviceable at the commencement of a low visibility take-off, an approach utilising EVS, or a Category II or III approach in accordance with the AFM or other approved document.
- 3.4.2 The operator shall have procedures to indicate to the flight crew / Flight operations officer the status of the aeroplane when the aeroplane is upgraded /degraded due to any un serviceability as per paragraph [3.4.1](#) or any other reason.
- 3.4.3 The commander shall satisfy himself the status of the aeroplane and of the relevant airborne systems is appropriate for the specific operation to be conducted prior to departure.

### 3.5 PILOT QUALIFICATIONS

- 3.5.1 The operator must ensure that each flight crew member completes training and a Check as required by this manual before being authorized to conduct Category II or III operations.
- 3.5.2 The flight crew qualifications as per above paragraph [3.5.1](#) are specific to the operator and the type of aeroplane in which the qualification obtained.

### 3.6 TYPE AND COMMAND EXPERIENCE.

- 3.6.1 Before commencing Category II operations, the following additional requirements are applicable to commanders, who are new to the aeroplane type/class:

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- (a) 50 pilot in command hours or 20 sectors on the type, including line flying under supervision; and
- (b) 100 meters must be added to the applicable Category II RVR minima when the operation requires a Category II manual landing or use of HUDLS to touchdown until:
  - (i) A total of additional 100 hours or 40 sectors after obtaining Category 11 qualification, including LIFUS (line flying under supervision) has been achieved on the type; or
  - (ii) A total of additional 50 hours or 20 sectors after obtaining Category 11 qualifications, including LIFUS has been achieved on the type where the flight crew member has been previously qualified for Category II manual landing operations with an operator acceptable to the Authority.

3.6.2 Before commencing Category III operations, the following additional requirements are applicable to commanders, who are new to the aeroplane type:


- (a) 50 pilot in command hours or 20 sectors on the type, including line flying under supervision; and
- (b) 100 meters must be added to the applicable Category III RVR minima unless he has previously qualified for Category III operations with an operator acceptable to the Authority, until a total of additional 100 hours or 40 sectors after obtaining Category 111 qualification, including line flying under supervision, have been achieved on the type.

3.6.3 The Authority may approve a reduction in the above command experience requirements for flight crew members who have Category II or Category III pilot in command experience if such experiences are acceptable to the Authority.

3.6.4 There are no additional requirements for first officer and flight engineer (if applicable) other than the requirement prescribed in paragraph [3.5.1](#), before commencing Category 11 / 111 operations.

### 3.7 LOW VISIBILITY OPERATIONS - CREW TRAINING

3.7.1 An operator shall ensure that, prior to conducting Category II and III operations or approaches utilising EVS:

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- (a) Each flight crew member completes the training and checking requirements prescribed in this manual including Flight simulator training in operating to the limiting values of RVR and Decision Height appropriate to the operator's approval.
- (b) The training and checking is conducted in accordance with a detailed syllabus approved by the Authority and included in the Operations Manual. This training is in addition to the training requirement for type qualifications.

3.7.2 An operator must ensure that flight crew member training programs for low visibility operations include structured courses of ground and flight simulator training.


### 3.8 CREW TRAINING - FLIGHT CREW MEMBERS WITH NO PREVIOUS CATEGORY II OR CATEGORY III EXPERIENCE

3.8.1 Flight crew members with no previous Category II or Category III experience must complete at least the following training program.


3.8.2 Ground training.

3.8.3 An operator must ensure that the initial ground training course for low visibility operations covers at least;

- (a) The characteristics and limitations of the ILS ,including the effect on aeroplane systems performance of interference to the ILS signal caused by other landing, takeoff or overflying aeroplanes and the effect of the infringement of ILS critical and sensitive areas by aeroplanes or vehicles in the maneuvering area.
- (b) The characteristics of the visual aids (eg; approach lighting, touchdown zone lighting, center line lighting)and the limitations on their use as visual cues in reduced RVRs with various glide path angles and cockpit cut of angles and the heights at which various cues may be expected to become visible in actual operations.
- (c) The operation, capabilities and limitations of the airborne systems(eg; the automatic fight control systems, monitoring and warning devices, flight instruments – including altimetry system, the means the pilot has to assess the position of the aeroplane during the approach, touchdown and roll out),and to include HUD symbology and EVS characteristics if appropriate;

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- (d) Approach, including missed approach procedures and techniques including description of the factors affecting height loss during missed approach in normal and abnormal aeroplane configurations.
- (e) The use and limitation of RVR, including the applicability of RVR readings from different positions of the runway, the different methods of measuring and assessing RVR, and the limitations associated with each method.
- (f) The basic understanding of obstacle limitation and the obstacle free zone, including missed approach design criteria and of obstacle clearance for Category 11 and 111 operations.
- (g) The effects of precipitation, ice accretion, low level wind shear, turbulence and characteristic of fog;
- (h) The pilot task at decision height, procedures and techniques for transition from instrument to visual flight in low RVR conditions, including the geometry of eye, wheel and antenna positions with reference to ILS reference datum height.
- (i) Action to be taken if the visual reference becomes inadequate when the aeroplane is below the decision height and the technique to be adopted for transition from visual to instrument flight should a go around become necessary at these low heights.
- (j) Action to be taken in the event of failure of approach and landing equipment above and below decision height.
- (k) Recognition of and action to be taken in the event of failure of ground equipment.
- (l) Significant factors in the determination of decision height, the effect of terrain profile in the approach area on radio altimeter readings and on the automatic approach/landing systems;
- (m) The importance and significance of alert height if applicable and the action in the event of any failure above and below the alert height;
- (n) Effect of specific aeroplane malfunctions (eg; engine failure) on auto throttle, auto pilot performance etc;
- (o) Procedures and precautions to be followed while taxiing during low visibility operations.

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- (p) Additional procedures required for take-off in conditions below 150 m (200 m for Category D aeroplanes);
- (q) The importance of correct seating and eye position.
- (r) The qualification requirements for pilots to obtain and retain approval to conduct low visibility take-offs and Category II or III operations;
- (s) Knowledge of air operator AOC / Operations specifications and contents of Civil Aviation Authority, Sri Lanka approved manual for low visibility operations.

3.8.4 The training must ensure that all flight crew members understand their duties and responsibilities, those of the other flight crew members and the need for close crew coordination.

#### 3.8.5 Flight simulator training

An operator must ensure that flight simulator training for low visibility operations includes;

- (a) Checks of satisfactory functioning of equipment required for low visibility operations, both on the ground and in flight;
- (b) Effect on minima caused by changes in the status of ground installations;
- (c) Monitoring of:
  - (i) Automatic flight control systems and auto land status annunciators with emphasis on the action to be taken in the event of failures of such systems; and
  - (ii) HUD/HUDLS/EVS guidance status and annunciators as appropriate, to include head down displays;
- (d) Actions to be taken in the event of failures such as engines, electrical systems, hydraulics or flight control systems;
- (e) The effect of known un serviceability and use of minimum equipment lists;
- (f) Operating limitations resulting from airworthiness certification;
- (g) Guidance on the visual cues required at decision height together with information on maximum deviation allowed from glide path or localiser; and

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- (h) The importance and significance of alert height if applicable, and the action in the event of any failure above and below the alert height.

3.8.6 An operator must ensure that each flight crew member is trained to carry out his duties and instructed on the coordination required with other crew members. Maximum use should be made of flight simulators.

3.8.7 Flight simulator training must be divided into phases covering;

- (a) Normal operation with no aeroplane or equipment failures but including all weather conditions which may be encountered.
- (b) Detailed scenarios of aeroplane and equipment failures, which could affect Category II or III operations.
- (c) If the aeroplane system involves the use of hybrid or other special systems (such as HUD/HUDLS or enhanced vision equipment) then flight crew members must practice the use of these systems in normal and abnormal modes during the flight simulator phase of training.


3.8.8 Incapacitation procedures appropriate to low visibility take-offs and Category II and III operations shall be practiced.

3.8.9 Initial Category II and III training shall include at least the following exercises:

- (a) Approach using the appropriate flight guidance, autopilots and control systems installed in the aeroplane, to the appropriate decision height and to include transition to visual flight and landing;
- (b) Approach with all engines operating using the appropriate flight guidance systems, autopilots, HUDLS and/or EVS and control systems installed in the aeroplane down to the appropriate decision height followed by missed approach; all without external visual reference;
- (c) Where appropriate, approaches utilising automatic flight systems to provide automatic flare, landing and rollout;
- (d) Normal operation of the applicable system both with and without acquisition of visual cues at decision height.


3.8.10 Emergency / Abnormal phases of simulator training must include at least;

- (a) Approaches with engine failure at various stages on the approach;

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- (b) Approaches with critical equipment failures (e.g. electrical systems, auto flight systems, ground and/or airborne ILS/MLS systems and status monitors);
  - (c) Approaches where failures of auto flight equipment and/or HUD/HUDLS/EVS at low level require either;
    - (i) Reversion to manual flight to control flare, landing and roll out;
    - (ii) Revision to manual flight and the execution of a missed approach from decision height;
  - (d) Reversion to manual flight or a downgraded automatic mode to control missed approaches from, below decision height including those which may result in a touchdown on the runway, such as to simulate failures or a loss of visual reference prior to touch down;
  - (e) Failures of the systems which will result in excessive localiser and/or glide slope deviation, both above and below decision height, in the minimum visual conditions authorised for the operation. In addition, a continuation to a manual landing must be practised if a head-up display forms a downgraded mode of the automatic system or the head-up display forms the only flare mode; and
  - (f) Failures and procedures specific to aeroplane type or variant.
- 3.8.11 The training programme must provide practice in handling faults which require a reversion to higher minima.
- 3.8.12 The training programme must include the handling of the aeroplane when, during a fail passive Category III approach, the fault causes the autopilot to disconnect at or below decision height when the last reported RVR is 300 m or less.
- 3.8.13 Where take-offs are conducted in RVRs of 400 m and below, training must be established to cover systems failures and engine failure resulting in continued as well as rejected take-offs.
- 3.8.14 The training programme must include, where appropriate, approaches where failures of the HUDLS and/or EVS equipment at low level require either:
- (i) Reversion to head down displays to control missed approach; or
  - (ii) Reversion to flight with no, or downgraded, HUDLS Guidance to control missed approaches from decision height or below, including those which may result in a touchdown on the runway.



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3.8.15 An operator shall ensure that when undertaking low visibility take-off and Category II and III Operations utilising a HUD/HUDLS or hybrid HUD/HUDLS or an EVS, that training program includes, where appropriate, the use of the HUD/HUDLS in normal operations during all phases of flight.

### 3.9 CREW TRAINING - FLIGHT CREW MEMBERS WITH PREVIOUS CATEGORY II OR CATEGORY III EXPERIENCE

3.9.1 Flight crew members with previous Category II or Category III experience with a similar type of operation (auto coupled /auto-land, HUDLS/Hybrid HUDLS or EVS) or Category II with manual land if appropriate with another operator acceptable to the Authority may undertake an abbreviated ground / flight training program.

3.9.2 The operator shall propose a suitable abbreviated training program (based on paragraph [3.8](#)) for the approval of the authority.

### 3.10 CREW TRAINING - LOW VISIBILITY TAKE-OFF (LVTO) WITH RVR LESS THAN 150/200 M

3.10.1 An operator must ensure that prior to authorization to conduct take-offs in RVRs below 150 m (below 200 m for Category D aeroplanes) the following training is carried out:

- (a) Normal take-off in minimum authorized RVR conditions;
- (b) Take-off in minimum authorized RVR conditions with an engine failure between V1 and V2, or as soon as safety considerations permit; and
- (c) Take-off in minimum authorized RVR conditions with an engine failure before V1 resulting in a rejected take-off.


3.10.2 LVTO training / recurrent training program shall have the approval of the Authority and included in the Operations manual.

3.10.3 An operator must ensure that the training required by paragraph [3.10.2](#) above is carried out in a flight simulator.

3.10.4 This training must include the use of any special procedures and equipment.

### 3.11 CREW TRAINING - FLIGHT CREW MEMBERS CONVERSION TRAINING

3.11.1 Conversion training requirements to conduct low visibility take-off, Category 11 / 111 operations by the operator's crew members on a another type / class or variant aircraft may be a abbreviated program based on paragraph [3.8](#).

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3.11.2 The operator shall propose a suitable abbreviated training program (based on paragraph 3.8) for the approval of the authority.

### 3.12 RECURRENT TRAINING - LOW VISIBILITY OPERATIONS

3.12.1 An operator shall ensure that all crew authorized for low visibility operations undergo an annual recurrent ground school training program which shall be an abbreviated training program covering requirements in paragraph [3.8.2](#).

3.12.2 An operator shall ensure that all crew authorized for low visibility operations undergo a recurrent simulator training program in the simulator prior to the certification requirement as per paragraph 3.13.2.

3.12.3 Training programs as required in paragraph 3.12.1 and 3.12.2 shall have the approval of the Authority and included in the Operations manual.

### 3.13 CREW CERTIFICATION FOR CATEGORY 11 / CATEGORY 111 OPERATIONS

3.13.1 An operator shall ensure that, prior to conducting Category II and III operations or approaches utilising EVS and conducting low visibility take off, each flight crew member completes the checking requirements prescribed in this manual.


#### 3.13.2 Flight crew training

Prior to conducting initial or recurrent Category II or Category III Checks the Inspector / DCP must ensure that all crew (Pilot-in-Command, First officer and where applicable, Flight engineer) has completed the applicable approved Category II/III training program successfully.

### 3.14 FLIGHT CREW CERTIFICATION

3.14.1 For the purpose of a Category II or Category III Check a successful approach is defined as one in which, at the DH:

- (a) The aircraft is in trim for continuation of a normal approach and landing;
- (b) The aircraft is positioned so that the flight deck is within, and tracking to remain within, the lateral confines of the runway extended;
- (c) Deviation from the glide path does not exceed  $\pm 75$  microamperes (equivalent to one dot)\* as displayed on the ILS indicator; no unusual roughness or excessive attitude changes have occurred after leaving the middle marker.

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- (d) \* This relationship may not be true for older instruments. In such cases, the allowable indicators deflection is that which is equivalent to  $\pm 75$  microamperes.


3.14.2 When preparatory requirements have been met, arrangements will be made between the Air Operator and Civil Aviation Authority, Sri Lanka, for crew evaluation. Details of the evaluation procedure will be determined by the Flight Operations Inspector / DCP, and the following general criteria will apply;

- (a) An evaluation of flight crews and operating procedures for certification for Category II or III will be demonstrated using applicable type simulators certified for Category II or III by Civil Aviation Authority, Sri Lanka.
- (b) Non-visual simulators may be used to demonstrate crew coordination and proficiency in the handling of emergency procedures during an approach and overshoot. All other Checks, whether initial or recurrent, must be done in a visual type simulator.
- (c) The crew will consist of a Pilot-in-Command, a first officer, and a third crewman as appropriate to type. The Air Operator training Pilot will not form part of the flight crew (unless for his qualification ride);
- (d) Inspector /DCP should try to introduce a fault prior to the Category II or III Approach to permit observation of the crew's ability to assess the approach capability of the aircraft.

3.14.3 The Captain's initial or recurrent Category II or III Proficiency Check will at least comprise of:

- (a) One Category II or III ILS approach, during which a practical emergency (e.g. engine fire) is introduced, aimed at assessing crew co-ordination.
- (b) One Category II or III ILS approach to a landing in Category II or III weather minima. (An automatic landing or manual landing from an approved manual system).
- (c) A missed approach starting from a very low altitude which may result in touchdown during the go-around maneuvers.
- (d) For those Category II or III operations predicated on the use of a fail-passive rollout control system, a manual rollout using visual reference or a combination of visual and instrument references.

3.14.4 Other flight crew members will be checked concurrently in the performance of their assigned duties in support of the above initial/recurrent Proficiency Check items.

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3.14.5 The recording of the evaluation will be made on the Pilot Proficiency Check report.

The authorized DH/ RVR shall be annotated in the appropriate box in the form.

3.14.6 The period of certification will be for six months or up to the validity period of the PPC. Renewal Check may be combined with Pilot Proficiency Check or during an approved LOFT program.

3.14.7 If HUDLS and / or EVS is utilized to touchdown the required approaches during evaluation shall be four (refer to paragraph 3.14.3).

### 3.15 CERTIFICATION OF LOW VISIBILITY TAKE OFF (LVTO)

3.15.1 An operator must ensure that a flight crew member has completed a check before conducting low visibility takeoffs in RVRs of less than 150 m (less than 200 m for Category D aeroplanes) if applicable.

3.15.2 The check shall comply with the requirements in paragraph [3.10.1](#) and may be combined with crew certification for Category 11 or 111 operations.

3.15.3 The recording of the evaluation will be made on the Pilot Proficiency Check report.

The authorized RVR shall be annotated in the appropriate box in the form.

3.15.4 The period of certification will be for six months or up to the validity period of the PPC. Renewal Check may be combined with Pilot Proficiency Check or during an approved LOFT program.

### 3.16 FLIGHT CREW / AIRCRAFT REGENCY REQUIREMENTS


3.16.1 An operator shall establish the Low Visibility Operations Recent Experience Requirement through an Approved Recurrent Training Programme conducted in an approved FSTD by the CAASL and shall be followed by a Simulator check for the flight crew in every 6 months period.

3.16.2 The aircraft certified for CAT II/CAT III operations shall be subject to a proper Monitoring and Quality Assurance of the Maintenance Procedures to ensure the reliability of the equipment used for the approaches including Auto Land by the operator based on the Approved Maintenance Schedule and the Maintenance Planning Document

### 3.17 FLIGHT CREW RECORDS

3.17.1 The operator shall maintain records in respect of all flight crew authorized to conduct low visibility operations.

3.17.2 The records as required as per paragraph 3.17.1 shall;

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- (a) Indicate initial and continued eligibility of the flight crew member to conduct LVTO, Category 11 / 111 operations
- (b) Minima authorized and Category of operation
- (c) Recency as required in paragraph [3.16](#).


3.17.3 Each flight crew member is required to be in possession of the crew record as required in paragraph 3.17.1 when exercising the privileges authorized in this manual.

### 3.18 PERFORMANCE RELIABILITY SYSTEM

3.18.1 Following certification to conduct low visibility operations, the air operator should use the airborne system to approved minima as frequently as feasible to ensure continued performance and reliability of the system and to build up pilot experience in approaches to authorized limits.

3.18.2 Each Category II/III approach, real or simulated, is to be recorded on a form developed by the operator, including the following information as a minimum:

- (a) Date, type of aircraft, name of pilot-in-command, aerodrome and runway of landing, and reported ceiling and visibility;
- (b) Whether approach was auto-coupled or flown manually;
- (c) If auto-coupled, indicate, when applicable:
  - (i) If flight director agreed with autopilot,
  - (ii) The height at which coupler was disengaged,
- (d) If auto landing was successful;
- (e) Whether the approach was successful, as defined in para. [3.14.1](#), or unsuccessful;
- (f) If the approach was unsuccessful, specify the unsatisfactory element of the Category II/III system (e.g. airborne equipment, ground installation, crew performance, traffic condition);
- (g) The difference, if any, between computed airspeed and actual airspeed at the DH;

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- (h) An assessment of the overall quality of the Category II/III system as Good, Acceptable, Poor or unacceptable.

3.18.3 A consolidated report containing the required information in paragraph 3.18 is to be sent to Civil Aviation Authority, Sri Lanka monthly. These reports will be used as one basis for determining when an operator may be considered for upgrading to operational Category II/III minima.

### 3.19 LOW VISIBILITY OPERATIONS — AERODROME CONSIDERATIONS

3.19.1 An operator shall not use an aerodrome for Category II or III operations unless the aerodrome is approved for such operations by the State in which the aerodrome is located.

3.19.2 An operator shall verify that low visibility procedures (LVP) have been established, and will be enforced, at those aerodromes where low visibility operations are to be conducted.

### 3.20 LOW VISIBILITY OPERATIONS - PRACTICE APPROCHES

3.20.1 Operators who wish to perform automatic landings in Category 1 or better weather conditions for training purposes, or record data for operational demonstrations shall have appropriate procedures for the guidance of flight crew included in the operations manual.

### 3.21 LOW VISIBILITY OPERATIONS – FLIGHT DISPATCH PROCEDURE


3.21.1 An operator shall ensure requirements for low visibility operations shall be included in the operator flight dispatch procedures.

3.21.2 The Operator shall have a system to inform the flight dispatch office regarding the status of the aircraft in respect low visibility operations including the requirement in paragraph [3.16.3](#).


3.21.3 Procedures as required in paragraph 3.21.1 shall be included in the operations manual.

### 3.22 LOW VISIBILITY OPERATIONS – FLIGHT OPERATIONS OFFICERS

3.22.1 If the system of flight dispatch of the operator requires the employment of a Flight Operations Officer (FOO), the operator shall ensure that the FOO receive initial and annual recurrent training in respect of flight dispatch in connection with low visibility operations.


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3.22.2 The initial and recurrent training programs as required by paragraph 3.22.1 shall have the approval of Civil Aviation Authority, Sri Lanka and be included in the operations manual.

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## Chapter - 4 THE AERODROME

### 4.1 CERTIFICATION

- 4.1.1 Certification and granting approval for an aerodrome to conduct Category 11 and Category 111 operations is the responsibility of Civil Aviation Authority, Sri Lanka.
- 4.1.2 Official recording of such approval will be by a suitable annotation in the Aerodrome certificate.
- 4.1.3 This annotation will stipulate that Category 11 / 111 approaches may be accepted at that aerodrome when the following elements have met or exceeded the specifications described in this Chapter.
  - (a) Runways and taxiways
  - (b) Obstacle Limitation requirements;
  - (c) Pre threshold terrain
  - (d) Visual Aids;
  - (e) Non visual aids
  - (f) Secondary power supply
  - (g) Aerodrome services (Aerodrome safety assessment / Ground control movement of aeroplanes and vehicles / Security and surveillance / Air traffic services / Meteorological services / Aeronautical information service)
  - (h) Instrument approach procedures
- 4.1.4 After granting approval for Category 11 / 111 operations to an Aerodrome Operator Civil Aviation Authority, Sri Lanka shall announce this fact through NOTAM and also amend the Aeronautical Information publication.
- 4.1.5 The references given in this manual are to ICAO documents. However whenever there is an approved Aerodrome Manual reference may be made to the Aerodrome Manual in addition to ICAO documents.

### 4.2 THE AERODROME OPERATOR

- 4.2.1 Aerodrome Operator shall publish appropriate procedures, instructions for the guidance and compliance of all applicable aerodrome staff during the period the

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aerodrome is conducting Category 11 and 111 operations which shall have the approval of Civil Aviation Authority, Sri Lanka.


- 4.2.2 It is the responsibility of the Aerodrome Operator to immediately cease Category 11 and 111 operations when any of the certifying criteria given in paragraph [4.1.3](#) are not met.
- 4.2.3 Certifying criteria given in paragraph [4.1.3](#) in this manual are in addition to requirements as given in Chapter 3 of the Manual of All Weather Operations (ICAO Doc 9365).
- 4.2.4 Hence when all requirements as tabulated in Chapter 3 of the Manual of All Weather Operations (ICAO Doc 9365) are not met the Aerodrome Operator shall cease Category 11 and 111 Operations.
- 4.2.5 When Category 11 and 111 operations are curtailed as per paragraph 4.2.2 and 4.2.4, such information shall be published in NOTAM and also Civil Aviation Authority, Sri Lanka shall be informed immediately.
- 4.2.6 When Category 11 /111 operations are curtailed at an aerodrome due to reasons in paragraph 4.2.2 and 4.2.4, the aerodrome operator shall obtain approval from Civil Aviation Authority, Sri Lanka prior to resuming Category 11 / 111 operations.

### 4.3 RUNWAYS AND TAXIWAYS

- 4.3.1 Physical characteristics of runways and taxiways shall comply with specifications and guidance material contained in ICAO Annex 14, Volume 1 and the Aerodrome Design manual (Doc 9157), Part 1 and 2.
- 4.3.2 In general the requirements for Category 11 / 111 operations are no more demanding than for those for Category 1 operations. However the separation distance between a holding bay or runway holding position and the center line of the runway may be significantly greater for Category 11 / 111 operations. Also the dimensions for the critical and sensitive areas may be greater for Category 11 / 111 operations.

### 4.4 OBSTACLE LIMITATION REQUIREMENTS

- 4.4.1 Obstacle Limitation Requirements for aerodromes situated in Sri Lanka shall comply with ICAO Annex 14, volume 1.
- 4.4.2 In addition, Sri Lanka will abide by the “Obstacle Limitation Surfaces” for CAT II/III runways as specified in Airport services manual (ICAO Doc 9137).
- 4.4.3 The limitation of obstacles in, and the dimension of, an obstacle free zone are to comply with ICAO Annex 14, volume 1.

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4.4.4 For Category 11 / 111 operations the obstacle free zone, extended when appropriate to the appropriate Category 11 obstacle clearance height, must not be penetrated by any obstacle except those specially permitted in ICAO Annex 14, volume 1.

4.4.5 Civil Aviation Authority, Sri Lanka will be responsible for determining the governing obstacle clearance limit which will determine the minimum CAT II/III DH.

#### 4.5 PRE-THRESHOLD TERRAIN

4.5.1 Civil Aviation Authority, Sri Lanka shall publish a Precision Approach Terrain Chart which conforms to specification in ICAO Annex 4 Chapter 6 for each precision approach runway intended to conduct Category 11 / 111 approaches.

4.5.2 A Precision Approach Terrain Chart is not required if the requisite information is available in the Aerodrome Terrain and obstacle Chart published in accordance with ICAO Annex 4 Chapter 5 by Civil Aviation Authority, Sri Lanka.


4.5.3 The Precision Approach Terrain Chart (or the Aerodrome Terrain and Obstacle Chart) shall be revised by Civil Aviation Authority, Sri Lanka whenever a significant deviation occurs to the published data.

4.5.4 Any additions or alterations to existing structures or terrain in the pre threshold area of a Category 11 / 111 runways must be monitored by the Aerodrome Operator to determine any effect on published information.

4.5.5 The determination of decision height by means of the radio altimeter may require consideration of the approach terrain out to 1000 meters from the threshold.

4.5.6 In the event that an alteration has a significant effect on radio altimeters then the amended data relating to the terrain profile must be brought to the notice of Civil Aviation Authority, Sri Lanka by the aerodrome operator, who shall disseminate such information rapidly.

4.5.7 The operation of some automatic landing systems is dependent among other things on the radio altimeters. The flare profile, the rate of descent at touchdown, and the distance of the touchdown point from the runway threshold can, therefore be effected by the profile of the terrain immediately prior to the threshold. The terrain most critical lies in an area 60 meters either side of the runway center line extending into the approach area to the distance of at least 300 meters before the threshold. The guidance material in ICAO Annex 14, Volume 1, makes reference to the maximum slopes of the pre threshold terrain which are normally acceptable for auto coupled approaches and automatic landings. However, radio altimeter inputs may also be required when the aeroplane is on final approach as much as 8 KM (5 NM) from touchdown and, at aerodromes where the terrain beneath the approach flight path is not approximately level, abnormal behavior may result.

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- 4.5.8 When the characteristics of the terrain are considered marginal for a particular type of aeroplane, a demonstration should be made to determine that the performance or functions of the flight control system is not adversely effected. The demonstration may take the form of flight trails or a suitable analysis.

## 4.6 VISUAL AIDS

- 4.6.1 Runway lights
- 4.6.2 Runway lights for Category 11 and 111 aerodromes shall be appropriate to the category of operation for which the runway is intended.
- 4.6.3 Approach, threshold, touchdown zone, runway edge, center line, runway end and other aerodrome lights shall comply with requirements as given in ICAO Annex 14, Volume 1.
- 4.6.4 It is appreciated that some runway lights in a particular system may fail, but if such failures are distributed in a manner which does not confuse the lighting pattern, the system may be regarded as serviceable.
- 4.6.5 It is difficult and expensive to provide monitoring of individual lights, except by regular visual inspection of all sections of the lighting system, and consideration may therefore be given to monitoring only the lighting circuits. To help safeguard recognizable patterns in the event of failure of a single circuit, circuits should be interleaved so that the failure of adjacent lights or cluster of lights will be avoided.
- 4.6.6 The design, maintenance and monitoring of lighting circuits shall be as contained in ICAO Annex 14, Volume 1 and the Aerodrome design manual (ICAO Doc 9157), Part 4.
- 4.6.7 When the lighting system does not comply with the requirements of ICAO Annex 14, Volume 1 (due to un serviceability etc;) the runway shall be downgraded from Category 11 / 111 status.
- 4.6.8 When the runway is downgraded as per requirement of paragraph 4.6.7 above, the Aerodrome Operator shall disseminate such information to all concerned including Civil Aviation Authority, Sri Lanka immediately by appropriate means.

## 4.7 RUNWAY MARKINGS

- 4.7.1 Runway markings shall be in accordance with ICAO Annex 14 and Aerodrome Design Manual (ICAO Doc 9157) for runways intended to conduct Category 11 and 111 Operations.
- 4.7.2 The conspicuity of runway markings and taxiway markings deteriorate rapidly, particularly at aerodromes having high movement rates. The Aerodrome Operator is

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required to have a program to inspect all runway markings at regular intervals and maintain marking to a standard suitable for Category 11 and 111 operations.

#### 4.8 NON VISUAL AIDS (ILS INSTALLATION)

4.8.1 The ILS ground equipment must meet with the facility performance requirement specified for Category II/III ILS contained in ICAO Annex 10, Volume I, Part 1.

4.8.2 The required components of a Category II/III ILS are:

- (a) Localizer (dual channel);
- (b) Glide path (dual Channel);
- (c) Middle marker (dual channel);
- (d) Outer marker or compass locator beacon (if not applicable DME collocated with the glide path antenna may be used as an acceptable alternate to part or all of the ILS marker beacon system or the compass locator beacon).

**NOTE:** All ILS installations in Sri Lanka will include items (a) through (d); however, the un serviceability of the outer marker or applicable alternative outer marker system will not necessitate a downgrading of the Category II/III system.


4.8.3 Flight inspections and ground checks of the ILS facilities shall be conducted as per ICAO Doc 8071 (Manual of testing of radio navigational aids) and respective manuals provided by the installation manufactures.

4.8.4 Aerodrome operators shall have a program to monitor the ILS ground equipment. Such program shall be in compliance with the guidance material contained in Attachment C to Part 1 of ICAO Annex 10 Volume 1.

4.8.5 To ensure that the integrity of the guidance signal radiated by the ILS is maintained during Category 11 / 111 approaches the aerodrome operator shall have procedures established to ensure that all vehicles and aircraft on the ground remain outside the ILS critical and sensitive area in conformity to ICAO Annex 10, Volume 1, Attachment C to Part 1.


4.8.6 ATS unit shall ensure that, the longitudinal separation between successive landing airplanes in Category 11 / 111 approaches are such that there is no deterioration to the integrity of the ILS signal.

4.8.7 Diffraction and / or reflection may also be caused by large aeroplanes in the vicinity of the runway which may effect both the glide path and the localizer signals. This additional area, outside the critical area is called the sensitive area. The extent of the sensitive area will vary with the characteristics of the ILS and the category of

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operations. It is essential to establish the level of interference caused by aircraft and vehicles at various positions on the aerodrome so that the boundaries of the sensitive areas can be determined.

- 4.8.8 Prior to granting approval to conduct Category 11 and 111 operations Civil Aviation Authority, Sri Lanka shall ensure the size and shape of the sensitive area for a particular category of operation is determined by the aerodrome operator to the satisfaction of the Authority.
- 4.8.9 The reliability of the ILS ground equipment is a measure of the frequency of unscheduled outages which may be experienced. Reliability will be increased by providing on line standby equipment and by duplication or triplication of key functions, including power supplies. The lowest value of operating minima can only be achieved with ILS that have high standard of reliability. The specification in ICAO Annex 10, Volume 1, Part 1, indicate the total maximum periods of time allowed outside the specified performance limits for each ILS facility performance requirements.
- 4.8.10 Aerodrome operators shall publish guidelines for maximum snow accumulations at the glide path antenna site, and the minimum area around the localizer and glide path antennas that must be protected from ground interference (if applicable).
- 4.8.11 Category II/III ILS installation will be downgraded to non-categorized status under the following conditions:
- (a) If the annual or routine flight inspection is delayed more than seven days;
  - (b) If there has been a significant change in ground conditions since the last flight inspection.
- The definition of “significant change” must be left to individual aerodrome electronic maintenance staffs since this could vary from eight inches of dry snow to one inch of wet snow (if applicable) or less than an inch of rain where the water table is near the surface. Where uncertainty exists, a flight inspection should be carried out.
- (c) If, during a snowfall, a number of successive pilot reports are received advising that the glide path angle is too high or too low (if applicable); or
  - (d) Where the standby localizer, glide path, or middle marker transmitter are not available.
- 4.8.12 Under all the conditions described in paragraph 4.8.11, an appropriate Class I NOTAM will be issued, as outlined in paragraph [4.15.3](#).

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## 4.9 SECONDARY POWER SUPPLIES

- 4.9.1 Requirements for the provision of secondary power supplies for the visual and non visual aids are specified in ICAO Annex 14, Volume 1 and ICAO Annex 10, Volume 1, Part 1 respectively. Prior to being authorized to conduct Category 11 and 111 approaches provisioning of secondary power supplies will conform to these requirements.
- 4.9.2 Change over times of secondary power supply will conform to guidance material in Aerodrome design manual (ICAO Doc 9157), Part 4 and in ICAO Annex 10, Volume 1, attachment C to part 1.
- 4.9.3 Secondary power supply is also required for essential communications and for other associated facilities, such as visibility measuring systems. Change over times for these facilities will be commensurate with the operations conducted.
- 4.9.4 When a runway is placed on Category II/III status, the standby on-site diesel power system becomes the primary source, and commercial power will revert to the standby source. In this way the backup power source (commercial electric) is available without interruption if the diesel generator system should fail.
- 4.9.5 One of the controller's actions when placing a runway on Category II/III status is the selection of diesel power as the primary source. He shall do so by the switching arrangement that is installed in the control tower enabling the controller to select diesel or commercial power. If such an arrangement is not available he shall request the appropriate authority to select diesel power as the primary source.
- 4.9.6 The Aerodrome Controller must be aware of the limitations of this system, particularly with regard to the number of starts that can be made over a given time period, the length of continuous running time of diesel generators, and minimum loading of the system.
- 4.9.7 If a failure occurs in the secondary power supply, the runway shall be declared unavailable for Category II/III approaches. However, if an aircraft is on final approach when the failure occurs, the pilot may complete the approach, and the ban then applied to subsequent approaches until secondary power is restored.

## 4.10 AERODROME SAFETY ASSESSMENT

- 4.10.1 In some conditions of limited visibility, air traffic controllers may no longer be able to see the whole movement area of the aerodrome but the pilots will still have the capability to see other traffic in their vicinity and to avoid if necessary. In worse conditions it may well be that nor the controller nor the pilot will be able to see the other traffic, and it may then become essential to have a system which effectively ensures the separation of aeroplane from aeroplane or aeroplane from vehicles.



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4.10.2 Aerodrome operator shall have a system to ensure the separation of airplanes from airplanes / vehicles which shall comply with guidance material contained in the ICAO manual of surface movement guidance and control system (SMGCS – ICAO Doc 9476).

4.10.3 In formulation of a system to ensure safe separation of aeroplanes and vehicles the Aerodrome operator shall conduct a comprehensive safety assessment of the aerodrome which requires examination of all relevant factors such as the layout of the movement area, aeroplanes and vehicle routings, relevant existing instructions and rules, meteorological records, movement statistics, records or runway intrusions, existing security procedures etc;

4.10.4 On completion of the safety assessment an action plan will be formulated which will dependent upon the characteristics of the movement area and the type of operation and will need consideration of the following.


- (a) Training of ground personnel
- (b) Maintenance of records by ATS of persons and vehicles on the maneuvering area
- (c) Non essential personnel and vehicles to be withdrawn from movement areas when limited visibility weather conditions prevail or are impending
- (d) Essential vehicles permitted to enter the movement area in limited visibility conditions to have R/T communications with ATS
- (e) Patrols where necessary in area of intensive vehicle movement where there is no traffic control point between those area and the runway
- (f) Unguarded aerodrome entrances to be locked and inspected at frequent intervals
- (g) Procedures to warn airlines and other organizations with the movement area access of the commencement of the more restricted measures
- (h) Development of appropriate emergency procedures

#### 4.11 GROUND MOVEMENT CONTROL OF AEROPLANES AND VEHICLES

4.11.1 Aerodrome Operator shall have ground movement control procedures adequate to ensure that runway incursions are prevented during any period when the runway is required for takeoff or landing operations.

4.11.2 Ground movement control procedures should constitute an appropriate combination of visual aids, non visual aids, radiotelephony communications,



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procedures, control and information facilities adequate to meet the guidance and control of all relevant traffic in the aerodrome in limited visibility conditions.


- 4.11.3 Aerodrome Operator should consider the use of aids specially designed for the control of ground movement of aerodrome traffic. Control, surveillance and safety will be enhanced by the use of supplementary facilities, such as aerodrome surface movement radar, controllable taxiway lights, stop bars, signs and local detectors such as induction loops, intrusion alarm devices etc; specially at aerodromes anticipating heavy traffic during low visibility conditions.
- 4.11.4 Ground movement control procedures adopted by Aerodrome Operator shall comply with provisions in ICAO Manual of surface movement guidance and control system (SMGCS – Doc 9476).

#### 4.12 SECURITY AND SURVEILLANCE

- 4.12.1 When no special surveillance equipment is employed and control over traffic on the movement area is maintained by procedures and visual aids, unauthorized traffic must be restricted by local security measures.
- 4.12.2 Normally, it may be expected that routine measures for restricting un authorized traffic on an aerodrome will be adequate for low visibility operations.
- 4.12.3 When the local situation is such that routine measures may not be adequate, Aerodrome operators are required to adopt special measures to provide surveillance and control, particularly for the ILS critical and sensitive areas and active runways.

#### 4.13 AIR TRAFFIC SERVICES

- 4.13.1 The provision of an Air Traffic control service is essential at aerodromes planned for Category 11 and 111 operations. The essential information to be provide to pilots is specified in ICAO Annex 11 and in Chapter 7 of PANS – ATM (ICAO Doc 4444).Guidance on the responsibilities of the ATS is given in the manual of Surface movement guidance and control system (SMGCS –Doc 9476).
- 4.13.2 Information on the status of relevant ground systems should be promptly passed to flight crews conducting instrument approaches. This is particularly critical for Category 11 and 111 operations. Although the general recommendation which encourages ATS to minimize transmission of extraneous communication to flight crews during critical phases of the flight is valid, care must be taken to not filter information which may seem unimportant to ATC, but which in fact may be operationally relevant. Accordingly, the following principle should be applied to radio communications between ATC and Category 11 / 111 arrivals or for aircraft departing in low visibility.

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- (a) As a minimum, information should be provided in accordance with the PANS – ATM (ICAO Doc 4444), Chapter 7.
- (b) ATC, Operators and the Authority should reach prior agreement on deficiencies, failures or anomalies that may occur which could affect Category 11 and 111 operations or low visibility take offs, particularly if they are site specific or unique.
- (c) Commonly agreed terminology should be devised to be applied by ATC for transmission to flight crews when the above occurrences take place.
- (d) Understanding should be reached on any situations which may occur for which ATC does not, or will not, advice landing aircraft.
- (e) As a general rule, if doubt exists regarding the operational relevance of the information, ATC will pass that information to flight crew who will decide its operational application and significance.


4.13.3 The Aerodrome Controller is the focal point on the aerodrome in so far as Category II/III operations are concerned. The Aerodrome Controller must, therefore, be immediately aware if any essential aerodrome element, as listed below, becomes unserviceable or is not operating to prescribed standards and tolerances (see paragraph [4.15](#) for NOTAM Procedures).

- (a) Approach, threshold, touchdown zone, centre line, edge and end lights;
- (b) ILS localizer, glide path, or middle marker;
- (c) RVR reporting system;
- (d) Commercial (electrical) and standby (diesel) power.

4.13.4 The status of those items listed in paragraph 4.13.3 (b), (c) and (d) will be available continuously by status indicators in the control tower. The lighting elements listed in paragraph 4.13.3 (a) will be checked daily, and unless advised to the contrary, the Aerodrome Controller will assume all lighting is within acceptable limits.


4.13.5 When any lighting element is found to be unserviceable, or below acceptable tolerances, the Aerodrome Controller will be so advised; he must also know when the element is restored to an acceptable status. Accordingly, the aerodrome management will have necessary procedures in place and arrange a reliable communication link between aerodrome maintenance and ATC unit to ensure this information is passed.

4.13.6 The Aerodrome Controller will, when Category II/III weather exists or is forecast, advice the appropriate authority whenever an essential aerodrome element is

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unserviceable. In this event, the Automatic Terminal Information Service (ATIS) broadcast will include the fact that Category II/III approaches are not authorized. Where ATIS is not available, incoming aircraft will be given this information as early as feasible.

- 4.13.7 When the ceiling is 200 ft. and/or the visibility is 550 meters, or when worse conditions exist or are considered imminent (within a time span of less than one hour), and providing inbound aircraft are scheduled, the Aerodrome Controller will switch airfield systems to standby power (refer to paragraphs [4.9.4](#) to 4.9.7).
- 4.13.8 Standby power to remote communication transceiver sites is not provided at some locations. At such locations a serviceable DC-powered transceiver shall be immediately available in the control tower.
- 4.13.9 When Category II/III approaches are made, special care is to be taken in the control of taxing aircraft. Holding position marking have been established at all aerodromes authorized for Category 11 and 111 operations on the basis of potential interference with ILS signals. It is mandatory that any taxiing aircraft or ground vehicles are not allowed to enter ILS critical areas, when Category II/III approaches are in progress.
- 4.13.10 Terminal Controllers shall assume that pilots using Category II/III facilities prefer an automatic coupled approach. Accordingly, terminal controllers shall vector the aircraft to intercept and be stabilized inbound on the localizer at least five miles prior to crossing the outer marker (or a similar distance prior to interception of the glide path where no outer marker is installed). The aircraft shall be at minimum vectoring altitude before interception of the glide path.
- 4.13.11 An aircraft overflying the localizer at close range may cause interference which could jeopardize a Category II/III approach by a following aircraft. To minimize this risk, departing aircraft should have started their takeoff run before the approaching aircraft is within 4 NM of the threshold. In the case of consecutive approaches, enough separation should be allowed to ensure the preceding aircraft cannot adversely affect the localizer signal for the following aircraft; the minimum separation in such cases is 5 NM.
- 4.13.12 It is necessary to provide information as much as possible and as early as possible to pilots in respect of any un serviceability resulting the downgrading of the runway during Category 11 and 111 operations. This information will be helpful to Pilot in command to make decisions in respect of a diversion or to continue to the destination.
- 4.13.13 Loss of following CAT II/III elements can result in a wide variation of landing limits, depending on remaining aids available and individual company operations specifications. By providing information to the pilot-in-command he will be able to determine his appropriate action, either to divert to his alternate aerodrome or continue the approach down to CAT I limits.

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- (a) Category II/III approach and runway lighting;
- (b) RVR system;
- (c) Standby power;
- (d) ILS outside Category II/III tolerances.

4.13.14 In addition to information normally transmitted by approach control, the following information must be passed by the appropriate controller to the pilot of every arriving aircraft.

- (a) The current RVR readings for the landing runway (or the reported metrological visibility if the RVR system is unserviceable).
- (b) Un serviceability of any component parts of the Category 11 / 111 facilities not previously broadcast on the arrival ATIS.


#### 4.14 METEOROLOGICAL SERVICES

4.14.1 Aerodrome Operators shall ensure that meteorological information provided in support of Category 11 and 111 operations shall be as specified in ICAO Annex 3 and amplified in the manual of Aeronautical Meteorological Practice (ICAO Doc 8896).

4.14.2 Aerodrome Operators shall ensure that RVR assessment and reporting shall comply with requirements in Manual of Runway visual range observing and reporting Practices (ICAO Doc 9328).

4.14.3 In addition to the normal meteorological information in routine hourly and special reports, RVR values must be known at the touchdown and mid-point prior to commencement of a CAT II/III approach. Accordingly, two transmissometers are required for each CAT II/III runway, one at the touchdown point, designated the “A” system, and one at the mid-point, normally half-way down the runway, designated the “B” system. Readouts from both systems are to be continuously available in the Aerodrome Controller position. For CAT III operations an additional rollout RVR is required.

4.14.4 Information on turbulence, wind shear and slant visual range could be invaluable during CAT II/III approaches. Pilots who have just completed approaches are the only reliable source of such information, and therefore should be encouraged to report any significant values in these areas so that the information can be passed to succeeding aircraft.

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#### 4.15 AERONAUTICAL INFORMATION SERVICES (NOTAM PROCEDURES)


- 4.15.1 When Civil Aviation Authority, Sri Lanka grant approval for an airport to conduct Category 11 and 111 operations such information shall be published in the Aeronautical Information Publication (AIP) of Sri Lanka and also disseminated through Class 11 NOTAM.
- 4.15.2 Whenever the airport does not comply with any criteria required in this manual the airport shall be downgraded from Category 11 / 111 status.
- 4.15.3 It is the responsibility of the Air Traffic Control Officers to originate the messages downgrading the airport from Category 11 / 111 status (or upgrading the airport).
- 4.15.4 The type of NOTAM normally employed should be “Voice Advisory” (and/or ATIS, where applicable). Class 1 NOTAM should be used when it is known the downgrading will be of long duration.

#### 4.16 INSTRUMENT APPROACH PROCEDURES

- 4.16.1 Civil Aviation Authority, Sri Lanka shall publish Instrument approach procedures for the use of Category 11 / 111 approaches. Such procedures shall comply with design criteria contained in PANS – OPS (ICAO Doc 8168).
- 4.16.2 An OCH is required for Category 11 but not for Category 111 operations. The latter is permitted provided the Obstacle Limitation criteria are met as given in Paragraph [4.4](#).

#### 4.17 CERTIFICATION OF FOREIGN AERODROMES

- 4.16.3 Prior to granting approval for Sri Lanka registered aircraft to conduct Category 11 / 111 approaches in a foreign country the Flight Operations Inspector from Civil Aviation Authority, Sri Lanka shall ensure that;
- (a) The Air Operator is authorized by Civil Aviation Authority, Sri Lanka to conduct Category 11 /111 Operations in his Air Operator Certificate using the type of aircraft requested.
  - (b) The Air operator has obtained the approval from the Civil Aviation regulatory authority of the State of the aerodrome to conduct Category 11 and 111 operations at the requested Aerodrome if such approval is required.

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- (c) As a minimum the Inspector must check the documentation issued by the Civil Aviation regulatory authority of the State of the aerodrome certifying the requested aerodrome is authorized to Category 11 /111 operations.
- (d) That the Air Operator has conducted an acceptable briefing and provide adequate guidance material (eg; Category 11 / 111 Charts) to the Pilot in Command in respect of the requested aerodrome.
- (e) That the Air Operator has adequately briefed the Pilot in Command in respect of, applicable aerodrome operating minima including minima for low visibility takeoff.