



---

***AMC 035 – ALL WEATHER OPERATIONS GUIDELINES***

---

**ACCEPTABLE MEANS OF COMPLIANCE  
(AMC)**

**AMC 035**

**GUIDE FOR  
ALL WEATHER OPERATIONS  
(AWO)**

**INDEX**



***This Page Intentionally Left Blank***



**AMC 035**

**ALL WEATHER OPERATIONS**

***INDEX***

<b>Section</b>	<b>Title</b>	<b>Page No.</b>
<b>1.</b>	<b>Introduction</b> .....	<b>1</b>
1.1	General .....	1
1.2	Applicability.....	1
1.3	References .....	1
1.4	Terminology .....	1
<b>2.</b>	<b>Instruments and Equipment</b> .....	<b>2</b>
2.1	General .....	2
2.2	Required Instruments and Equipment.....	2
2.3	Flight Control Guidance System.....	3
2.4	Radio Altimeter.....	4
<b>3</b>	<b>Approval Process</b> .....	<b>4</b>
3.1	Application.....	4
3.2	Supporting Documentation .....	5
3.3	Operations Evaluation Programme .....	7
3.3.1	General .....	7
3.3.2	Demonstrations .....	7
3.3.3	Records.....	9
<b>4.</b>	<b>Certification</b> .....	<b>10</b>
4.1	Approval.....	10
4.2	Certificate of Competency .....	10
Appendix 1	Compliance Statement .....	11
Appendix 2	Application Form for AWO .....	13



***This Page Intentionally Left Blank***



## 1. INTRODUCTION

### 1.1 General

Air Weather Operations (AWO or AWOPS) applies to an operator who requires an ILS landing minima with a decision height lower than 200 feet and a RVR of less than 400 metres. Appropriate Low Visibility Procedures must be in force at an aerodrome, according to information received from Air Traffic Services, before commencing a Low Visibility Take-off, an approach utilising EVS, a Lower than Standard Category I, an Other than Standard Category II or a Category II or III approach.

*Note: Please refer to AMC-034 for additional operational approval requirements for the use of Head-up Display and Enhanced Visual Systems (HUD/EVS).*

This guidance material is intended for all operators of Aruban registered aircraft planning to conduct All Weather Operations. This AMC provides information on the application, required equipment, the approval process, as well as guidance on operational procedures and training. All Aruban registered aircraft planning to conduct AWO operations shall be required to obtain an approval from the DCA before the commencement of operations.

### 1.2 Applicability

This AMC applies to the initial issue of AWO for CAT II ILS and the approval process for CAT III ILS can only be initiated once an operator has operational experience using CAT II ILS and associated AWO. AWO approval will be granted only to operators of aircraft with the appropriate equipment and applying additional training, procedures and maintenance.

*Note: The process for operational approval is the same for AOC holders and General Aviation operators.*

### 1.3 References

The following references should be used when processing applications for All Weather Operations;

- (a) EU OPS 1, Subpart E (primary reference for all operators and must be reviewed before application..)
- (b) FAA Advisory Circular 120-29.

*Note: TGL 12 – AWO for General Aviation operators is no longer relevant.*

### 1.4 Terminology

- (a) Terminology applicable to AWO can be found in JAR OPS 1 for Aruba, Subpart E;

**Category II** - Landing following a precision approach using an Instrument Landing System or Microwave System with a decision height of below 200 feet but not less than 100 feet. Runway visual range: not less than 300 metres.



**Category IIIA** - Landing following a precision approach using an Instrument Landing System or Microwave System with a decision height of below 100 feet. Runway visual range: not less than 200 metres.

**Category IIIB** - Landing following a precision approach using an Instrument Landing System or Microwave System with a decision height of below 50 feet. Runway visual range: less than 200 metres but not less than 75 metres.

**Enhanced vision system (EVS).** An electronic means of displaying a real-time image of the external scene through the use of imaging sensors.

**Lower than Standard Category I Operation.** A Category I Instrument Approach and Landing Operation using Category I DH, with an RVR lower than would normally be associated with the applicable DH.

**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.

*Note: Some States refer to LVP (as applied at an aerodrome) as All Weather Operations.*

**Low Visibility Take-Off (LVTO).** A take-off where the Runway Visual Range (RVR) is less than 400 m.

**Other than Standard Category II Operation.** A Category II Instrument Approach and Landing Operation to a runway where some or all of the elements of the ICAO Annex 14 Precision Approach Category II lighting system are not available.

## 2. INSTRUMENTS AND EQUIPMENT

### 2.1 General

The AFM (or supplement) should indicate that the aircraft is approved for AWO and the instruments and equipment, as fitted, would normally meet the certification requirements for AWO. The required instruments and equipment must be installed in each aircraft and approved by the DCA before being used in a Category II/III operation. All instruments and items of equipment required must be capable of performing as necessary for Category II/III operations.

Approval is also required after each subsequent alteration to these instruments and items of equipment. The DCA requires the aircraft to be equipped in accordance with EASA CS-AWO or an equivalent standard accepted by the DCA.

### 2.2 Required Instruments and Equipment

- (a) Two localiser and glide slope receiving systems. Each system must provide a basic ILS display and each side of the instrument panel must have a basic ILS display. However, a single localiser antenna and a single glide slope antenna may be used.
- (b) A communications system that does not affect the operation of at least one of the ILS systems.



- (c) A marker beacon receiver that provides distinctive aural and visual indications of the outer and the middle markers.
- (d) Two gyroscopic pitch and bank indicating systems.
- (e) Two gyroscopic direction indicating systems.
- (f) Two airspeed indicators.
- (g) Two sensitive altimeters adjustable for barometric pressure, having markings at 20 foot intervals and each having a placarded correction for altimeter scale error and for the wheel height of the aircraft.
- (h) Two vertical speed indicators.
- (i) A flight control guidance system that consists of either an automatic approach coupler or a flight director system. A flight director system must display computed information as steering command in relation to an ILS localiser and, on the same instrument, either computed information as pitch command in relation to an ILS glide slope or basic ILS glide slope information. An automatic approach coupler must provide at least automatic steering in relation to an ILS localiser. The flight control guidance system may be operated from one of the receiving systems required by subparagraph (a) of this paragraph.
- (j) For Category II/III operations with decision heights below 150 feet either a marker beacon receiver providing aural and visual indications of the inner marker or a radio altimeter.
- (k) Warning systems for immediate detection by the pilot of system faults in items (a), (d), (e), and (i) and, if installed for use in Category III operations, the radio altimeter and auto-throttle system.
- (l) Dual controls.
- (m) An externally vented static pressure system with an alternate static pressure source.
- (n) A windshield wiper or equivalent means of providing adequate cockpit visibility for a safe visual transition by either pilot to touchdown and rollout.
- (o) A heat source for each airspeed system pitot tube installed or an equivalent means of preventing malfunctioning due to icing of the pitot system.

### 2.3 Flight Control Guidance System

All components of the flight control guidance system must be approved as installed by the evaluation program specified in the above paragraph if they have not been approved for Category III operations under applicable type or supplemental type certification procedures.

In addition, subsequent changes to make, model, or design of the components must be approved under this paragraph. Related systems or devices, such as the auto throttle and computed missed



approach guidance system, must be approved in the same manner if they are to be used for Category II operations.

## 2.4 Radio Altimeter

A radio altimeter must meet the performance criteria of this paragraph for original approval and after each subsequent alteration.

- (a) It must display to the flight crew clearly and positively the wheel height of the main landing gear above the terrain.
- (b) It must display wheel height above the terrain to an accuracy of  $\pm 5$  feet or 5 percent, whichever is greater, under the following conditions:
  - (1) Pitch angles of zero to  $\pm 5^\circ$  about the mean approach attitude.
  - (2) Roll angles of zero to  $20^\circ$  in either direction.
  - (3) Forward velocities from minimum approach speed up to 200 knots.
  - (4) Sink rates from zero to 15 feet per second at altitudes from 100 to 200 feet.
- (c) Over level ground, it must track the actual altitude of the aircraft without significant lag or oscillation.
- (d) With the aircraft at an altitude of 200 feet or less, any abrupt change in terrain representing no more than 10 percent of the aircraft's altitude must not cause the altimeter to unlock, and indicator response to such changes must not exceed 0.1 seconds and, in addition, if the system unlocks for greater changes, it must reacquire the signal in less than 1 second.
- (e) Systems that contain a push to test feature must test the entire system (with or without an antenna) at a simulated altitude of less than 500 feet.
- (f) The system must provide to the flight crew a positive failure warning display any time there is a loss of power or an absence of ground return signals within the designed range of operating altitudes.

## 3. APPROVAL PROCESS

### 3.1 Application

An application for Air Weather Operations approval must be submitted to the DCA for their initial review using the form at Appendix 2. Any operational supporting documentation must be included in the application.



### 3.2 Supporting Documentation

The supporting documentation must be sufficient for the DCA to be able to make a determination. The relevant section of the AFM (or supplement) and documentation on modifications, STC etc for the aircraft serial number must be included as well as proposed amendments to;

- (a) MMEL/MEL.
- (b) Maintenance Programme. 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 programme, which must be approved by the DCA.

*Note: The operator must include procedures for the maintenance of AWO equipment such as adherence to manufacturer's instructions, modification procedures, repair procedures, system calibration policy etc. Additional engineering procedures should include action for downgrading and upgrading such as technical log entries, corrective action, placarding, release to service procedures, monitoring reliability of AWO critical components and reporting to DCA etc.*

- (c) Approved training programmes on engineer training (initial and recurrent).
- (d) MME if applicable
- (e) Operations Manual
  - (1) SOPs covering
    - Definitions.
    - Crew qualifications for AWOPS operations.
    - Equipment required for AWOPS operations.
    - MEL handling.
    - Data collection
    - Crew briefing
    - Low Visibility Take-Off:
      - Taxiing in low visibility conditions.
      - Take-off minima and lighting.
      - Crew visual visibility assessment.
      - Crew responsibilities/handling.
      - Visual references required.
      - Approved lateral guidance system.
      - ATC calls.
      - Contingency procedures including: engine failure between V1 and VR; and rejected take-off.
    - Approach and landing:
      - Modes of operation.
      - Statement that autopilot/flight director must be used whenever possible.
      - AWOPS fuel considerations.
      - Minimum visual references for landing.



- Approach Ban and RVR.
- Cross-wind limits.
- Effect of irregular pre-threshold terrain.
- Stabilised Approach Criteria.
- Correct seating and eye position.
- Designation of PF and PNF and their duties.
- Use of automatic flight control system.
- Checklist handling.
- Approach briefing.
- Radio communications handling.
- Monitoring and cross-checking of instruments and radio aids.
- Cockpit call outs.
- Contingency procedures including:
  - o use of equipment downgrade list;
  - o failures above and below decision height;
  - o ILS deviation warnings;
  - o autopilot disconnect;
  - o auto-throttle disconnect;
  - o electrical failures;
  - o engine failure;
  - o failures and loss of visual references at or below decision height; and pilot incapacitation.

(2) Airport Requirements

- Airports approved for Cat II/III
- Special qualification airports (as applicable)

(3) Training syllabus

- Initial training
- Recurrent training/qualification
- Upgrade training
- Requalification training
- Recency of experience
- Differences training
- Simultaneous training and qualification for Cat II and III
- Ground training curriculum segment
- Surface movement control training
- Flight training curriculum segment
- Manoeuvres and procedures document
- Initial qualification
- Low visibility takeoff qualification
- Multiple aircraft type or variant qualification (as applicable)
- “High limit Captain” procedures
- Line checks
- Crew records and notification system

(f) TRTO simulator approval indicating AWO capability



- (g) Compliance Statement (refer Appendix 1)

### 3.3 Operations Evaluation Programme

#### 3.3.1 General

The DCA must evaluate, and approve where necessary, the following before operational approval;

- (a) TRTO & FSTD capability;
- (b) Training programme;
- (c) Aircraft systems;
- (d) Operating instructions (Operations Manual and MEL);
- (e) Operational procedures (FSTD and in-flight); and

#### 3.3.2 Demonstrations

Unless otherwise authorised by the DCA, the evaluation programme for each aircraft requires the demonstrations as specified in Appendix 1 to EU OPS 1.440, as follows.

- (a) *General.* The following procedures apply to the introduction and approval of low visibility operations.
- (b) *Operational Demonstration.* The purpose of the operational demonstration is to determine or validate the use and effectiveness of the applicable aircraft flight guidance systems, training, flight crew procedures, maintenance programme, and manuals applicable to the Category II/III programme being approved.
  - (1) At least 30 approaches and landings must be accomplished in 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 DCA.
  - (2) 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 DCA may also accept a reduction of the number of approach and landings based on credit given for the experience gained by another operator using the same aeroplane type or variant and procedures.
  - (3) If the number of unsuccessful approaches exceeds 5 % of the total (e.g. unsatisfactory landings, system disconnects) the evaluation programme



must be extended in steps of at least 10 approaches and landings until the overall failure rate does not exceed 5 %.

- (c) *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 DCA for evaluation.
- (d) *Data Analysis.* Unsatisfactory approaches and/or automatic landings shall be documented and analysed.
- (e) *Continuous Monitoring*
  - (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) The following information must be retained for a period of 12 months:
    - (i) The total number of approaches, by aeroplane type, where the airborne Category II or III equipment was utilised to make satisfactory, actual or practice, approaches to the applicable Category II or III minima; and
    - (ii) Reports of unsatisfactory approaches and/or automatic landings, by aerodrome and aeroplane registration, in the following categories:
      - (A) Airborne equipment faults;
      - (B) Ground facility difficulties;
      - (C) Missed approaches because of ATC instructions; or
      - (D) Other reasons.
  - (3) An operator must establish a procedure to monitor the performance of the automatic landing system of each aeroplane.
- (f) *Transitional periods*
  - (1) *Operators with no previous Category II or III experience*
    - (i) An operator without previous Category II or III operational experience may be approved for Category II or IIIA operations, after having gained a minimum experience of 6 months of Category I operations on the aeroplane type.
    - (ii) On completing 6 months of Category II or IIIA operations on the aeroplane type the operator may be approved for Category IIIB operations. When granting such an approval, the DCA may impose



higher minima than the lowest applicable for an additional period. The increase in minima will normally only refer to RVR and/or a restriction against operations with no decision height and must be selected such that they will not require any change of the operational procedures.

(2) *Operators with previous Category II or III experience.*

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

(g) *Maintenance of Category II, Category III and LVTO equipment.* 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 programme which must be approved by the DCA.

(h) Eligible Aerodromes and Runways

- (1) Each aeroplane type/on-board equipment/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.
- (2) For runways with irregular pre-threshold terrain or other foreseeable or known deficiencies, each aeroplane type/on-board equipment/runway combination must be verified by operations in Category I or better conditions, prior to commencing Category II or III operations.
- (3) 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/runway combination.
- (4) Operators using the same aeroplane type/variant and on-board equipment combination and procedures may take credit from each others' experience and records in complying with this paragraph.

### 3.3.3 Records

During the evaluation programme the following information must be maintained by the applicant for the aircraft with respect to each approach and made available to the DCA upon request;

- (a) Each deficiency in airborne instruments and equipment that prevented the initiation of an approach.
- (b) The reasons for discontinuing an approach, including the altitude above the runway at which it was discontinued.



- (c) Speed control at the 100 foot decision height if auto throttles are used.
- (d) Trim condition of the aircraft upon disconnecting the auto coupler with respect to continuation to flare and landing.
- (e) Position of the aircraft at the middle marker and at the decision height indicated both on a diagram of the basic ILS display and a diagram of the runway extended to the middle marker. Estimated touchdown point must be indicated on the runway diagram.
- (f) Compatibility of flight director with the auto coupler, if applicable.
- (g) Quality of overall system performance.

## **4. CERTIFICATION**

### **4.1 Approval**

The operational approval is issued as an amendment to the AOC holder's Operations Specifications or as a Letter of Approval (LOA) for non-AOC holders. The limits to be included in the Operations Specifications or LOA are stated in the relevant tables of EU OPS 1, Subpart E for the specific aeroplane category.

### **4.2 Certificate of Competency**

Once approved and upon request, the DCA will also prepare a Certificate of Competency for the operator to send to foreign states with CAT II/III airports for their approval. No person may conduct a Category II/III approach in a foreign country without the authorisation from the Regulatory Authority of that country and only then in accordance with that authority.



**APPENDIX 1**

**COMPLIANCE STATEMENT**

*The operator must complete this compliance statement indicating how the EU OPS 1 requirement is to be met with Operations Manual references*

<b>Requirement</b>
<p><b>OPS 1.430 &amp; Appendix 1 to OPS 1.430 - AOM, General:</b> An operator shall establish, for each aerodrome planned to be used, aerodrome operating minima that are not lower than the values given in Appendix 1. The method of determination of such minima must be acceptable to the DCA. Such minima shall not be lower than any that may be established for such aerodromes by the State in which the aerodrome is located, except when specifically approved by that State. <b>Compliance</b> (<i>Verify and record the OM references satisfying the requirement</i>)</p>
<p><b>OPS 1.435 – Terminology:</b> <b>Compliance</b> (<i>Verify and record the OM references satisfying the requirement</i>)</p>
<p><b>OPS 1.440 – General operating Rules:</b> <b>Compliance</b> (<i>Verify and record the OM references satisfying the requirement</i>)</p>



**OPS 1.445 – Aerodrome Considerations:**

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.

**Compliance** (*Verify and record the OM references satisfying the requirement*)

**OPS 1.450 – LVO, Training and Qualification:**

**Compliance** (*Verify and record the OM references satisfying the requirement*)

**OPS 1.455 – LVO, Operating Procedures**

An operator must establish procedures and instructions to be used for low visibility take-off, approaches utilising EVS, Lower than Standard Category I, other than Standard Category II, 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.

**Compliance** (*Verify and record the OM references satisfying the requirement*)



**OPS 1.460 – LVO, Minimum Equipment**

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, a lower than Standard Category I approach, an Other than Standard Category II approach, an approach utilising EVS, or a Category II or III approach in accordance with the AFM or other approved document.

**Compliance** (*Verify and record the OM references satisfying the requirement* )

**OPS 1.465 – VFR, Operating Minima**

**Compliance** (*Verify and record the OM references satisfying the requirement* )

**Applicant's Statement**

The undersigned certifies that the above information to be correct and true.

<b>Name of Accountable Manager:</b>	<b>Signature:</b>	<b>Date:</b>
-------------------------------------	-------------------	--------------





## APPENDIX 2 cont'd.



## Application for Special Operational Approvals

INS-16.020

<b>3(j.-l.) ALL WEATHER OPERATIONS (AWO), refer to AMC-035</b>			
<b>1. Scope of Application</b> <span style="float: right;"><i>(tick if applicable)</i></span>			
	DH	RVR	Take off minima
Lower than Standard Cat I			
CAT II			
Other than Standard CAT II			
CAT III			
<b>2. Maintenance Documentation</b> <span style="float: right;"><i>(tick if attached)</i></span>			
Proof of aircraft capability	Type Certificate Aircraft Flight Manual (AFM) or Service Bulletin (S/B) or Supplemental Type Certificate (STC)		
Exposition (MME)	Proposed amendment		
Maintenance programme	Proposed amendment		
MMEL/MEL	Proposed amendment		
<b>3. Aircraft Equipment</b> <span style="float: right;"><i>(tick if applicable)</i></span>			
Two localiser & glide slope systems		Two vertical speed indicators	
Communication system		Flight control guidance system	
Marker beacon with aural & visual indications		Dual controls	
Two gyroscopic pitch & bank indicating systems		External vented static pressure system with alternate source	
Two gyroscopic direction indicating systems		Windshield wiper	
Two airspeed indicators		Heated pitot system	
Two sensitive altimeters		Radio Altimeter	
<b>4. Operations</b> <span style="float: right;"><i>(tick if attached)</i></span>			
Operations Manual (SOPs)	Proposed amendment		
Aircraft checklist (QRH)	Proposed amendment		
Training syllabi	Proposed amendment		
TRTO Simulator	Approved for AWO		
Approach plates (make)			
<b>5. Proposed Schedule of Events</b>			
Documentation submission date			
TRTO inspection date			
Flight observation date			

