ALL WEATHER OPERATIONS CERTIFICATION

1. PURPOSE

This Advisory Circular is issued to provide a summary to the industry on Weather Operations (AWO) approval. All-weather operations is any surface movement, take-off, departure, approach or landing operations in conditions where visual reference is limited by weather conditions.

The guidance can be used by operators in the establishment of the requirements for the approvals related to take-off minima, alternate minima and approach/landing minima for all-weather operations, including 2D and 3D instrument approach operations and CAT II and III LVO.

2. REFERENCES.

The following materials were referred to for the development of this Advisory Circular:

a. Civil Aviation (Operation of Aircraft - Commercial Air Transport) Regulations, 2024,

b. Civil Aviation (Helicopter Operations) Regulations, 2024,

c. Civil Aviation (Personnel Licensing) Regulations, 2017 as amended,

d. Civil Aviation (Instrument and Equipment) Regulations, 2024,

e. Civil Aviation (Operation of Aircraft – General Aviation) Regulations, 2024,

3. INTRODUCTION

3.1 All Weather Operation (AWO) is any taxi, take-off and landing operations in conditions where visual reference is limited by weather conditions.

3.2 The operational approval granted by the Authority for AWO covers major elements such as the aircraft as a system, flight crew capabilities and flight procedures. The operational approval does not include aerodrome facilities.

3.3 The operator must take cognizance of the physical and design characteristics of the runways and taxiways, pre-threshold terrain topography and back-up services of the aerodromes of intended operation and ensure that they are certified by the State of the Aerodrome to ICAO standard specifications.

4. LOW VISIBILITY TAXI AND TAKE-OFF.

4.1 When an aerodrome visibility drops below a pre-determined level, the local ATC may declare LVP (Low Visibility Procedure) operation in effect.

4.2 Pilots are required to follow Low Visibility Procedure and use specific aerodrome taxi charts to ensure correct taxiing to the intended runway for take-off.

4.3 Low visibility take-off (RVR below 400 m or RVR as promulgated by the aerodrome authority, whichever is the higher) is predicated on the declared RVRs for the three runway zones to provide adequate visual reference for accelerate-go as well as accelerate-stop.

4.4 For LVP operation, the operator shall ensure that its pilots are trained in accordance with the policy and procedures approved by the Authority.

5. CATEGORY II AND III OPERATIONS.

5.1 Airworthiness Requirements.

5.1.1 Aeroplane equipment authorization

a. The operator should include in his application to the Authority relevant pages of

the AFM, TC, STC, TCDS and/or the aeroplane operations manual attesting that the aeroplane meets the relevant airworthiness requirements and performance criteria for Category II (CAT II) and/or Category III (CAT III) operations as well as autoland capabilities, whichever is applicable.

b. The operator should also include any promulgated limitations or procedures necessary for safe operation, such as:
   i. DA/H or AOM limitations;
   ii. Minimum airborne equipment prior to commencement of the AWO approach;
   iii. Equipment operating procedures and sequences;
   iv. Aircraft performance data; and
   v. Any factors affecting the aeroplane AWO operations.

5.1.2 Aircraft Maintenance Programme (AMP)

a. The operator shall maintain the aeroplane in accordance with the approved AMP with specific programmes for lower landing minima or All Weather take-off. The AMP should include at least the following:

i. Maintenance procedures to ensure continued airworthiness relative to All Weather operations;
ii. Procedure to revise and update the maintenance programme.

b. The operator shall also ensure that maintenance personnel are trained in accordance with training programmes approved by Authority.

5.1.3 AWO Procedures Manual

The purpose of the AWO Procedures Manual is to provide involved personnel and AWO authorized persons with a descriptive means aimed at ensuring safe and efficient All Weather Operations. The operator will ensure the manual addresses the following topics:

i. Maintenance procedures necessary to ensure continued airworthiness relative to All Weather operations;

ii. A procedure to revise and update the maintenance program;

iii. Method to identify, record or designate personnel currently assigned responsibility in managing the program, performing the

program, maintaining the program, or performing quality assurance for the program;

iv. This includes identification of any service provider or sub-contractor organizations, or where applicable, their personnel;

v. Verification should be made of the lower landing minima systems and configuration status for each aircraft brought into the maintenance or lower minimum program.

vi. Identification of modifications, additions, and changes which were made to qualify systems for the intended operation or minima, if other than as specified in the AFM, TC or STC.

vii. Identification of additional maintenance requirements and log entries necessary to change minima status;

viii. Any discrepancy reporting procedures that may be unique to the All Weather program. If applicable, such procedures should be compatibly described in maintenance documents and operations documents;

ix. Procedures which identify, monitor and report lower minimum system and component discrepancies for the purpose of quality control and analysis;

x. Procedures which define, monitor and report chronic and repetitive discrepancies;

xi. Procedure to monitor the performance of the autoland system components of each aeroplane that detects any undesirable trend before it becomes hazardous. i.e when setting alert levels in system reliability monitoring, consideration must be given to the levels or reliability assumed in qualifying the aeroplane for Category II or III operations.

xii. Procedures which ensure aircraft remain out of lower minimum status until successful corrective action has been verified for chronic and repetitive discrepancies;

xiii. Procedures which ensure the aircraft system status is placarded properly and clearly documented in the aircraft log book, in coordination with maintenance control, engineering, flight operations, and dispatch, or equivalent;

xiv. Procedures to ensure the downgrade of an aircraft All Weather capability status from Category III or Category II to Category I if applicable, in the event that an uncontrolled item of equipment is fitted or after any defect in an affected system or any event which results in disturbance of the system or when maintenance has been performed by persons other than those trained, qualified, or authorized to use or approve procedures related to All Weather operations;

xv. Procedures for upgrading capability from Category I to Category II or Category III as appropriate when serviceability is proven, normally by performing a successful Category II approach or Category III landing in Category I weather conditions.

xvi. Procedures for periodic maintenance of systems ground check, and systems flight check, as applicable; For example, following a heavy maintenance, suitable checks may need to be performed prior to maintenance release.

xvii. Provisions for an aircraft to remain in a specific All Weather capability status (e.g., Category II, Category III, Fail-Operational, Fail Passive) or other designated operational status used by the operator

xviii. Provision should be made for periodic operational sampling of suitable performance, i.e;

a. A recording procedure for both satisfactory and unsatisfactory results should be included.

b. Fleet sampling is not generally acceptable in lieu of specific aircraft assessment.

c. At least one satisfactory All Weather system operational use, or a satisfactory systems ground check, should be accomplished within 30 days, for an aircraft to remain in Category III status.

d. Any extension to an aircraft sampling period limit beyond 30 days, or use of statistical fleet sampling should be consistent with the manufacturer's current sampling recommendations and be based on the demonstrated reliability of that operator's aircraft flight guidance system performance in service.

6. INITIAL & CONTINUING MAINTENANCE TRAINING

The following operator maintenance personnel should receive initial and continuing training as necessary for an effective AWO program, including;

a. Mechanics;
b. Maintenance controllers;
c. Avionics technicians;
d. Personnel performing maintenance inspection and quality assurance; and
e. Other engineering personnel if applicable.

The training curriculum should include specific aircraft systems and operator policies and procedures applicable to All Weather operations.

6.1 Continuing Training

6.1.1 Continuing training should be accomplished;
a. At least Biennial; and
b. When a person has not been involved in the maintenance of the specified aircraft or systems for an extended period of more than 12 months.

6.1.2 The training should at least include, as applicable;
i. An initial and recurrent training program for appropriate operator and contracted personnel;

ii. Personnel considered to be included are maintenance personnel, quality and reliability groups, maintenance control, and incoming inspection and stores, or equivalent organizations.

iii. Training should include both classroom and at least some “hands-on" aircraft training for those personnel who are assigned aircraft maintenance duties.

iv. Subject areas for training should include;
a. Operational concepts,

b. Aircraft types and systems affected,
c. Aircraft variants and differences where applicable
d. Procedures to be used,
e. Manual or technical reference availability and use Processes, tools or test equipment to be used
f. Quality control
g. Methods for testing and maintenance release
h. Sign-offs required necessary,
i. Proper Minimum Equipment List (MEL) application
j. General information about where to get technical assistance as necessary
k. Necessary coordination with other parts of the operator's organization (eg. flight operations, dispatch etc.)and
l. Any other maintenance program requirements unique to the operator or the aircraft types or variants flown (e.g., human factors considerations, problem reporting).

v. Procedures for the use of outside vendors or vendor's parts that ensures compatibility to program requirements and for establishing measures to control and account for parts overall quality assurance
vi. Procedures to ensure tracking and control of components that are "swapped" between systems for trouble shooting when systems discrepancies cannot be duplicated. These procedures should provide for total system testing and/or removal of aircraft from lower minimum status.
vii. Procedures to assess, track and control the accomplishment of changes to components or systems pertinent to All Weather Operations for example; ADs, service bulletins, engineering orders, Authority requirements
viii. Procedures to record and report lower minimum operation(s) that are discontinued/ interrupted because of system(s) malfunction
ix. Procedures to install, evaluate, control, and test system and component software changes, updates, or periodic updates

x. Procedures related to the MEL remarks section use which identify All Weather related systems and components, specifying limitations, upgrading and downgrading

xi. Procedures for identifying All Weather related components and systems as "RII" items, to provide quality assurance whether performed in-house or by contracted vendors.

xii. Procedures to ensure the downgrade of an aircraft All Weather capability status from Category III or Category II to Category I.

xiii. Procedures for upgrading capability from Category I to Category II or Category III.

6.2 Reliability Reporting & Quality Control

The operator shall develop a data collection method to record approach and landing performance.

The Operator is required to record and report, the following information in form of reliability report;

a. The total number of approaches tracked;
b. The number of satisfactory approaches tracked, by aircraft /system type, and visibility;
c. The total number of unsatisfactory approaches and the reasons for unsatisfactory performance.
d. The total number of unscheduled removals of components of the related avionics systems.

The operator shall submit to the Authority, a monthly reliability report that contains the above information for a period of 1 year after been approved.

Reporting after the initial period should be in accordance with the established reporting requirements.

6.3 Configuration Control/System Modifications

6.3.1 The operator should ensure that any modification to systems and components approved for All Weather operations are not adversely affected when incorporating software changes, service bulletins, hardware additions or modifications.

6.3.2 Any changes to system components should be consistent with the aircraft manufacturer's, avionics manufacturer's, industry or processes acceptable to the Authority.

6.4 Flight Operations Requirements

6.4.1. Flight Crew Qualification.

The operator should include the following structured courses in the flight crew training programmes for All Weather operation:

a) Ground Training

1. the characteristics, capabilities and limitations of the navaids involved including the effect on airplane system performance of interference to the ILS signal caused by other landing, departing or overflying airplanes, and the effect of the infringement of ILS critical and sensitive areas by airplanes or vehicles in the maneuvering area;

2. the characteristics of the visual aids (e.g. approach lighting, touchdown zone lighting, centre line lighting).

3. the operation, capabilities and limitations of the airborne systems (e.g. the automatic flight control systems; monitoring and warning devices; flight instruments, including altimetry systems; and the means the pilot has to assess the position of the airplane during the approach, touchdown and rollout);

4. approach, including missed approach procedures and techniques, along with descriptions of the factors affecting height loss during missed approach in normal and abnormal airplane configurations;

5. the use and limitations of RVR, including the applicability of RVR readings from different positions on the runway, the different methods of assessing RVR, the conversion method of visibility into an RVR in some States, and the limitations associated with each method;

6. the basic understanding of obstacle limitation and the obstacle-free zone, including missed approach design criteria and obstacle clearance for Category II and III operations (refer to PANS-OPS, Volume I);

7. the effects of low-level wind shear, turbulence and precipitation;

8. pilot tasks at decision height, and procedures and techniques for transition from instrument to visual flight in All Weather conditions.

9. action to be taken if the visual reference becomes inadequate when the airplane is below 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;

10. use of alert height and appropriate actions;

11. action to be taken in the event of failure of approach and landing equipment above and below decision height;

12. recognition of and action to be taken in the event of failure of ground equipment;

13. significant factors in the determination of decision height;

14. effect of specific airplane malfunctions (e.g. engine failure) on auto-throttle, auto-pilot performance, etc.;

15. procedures and precautions to be followed while taxiing during limited visibility conditions; and

16. the existence and effects of visual illusions.

b) Flight Simulator and/or Airplane Flight Training

1. approaches with all engines operating, and with an engine inoperative, using the appropriate flight guidance and control systems installed in the aeroplane down to the appropriate minimum height, without external visual reference, followed by transition to visual reference and landings;

2. approaches with all engines operating, and with an engine inoperative, using the appropriate flight guidance and control systems installed in the aeroplane down to the appropriate

minimum height, followed by missed approaches, all without external visual reference;

3. approaches utilizing the automatic flight control and landing system, followed by reversion to manual control for flare and landing after disconnecting the automatic system at low level, if appropriate;

4. approaches utilizing the automatic flight control and landing system with automatic flare, automatic landing and, where appropriate, automatic roll out;

5. procedures and techniques for reversion to instrument flight and the execution of a missed approach from DA/H, including obstacle clearance aspects; and

6. go-around from a height below decision height which may result in a touchdown on the runway in cases of a go-around initiated from a very low altitude, e.g. such as to simulate failures or loss of visual reference prior to touchdown.

7. APPLICATION FOR APPROVAL

7.1 The operator should arrange to meet Authority as soon as possible, at least 90 working days in advance of his plan to engage in all-weather operations.

7.2 The 5-step/phase structured process is applicable and it comprises pre-application meeting, Formal application, Document evaluation/assessment, Flight provision/validation and award/rejection of the application.

7.3. The application package should include the following items:

a. Application letter with statement on operating experience, types of aircraft and currently approved Instrument Approach Procedure (IAP);

b. Application form

c. AWO category applied for and with the relevant minima, LVP if applicable;

d. List of destination and alternate aerodromes with categorization approved for AWO operations;

e. Relevant pages of AFM, Operations manual stating operator operating policy and/or procedures and, training programmes; and

f. Proposed timeline, if any, for the completion of aeroplane and crew qualification.

g. Any other details that may be required by the Authority

7.4. The grant of operational approval depends on successful evaluation of the submitted documents, approval and validation of crew training programmes, and compliance with requirements set out in section 6.

8. ADDITIONAL REQUIREMENT

8.1 Operational Demonstration

a. Inspection of the specific aircraft to be used for AWO to be performed to Check on the condition of the installed instruments and equipment required for AWO.

b. The purpose of operational demonstration is to determine or validate the use and effectiveness of the applicable aeroplane flight guidance system (including HUDLS if any), crew procedures, training, maintenance programmes and operating policy and/or procedures applicable to CAT II/III operations.

c. Operational demonstration is applicable to the introduction and the approval of All Weather operations for new aeroplane type and the requirements are as follows:

i. At least 30 approaches and landings must be accomplished utilizing onboard CAT II/III system of the aeroplane type if the requested DH is 50 ft or higher;

ii. If the DH is less than 50ft, at least 100 approaches and landings must be accomplished

iii. Unsuccessful approaches such as those due to unsatisfactory landings or system disconnect, shall not exceed 5% of the total. In such instance, the evaluation programme must be extended in step increments of 10 approaches and landings until over-all failure rate does not exceed 5%

iv. On a case by case basis, Authority may consider granting credits in the form of reduction to the number of required approaches and landings based on the operator's experience gained from operating other aeroplane-type.

d. The operator shall develop a data collection method to record approach and landing performance which should include the following information:

i. Deficiencies relating to airborne equipment that causes inability initiate an approach

ii. Reasons for abandoning an approach and the altitude above the runway where the approach was discontinued or the autoland system disengaged

iii. Touchdown and/or rollout: A landing is considered satisfactory if autopilot or pilot is able to correct, with normal control input, the lateral velocity so as to remain within the lateral confines of the runway. The data for the record should include, at touchdown, the approximate lateral and longitudinal position, indicated airspeed and the sink rate.

iv. Summary of the operational demonstration data shall be made available to the Authority for evaluation.

8.2. Continuous Monitoring

8.2.1 After initial authorization, the operator must continuously monitor the operations to detect any undesirable trends. An acceptable method is by flight crew report.

8.2.2. The operator shall retain for a period of 12 months, information on:

a. Total number of satisfactory CAT II/III approaches by aeroplane-type; and
b. Reports of unsatisfactory approaches and/or autolands by aerodrome and aeroplane registration on the following:

i. Airborne equipment faults;
ii. Ground facility difficulties;
iii. Any other reasons.

c. Additionally, the operator shall establish a procedure to monitor the performance of the autoland system and/or HUDLS to touchdown, as appropriate, of each aeroplane.

8.2.3 Any unsatisfactory report shall be thoroughly investigated.

8.3 Aerodromes and Runways

8.3.1 The aeroplane-type versus the runway must be verified by successful completion of at least one landing in CAT II or better conditions prior to commencing CAT III operations

8.3.2 Runways with irregular pre-threshold terrain or other perceived or known deficiencies must be satisfactorily verified in CAT I or better conditions before lowering in steps to CAT II followed by CAT III.

8.4 Aeroplane and Crew Recency

8.4.1 To maintain aeroplane CAT III approach and autoland currency, the aeroplane must successfully complete an autoland within the previous 28 day period.

8.4.2 Flight crew CAT II/III recency is maintained by a minimum number CAT II/III approaches with autolands conducted either in flight or in an Authority-approved flight simulator. The number and the conduct of the exercise, as in the case of the use of a flight simulator, shall be approved by Authority.

8.5. Transition period

8.5.1 An operator without prior CAT II experience may be approved for CAT II or CAT IIIA operations after having gained a minimum experience of 6 months of CAT I operations on the aeroplane type.

8.5.2 A current CAT II or CAT III operator introducing a new aeroplane-type may be approved for CAT II or CAT IIIA operations for an Authority-approved transition period (normally 6 months) before being granted approval for lower category operations.

9. WITHDRAWAL OF APPROVAL.

9.1 To ensure safety of operation the operator should take positive steps which may include suspending the aeroplane or crew from AWO operations.

9.2 Violation or failure to comply with AWO operating requirements may result in withdrawal of the approval by the Authority.

Director Safety Regulation