



ESWATINI CIVIL AVIATION AUTHORITY

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RECORD OF AMENDMENTS

All amendments to this AC shall contain the authorisation of ESWACAA.

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Order

SW-FSSD-OD-001

ESWATINI CIVIL AVIATION AUTHORITY

June 2021

RUNWAY SURFACE CONDITION AND REPORTING FORMAT

Foreword

The changes on runway safety aspects arising from operational experience and the precise need to present information in a more useful format has driven the originators, the users and those affected to provide an overarching conceptual understanding of the surface friction characteristics that contribute to controlling an aircraft via the critical tire-to-ground contact area.

The intent is to provide broad and fundamental concepts and guidance on the new global reporting system and format for assessing and reporting runway surface conditions. The Kingdom of Eswatini will mandate the aforesaid to be applicable as of 5 November 2021

Legal Obligation

In terms of the Civil Aviation Authority Act, 2009, Section 31(3) *Powers and duties of the Director General*, Order CAA-O-GEN 010 dated June 2021, mandates the implementation and compliance with International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs) on the assessment and reporting of runway surface conditions as prescribed in the following ICAO Annexes:

- a. Annex 3 Meteorological Service for International Air Navigation, Chapter 5 on Aircraft Observations and Reports, 5.5 (i).
- b. Annex 6, Operation of Aircraft Part I International Commercial-Aeroplane & Operation of Aircraft Part II International General Aviation -Aeroplane. Section 4 and 5
- c. Annex 8 Airworthiness of Aircraft Part IIIB, Chapter 2 – 2.2.
- d. Annex 14 Aerodromes and Ground Aids Volume 1 – Chapter 2 and 10; and
- e. Annex 15 Aeronautical Information Services – Issuance of SNOWTAMs

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1. INTERPRETATIONS

The Interpretations herein have been transposed from ICAO Annexes, among and not limited to Annexes: 3, 6, 8, 14 and 15; ICAO Guidance Documents among and not limited to PANS-Aerodromes – Doc 9981 , PANS-AIM – Doc 10066 , PANS-ATM – Doc 4444.

“Aerodrome operator” means a person who has been granted an aerodrome certificate and registered in terms of the Civil Aviation (Aerodrome) Regulations currently in force.

“Authority means” The Civil Aviation Authority established in terms of the Civil Aviation Act currently in force.

“Declared distances” means:

- a) *Take-off run available (TORA)* – The length of runway declared available and suitable for the ground run of an aeroplane taking off.
- b) *Take-off distance available (TODA)* – The length of the take-off run available plus the length of the clearway, if provided.
- c) *Accelerate-stop distance available (ASDA)* – The length of the take-off run available plus the length of the stop way, if provided.
- d) *Landing distance available (LDA)* – The length of runway which is declared available and suitable for the ground run of an aeroplane landing.

“Landing area” means the part of a movement area intended for the landing or take-off of aircraft.

“Landing direction indicator ” means a device to indicate visually the direction currently designated for landing and for take-off.

“Manoeuvring area” means that part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.

“Runway” means a defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

“Runway condition assessment matrix (RCAM)” means a matrix allowing the assessment of the runway condition code, using associated procedures, from a set of observed runway surface condition(s) and pilot report of braking action.

“Runway condition code (RWYCC)” means a number describing the runway surface condition to be used in the runway condition report.

“Runway condition report (RCR)” means a comprehensive standardized report relating to runway surface condition(s) and its effect on the aeroplane landing and take-off performance.

“Runway end safety area (RESA)” means an area symmetrical about the extended runway centre line and adjacent to the end of the strip primarily intended to reduce the risk of damage to an aeroplane undershooting or overrunning the runway.

“Runway surface condition(s)” means a description of the condition(s) of the runway surface used in the runway condition report which establishes the basis for the determination of the runway condition code for aeroplane performance purposes.

- a) *Dry runway.* A runway is considered dry if its surface is free of visible moisture and not contaminated within the area intended to be used.
- b) *Wet runway.* The runway surface is covered by any visible dampness or water up to and including 3 mm deep within the intended area of use.
- c) *Slippery wet runway.* A wet runway where the surface friction characteristics of a significant portion of the runway have been determined to be degraded.
- d) *Contaminated runway.* A runway is contaminated when a significant portion of the runway surface area (whether in isolated areas or not) within the length and width being used is covered by one or more of the substances listed in the runway surface condition descriptors
- e) *Runway surface condition descriptors.* One of the following elements on the surface of the runway:
 - (i) *Compacted snow.* Snow that has been compacted into a solid mass such that aeroplane tires, at operating pressures and loadings, will run on the surface without significant further compaction or rutting of the surface.
 - (ii) *Dry snow.* Snow from which a snowball cannot readily be made.
 - (iii) *Frost.* Frost consists of ice crystals formed from airborne moisture on a surface whose temperature is below freezing. Frost differs from ice in that the frost crystals grow independently and therefore have a more granular texture.
 - (iv) *Ice.* Water that has frozen or compacted snow that has transitioned into ice, in cold and dry conditions.
 - (v) *Slush.* Snow that is so water-saturated that water will drain from it when a handful is picked up or will splatter if stepped on forcefully.
 - (vi) *Standing water.* Water of depth greater than 3 mm.
 - (vii) *Wet ice.* Ice with water on top of it or ice that is melting.
 - (viii) *Wet snow.* Snow that contains enough water content to be able to make a well-compacted, solid snowball, but water will not squeeze out.

“Threshold” means the beginning of that portion of the runway usable for landing.

“Touchdown zone” means the portion of a runway, beyond the threshold, where it is intended landing aeroplanes first contact the runway.

2. Service Providers/Operator's Obligations

2.1 Aerodrome Operator

- 2.1.1 An Aerodrome Operator for a certified International Aerodromes (Scheduled, Non-scheduled, Alternate) shall develop an inspection programme. The format, approval and amendment process of the Inspection Programme shall follow the established amendment processes of the Aerodrome Manual.
- 2.1.2 For aerodrome that is required to be registered under Civil Aviation (Aerodromes) Regulations, the inspection programme shall be included in the procedure for notification of aerodrome data contemplated in the Civil Aviation Authority (Aerodromes) Regulations; currently in force.
- 2.1.3 Information on the condition of the movement area and the operational status of related facilities shall be provided to the appropriate Aeronautical Information Services Units, and similar information of operational significance to the Air Traffic Services Units, to enable those units to provide the necessary information to arriving and departing aircraft. The information shall be kept up to date and changes in conditions reported without delay.
- 2.1.4 The condition of the movement area and the operational status of related facilities shall be monitored, and reports on matters of operational significance affecting aircraft and aerodrome operations, shall be provided to the arriving and departing aircraft so that appropriate action may be taken, particularly in respect of the following:
- a) construction or maintenance work;
 - b) rough or broken surfaces on a runway, a taxiway or an apron;
 - c) water on a runway, a taxiway or an apron;
 - d) anti-icing or de-icing liquid chemicals or other contaminants on a runway, taxiway or apron;
 - e) other temporary hazards, including parked aircraft;
 - f) failure or irregular operation of part or all of the aerodrome visual aids; and
 - g) failure of the normal or secondary power supply.

- 2.1.5 Daily inspections shall be carried out by the Aerodrome Operator certified as an International Aerodrome and/or registered in terms of the Civil Aviation (Aerodrome) Regulations currently in force. The inspections shall include but not limited to the inspections of:
- a) The manoeuvring area, at a frequency of:
 - i. At least once where the aerodrome reference code number is 1 or 2
 - ii. At least twice where the aerodrome reference code number is 3 or 4;
 - b) For the runway(s), inspections in addition to a) whenever the runway surface conditions may have changed significantly due to meteorological conditions.
- 2.1.6 The aerodrome operator shall ensure personnel assessing and reporting the runway surface conditions are trained and competent to perform their duties.
- 2.1.7 Whenever water is present on a runway, a description of the runway surface conditions should be made available using the following terms:
- a) DAMP — the surface shows a change of colour due to moisture.
 - b) WET — the surface is soaked but there is no standing water.
 - c) STANDING WATER — for aeroplane performance purposes, a runway where more than 25 per cent of the runway surface area (whether in isolated areas or not) within the required length and width being used is covered by water more than 3 mm deep.
- 2.1.8 Information that a runway or portion thereof may be slippery when wet shall be made available.
- 2.1.9 Notification shall be given to aerodrome users when the friction level of a paved runway or portion thereof is less than the one required.
- 2.1.10 The runway surface condition shall be assessed and reported through a runway condition code (RWYCC) .
- 2.1.11 Whenever an operational runway is contaminated, an assessment of the contaminant depth and coverage over each third of the runway shall be made and reported.
- 2.1.12 Friction measurements made on runway surface conditions with contaminants other than compacted snow and ice should not be reported.
- 2.1.13 Information that a runway or portion thereof is slippery wet shall be made available.

2.2 Air Navigation Services Provider

- 2.2.1 Information on the condition of the movement area and the operational status of related facilities provided to the appropriate Aeronautical Information Services Units, and similar information of operational significance to the Air Traffic Services units, to enable those units to provide the necessary information to arriving and departing aircraft, shall be kept up to date and reported without delay.
- 2.2.2 When receiving special air-reports by voice communications, Air Traffic Services Units shall forward them without delay to their associated Meteorological Watch Offices, with the exception of conditions applying to runway braking action encountered.
- 2.2.3 When receiving special air-reports by voice communications from Pilots concerning braking action encountered on an active runway that is not as good as reported by the Aerodrome Operator, the Air Traffic Service Units shall without delay forward the report to the appropriate aerodrome operator.

2.3 Aircraft Operator

- 2.3.1 The pilot-in-command shall report the runway braking action special air-report (AIREP) when the runway braking action encountered is not as good as reported by the Aerodrome Operator.
- 2.3.2 An approach to land shall not be continued below 300 m (1 000 ft) above aerodrome elevation unless the pilot-in-command is satisfied that, with the runway surface condition information available, the aeroplane performance information indicates that a safe landing can be made.
- 2.3.3 The following factors that may significantly affect the performance of the aeroplane shall be taken into account:
 - a) Mass of the aeroplane,
 - b) Aircraft operating procedures,
 - c) Pressure-altitude appropriate to the elevation of the aerodrome,
 - d) Runway slope,
 - e) Ambient temperature,
 - f) Surface wind, and
 - g) surface conditions of the runway at the expected time of use, i.e. presence of snow, slush, water, and/or ice for landplanes,

- 2.3.4 Such factors mentioned in preceding paragraph shall be taken into account directly as operational parameters or indirectly by means of allowances or margins, which may be provided in the scheduling of performance data or in the comprehensive and detailed code of performance in accordance with which the aeroplane is being operated.
- 2.3.5 Special air-reports shall be made by all aircraft whenever the following conditions are encountered or observed:
- a) Moderate or severe turbulence; or
 - b) Moderate or severe icing; or
 - c) Severe mountain wave; or
 - d) Thunderstorms, without hail that are obscured, embedded, widespread or in squall lines; or
 - e) Thunderstorms, with hail that are obscured, embedded, widespread or in squall lines; or
 - f) Heavy dust storm or heavy sandstorm; or
 - g) Volcanic ash cloud; or
 - h) Pre-eruption volcanic activity or a volcanic eruption; or
 - i) Runway braking action encountered is not as good as reported.
- 2.3.6 For aeroplanes for which application for certification was submitted on/or after 2 March 2019,
- a) Performance data shall be determined and furnished in the flight manual.
 - b) The said performance data shall be so that its application by means of the operating rules to which the aeroplane is to be operated in accordance with 5.2 of Annex 6, Part I, will provide a safe relationship between the performance of the aeroplane and the aerodromes and routes on which it is capable of being operated.
 - c) Performance data shall be determined and furnished for the:
 - i. Ranges of mass,
 - ii. Pressure-altitude,
 - iii. Ambient temperature,
 - iv. Wind velocity, and for
 - v. Any other operational variables for which the aeroplane is to be certificated.
 - d) Additionally, the take-off performance data and the at time of landing performance data shall include the:
 - i. Effect of the gradient and conditions (dry, wet or contaminated) of the take-off or landing surface as appropriate for landplanes.
 - ii. At time of take-off landing performance data need only to be determined with standard day temperature and level, dry landing surfaces for landplanes, but shall include the effect of water surface conditions, density of water, and strength of current for seaplanes.

Issued by

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