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1.0 PURPOSE

The purpose of this Advisory Circular (AC) is to guide aerodrome operators on installation and specifications of visual aids in compliance with the requirements provided for Surface Movement Guidance Control System (SMGCS) to enable control of runway incursions and occurrences at the movement area that may caused by low visibility operational conditions.


2.0 REFERENCE

- 2.1 Civil Aviation (Aerodrome Design and Operations) Regulations, 2024.
- 2.2 ICAO SMGCS Manual (Doc. 9476-AN/927)
- 2.3 ICAO Annex 14 Volume 1 – Aerodromes, 9th edition, July 2022.
- 2.4 Air Traffic Services Planning Manual (Doc 9426).

3.0 DESCRIPTION OF THE SYSTEM

A SMGCS system consists of the provision of guidance to, and control or regulation of, all aircraft, ground vehicles, and personnel on the movement area of an aerodrome. Guidance relates to facilities, information, and advice necessary to enable the pilots of aircraft or the drivers of ground vehicles to find their way on the aerodrome, and to keep the aircraft or vehicles on the surfaces or within the areas intended for their use. Control or regulation means the measures necessary to prevent collisions, and to ensure that the traffic flows smooth and freely.

A surface movement guidance and control system shall be provided at an aerodrome to ensure safe operation of the aircraft, vehicles, personnel and other equipment and thus prevent runway incursions and ramp incidences or accidents.

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4.0 CHARACTERISTICS FOR AN SMGCS SYSTEM

The design of a surface movement guidance and control system should take into account:


- a) Density of air traffic;
- b) Visibility conditions under which operations are intended;
- c) The need for pilot orientation;
- d) Complexity of the aerodrome layout; and
- e) Movements of vehicles.

The visual aid components of a surface movement guidance and control system, i.e. markings, lights and signs, should be designed to conform with the relevant specifications in ICAO Annex 14 – Volume I standards and recommended practices (SARPs). The surface movement guidance and control system should be designed to assist in the prevention of inadvertent incursions of aircraft and vehicles onto an active runway. In addition to that, the system should be designed to assist in the prevention of collisions between aircraft, and between aircraft and vehicles or objects, on any part of the movement area.

5.0 CONTROL OF TAXIWAY AND STOP BAR LIGHTING SYSTEM

Further, guidance on control of stop bars through induction loops and on a visual taxiing guidance and control system is contained in the Aerodrome Design Manual (ICAO Doc. 9157, Part 4). Where a surface movement guidance and control system is provided by selective switching of stop bars and taxiway centre line lights, the following requirements shall be met:

- a) taxiway routes which are indicated by illuminated taxiway centre line lights shall be capable of being terminated by an illuminated stop bar;
- b) the control circuits shall be so arranged that when a stop bar located ahead of an aircraft is illuminated, the appropriate section of taxiway centre line lights beyond it is suppressed; and
- c) the taxiway centre line lights are activated ahead of an aircraft when the stop bar is suppressed. Guidance on installation of stop bars and taxiway centre line lights in surface movement guidance and control systems is given in the Aerodrome Design Manual (Doc. 9157), Part 4.

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6.0 REQUIREMENTS FOR STOP BARS

Stop bar shall be provided at every runway-holding position serving a runway when it is intended that the runway will be used in runway visual range conditions less than a value of 550 m, except where:

- a) appropriate aids and procedures are available to assist in preventing inadvertent incursions of traffic onto the runway; or
- b) operational procedures exist to limit, in runway visual range conditions less than a value of 550 m, the number of:
 - i. aircraft on the maneuvering area to one at a time; and
 - ii. vehicles on the maneuvering area to the essential minimum.

These lights consist of a row of red unidirectional, in-pavement lights installed along the holding position marking. When extinguished by the controller, they confirm clearance for the pilot or vehicle operator to enter the runway. Controlled stop bars operate in conjunction with green centerline lead-on lights, which extend from the stop bar location onto the runway.

7.0 SURFACE MOVEMENT RADAR

Surface movement radar for the manoeuvring area should be provided at an aerodrome intended for use in runway visual range conditions less than a value of 350 m; and when traffic density and operating conditions are such that regularity of traffic flow cannot be maintained by alternative procedures and facilities.



Tanzania Civil Aviation Authority