



2013

**SURFACE MOVEMENT GUIDANCE
CONTROL SYSTEM (SMGCS)
TRAINING MANUAL**

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OPERATIONS SAFETY

MEMPHIS-SHELBY COUNTY

AIRPORT AUTHORITY

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Surface Movement Guidance and Control Systems (SMGCS) Manual

1.0 Surface Movement Guidance and Control System (SMGCS):

1.1 MEM has a Surface Movement Guidance and Control System (SMGCS), which provides guidance to, and control or regulation of, all aircraft and ground vehicles on the movement area of an airport. Guidance relates to facilities, information, and advice necessary to enable pilots of aircraft, or drivers of ground vehicles, to find their way on the airport and keep the aircraft or vehicles on the surfaces and areas intended for their use. Control or regulation means the measures necessary to prevent collisions and to ensure that the traffic flows safely. For additional information on the SMGCS and the MEM SMGCS Plan, refer to **AC 120-57**.

2.0 SMGCS Components. 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. (Reference: **ICAO SMGCS Manual Doc 9476-AN/927**) (for operations below 1200 feet runway visual range (RVR))

2.1 Stop Bars: Are required at intersections of an illuminated (centerline lighted) taxiway and an active runway for operations less than 600 feet RVR. 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.



Row of red, in-pavement lights that when illuminated designate a runway hold position. **NEVER CROSS AN ILLUMINATED RED STOP BAR!**

2.1.1. Normal operation of stop bars include:

2.1.1.1. When ATCT issues a clearance to the pilot to enter the runway they activate a timer. This action causes the red stop bar to be extinguished and the green lead-on lights to illuminate.

2.1.1.2. After traveling approximately 150 feet beyond the stop bar, the aircraft or vehicle activates a sensor. This sensor relights the red stop bar and extinguishes the first segment of the lead-on lights between the stop bar and the sensor. This protects the runway against inadvertent entry by a trailing aircraft or vehicle.

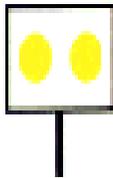
2.1.1.3. The aircraft then activates another sensor at approximately 300 feet which extinguishes the remaining lead-on lights.

2.1.1.4. If either sensor is not activated within a specified time limit, the stop bar will automatically reset to "on" and both sets of lead-on lights will be turned "off."

2.1.1.5. Should the pilot or vehicle operator have a discrepancy between the condition of the stop bar or lead-on lights and the verbal clearance from the controller, the aircraft or vehicle shall stop immediately.

!WARNING! Pilots Shall Never Cross An Illuminated Red Stop Bar!

2.2. **Runway Guard Lights:** Either elevated or in-pavement, will be installed at all taxiways which provide access to an active runway. They consist of alternately flashing yellow lights. These lights are used to denote both the presence of an active runway and identify the location of a runway holding position marking.



Elevated or in-pavement yellow flashing lights installed at runway holding positions.

2.3. **Taxiway Centerline Lights:** Guide ground traffic under low visibility conditions and during darkness. These lights consist of green in-pavement lights.



Green in-pavement lights to assist taxiing aircraft in darkness and in low visibility conditions.

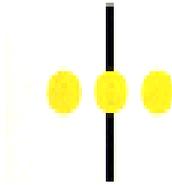
2.4. **Geographic Position Markings:** ATCT will verify the position of aircraft and vehicles using geographic position markings. The markings can be used either as

hold points or for position reporting. These checkpoints or "pink spots" will be outlined with a black and white circle and be designated with a number, a letter, or both.



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- 2.5. **Clearance Bar Lights:** Three yellow in-pavement clearance bar lights will be used to denote holding positions for aircraft and vehicles. When used for hold points, they are co-located with geographic position markings.



In-pavement yellow lights. When installed with geographic position markings they indicate designated aircraft or vehicle hold points.

- 2.6. **Taxiway Centerline Marking:** Provides a visual cue to permit taxiing along a designated path. Marking may be enhanced on light-colored pavement by outlining with a black border.



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3.0. There are two types of SMGCS AOA operator permits: 1. Non-movement area & 2. Movement area.

3.1. NON-MOVEMENT AREA OPERATORS PERMIT

- 3.1.1.** All personnel required to operate a vehicle or piece of equipment on a ramp or non-movement area under SMGCS conditions are required to abide by a strict set of guidelines which are as follows:

- 3.1.1.1.** All vehicles and equipment will not exceed 15 mph. on any designated driving lane or ramp area.

3.1.1.2. All vehicles driving during SMGCS conditions must be actively involved in aircraft turnaround operations. Vendors making routine deliveries (garbage pick-up, uniform deliveries, etc.) will not be allowed on the AOA when low-visibility conditions are in effect.

3.1.1.3. Any vehicle or piece of equipment left unattended must be parked so as not to interfere with aircraft operations.

3.1.1.4. Ensure that ground/tow crews are standing by when the aircraft lands/pushes back. Wing walkers are required for all low-visibility operations. Vehicles will stop for wing walkers at all times.

3.1.2. Movement Area Boundary

3.1.2.1. The movement area boundary for low visibility conditions is the outer portion of the vehicle roadway. This marking is a white/black zipper marking. Drivers must possess a Class 3 license and a movement area permit in order to cross this marking. All other drivers must be escorted by Airport Police or Airport Operations.



3.1.3. Taxiways P1 & P2 Crossing

3.1.3.1. During certain low visibility operations, vehicles may not be allowed to use the Taxiways P1 non-movement area crossing without an escort. Additionally, P2 will be closed and construction vehicles will NOT be allowed to operate on the AOA while SMGCS is in effect. During these operations, the security guard on the south side of the P1 crossing will alert drivers to wait for

escort. An Airport Authority vehicle will normally be on the north (ramp) side of the crossing. This vehicle will provide the escort at the P1 intersection. If these procedures are NOT in place, the P1 crossing will not be used unless the driver can see clearly enough (forward and right/left) to determine that they will not be proceeding into the path of a moving aircraft.

3.2.MOVEMENT AREA OPERATORS PERMIT

- 3.2.1.** Only vehicles operated by Airport Operations, Airfield maintenance, ARFF, Airport Police and FAA Facility Maintenance personnel are allowed on the airport movement area while the low visibility operations are in effect (all other class 3 drivers will not be allowed on the movement area during low-visibility conditions).
- 3.2.2.** In order to gain entry to the movement area, specific approval must be obtained by these vehicles from the ATCT by radio. Any other vehicle must be escorted by an Airport Operations or Airport Police vehicle.
- 3.2.3.** When the visibility is below 600 feet RVR, the ATCT will NOT provide clearance to any vehicle on the movement area that is not in direct support of the SMGCS plan. Support vehicles will generally include Airport Operations vehicles when inspecting the airport and providing “follow-me” support, Airport Maintenance vehicles used to maintain lighting, Airport Police, and ARFF vehicles responding to emergencies. All other access will be coordinated and approved by Airport Operations on a case-by-case basis.
- 3.2.4.** In emergency situations involving aircraft, (i.e. disabled/stranded, etc.) vehicles would be allowed on the movement area under escort by an authorized Airport Authority SMGCS licensed driver.