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1. **SECTION I/POLICY**

1.2. **THE MEM AOA CLASS 3/MOVEMENT AREA STUDY GUIDE.** Is a continuation of MEM AOA Rules & Regulations/ Class 2 & 2L/Non-movement Area Study Guide. This publication is intended for vehicle drivers/taxiers, and is best suited for those personnel operating in the movement area of the AOA (Airport Operations Area). It is pertinent to learn and utilize tools which aide you best to help improve safety on or near runways.

1.3. **BACKGROUND.** Every year there are accidents and incidents involving aircraft, pedestrians, and ground vehicles at airports that lead to property damage and injury; often fatal. Many of these events result from inadequate security measures, a failure to maintain visual aids, a lack of such aids, and inadequate vehicle operator training or lack of situational awareness.

1.4. **PURPOSE.** The purpose of the airfield safety program is to provide training guidance to all individuals who operate vehicles and/or equipment on the airfield. The intent of this study guide is to supply the reader with information on procedures recommended for safe vehicle operations on the AOA and other restricted areas at Memphis International Airport. The information in this study guide is extracted from applicable Airport Rules and Regulations.

1.5. **GOAL.** The goal of this program is safety through strict compliance with Airport regulations. Accomplishing this goal requires airlines, tenants and other users of the airfield to work closely with the Airport Authority to promote strict adherence to the rules and regulations pertaining to the airfield. An Enforcement Program is in place to monitor and enforce these regulations. **Other major goals of the program are to:**

1.5.1. Provide initial training for new employees and refresher training for all current employees in vehicle operations on the airfield. **NOTE:** The FAA’s Final Ruling on Part 139.329/Pedestrian and Ground Vehicles states: "...all persons who are authorized to operate on the movement area or safety area without an escort, are properly trained at least once every 12 consecutive calendar months..."

1.5.1.1. All Class 3 drivers will take an annual computer-based IET test and continue to take a biennial (every two years) practical test.

1.5.1.2. Stress the importance of safety procedures to prevent personal injury and property damage accidents.
SECTION II/GLOSSARY

2.1 **Air Operations Area (AOA):** The AOA is divided into two separate areas; the movement area and non-movement area. The movement area is one where clearance must be obtained from the FAA Control Tower prior to entrance to runways, taxiways and safety areas and a Class 3 drivers’ license required. The non-movement area consists of the terminal area, ramps, gates, and roadways.

2.2 **ATCT (Air Traffic Control Tower) Control.** Movement areas are defined as the runways, taxiways, and safety areas along with other areas of the airport that are used for taxiing, hover taxiing, air taxiing, and takeoff and landing of aircraft, exclusive of loading ramps and aircraft parking areas. Movement areas are considered “positive control,” meaning that all vehicle operators will need permission from ATCT before entering the area.

2.3. **Authorized Vehicles:** Only those vehicles necessary for airport operations may enter a movement area. Therefore, fuel trucks, maintenance vehicles, tugs, catering trucks, and other nonessential vehicles should NOT be permitted to enter these areas. Exceptions may include (MSCAA)-authorized vehicles with appropriately trained personnel. Airport Operations / Maintenance shall coordinate all other vehicle operations within the movement areas.

2.4. **Caution Signs** are installed so as to be clearly visible to vehicle operators prior to entering taxiway areas during all hours of operation.
The Airport Authority will maintain a reasonable surveillance of vehicle crossings and conduct strict enforcement action against any vehicle operator violating established vehicle crossing procedures.

2.5. **Dashed Taxiway Edge Line**: A double dashed yellow line separates the movement area from the non-movement area around the terminal. These lines double as the taxiway edge lines for aircraft entering and exiting the terminal area where the adjoining pavement is usable and load-bearing for aircraft. NOTE: Drivers do NOT have wingtip clearance of some aircraft when outside the zipper line between it and the dashed taxiway edge line.

2.6. **Direction and Designation Signs**: Have black lettering and a directional arrow or arrows on a yellow background. The arrow indicates the direction to that taxiway, runway, or destination. HINT: “*Yellow Array Shows The Way.*”

2.7. **Enhanced Taxiway Centerline Markings**: May be present at some airports, and will appear before a runway hold line, as illustrated below. These markings are intended to serve as an additional warning to flight crews that they are approaching the runway.
2.8. **Hold Short Line/Position**: A holding position line/marking that denotes the entrance to a runway from a taxiway. It is located across centerline within 10 feet of hold short sign on taxiways and on certain runways.
2.9. **ILS Critical Area (Instrument Landing System) Critical Area Holding Position Markings**: An area provided to protect the signals of the localizer and glideslope. Are comprised of two parallel yellow lines with lines running perpendicular between the two parallel yellow lines. These markings identify the location on a taxiway where an aircraft or vehicle is to stop when it does not have clearance to enter ILS critical areas. The ILS critical area must remain clear, especially in inclement weather. If a vehicle proceeds past this ILS marking, it might cause a false signal to be transmitted to the landing aircraft.

![ILS Hold and ILS Clear Boundary](image)

2.10. **Instrument Landing System (ILS) Holding Position Signs ILS Hold Sign Holding Position Signs for Runway Approach Areas**: The inscription on a sign for a runway approach area is the associated runway designation followed by a dash and the abbreviation APCH for approach. This sign has white numbering on a red background with a white border. The sign is installed on taxiways located in approach areas where an aircraft on a taxiway would either cross through the runway safety area or penetrate the airspace required for the approach or departure runway. I will have white letters on a red background with a white border. These signs tell pilots and vehicle operators where to stop to avoid interrupting
a type of navigational signal used by landing aircraft. This is a critical area, and a
vehicle/equipment operator must remain clear of it (use airport-specific policy). If a vehicle
proceeds pass this microwave landing system/ILS marking, it may cause a false signal to be
transmitted to the landing aircraft. **HINT: “Red & White Means Runway In Sight.”**

2.11. **Incursion**: Any occurrence at an airport involving an aircraft, vehicle, person, or object
on the ground that creates a collision hazard or results in loss separation with an aircraft
taking off, intending to take off, landing, or intending to land.
2.12. **Light Gun**: A hand-held, directional light-signaling device that emits a bright narrow beam of white, green, or red light, as selected by the tower controller. The color and type of light transmitted can be used to approve or disapprove anticipated pilot or vehicle actions where radio communication is not available. The light gun is used for controlling traffic operating in the vicinity of the airport and on the airport movement area.

![ATCT Light Gun Signals](image)

2.13. **Location Signs**: have yellow lettering on a black background. The location sign below indicates that the operator of the vehicle/equipment is located on the named taxiway or runway. **HINT**: “Yellow on Black Shows Where You’re At.”

![Location Signs](image)

2.14. **Movement Area**: The runways, taxiways, and other areas of an airport that aircraft used for taxiing, takeoff, and landing, exclusive of loading ramps and parking areas, and that are under the control of an air traffic control tower. The airport runways, taxiways, and safety areas. Approval from the FAA Control Tower must be obtained prior to operating in this area (REQUIRES A CLASS 3 AOA LICENSE!!).

2.14.1. **Movement/Non-Movement Boundary Marker**: The movement and non-movement areas are separated by the movement/non-movement boundary marker which consists of two yellow lines (one dashed, the other solid, on black background when on concrete) with the dashed side facing the movement area and the solid side facing the non-
movement area. It is located where there is wing-tip clearance from the largest aircraft operating on aircraft taxiways for vehicles operating inside the boundary marker, even if they have to exit the zipper line/roadway edge.

2.14.2. A general rule of thumb for Class 2 and 2L drivers is to think of the “solid line as a wall they cannot cross” and for Class 3 driver’s to think of the “dashed line as holes in the wall they can cross through back to the non-movement area.”

2.14.2.1. At MEM, the movement/non-movement boundary markers can be predominantly found along the Delta Cargo Ramp, J & N blast pads, perimeter roads where the roadway is next to or crosses over TWYs (Mil, P, UPS, Wilson Air, and the Southern FedEx Ramp). It is also common to see movement/non-movement boundary markers bordering non-movement roadway “zipper lines” or construction corridor routes that cross through movement areas.

2.15. **Non-movement Areas**: Taxilanes, aprons, roadways, gates, terminal, and other areas not under the control of air traffic or at airports without an operating airport traffic control tower. No FAA clearance is required for operation in this area (REQUIRES a CLASS 2 OR 2L AOA LICENSE).

2.15.1. **Non-Movement Area Boundary Markings** consist of two yellow lines (one solid and one dashed). The solid line is located on the non-movement area side, while the dashed yellow line is located on the movement area side. A vehicle operator is not to cross from the solid-line side without first contacting the ATCT and obtaining a clearance to operate on the movement area.
2.16. **Runway**: A defined rectangular area on a land airport prepared for the landing and takeoff run of aircraft along its length. Runways are lighted with a variety of colored lights:

![Runway Diagram]

2.17. **Runway Centerline Lights**: Are white except for the last 3,000 feet of the runway, where they begin to alternate red and white. For the last 1,000 feet of runway the centerline lights are all red.

2.18. **Runway Distance Remaining Signs**: Provide distance remaining information to pilots during takeoff and landing operations. They have white numbering on a black background. The number on the sign provides the remaining runway length in 1,000-foot increments.

![Runway Distance Sign]
2.19. **Runway Edge-Lights**: Are white. If the runway has an instrument approach, the last 2,000 feet of the runway will be yellow in color.

2.20. **Runway End/Threshold Lights**: Are split lenses that are red/green.

2.21. **Runway Exit Sign**: Is a destination sign located prior to the runway/taxiway intersection on the side and in the direction of the runway where the aircraft is expected to exit. This sign has black lettering and a directional arrow on a yellow background.

2.22. **Runway Hold Short Lines**: A pair of solid and a pair of dashed yellow lines painted on a taxiway designating a stopping point. **Runway Holding Position Markings** are located across each taxiway that leads directly onto a runway. These markings are made up of two solid lines and two broken yellow lines and denote runway holding position markings. These markings are always co-located with a Runway Holding Position Sign. A vehicle operator must not cross from the solid-line side of the marking without first obtaining clearance.
2.23. **Runway Hold Sign/Mandatory Holding Position Signs:** for Runways have white numbering/lettering on a red background with a white border. These are located at each entrance to a runway and at the edge of the runway safety area/obstacle-free zone and are co-located with runway holding position markings. Do not proceed beyond these signs until clearance is given by the ATCT to enter onto the runway. **HINT:** “Red & White Means Runway In Sight.”

2.24. **Runway in Use or Active Runway:** Any runway or runways currently being used for takeoff or landing. When multiple runways are used, they are all considered active runways.

2.25. **Runway Markings:** Pavement markings on a runway are white. Runway Threshold Markings and Runway Threshold Bars, Runway Aiming Point Markings, Runway Designation Markings, Runway Touchdown Zone Markings, Runway Centerline Markings, Runway Side Stripes, and Displaced Threshold Markings are white. The only nonwhite lines on a runway are yellow lead-in/-off lines that extend from the runway centerline and hold lines for a specific operation known as land and hold short.
2.26. **Runway Safety Area**: A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.
2.27. **Runway Safety Area/Object Free Zone (OFZ) And Runway Approach Area Boundary Signs:** When required, identify the boundary of the runway safety area/OFZ or the runway approach area to the pilot and vehicle operator. The driver can use these signs to identify when the vehicle is clear of the runway environment. It has a black inscription that depicts the hold line marking on a yellow background.

![Image of runway safety area boundary signs]

2.28. **Runway Touchdown Zone Lights:** Are white.

2.29. **Safety Area:** A defined rectangular area extending beyond runways and taxiways. Objects placed in the safety area must be necessary for aircraft operations and be on frangible mountings.

2.30. **Signs:** The signs used on taxiways are direction, destination, location, and taxiway ending marker signs.
2.31. **Surface Incident**: Unauthorized or unapproved movement within the designated movement area (excluding runway incursions) or an occurrence in that same area associated with the operation of an aircraft that affects or could affect the safety of flight.

2.32. **Surface Movement Guidance and Control System (SMGCS)**: A system comprising the provisions for guidance to, and control or regulation of all aircraft, ground vehicles, and personnel of the airport during low-visibility operations. Guidance relates to facilities and information necessary for pilots and ground vehicle operators to find their way about the airport. Control or regulation means the measures necessary to prevent collisions and to ensure that traffic flows smoothly and efficiently.

2.33. **Taxiways**: Those parts of the airside designated for the surface maneuvering of aircraft to and from the runways and aircraft parking areas. Taxiways are designated by letters or by a letter/number combination such as A, B, C, or C3. Pavement markings on taxiways are always yellow. The taxiway centerline is painted on all taxiways. On the edges of some taxiways, there is a solid, double yellow line or double-dashed line. If pavements are usable on both sides of the line, the lines will be dashed; if not, the lines will be solid.
2.34. **Taxiway Lighting/Edgelines:** Taxiways are lighted with blue edge lighting and/or reflectors. Some taxiways are also lighted with green in-paved, centerline lighting.

2.35. **Tow:** The movement of an aircraft on the airport surface by ground vehicle.

2.36. **Vehicle or Pedestrian Deviation (V/PD):** Any entry or movement on the airport movement area by a vehicle operator or pedestrian that has not been authorized by air traffic control (includes surface incidents involving aircraft operated by non-pilots, such as mechanics).
3.0. SECTION III/DRIVING ON/IN THE MOVEMENT AREA

3.1. DESCRIPTION: There are two types of airports, a controlled airport and an uncontrolled airport. A controlled airport has a control tower and you need to contact the tower to get permission to go onto the runways and taxiways. MEM is a controlled airport.

3.1.1. The Non-Movement Areas: Are the terminal area, aprons/ramps, parking areas, and vehicle roadways). No clearance is required from the FAA Control Tower in a non-movement area. A Class 2 drivers’ license required.

3.1.2. Movement Area Drivers: Require more training and vigilance since there are dangers associated with this area that are not present on non-movement areas. In addition to the principals for driving on the non-movement area, drivers who have access to the movement area must be cognizant of the meaning of airfield signs, markings, and lighting configurations. Additionally, they must be able to communicate with air traffic control (ATC) and be able to follow ATC directions.

3.2. RUNWAY PROXIMITY

3.2.1. Any vehicles that have been permitted to operate on the airport will not proceed closer than two hundred fifty (250) feet from the edge or one thousand (1,000) feet from the end of any runway nor cross any runway prior to being cleared by the Tower, except as specifically authorized by exemption to FAR 139 and disseminated by the Airport Authority.

3.2.1.1. It is the responsibility of all vehicle operators to be familiar with the standard airport light signals regardless of whether the vehicle is radio equipped. The penalty imposed for a runway incursion will be a minimum of a $1,000 PERSONAL fine and must not exceed $10,000. The FAA may levy a $50,000 fine against the airport, who could charge those costs to the employer of the violator.

3.2.1.2. In addition, persons committing runway incursions will have their AOA Operators permit suspended and/or revoked.

3.2.1.3. NOTICE: THE WORST THING THAT CAN HAPPEN WITH A RUNWAY INCURSION IS DEATH!!! DUE TO THE LARGE AMOUNT OF AIRCRAFT TAKING OFF AND LANDING AT MEM, THE ODDS ARE NOT IN YOUR FAVOR (OR OTHERS) IF YOU ARE NOT AWARE OF YOUR SITUATIONAL AWARENESS AND SURROUNDINGS.
3.3. ENTERING THE MOVEMENT AREA: No vehicle operator shall enter the movement area—

3.3.1. Without first obtaining permission of MSCAA and clearance from the ATCT to enter the movement area;

3.3.2. Unless equipped with an operable two-way radio in communication with the ATCT;

3.3.3. Or unless escorted by an MSCAA vehicle and as long as the vehicle remains under the control of the escort vehicle.

3.4. DRIVING NEAR AIRCRAFT: All vehicles must pass to the rear or side of taxiing aircraft. While on the ramp no vehicle may pass closer than 20 feet off the wingtip of any moving aircraft, and no closer than 200 feet behind any moving aircraft. Driving under the wing of a moving aircraft is strictly prohibited.

3.5. AIRCRAFT OPERATIONS

3.5.1. General Information: To operate safely around aircraft one must have a basic understanding of how they operate while in the airport environment. Aircraft can be divided into three categories: air carrier and other large aircraft, general aviation aircraft, and helicopters. Air carrier aircraft are easily visible during daytime operations, but may be difficult to see during nighttime operations. General aviation aircraft and helicopters may be difficult to see during nighttime and daytime operations. The airfield driver must be knowledgeable of the various types of aircraft operations in the airport environment and be watchful for any possible vehicle/aircraft incursion.
3.5.1.1. When approaching an aircraft with its flashing beacons turned on you must exercise extreme caution as the aircraft's engines could be running.

3.5.2. **Taxiing:** Taxiing is defined as aircraft moving under their own power between parking areas and runways. This is done on aprons, taxiways and non-active runways.

3.5.3. **Parking:** All aircraft must park at the termination of their flight operations in an approved parking area; either a gate, apron, FBO, or private hangar.

3.5.4. **Pushing Back:** Aircraft may leave the gate or parking area under power (powering back), or by being pushed back by a tug. Powering back creates strong blasts that can reach up to 300 miles per hour at close range and can be dangerous to passing vehicles.

3.5.5. **Engine Run-Ups:** Before takeoff, smaller aircraft may conduct an engine run-up at high RPM. This can create strong gusts of air behind the aircraft and can occasionally hurl loose objects a substantial distance. **NOTE:** Refer to Attachment #5

3.5.6. **Helicopter Operations:** Because of the unique capabilities of helicopters, special precautions must be taken around operating helicopters. Most important is to be aware of the main rotor and the tail rotor, both of which are turning at high speeds. It is best to maintain a safe distance from the helicopter, and stay in sight of the pilot until the rotors have come to a complete stop.

3.6. **RADIO EQUIPMENT**

3.6.1. All vehicles operating in the air operations area must be equipped with a two-way radio and be in continuous communication with the Tower **except:**

3.6.1.1. Agricultural and maintenance equipment not engaged in work on the apron and aircraft parking ramp.

3.6.1.2. Vehicles operating in designated aircraft non-movement areas as may be designated by the President.

3.6.1.3. Vehicles operated on the apron and aircraft parking ramps.

3.6.2. The installation of a radio does not permit the operation of vehicles on the airport without proper authorization of the President. All applicants must satisfactorily complete the applicable driver’s training class before receiving an airside driver’s license.
3.7. PROCEDURES FOR OPERATING A GROUND VEHICLES (INCLUDING MX TAXIING/TOWING A/C) ON THE MOVEMENT AREA ARE AS FOLLOWS:

3.7.1. **Authorized Drivers**: Applicants for movement area driving privileges shall be required to successfully complete an airside driving test by a designated representative of MSCAA.

3.7.2. No vehicle shall be operated on the airside **unless**—

3.7.2.1. The driver is authorized to operate the class of vehicle by an appropriate state-licensing agency or by the driver’s employer through a company training/certification program.

3.7.2.2. The driver properly displays an approved, airport-issued ID card with the Authorized Driver designation (if applicable).

3.7.2.3. Operators of any radio equipped vehicles on movement areas must be trained and familiar with airport radio procedures prior to operating on movement areas.

3.7.3. **Taxiing And Towing Of Aircraft**:

3.7.3.1. All vehicles must establish radio contact with ATCT and receive authorization prior to operating on movement areas. Two-way radio communication between the towing vehicle and FAA Tower must be maintained while any Aircraft is under tow except in tenant-leased areas.

3.7.3.2. Movement of Aircraft on the air operations area and in-flight traffic patterns shall be conducted in accordance with applicable Federal Aviation Regulations and Tower instructions.

3.7.3.3. All Aircraft taxied, towed or otherwise moved at the Airport shall proceed with position lights and rotating beacons on during the hours between sunset and sunrise.

3.7.3.4. Where applicable, no personal shall taxi or tow any Aircraft upon the Aircraft Movement Area until they have received cleared from the FAA Air Traffic Control Tower. Also, no person shall taxi or tow an Aircraft upon the ramp, approved parking space or parking area until they have ascertained there will be no danger of collision with other Aircraft, vehicles, persons or objects in the immediate area.

3.7.3.5. Persons taxiing Aircraft shall have either a valid FAA pilot’s license OR FAA/FedEx Run-Taxi Certification PLUS a valid MEM Class 3 operators permit issued by MSCAA.
3.7.3.6. Aircraft shall be taxied at speeds that will ensure complete control at all times.

3.7.3.7. Aircraft shall not be taxied in or out of hangars.

3.7.3.8. Aircraft pushback operations shall not be conducted except under the guidance of a ground marshaller.

3.7.3.9. All operators of tugs must ensure that they are able to operate safely on standard taxiways and follow standard safety procedures as defined by the Aircraft manufacturer when towing Aircraft.

3.7.3.10. Aircraft should be properly illuminated during periods of low light and darkness when under tow.

3.7.3.11. Aircraft power-back operations are NOT authorized at Memphis International Airport without the express written approval of MSCAA.

3.7.3.12. Individuals in direct control a vehicle/aircraft (in left seat) in the AOA movement area and in direct communications with ATCT must have a Class 3 driver’s license. For aircraft movements, the Class 3 holder is responsible for any tow and/or taxi operation as well as any “in tow” trailing vehicles during such operations. The class 3 operator must also have direct communications with the tow tractor driver and any “trailing” vehicle (if applicable). Note: Tow & taxi operations support vehicles not specifically required to make aircraft mechanical observations during towing or taxiing are required to use service/perimeter roadways. Aircraft are not to have ground vehicles “in tow” other than indicated above. See Attachment #4 for further information.

3.7.4. Vehicle operators will not cross hold lines or enter an active runway until authorized by ATCT.

3.7.5. Aircraft have right-of-way on movement areas and aprons. Vehicles are required to yield to all moving aircraft, emergency vehicles, and pedestrians.

3.7.6. Access onto an active runway without ATCT authorization will be investigated by the FAA as a possible violation of FAR Part 139. Any vehicle operator involved in a runway
incursion incident will be required to submit a written report to the MSCAA Director of Operations & Public Safety.

3.7.7. After examination of this situation by the Administrator, the following conditions were stipulated and implemented so that crossing of these taxiways is controlled in a manner which is acceptable:

3.7.8. Vehicle lanes are established and appropriately marked delineating the areas in which transverse of taxiways is permissible.

3.8. RUNWAYS

3.8.1. **Designations:** Runways are areas where aircraft land and take off. Runways are always designated by a number such as 9 or 27. The number indicates the compass heading of the runway. An aircraft taking off (or landing) on runway 9 is headed 90 degrees (East) and an aircraft taking off (or landing) on Runway 27 is headed 270 degrees (West). In the event of parallel runways, a letter designation is added to indicate either the right or left runway. Here at MEM, we have three North-South parallel runways (e.g., 18L-36R, 18C-36C, and 18R-36L).

3.8.2. **MEM has (8) different runways:** (3x2) N-S parallel & (1x2) E-W perpendicular. The following MEM RWYs are as follows:

3.8.2.1.RWY 18L/36R (Pronounced: one-eight left/tree-six right); 180/360 degrees
3.8.2.2.RWY 18C/36C (Pronounced: one-eight center/tree-six center); 180/360 degrees
3.8.2.3.RWY 18R/36L (Pronounced: one-eight right/tree-six left); 180/360 degrees
3.8.2.4.RWY 9/27 (Pronounced: niner/two-seven) 90/270 degrees

3.9. COMMUNICATIONS

3.9.1. Any vehicle driving on the movement areas (runways and taxiways) at MEM must be in contact with the ATCT. Vehicle operators must always monitor the appropriate radio frequency when in the movement areas on controlled airports. Permission must be requested and clearance given prior to driving on a movement area. A vehicle that is equipped with a radio may escort vehicles without radios. When a movement area is closed for construction, vehicles may traverse that area without ATCT contact but must be escorted if their travels require them to cross an active movement area.
3.9.2. The ATCT controller may use separate or common radio frequency to control all ground traffic, vehicle and aircraft, on the movement areas. The frequency is only to be used to get clearance onto and off the movement areas.

3.9.3. 4-PART REQUEST FORMAT. Vehicle operators must contact the ATCT ground controller each and every time they proceed onto or leave the movement area. When proceeding onto a movement area, vehicle operators must tell the controller four things:

3.9.3.1. **WHO** you are
3.9.3.2. **WHERE** you are
3.9.3.3. **WHERE** you want to go and/or **WHAT** your intentions are
3.9.3.4. **HOW** you want to get there.

3.9.3.5. Vehicle operators must always acknowledge all communications so ground control and other persons know that the message was received. Vehicle operators must always give aircraft and ground control transmissions priority unless an emergency exists. Very high frequency frequencies are for the primary use of aircraft and ATCT personnel. Some typical transmissions are as follows:

3.9.3.5.1. • **(OPERATIONS VEHICLE #3)** “Memphis Ground, this is Ops-3.”

3.9.3.5.2. • **(MEMPHIS ATCT)** “Ops-3, this is Memphis Ground.”

3.9.3.5.3. • “Memphis Ground, Ops-3 located at the intersection of Taxiways (TWYs) Charlie & Delta. Request permission to proceed to Spot #13 via TWY C, crossing Runway (RWY) 27.”

3.9.3.5.4. • “Ops-3, Memphis Ground. You may proceed as requested. Hold short of RWY 27 at TWY C.”

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3.9.3.5.5. • “Memphis Ground, Ops-3. Proceeding as requested. Will hold short of RWY 27 at TWY C, Ops-3.”

3.9.3.5.6. • “Memphis Ground, Ops-3 clear of RWY 27.” *(Only after RWY has been cleared)*

3.9.3.5.7. • “Ops-3, Memphis Ground. Copy, Ops-3 clear of RWY 27.”

3.9.4. **NOTE**: If you are unsure what the controller has said, or if you don’t understand an instruction, you should ask the controller to repeat it. Good communications only occur when each party knows and understands what the other is saying. **NEVER ASSUME! YOU EITHER KNOW OR YOU DON’T KNOW!!!**

3.9.5. **PHRASEOLOGY & COMMON USE PHRASES**

3.9.5.1. **Acknowledge**: Let me know you have received and understand this message.

3.9.5.2. **Advise Intentions**: Let me know what you plan to do

3.9.5.3. **Affirmative**: Yes.

3.9.5.4. **Confirm**: My understanding of your transmission is______: Is that correct?

3.9.5.5. **Correction**: An error has been made in the transmission, and the correct version follows.

3.9.5.6. **Expedite**: Used by ATC when prompt compliance is required to avoid the development of an imminent situation.

3.9.5.7. **Final**: Commonly used to mean that an aircraft is on the final approach course or is aligned with a landing area.

3.9.5.8. **Go Ahead**: Proceed with your message only.

3.9.5.9. **Hold/Hold Position For**: Stay in place where you are currently located.

3.9.5.10. **Hold Short Of…**: Proceed to, but hold short of a specific point and maintain and maintain appropriate distance to avoid interfering with other traffic. Phrase used during ground operations to keep a vehicle or aircraft within a specified area or at a specified point while awaiting further clearance from air traffic control.
3.9.5.10.1. With respect to runways, always stop at or just before the runway holding short marking unless otherwise directed by the ATCT. A “read back” confirmation is required anytime ATCT gives a “hold short” instruction.

3.9.5.11. **How do you hear/read me?** Question relating to the quality of the transmission or to determine how well the transmission is being received. Immediately or without delay Phrase used by ATC when such action compliance is required to avoid an imminent situation.

3.9.5.12. **Line Up and Wait (LUAW):** This phrase has replaced the “position and hold” instruction by a controller to direct a pilot to enter a runway and await take-off clearance. It is NOT authorization for take-off. It is to be used when runway take-off clearance cannot be given immediately, because of traffic or other reasons.

3.9.5.13. **Negative:** "No" or "permission not granted" or "that is not correct."

3.9.5.14. **Out:** The radio conversation is ended, and no response is expected.

3.9.5.15. **Over:** My radio transmission is ended, and I expect a response.

3.9.5.16. **Proceed:** You are authorized to begin moving.

3.9.5.17. **Read Back/Say Again:** Repeat my message to me.

3.9.5.18. **Roger:** I have received all of your last transmission.

3.9.5.19. **Stand By:** Means the controller or pilot must pause for a few seconds, usually to attend to other duties of a higher priority. Also means to wait as in "stand by for clearance." The caller should reestablish contact if a delay is lengthy. “Stand by” is NOT an approval or denial.

3.9.5.20. **Unable:** Indicates inability to comply with a specific instruction, request, or clearance.

3.9.5.21. **Verify:** Request confirmation of information. Wilco I have received your message, understand it, and will comply with it.

3.9.5.22. **Without Delay:** Follow instructions expeditiously, specifically and safely.

3.9.5.23. **Wilco:** I have received your message and will comply.

3.9.6. **PHONETIC AVIATION ALPHABET.** Because some letters have similar sounds, like B and P, the international aviation industry uses the following words to reduce confusion. For example; Taxiway B would be referred to as Taxiway Bravo on the radio.
3.9.6.1. **A**-ALFA, **B**-BRAVO, **C**-CHARLIE, **D**-DELTA, **E**-ECHO, **F**-FOXTROT, **G**-GOLF, **H**-HOTEL, **I**-INDIA (NOT USED FOR TWYs), **J**-JULIET, **K**-KILO, **M**-MIKE, **N**-NOVEMBER, **O**-OSCAR, **P**-PAPA, **Q**-QUEBEC, **R**-ROMEO, **S**-SIERRA, **T**-TANGO, **U**-UNIFORM, **V**-VICTOR, **W**-WHISKEY, **X**-X-RAY, **Y**-YANKEE, **Z**-ZULU

3.9.6.2. **0**-(Zero), **1**-(Wun), **2**-(Two), **3**-(Tree), **4**-(Fo-wer), **5**-(Fife), **6**-(Six), **7** (Sev-en), **8** (Eight), **9**-(Ni-ner), **10**-(Wun-Zero), **18**-(Wun-Eight), **27**-(Two-Seven) **36** (Tree-Six)

3.9.7. **ATCT LIGHT GUN SIGNALS**

3.9.7.1. Air traffic controllers have a backup system for communicating with aircraft or ground vehicles if their radios stop working. The controller has a light gun in the tower that can send out different colored lights to tell the pilot or driver what to do. If a vehicle operator experiences a radio failure on a runway or taxiway, the operator should vacate the runway as quickly and safely as possible and contact the ATCT by other means, such as a cellular telephone, and advise the ATCT of the situation. If this is not practical, then the driver, after vacating the runway, should turn the vehicle toward the tower and start flashing the vehicle headlights and wait for the controller to signal with the light gun.

3.9.7.2. Light gun signals, and their meaning, are as follows:

3.9.7.2.1. **Steady Green**: OK to cross runway or taxiway.

3.9.7.2.2. **Steady Red**: STOP!

3.9.7.2.3. **Flashing Red**: Move off the runway or taxiway.

3.9.7.2.4. **Flashing White**: Go back to where you started.

3.9.7.2.5. **Alternating Red and Green**: Use extreme caution.
3.9.8. AIRCRAFT RESCUE & FIRE FIGHTING (ARFF) COMMUNICATIONS

3.9.8.1. ARFF should refer to AC No: 150/5210-7D and FAA/MEM ATCT/MSCAA/& MFD LETTER OF AGREEMENT: AIRPORT EMERGENCY PROCEDURES (Located in the ACM/APPENDIX 317-1) for guidance in preparing for Aircraft Rescue and Fire Fighting (ARFF) communications.
4.0 SECTION IV/SAFETY

4.1 RUNWAY INCURSIONS

4.1.1. The FAA uses the ICAO definition of a runway incursion as “Any occurrence at an airport involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.”

4.1.2. An example of an incursion is a vehicle at an airport with an operating ATCT straying onto a runway in front of an aircraft causing the pilot to take an action to avoid a collision.

4.2 CAUSES OF RUNWAY INCURSIONS (RIs) - Runway incursions are primarily caused by error in one or more of the following areas:

4.2.2. Pilot/ground vehicle/controller communications
4.2.3. Airport familiarity
4.2.4. Loss of situational awareness

4.2.5. Human factors are the #1 cause

4.2.5.1. Forgetfulness and preoccupation
4.2.5.2. Loss of situational awareness

4.2.6. “Top 3” areas that lead to incursions
4.2.6.1. Failure to comply w/ ATCT instructions
4.2.6.2. Lack of airport familiarity
4.2.6.3. Non-conformance with SOPs (Standardized Operating Procedures)

4.2.6.4. Other causes:

4.2.6.4.1. ATCT having difficulty seeing vehicles on airfield from heights of 300’ elevation
4.2.6.4.2. Reduced visibility; snow or fog impeding driver’s or ATCT’s vision
4.2.6.4.3. An increase in summertime construction activities
4.2.6.4.4. Drivers operating on wrong radio frequency responding to emergencies
4.2.6.4.5. Drivers not being heard on correct radio frequency
4.2.6.4.6. The need to listen to more than 2 radio frequencies
4.2.6.4.7. Driving in high noise environments w/out headsets (grass cutters)
4.2.6.4.8. NOTE: Any individual involved in a runway incursion should receive remedial airfield driver’s training given by the (MSCAA).
4.3. **RI PREVENTION**

4.3.2. When driving on the airfield, vehicle operators need to always be aware of their location **AT ALL TIMES** and the meaning of all pavement markings, lights, and signs. When on the aprons and taxiways, stay away and steer clear of aircraft. Aircraft always have the right-of-way. **Additional ways to prevent RIs are:**

4.3.2.1. Proper training and evaluation
4.3.2.2. Maintain vigilance at gates and throughout the movement area
4.3.2.3. Appropriately brief & monitor escorted individuals
4.3.2.4. Avoid electronic devices while driving
4.3.2.5. Ask ATCT to repeat unclear instructions
4.3.2.6. Know runway safety area boundaries

4.3.2.7. **Know runway hold short ques**

4.3.2.7.1. Runway hold short sign
4.3.2.7.2. Elevated guard lights (wig-wags)
4.3.2.7.3. Surface/in-pavement guard lights
4.3.2.7.4. Surface-painted hold position signs
4.3.2.7.5. Enhanced taxiway center lines
4.3.2.7.6. Runway hold short lines

4.3.2.8. Monitor/use ASD-X RADAR or Airport Ground Vehicle Automatic Dependent Surveillance – Broadcast (ADS-B) Out Squitter Equipment, or DRIVER’S ENHANCED VISION SYSTEM (DEV) when available.

4.3.2.9. Use of “runway status lights” to alert drivers of authorization to hold short or cross runways.

4.3.2.10. Regular audits of training and evaluation programs
4.3.2.11. Holding monthly drivers meetings
4.3.2.12. Place posters & runway safety brochures in common areas
4.3.2.13. Strictly limiting access to only those with a “need & frequency” to enter movement area
4.3.2.14. Institute harsh penalties for those that deviate from safety procedures
4.3.2.15. Fixed-based operators should ensure stringent & comprehensive security
4.3.2.16. Conduct planned safety meetings before each shift

4.3.3. **BEST PRACTICES**

4.3.3.1. Restrict access to the movement area to operational needs only
4.3.3.2. Practice the ABCs of radio communication (accuracy, brevity, and concise)
4.3.3.3. Regularly review movement area letters of agreement, memorandums of agreement, and memorandums of understanding.

4.3.3.4. Operations and managers conduct continuous surveillance/spot inspections

4.3.3.5. **Pilots should review and adhere to the following:**

4.3.3.5.1. Pilot handbook of aeronautical knowledge (PHAK)
4.3.3.5.1.1. [www.faa.gov/library manuals/aviation](http://www.faa.gov/library/manuals/aviation)
4.3.3.5.2. Studying for Practical Test Standards (PTS) are new runway incursion avoidance tasks
4.3.3.5.2.1. [www.faa.gov/training testing/testing/airmen/test_standards](http://www.faa.gov/training testing/testing/airmen/test_standards)
4.3.3.5.3. Review taxi operations advisory circulars revisions
4.3.3.5.3.1. AC 91.73, Part 91 & 135
4.3.3.5.3.2. AC 210.74, Parts 91, 121, 125, and 135
4.3.3.6. Review/understand signage/markings
4.3.3.7. When planning, always review the airport diagram and have available

4.3.3.8. Always gather current airfield information **BEFOREHAND**
4.3.3.8.1. Automated NOTAM system
4.3.3.8.2. **ATIS (Automated Terminal Information Service) on Frequency 127.75**

4.3.3.9. Always inspect vehicle for required safety items (ATCT radio, beacon, airport diagram, etc...) **BEFORE** going out onto the AOA.
4.3.3.10. Use perimeter and service roads whenever possible
4.3.3.11. Eliminate communication and driving distractions to keep a sterile cabin
4.3.3.12. Focus your attention...”eyes out” of vehicle forward and 360 degrees around
4.3.3.13. Keep a window cracked to hear unseen aircraft and vehicles
4.3.3.14. Maintain appropriate speed in order to react to driving conditions
4.3.3.15. Use Aerobahn Surface Management System if available
4.3.3.16. Ensure trainees participate in the ride-along-program 15 times before testing
4.3.3.17. Increase minimum passing scores from 80% to 90%
4.3.3.18. Require trainees to complete map test labeling of taxiways and runways
4.3.3.19. Advertise the increase penalties for violations based on severity
4.3.3.20. Standardized ramp driving training courses/lesson plans
4.3.3.21. Develop focused training for specific groups
4.3.3.22. Distribute alerts of incursions
4.3.3.23. Share increased hot spot awareness with fixed-based operators
5.1 Attachment #1/MEM Diagram
### Airfield Procedures for Vehicles and Pedestrians

<table>
<thead>
<tr>
<th>Loop</th>
<th>Maintain the Communication</th>
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<tbody>
<tr>
<td></td>
<td>Proceed with Caution</td>
</tr>
<tr>
<td></td>
<td>Maintain Situational Awareness</td>
</tr>
</tbody>
</table>

- Carry a hand-held radio or turn on the radio to receive ATC instructions. Establish radio communication with ATC if not already established.

- Focus on what ATC is instructing you to do. If unsure, seek clarification.

- Use standard ATC procedures (radar, communication, etc.) to ensure clear communication.

- Limit other distractions (cell phone, radio, etc.) while communicating with ATC.

- Proceed with caution at all times, especially during taxiing or when crossing runways.

- Be extra cautious at night or during reduced visibility.

- Always be aware of the surroundings, including other vehicles and pedestrians.

- Monitor ATC instructions to ensure understanding and compliance.

- Know where you are and where you are going.

<table>
<thead>
<tr>
<th>Movement Area</th>
<th>Authorized Vehicles Only!</th>
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<tbody>
<tr>
<td></td>
<td>(ATC clearance required)</td>
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</table>

- Write down complex instructions from ATC and review them before proceeding.

- Identify your location vs. destination.

- Think about your route and plan accordingly.

- Lay out your course on the ground.

- Have a current airport diagram available.

- Never proceed until authorized by ATC.

- Do not proceed until cleared.

- Always clarify any and all instructions or clearances.

- Write down complex instructions from ATC and review them before proceeding.

- If in doubt, stop and clear with ATC.

- Follow ATC instructions to the letter.

- Be extra cautious at night or during reduced visibility.
MEMPHIS INTERNATIONAL (MEM)
MEMPHIS, TENNESSEE

Hot Spot Chart

For informational purposes only. Not an official airport diagram.
5.3.1. ATTACHMENT #3.1/MEM HOT SPOTS (CONT.)

- **Hot Spot - 1**: Intersections of TWY 'B' & 'S' - Hold Short Line painted on TWY 'B' is for RWY 18C APCH. TWY 'S' is immediately beyond the Hold Short Line with RWY 18C/36C West of TWY 'S'.

- **Hot Spot - 2**: Intersections of TWY 'M1', 'M' & 'N' - TWY 'M' & 'N' are parallel TWYs. RWY 18R/36L lies West of TWY M. Pilots departing RWY 36L from TWY 'N' will turn onto TWY 'M1' and cross TWY 'M' before intersecting RWY 36L.
DATE: August 27, 2007
TO: Airport Tenants & Concessionaires
FROM: Walter White, AAE
       Director of Operations and Public Safety
SUBJECT: Class 3 AOA Driver’s License – Clarification of Policy
PURPOSE: Safety
EFFECTIVE: IMMEDIATELY

INFORMATION:

Class 3 driver’s license – “permit for the operation of vehicles (including aircraft by
maintenance personnel) on all areas. The class 3 driver’s license enables the operator to
traverse taxiways, runways, and safety areas while under the supervision of an FAA air
traffic controller via tower radio.”

The individual in direct control of the movement of the vehicle or aircraft (in left seat) in the
Air Operations Area (AOA) movement area and who is in direct communications with FAA
air traffic controllers must have an MSCAA AOA class 3 driver’s license. For aircraft
movements, the class 3 holder is responsible for any tow and/or taxi operation as well as
any “in tow” trailing vehicles (reference note below) during such operations. In addition to
having direct communications with the FAA air traffic controller, the class 3 operator must
have direct communications with the tow tractor driver (if applicable) and any “trailing”
vehicle (if applicable).

Note: For tow and taxi operations support vehicles not specifically required to make aircraft
mechanical observations during towing or taxiing are required to use service/perimeter
roadways. Aircraft are not to have ground vehicles “in tow” other than indicated above.
DATE: March 31, 2003
TO: Air Traffic Control Tower Personnel and Aircraft Operators
FROM: Walter White, AAE
       Director of Operations and Public Safety
SUBJECT: Aircraft Run-up Areas
BULLETIN: 2003-03 Updates #2003-02 Aircraft Run-up Areas

AIRPORT OPERATIONS BULLETIN

APPLICABILITY: Applies to all aircraft operators performing engine run-ups at MEM.

PURPOSE: To establish and maintain the proper locations for engine run-ups, while providing safe airfield operations and minimizing environmental impacts.

EFFECTIVE: Immediately.

COMPLIANCE: Compliance with this bulletin will be monitored by Airport Operations. Individuals and/or tenants not following procedures can be penalized by the Memphis-Shelby County Airport Authority.

RUN-UP LOCATIONS & PROCEDURES

The following areas have been designated as aircraft engine run-up areas at the Memphis International Airport and are available on a “first-come, first-served” basis without regard to type aircraft or company:

1) South end of Taxiway J on the deice pad: headings restricted to 315-030 degrees or 135-180 degrees.

2) South end of Taxiway N on the deice pad: restricted to 757 and smaller aircraft. Aircraft heading restricted to 360-035 degrees.

3) FAA approved hush house or engine run facility. Aircraft operators must utilize facility in accordance with manufacturer’s operating guidelines.

The hours of 2200L - 0600L are considered quiet hours at Memphis International Airport and prior permission is required (PPR) from Airport Operations (922-8298) to conduct any run-ups.

During any period when the Airport is using Surface Movement Guidance Control System (SMGCS) procedures for operations below 1200' Runway Visual Range (RVR), run-ups will not be permitted on runways or taxiways without prior permission from Airport Operations.

* Exceptions to the above must be authorized by the on duty Operations Coordinator. They may be contacted via the Communications Center at 922-8298.
SECTİON #6/REFERENCES


Castellano, B. D. (n.d.).


