AIRFIELD GROUND MOVEMENT TRAINING FOR AIRPORT OPERATORS

(rev 9-21-18)

Standardized Airfield Ground Movement Training Program

- **Overview/Purpose**
- **Airfield Markings**
- **Airfield Lighting**
- **Airfield Signage**
- **Radio Communication**
- **Light Gun Signals**
- **Runway Incursions**
- **Construction**
- **Conclusion**
- **Acronyms**

Purpose of Training

- To establish a standardized ground movement training program and make airport operators and vehicle operators aware of the resources available, to maintain the highest possible level of safety within the airport environment. To ensure that the number of runway incursions is reduced, along with the potential for aircraft incidents or accidents.

Definitions

- **Runway – A defined rectangular surface on an airport prepared or suitable for the landing or take off of aircraft.**

- **Taxiway – A defined path established for the taxiing of aircraft from one part of an airport to another.**

- **Movement Area – Runways, taxiways, and other areas of an airport which are used for taxiing, or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and aircraft parking areas.**

- **Runway Incursion – Any occurrence at an airport involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of separation with an aircraft taking off, intending to take off, landing, or intending to land.**

Acronyms

- ATC – Air Traffic Control
- FBO – Fixed Based Operator
- FOD – Foreign Object Debris
- ILS – Instrument Landing System
- NAVAID – Navigational Aid
- NOTAM – Notices to Airmen

What is FOD?

- Foreign Object Debris; any trash or debris found on the airfield.
- FOD can cause aircraft damage or personal injury from flying debris.
- Waste or loose materials might attract birds or other wildlife

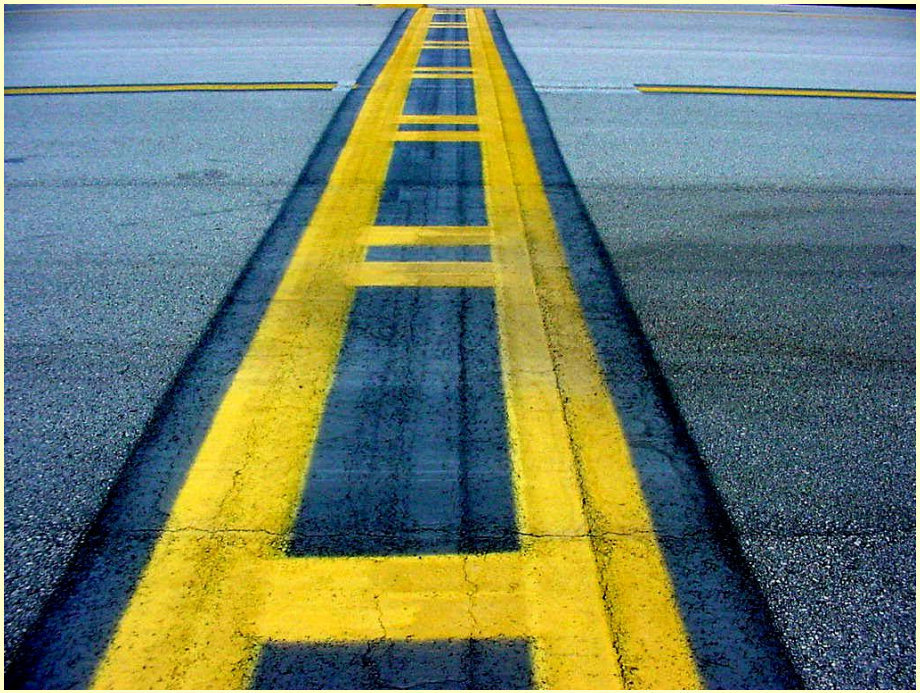
Airfield Markings

- **Hold Bars**
- **ILS Hold Bars**
- **Movement/Non-Movement Area Boundary**
- **Surface Painted Holding Position**
- **Surface Painted Directional Signs**
- **Taxiway Edge Markings**
- **Movement /Non-Movement Areas**
- **Vehicle Roadway Markings**

Hold Bars

- Used to identify the location where a pilot or vehicle is to stop when clearance has not been granted onto a runway.
- Never cross without permission.
- Hold on the solid line side.

ILS Hold Bar



- To identify the location where a pilot or vehicle is to stop when he/she does not have clearance to enter the ILS area.
- Located at the perimeter of the ILS critical area.
- Unauthorized penetration could disrupt NAVAIDS.

Movement/Non-Movement Area Boundary

- Defines the boundary of the movement area and non-movement area.
- Must have permission from ATC to enter movement area.
- Hold on the solid line side.

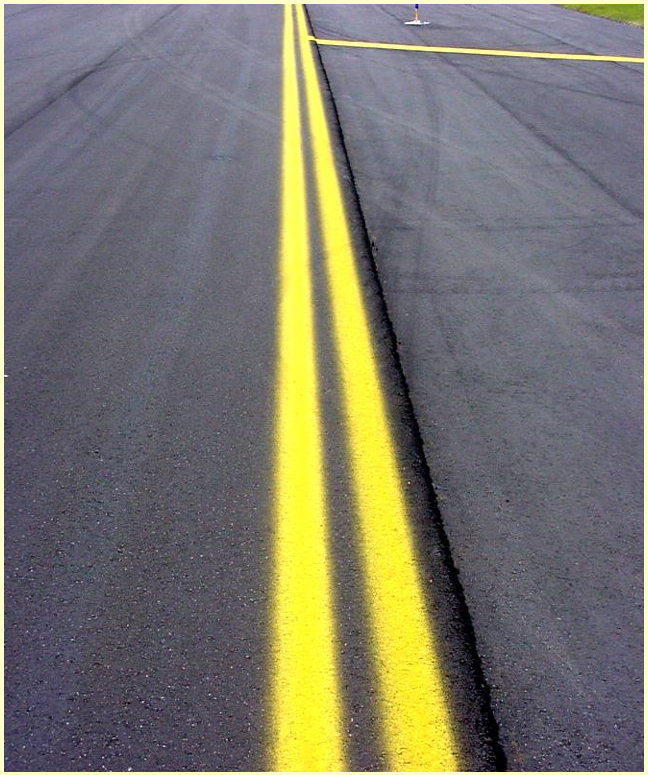
Surface Painted Holding Position

- Used where pilots had difficulty discerning the location of the holding position and to supplement signs located at holding positions.
- Required where the width of holding position on the taxiway is greater than 200’.
- Used in conjunction with the hold bar.

Surface Painted Direction Signs

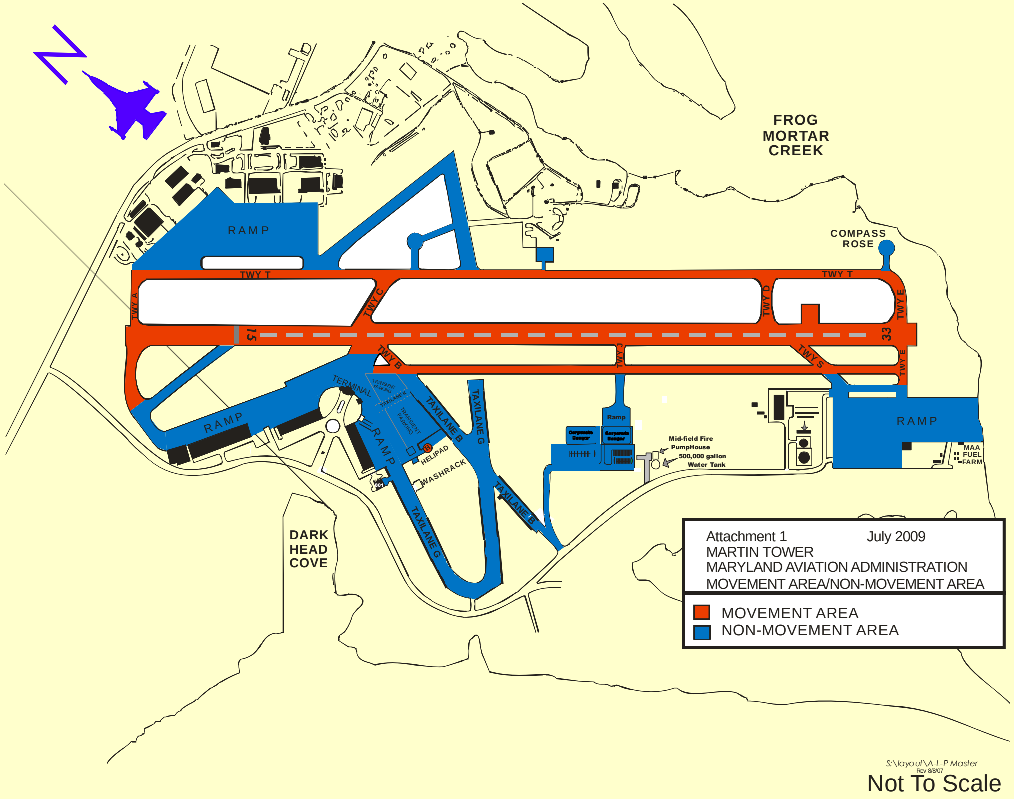
- Useful to guide pilots to runways or taxiways and to avoid missing taxiway turns.
- Applied on taxiway surface when it is not feasible to provide elevated directional signs or to supplement elevated signs.

Taxiway Edge Stripes



- Used to delineate the edge of a taxiway, primarily when the edge of the useable taxiway does not correspond to the edge of the pavement. (Example, taxiway shoulders).
- Continuous – Paved surface other than full strength taxiway not intended for use by aircraft.

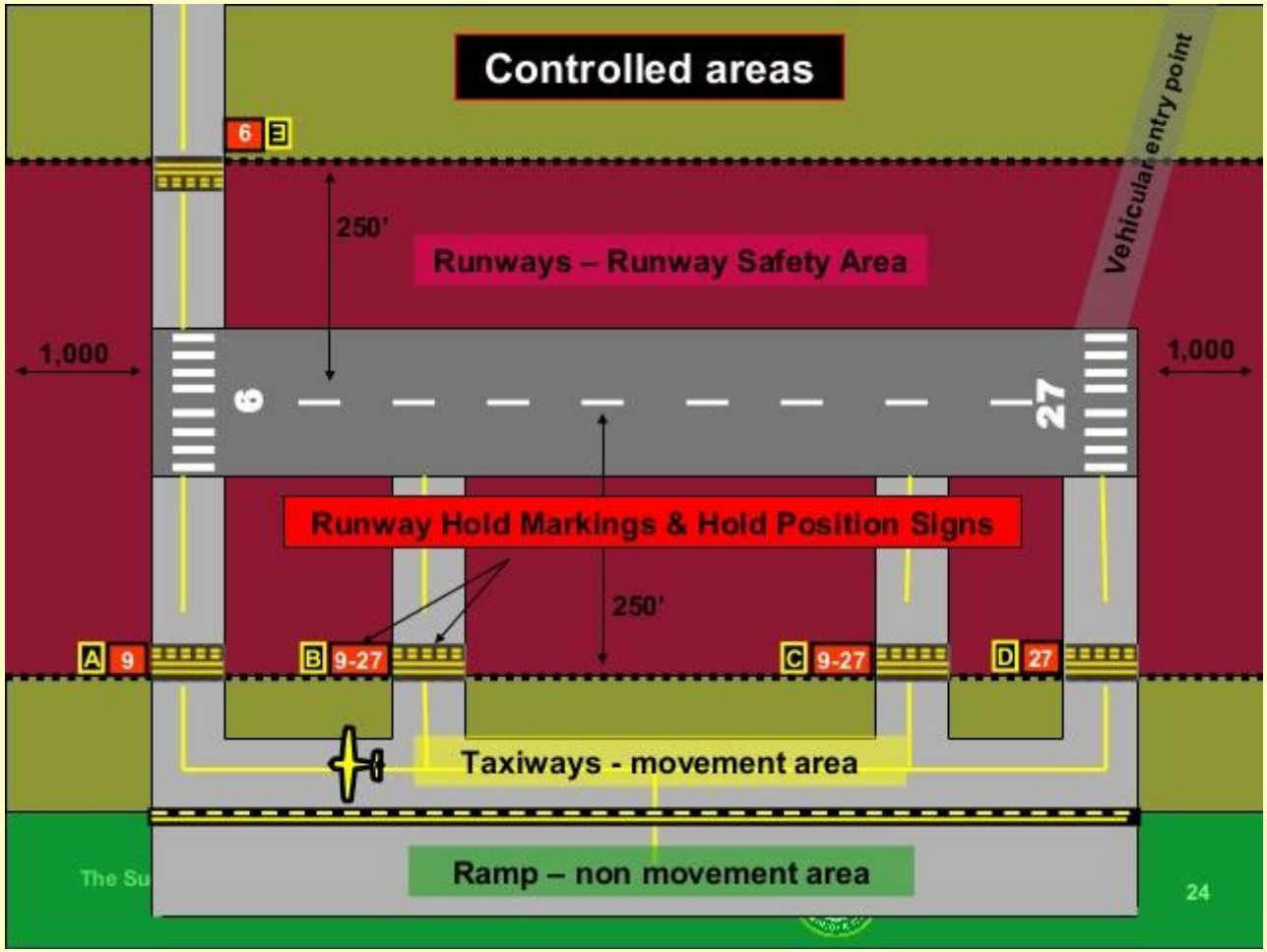
Movement/Non-Movement Areas



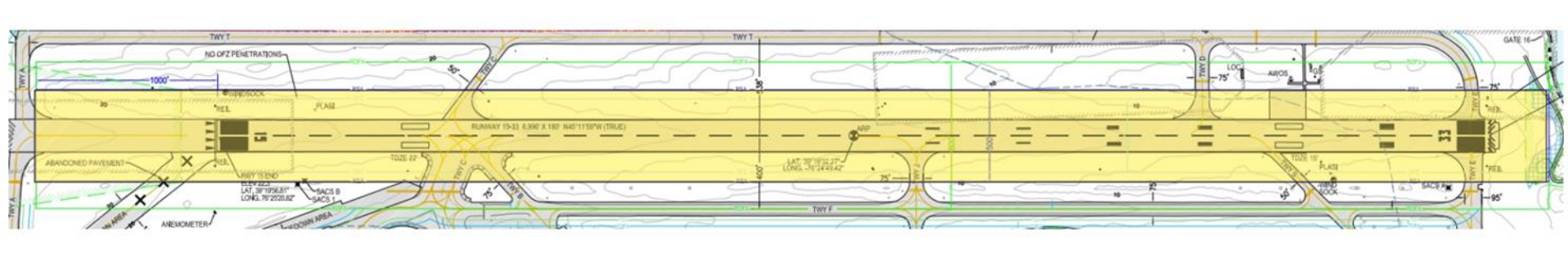
- Movement areas are defined as the runways, taxiways, and other areas of the airport which are utilized for the taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. Here at MTN, specific approval for entry onto the movement area must be obtained from ATCT.

- Areas in RED shown on the map require Air Traffic Control approval before entering.

Runway Safety Area



RWY Safety Area



- Safety Areas, Runways, and Taxiways, are surrounded by safety areas that are designed to provide an increased level of safety for aircraft landing and taking off. The dimensions of the safety areas vary according to the runways (RWY 15-33 - 250’ each side of centerline – image above) . These safety areas are intended to minimize damage to an aircraft during emergency situations, such as an aircraft overshooting or veering off the runway.

RWY Safety Area

- If conditions do not justify closure of the runway and personnel or vehicles need to enter the Runway Safety Area (RSA), they shall obtain a clearance from the ATCT for “access to the runway” even if their position will not place them on the actual runway pavement. The term “Runway Safety Area” shall not be used when coordinating with the ATCT.

- Note: Air Traffic Control personnel will not make any distinction between the Runway and the RSA. Once clearance is granted, no arrivals or departures will be authorized on that runway.

RWY Safety Area

- Personnel and vehicles shall report “clear of the runway” when exiting the runway or the Runway Safety Area. The term “clear of the runway” shall indicate to ATCT personnel that protection is not required and that operations on the runway may continue. For example, “Martin 1” needed to pick up FOD between the runway and taxiway but is not in the safety area of runway 15-33, Martin 1 would advise Ground Control that he/she was “in the grass east of the runway to remove FOD and will remain “clear of the runway”.

- With respect to operations on the movement area, there are no changes in procedures. Vehicles must hold short at the mandatory hold short line and request permission from Air Traffic Control for access to and/or cross runways.

Vehicle Roadway Markings

- Defines route that vehicles should use when the same area is used in conjunction with aircraft.
- Markings can be solid or zipper style for greater visibility.
- Vehicles should use these routes to the greatest extent practicable.

Airport Lighting

- Runway Edge Lighting
- Taxiway Edge Lighting
- Runway / Threshold In Pavement Lighting

Runway Edge Lighting

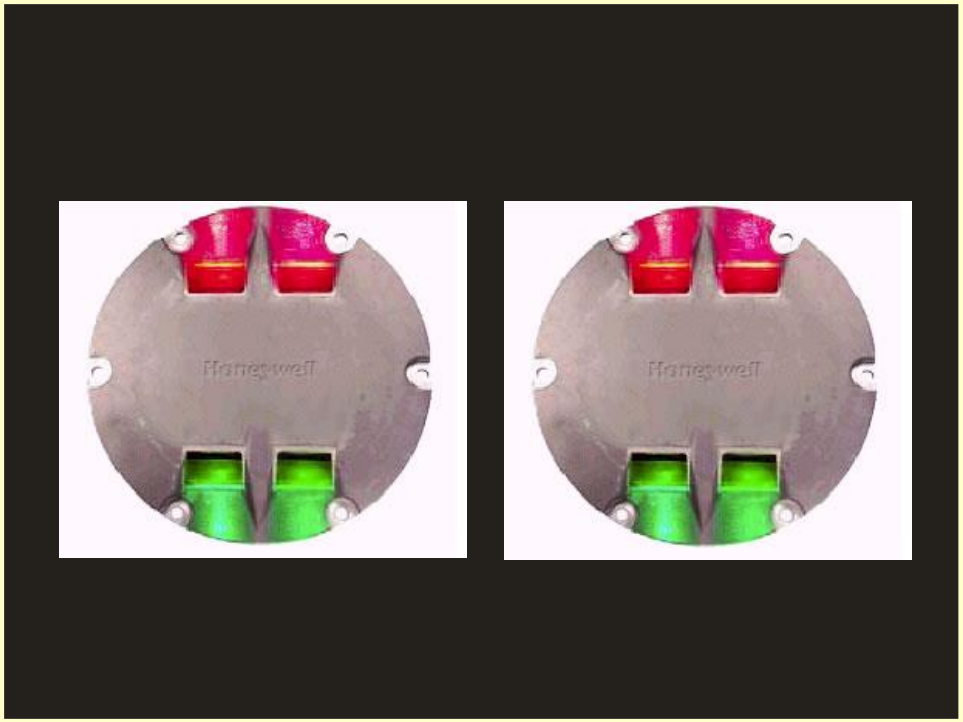
- Designed to identify the edge of the usable runway surface at night and during periods of low visibility.

- Clear (or white) except the last 2000’ of a precision or non-precision instrument runway, lights are amber.

Taxiway Edge Lighting

- Designed to identify the edge of the usable taxiway surface at night and during periods of low visibility.
- Taxiway edge lighting is blue.

Runway Threshold/End Lighting



- Runway Threshold / End Lights are used to define the beginning or the end of the runway pavement suitable for aircraft operation.
- Green lights represent the beginning and Red lights the end of the pavement.

Airfield Signs

- Mandatory Hold Position Signs
- ILS Critical Area Sign
- Taxiway Location Signs
- Inbound Destination Signs
- Array of Multiple Signs

Mandatory Hold Position Signs

- Used to denote the entrance to a runway or critical area, in conjunction with hold bars.
- Must not be passed unless permission is granted by ATC.
- Have white inscriptions with red backgrounds.
- These signs must be adhered to or your life and the life of others will be endangered!

ILS Critical Area Sign

- Used in conjunction with ILS Critical area hold markings to identify the outer boundary of the critical area.
- White inscription with Red background.
- Penetration into area without ATC permission could disrupt NAVAIDs.

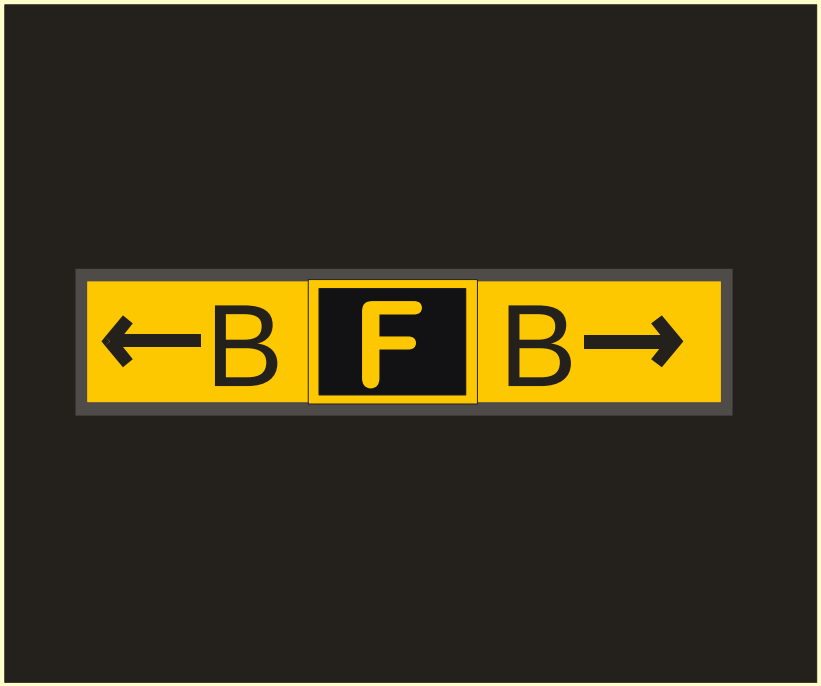
Taxiway Location Signs

- Identify the taxiway on which the aircraft or vehicle is located.
- The inscription is yellow with a black background.
- Can also be used to designate a runway in which an aircraft or vehicle is located.

Inbound Destination Sign

- Used to designate a location on the airport such as an FBO, ramp parking area, military operation, or fuel.
- Black inscription with yellow background.
- Denotes generally non-movement area facilities.

Sign Array



- Used to provide direction to multiple taxiways within close proximity.
- Generally located at the intersection of two or more taxiways.
- Consists of Taxiway location and Taxiway directions.

STOP DO NOT PROCEED

Comar 11.03.02.09

.09 Penalties.

Any person who violates the provisions of these regulations, except a motor vehicle parking regulation, is guilty of a misdemeanor and upon conviction shall be subject to a fine of not more than $500 or by imprisonment of not more than 90 days or both in the discretion of the court, except that for a violation of a motor vehicle parking regulation, the maximum fine may not exceed $50.

Ramp/Apron Areas

- Ramp/Apron areas are maintained by the Fixed Based Operator and the MAA. Surface markings and lighting, when present, will be similar to that of a taxilane.
- Ramps/Aprons at MTN are also non-movement areas.

General Rules to Follow

•Ensure that all available pertinent information regarding airport construction, movement area closures and applicable VHF frequencies has been reviewed. Know where you are, where you are going, and how to get there.

•Is operation on the movement area absolutely necessary?

•Can the operation be delayed until a less busy time?

•15 MPH speed limit on the Aprons/Ramps and Taxi-lanes.

•All aircraft, emergency vehicles, passengers, have the right of way.

•Listen before you transmit. When you are ready to transmit, pause, listen, and make sure the frequency is clear.

•Use correct radio technique and phraseology. Read back ATCT instructions before proceeding and read back all hold short and runway crossing instructions verbatim.

•Do not become absorbed in unrelated tasks or non-essential conversations while on movement areas.

•Look in all directions before proceeding onto the movement area and then move in an expeditious manner.

•Report when off the movement area.

•Be alert to the sounds or the lack of sounds in your receiver. Check your volume, recheck your frequency, and make sure that your microphone is not stuck in the transmit position.

•If you are unsure of your position on the airfield, stop and ask for assistance.

•Continuously monitor the appropriate ATCT frequency and acknowledge all transmissions.

•Ensure that you fully understand your instructions. If you are unsure, ask for clarification and do not move until you completely understand your instructions.

• Park your vehicle only in the designated areas, clear of taxiways, ramp and 15 feet from a fire hydrant.

•Report any accident, deteriorating/confusing airfield signs, FOD, Bird activity, surface markings or lighting to MTN Airport Operations at (410) 682-8831.

Radio Communication

- Tower Control
- Ground Control
- Phonetic Alphabet
- Proper Phraseology
- Light Gun Signals

Tower Frequency

- Controls the movement of aircraft on airport runways and airport airspace.
- Local controller has jurisdiction over runways.
- The tower frequency for this airport is 121.30 MHZ.

Ground Control Frequency

- Responsible for the control of aircraft, vehicles, and pedestrians on controlled airport surfaces, except runways. (Movement Areas)
- The Ground Control frequency for this airport is 121.80MHZ.

MTN Air Traffic Control Frequencies

- **Ground Control -121.8 / 253.4**
- **Tower - 121.3 / 297.2**
- **Unicom - 122.95**
- **Automatic Terminal Information Service (ATIS) - 124.925**

ICAO Phonetic Alphabet

A	Alfa	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliett	W	Whiskey
K	Kilo	X	X-Ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

- ATCT will use this alphabet during all transmissions to identify taxiways.
- The phonetic alphabet is shown above, and must be memorized.

Proper Phraseology

- Identify who you are calling/name of facility.

Vehicle – "Martin Ground… Operations 1".

- Wait for a response.

Tower – "Operations 1 .. Martin Ground."

- Identify your intentions.

Vehicle – "I am at the base of the tower and would like to cross Runway 15 to Tango Taxiway".

- Wait for a response.

Tower – "Operations 1, Proceed up to and hold short of Runway 15 at Taxiway Charlie."

- Always repeat the instructions back to the tower.

Vehicle – "Roger, Operations 1, Proceed up to hold short of Runway 15 at Taxiway Charlie."

Proper Phraseology

- Listen before you transmit.
- Think about what you want to say.
- Avoid using slang.
- Use aviation related phraseology.
    - Roger (I understand)
    - Wilco (Will comply)
    - Acknowledge
    - Affirmative (Yes)
    - Negative (No)

Light Gun Signals

Used when a two way radio system between the air traffic control facility and aircraft or vehicle is unavailable or inoperative.

- Steady Green — Cleared to cross, proceed, or, go.
- Flashing green — Cleared to taxi (aircraft only).
- Steady Red — Stop.
- Flashing red — Clear runway or taxiway.
- Flashing White — Return to starting point on airport.
- Alternating Green/Red — Use extreme caution.

Runway Incursions

- The worst disaster in civil aviation history resulted from a runway incursion.
- Runway incursions have increased from 186 to 321 nationally in the last seven (7) years.
- Haze and fog increase the risk of runway accidents by a factor of twelve(12).
- Runway incursions represent 6% of total aviation fatalities.
- 60%-80% of runway incursion result from human error.
- Nationally, runway incursions average 1 per every 200,000 aircraft operations.

Ways to Prevent Runway Incursions

- **See the Big Picture** – When possible monitor both ground and tower frequencies.
- **Transmit Clearly** – Make your instructions and read backs complete and easy to understand.
- **Listen Carefully** – Listen to your clearance. Do not let communications become automatic.
- **Situational Awareness** – Know your location. Know what is going on around you, in all directions.
- **Admit When Help is Needed** – Ask ATC for help. Better to damage your pride than property.

Ways to Prevent Runway Incursions

- **Understand Signs, Lights, and Markings** – Keep current with airport signs, lights, and markings. Know what they mean and what action to take.
- **Never Assume** – Do not take clearances for granted. Look both ways before entering or crossing taxiways and runways.
- **Follow Procedures** – Establish safe procedures for airport operations. Then follow them.
- **Right of Way -** When giving way to aircraft, ensure personnel and vehicles are outside of the Obstacle Free Area (OFA)

Airport Construction

- Ensure that contractors are briefed on airport surroundings.
- Keep construction areas well guarded and lit.
- Establish haul routes away from runways and taxiways. (If possible)
- Ensure that NOTAMS are current.
- Coordinate construction activities with your air traffic control tower.
- Advisory Circular 150-5370-2C provides information.

VIOLATIONS

Penalties for violating the MTN Airport driving rules may include:

- Written reprimand (MTN Personnel)
- Suspension or revocation of driving privileges on the airfield
- Retraining and Testing

Conclusion

To ensure safe operations are conducted at airports, it takes a cooperative effort from all who are involved. This includes pilots, controllers, airport operators, vehicle operators, and contractors.

Together, we can make a difference to reduce incidents and make runway incursions, a thing of the past.