Robert Ranstadler

Delta County Airport Airfield Operations Training: Airport Familiarization

This course provides Delta County Airport (ESC) Airfield Operations personnel initial and annual 14 CFR Part 139 training in accordance with FAR (Federal Aviation Regulation) 139.303(c)1: Airport Familiarization, Including Marking, Lighting & Signs.

All Operations staff must complete this course at least once every 12 CCM (consecutive calendar months). Applicable training records must be furnished upon request and kept on file for no less than 24 CCM.

References: FAR 139.303(c)(1); FAR 139.311(a); AC 150/5340-1; ESC Airport Diagram; ESC ACM; ESC ALP

LESSON

Introduction

Airfield Markings

Airfield Lighting & Signage Systems

Aircraft Navigational Aids

Airfield Access

Movement & Non-Movement Areas

Communicating on the Airfield

Conclusion

Airport Familiarization Quiz

Lesson 1 of 9

Introduction

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Objective

Airfield Operations staff shall review this self-paced lesson in its entirety, including completing all interactive activities, to demonstrate they possess the minimum background knowledge necessary to safely perform Part 139 duties at ESC. **This course concludes with a quiz (minimum passing score of 70%).**

What is a Part 139 Airport Certification?

14 CFR Part 139 requires the FAA to issue airport operating certificates to airports that serve scheduled and unscheduled air carrier aircraft with more than 30 seats, or scheduled air carrier operations in aircraft with more than 9 seats but less than 31 seats. Compliance with this regulation is mandatory for U.S. airports serving air carrier operations

Section 139.303(c)1

Section 139.303 requires that, "in a manner authorized by the FAA, each certificate holder must train all persons who access movement areas and safety areas and perform duties in compliance with the requirements of the Airport Certification Manual (ACM) and this part." The subpart requires that the curriculum for initial and recurrent training must incorporate airport familiarization, including airport marking, lighting, and signs systems. *This training must be completed prior to the initial performance of such duties and at least once every 12 CCM.*

What is a Part 139 Operating Certificate?

Operating certificates are FAA credentials issued to airports. A Part 139 Operating Certificate permits an airport to serve scheduled and unscheduled air carrier aircraft with more than 30 seats, or scheduled air carrier operations in aircraft with more than 9 seats but less than 31 seats.

Who is subject to this policy?

The certificate holder (Airport Director) and all persons who access movement areas and safety areas as well as personnel who perform duties in compliance with the requirements of ACM and

Part 139 (Airfield Operations personnel).

Is this policy mandatory?

Compliance with this regulation is mandatory for U.S. airports serving air carrier operations. *Personnel training records must be furnished upon request and kept on file for a minimum of 24 CCM.*

When and how often must this training be completed?

Part 139 training must be completed prior to the initial performance of duties and at least once every 12 CCM.

For how many CCM must personnel training records be kept on file?

Type your answer here

SUBMIT

CONTINUE

Lesson 2 of 9

Airfield Markings

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Runway & Taxiway Markings

Airfield markings are a system of symbols, lines, and colors found on runway, taxiway, and apron surfaces that serve as visual aids to guide pilots and ground crew. They are used to indicate boundaries between different areas of the airfield, such as runways, taxiways, holding positions, and parking areas.

Use the checklists below to learn more about the runways and taxiways at ESC.

Runways

- [ ] **Purpose**
  Runways are used for the takeoff and landing of aircraft. Some airports only have a single runway while larger airports may have three or more runways. They are rectangular in shape and may be oriented differently. ESC has two runways that intersect one another in the southeast corner of the airfield.

- [ ] **Identification & Direction**
  Each runway has numbers on the end that match the compass direction in which they point. Runway 01 (RWY 01), for example, points north (010 degrees). Primary RWY 10/28 runs east/west

(100/280 degrees) and secondary RWY 01/19, runs north/south (010/190 degrees).

Materials & Dimensions
Runways are typically made from pavement or asphalt, although some small GA airports have grass runways. At ESC, RWY 10/28 is 6,498 feet long and 150 feet wide. RWY 01/19 is 5,016 feet long and 100 feet wide.

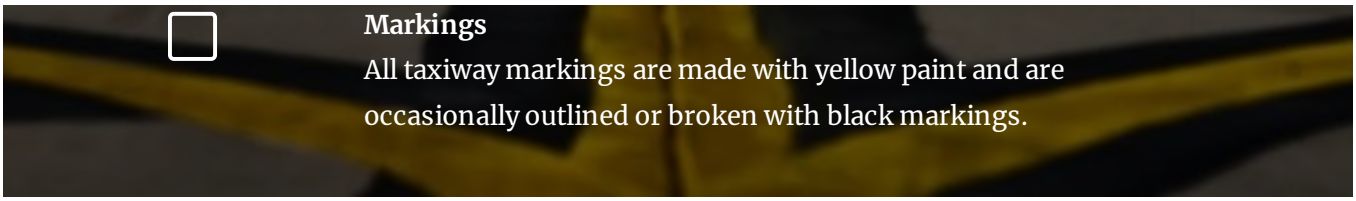
Markings
Nearly all runway markings are white. Exceptions include yellow markings that indicate temporary closures, which are handled on a case-by-case basis.

Taxiways

Purpose
Taxiways are paths that connect runways with other runways, adjacent taxiways, aprons, hangars, terminals and nearby facilities. ESC has three taxiways. Two of these are full-length parallel taxiways (see below).

Identification & Direction
Taxiways are identified by letters. Taxiway A (TWY A) runs parallel to and the full length of RWY 01/19 (north/south). TWY B runs parallel to RWY 10/28 (east/west), intersecting TWY A at the southeast end of the airfield. TWY C connects the DNR Hangar Area to RWY 01/19.

Materials and Dimensions
Taxiways are mostly hard surfaces, such as asphalt or concrete, although smaller airports sometimes use gravel or grass. TWY A is approximately 5,000 feet long and TWY B is about 6,500 feet long. TXY C is only 500 feet long.



Markings

All taxiway markings are made with yellow paint and are occasionally outlined or broken with black markings.

CONTINUE

Lesson 3 of 9

Airfield Lighting & Signage Systems

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Airfield Lighting

Airfield lighting is used to illuminate airport runways at night or in low visibility conditions. It helps pilots to identify runways and other areas on the airfield. Airfield ground lights consist of elevated lights at the side of runways and taxiways and inset lights which are embedded in the airport surfaces

Click on each of the images below and read their attached captions to learn more about the two primary types of airport lighting.

YOUTUBE

FAA Airport Markings and Signs King Video

FAA Airport Markings and Signs King Video

VIEW ON YOUTUBE >

RUNWAY LIGHTS are mostly white. The runway is marked with white edge lights on each side of the runway. The final 2,000 feet of each runway have **amber and white split lenses**, with amber telling the pilot they are nearing the end. The runway end is marked with **red and green split lenses** to tell

TAXIWAY LIGHTS are always blue. They run along each side of the taxiways and taxiway connectors. Taxiway lights are mounted to frangible supports, meaning they are designed to break away from their bases in the result of a collision rather than damaging an aircraft.

the pilot that is the end of the runway.

Airfield Signage

Airport signage systems provide visual cues to pilots and vehicle operators that enhance safe and efficient movement within the airfield environment

Click on each of the below tabs to learn more about the type of airfield signs in use at ESC.

DESTINATION & DIRECTION SIGNS | RUNWAY DISTANCE REMAINING SIGNS | RUNWAY HOLD POSITION SIGNS | LOCATION SIGNS

Destination signs and direction signs are yellow with black inscriptions. They always have an arrow. They show the location of various movement surfaces, including runways and taxiways, on the airfield. In the below example, this direction sign is directing the operator to TWY A2. NOTE: In the background is a (black on yellow) hold short sign and a (yellow on black) location sign for TWY A2.

These signs are black with white numbering. They are located along the side of the runway and are spaced 1,000 feet apart. These signs indicate how many feet of the runway exist beyond that point in 1,000-foot increments. In the below example, this sign is indicating that 4,000 feet of runway are remaining.

These are red signs with white lettering and are located beside each runway entrance between the runway and taxiway. They serve as a visual indication that a runway is directly ahead. Typically, one must "hold short" and obtain clearance prior to entering the runway. In the below example, the (red and white) hold position sign indicates that RWY 37/15 is ahead. NOTE: A (black & yellow) location sign is attached that indicates that the operator is currently on TWY B.

Location signs are black signs with yellow inscriptions. These signs tell pilots and operators what taxiway or runway they are currently occupying. Remember that "yellow on black is where you're at!" The below example indicates that the operator is currently on RWY 15.

What color are taxiway lights?

- white
- blue
- amber
- green

SUBMIT

CONTINUE

Lesson 4 of 9

Aircraft Navigational Aids

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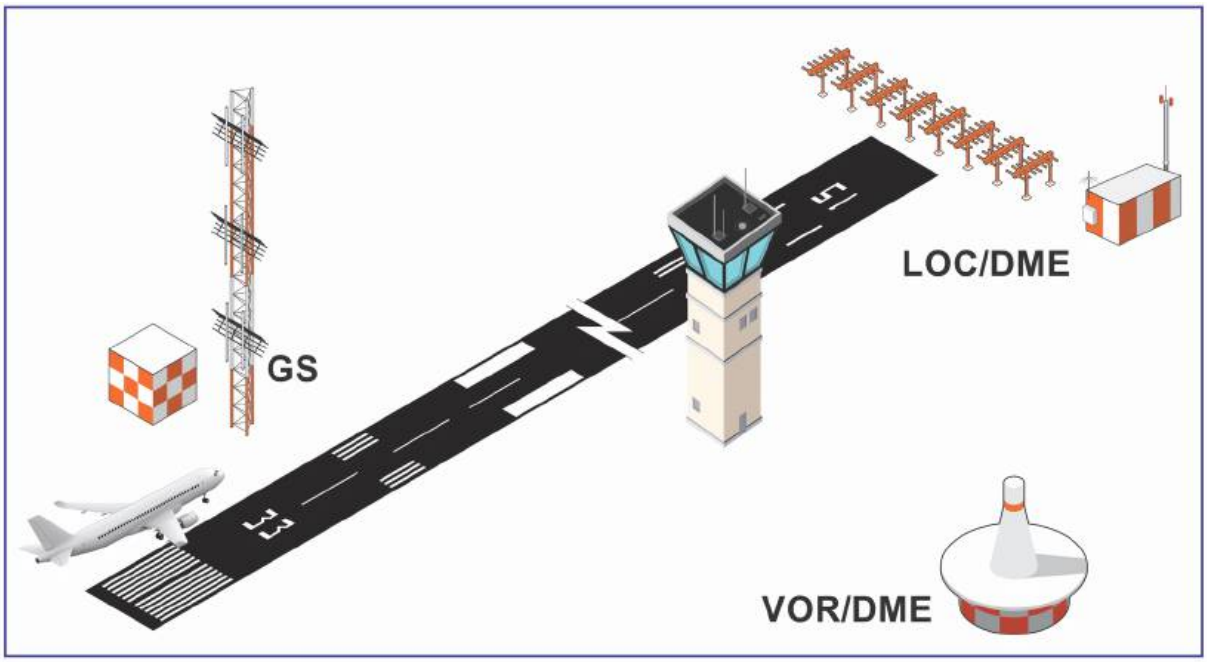
NAVAIDs

Aircraft navigational aids, abbreviated NAVAIDs, are visual or electronic devices that provide point-to-point guidance information or position data to pilots in flight. They primarily assist pilots in the landing and taking off of aircraft. There are six (6) types of major NAVAIDs currently in use at ESC.

Review the below cards to learn more about NAVAIDs at ESC.

Introduction



Most of the NAVAIDs used on ESC's airfield are federal property, which means they are actively maintained by the FAA. A few pieces of equipment, however, belong to ESC and must be inspected and maintained by Airfield Operations staff regularly. Your supervisor will cover the differences between these pieces of equipment during hands-on training. For now, just focus on familiarizing yourself with the purpose of each NAVAID.

Step 1

Automated Weather Observation System (AWOS)

The AWOS is a series of equipment that reads the weather at the airport. There is a road to access this from the Runway 10/28 between Taxiway B and Taxiway B2. In order to access this facility, staff must have permission to enter the movement area from airport management and cross Runway 10/28.

Step 2

Medium-Intensity Approach Lighting System (MALSR)

The MALSR is a series of lights on the west end of the airfield that help pilots find the RWY 10/28 in poor weather conditions. The road is accessed from Taxiway B at the RWY 10 approach end. This road must be cleared for maintenance of the equipment.

Use extreme caution when operating around these poles, they are extremely expensive and are frangible.

Step 3

Glide Slope Antenna

During poor weather conditions, pilots use this NAVAID to help on final approach. It is a tall pole with an orange and white striped building at the base, located near the Runway 10 approach end. The only way to access the antenna is from Runway 10/28 between Taxiway B and Taxiway B1. The access and parking area needs to remain clear so the building may be accessed. Since this is a highly sensitive piece of equipment, vehicles may only authorized personnel may be in the vicinity.

Step 4

Localizer

Pilots use the localizer to help them line up with the centerline of the runway during poor weather conditions. It can be identified by a series of T-shaped poles 1,000 from the end of the runway and an orange and white striped building off to the side. There is an access road to get to this building from the east side of Runway 01/19 between Runway 10/28 and Taxiway B intersections with Runway 01/19. It is imperative that no vehicle be left in front of this facility for an extended period of time, as that may interfere with the signal to the aircraft.

Step 5

Precision Approach Indicator (PAPI)

Visual system of lights used to help pilots in determining their approach angle while landing. Since they are located near the runway, staff need prior authorization to access the PAPI and vehicles should not be stopped in front of the lights. Occasionally the lights need to be changed, or the line of sight needs to be cleared of snow, which is the only time these lights should be accessed.

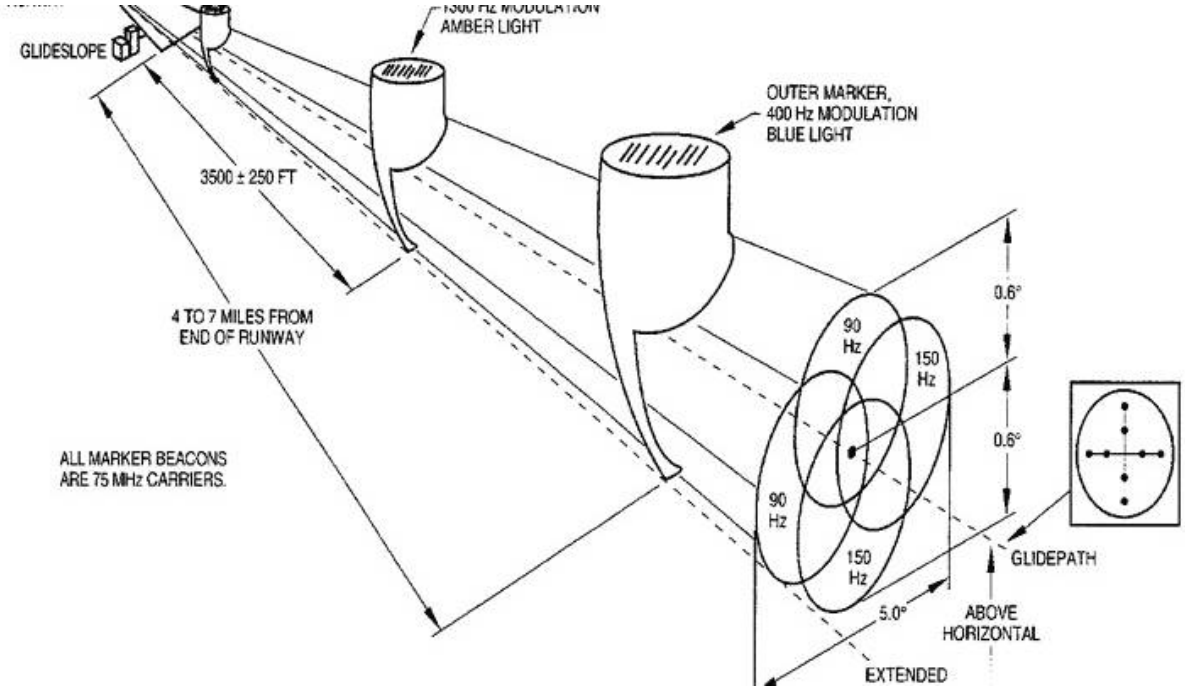
Step 6

Runway End Identifier Lights (REIL)

These lights are located at the ends of Runways 01 and 28. They help pilots find the ends of runways in poor weather (visibility) conditions by emitting a white flashing strobe. Since they are located at the end of each runway, access requires prior authorization. Occasionally, snow needs to be moved from the front of these lights.

Use extreme caution when operating around this NAVAID because the strobe lights are very expensive and incredibly fragile.

Runway Safety Area (RSA) and the Instrument Landing System (ILS) Critical Area



Of final and important note, are the **RSA** and **ILS Critical Area**.

The **RSA** extends 250 feet from the centerline of RWY 10/28, and 1000 feet past the landing threshold on each end. The RSA for RWY 01/19 extends 250 feet from the centerline and 1000 feet from the landing thresholds. Vehicles or pedestrians are not allowed in the RSAs during aircraft operations.

The **ILS Critical Area** is a cone-shaped zone, located near the approach zone of RWY 10, which is an area of defined dimensions around the localizer and glide path antennas. **This area must remain clear of personnel and vehicles during ILS operations.** Pilots will typically specify that they are shooting the ILS approach, but in inclement weather or if you are unsure, stop and hold short of the ILS Critical Area.

Match the NAVAID with its corresponding purpose.

SUBMIT

CONTINUE

Lesson 5 of 9

Airfield Access

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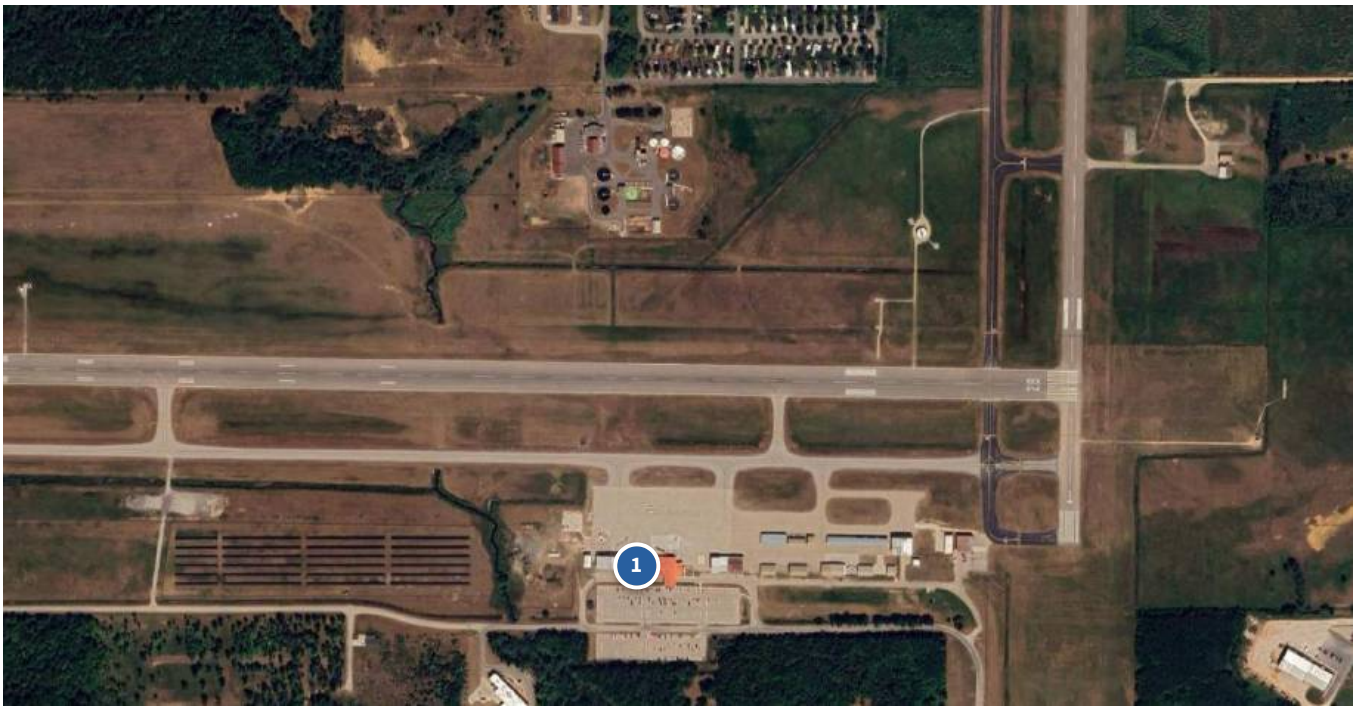
Gate Access & Security Requirements

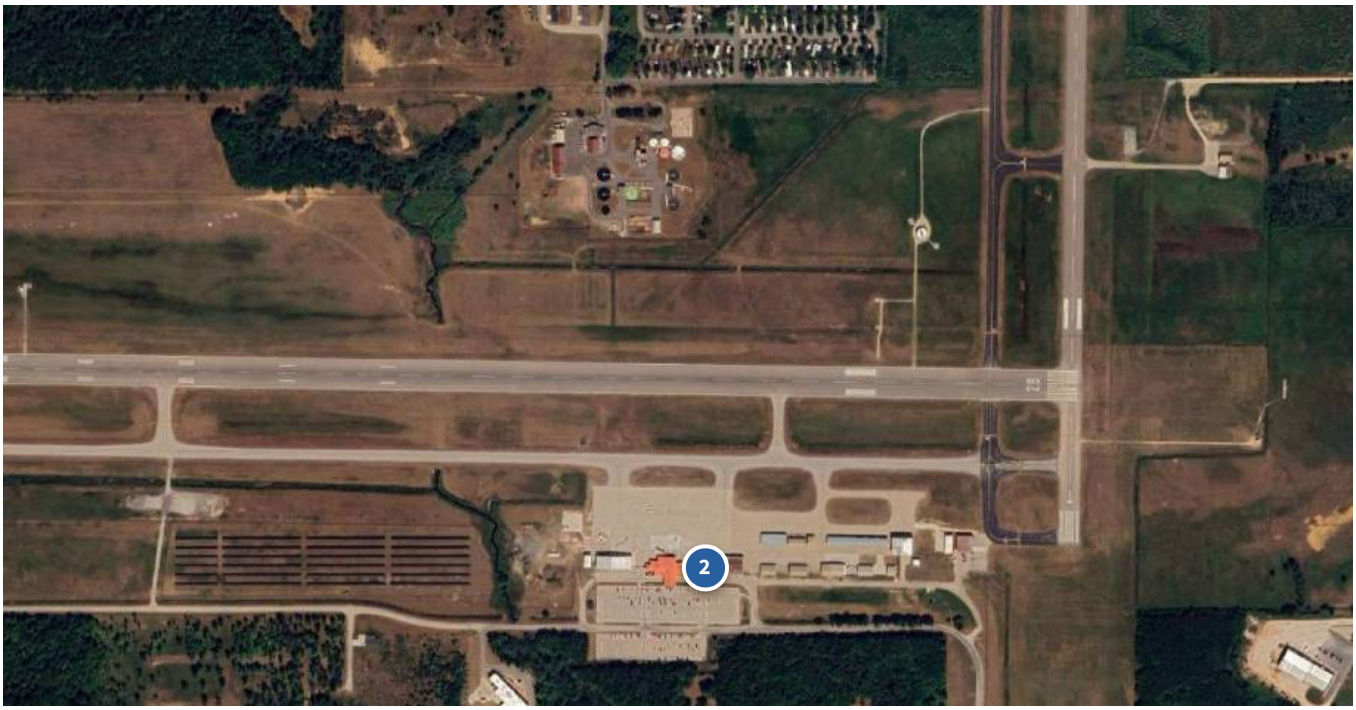
Airport security requirements are mandated by the TSA, which establishes airfield access standards based on several factors including the size of aircraft served, the type of service, and point of origin. ESC is presently classified as a Category IV (CAT IV) airport, which is the least restrictive of all TSA categories.

Explore the topics below to learn more about how airfield access is monitored and controlled to promote safety and security at ESC.



Gate 1

Gate 1 is a motorized rolling gate that permits groundside-to-airside access to airport staff, first responders, and authorized members of the public. The gate is actuated by the use of a key card or transmitter, which are issued and tracked by the Airport Manager.



Gate 2

Gate 2 is a motorized rolling gate that permits groundside-to-airside access to airport staff, first responders, and authorized members of the public. The gate is actuated by the use of a key card or transmitter, which are issued and tracked by the Airport Manager.

Gate 3

Gate 3 is a motorized rolling gate that permits groundside-to-airside access to airport staff, first responders, and authorized members of the public. The gate is actuated by the use of a key card or transmitter, which are issued and tracked by the Airport Manager.

Other Gates

There are several more non-motorized gates located around the perimeter of the airfield that are for staff use only. These gates are secured and accessed using traditional padlocks and keys. Diagrams detailing all gate locations are considered confidential information and should be handled appropriately

> **Gate keys, access cards, and remote entry devices are distributed and controlled by the Airport Security Coordinator (Airport Manager).**

Signs like the one pictured above are posted at Gates 1, 2 & 3

Piggybacking

Remember to avoid "piggybacking," which is allowing multiple pedestrians or vehicles to enter gates with the single swipe of an entry card. Report violations to airport management.

Which gate(s) require electronic access? Check all that apply.

- [ ] 3
- [ ] 1
- [ ] 5
- [ ] 2

SUBMIT

CONTINUE

Lesson 6 of 9

Movement & Non-Movement Areas

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Walking & Driving Around the Airfield

Walking and driving around the airfield is unlike groundside environments because pedestrians and drivers must be aware of ground traffic and air traffic, which occupies the airspace above the airfield. Pedestrians and drives must therefore think "three dimensionally" when it comes to moving about the airfield.

As a general rule, aircraft *always* have the right of way on an airfield, in most cases even over emergency response vehicles. Ground operators should always give the right of way to aircraft, whether they are arriving, departing, or taxiing to an airfield location.

Explore the below content to learn more about the differences between the different movement surfaces on the airfield, as well as some of the requirements needed to operate a vehicle in and around these areas at ESC.

MOVEMENT AREAS include all

NON-MOVEMENT AREAS include ramps and

Lesson 6 of 9

Movement & Non-Movement Areas

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MOVEMENT AREAS include all

NON-MOVEMENT AREAS include ramps and

taxiways and runways under the jurisdiction of the control tower. ESC is a non-towered airport, but pilots must still declare their intentions using over the radio (see next lesson).

aprons that are not controlled by air traffic control (ATC). Although an aircraft may taxi in a non-movement area without any instructions from ATC, it must have a specific clearance to operate in the movement area.

Hold position lines are very similar to markings found on roads and highways: solid lines mean do not cross (without permission) whereas dashed lines may be passed over at the operator's discretion.

Hold Position Pavement Markings

These markings serve as boundaries between movement areas (runways) and non-movement areas (taxiways). They consist of four (4) yellow lines, including two (2) dashed lines and two (2) solid lines. If approaching from the dashed-line side (exiting runway), continue over the bar

without stopping to clear a runway. If approaching from the solid-line side, stop and contact local traffic on the radio at 122.80 MHz before driving out onto the runway.

Airfield Vehicle Requirements

- [ ] Airfield vehicles must be equipped with a flashing yellow light (beacon) that is visible from all sides and above. This allows pilots to see vehicles operating on runways, taxiways, or the main apron.
- [ ] All airfield vehicles must be equipped with a two-way aviation radio that permits uninterrupted monitoring and communication with local traffic (see next lesson).
- [ ] Airfield vehicles must be in good working condition. Passenger compartments and windows must be kept free of obstructions.
- [ ] All federal, state, and local laws applicable to operating the vehicle must be observed, including the driver holding a valid license, current insurance, and an up-to-date motor vehicle registration.

As a general rule, when do aircraft have the right of way on an airfield?

Type your answer here

SUBMIT

CONTINUE

Lesson 7 of 9

Communicating on the Airfield

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Keeping in Touch Around the AOA

The preceding lesson described some of the various movement surfaces around airfields. Collectively, these surfaces are referred to as the Airport Operations Area (AOA). This lesson will cover the AOA in more detail while also touching upon how to communicate with others while moving about the AOA.

Visit each of the below resources to learn more about AOAs and airfield communications.

YOUTUBE

FAA Video Airport Operation Areas

VIEW ON YOUTUBE >

The Common Traffic Advisory Frequency (**CTAF**) and Universal Communications frequency (**UNICOM**) are shared at ESC at **122.80 MHz**.

Communicating on CTAF

When communicating over the CTAF or UNICOM frequency, remember to state the following information in the below order:

1. Who you are talking to ("Escanaba Area Traffic," "SkyWest 1433," etc.)
2. Who you are ("Service Vehicle 02," "ARFF 1," etc.)
3. What your intentions are ("Crossing Runway 01/19," for example)
4. Your present location ("On Taxiway Alpha," Exiting Runway 10/28," etc.)
5. Identify which airport you are communicating with ("Escanaba Area Traffic." for example)

CONTINUE

Lesson 8 of 9

Conclusion

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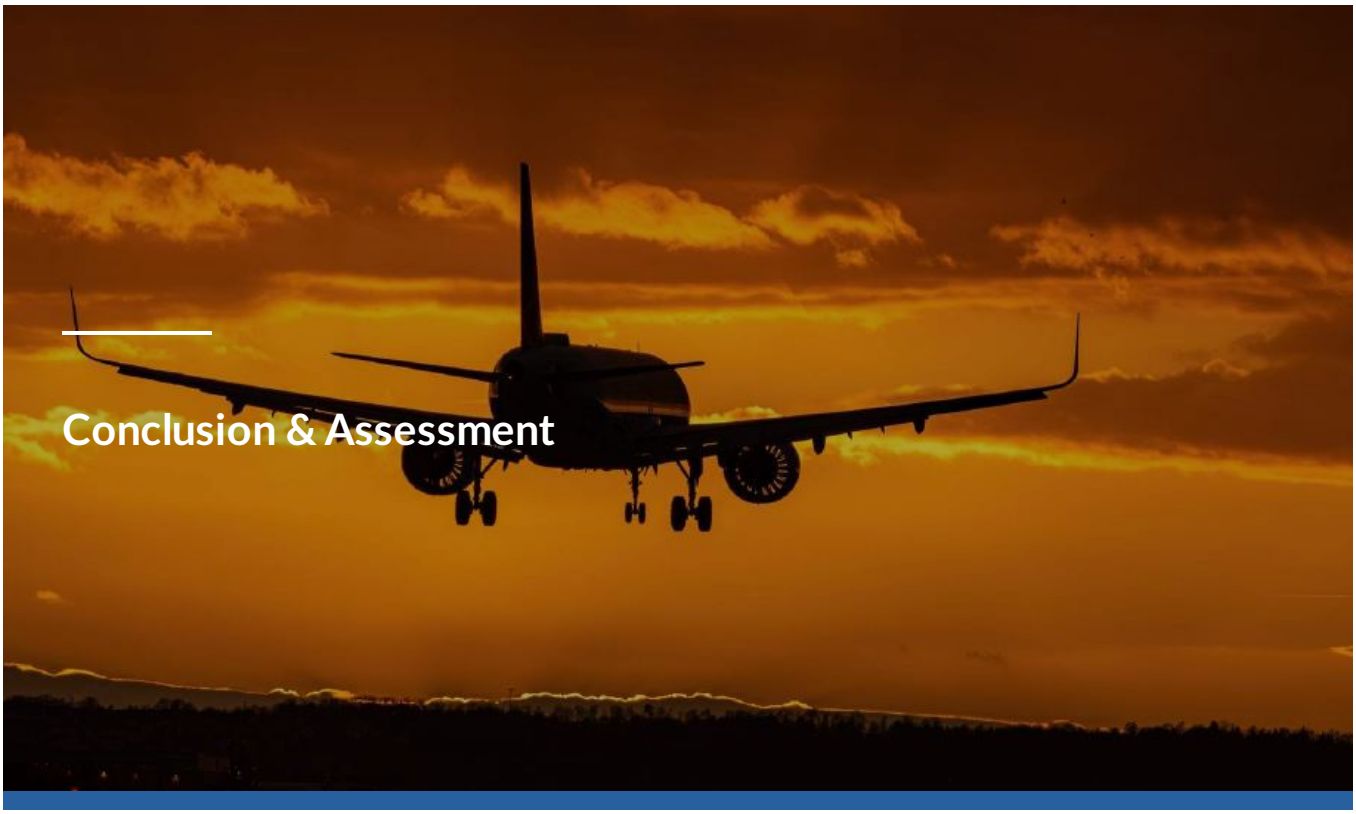

Congratulations!

You've made it to the end of your annual Airfield Operations training for 139.303(c)1: Airport Familiarization, Including Marking, Lighting & Signs.

To complete your training, please be sure to follow the steps outlined below.

- [ ] Complete the quiz attached to the end of this course.

- [ ] Submit your completed assessment to the Training Officer/Airport Manager.
- [ ] Initial the associated Exhibit 11 – Personnel Training Sign-In sheet.
- [ ] Provide feedback to the Training Officer/Airport Manager about how to improve this course.

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CONTACT

CONTINUE

Lesson 9 of 9

Airport Familiarization Quiz

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This quiz will test your knowledge of the material covered during this course. Read each question in its entirety then choose the best answer. You may retake this quiz an unlimited number of times, but the minimum passing score is 70%.

Question

01/10

14 CFR Part 139 requires the FAA to issue airport operating certificates to airports that serve scheduled and unscheduled air carrier aircraft with more than 30 seats, or scheduled air carrier operations in aircraft with more than 9 seats but less than ___ seats.

Type your answer here

Question

02/10

How often must Airfield Operations staff complete this Part 139 training? Check all that apply.

- [ ] Once every 12 CCM
- [ ] Twice every 12 CCM
- [ ] Once every 24 CCM
- [ ] Prior to the initial performance of duties

Question

03/10

How many taxiways are on the airfield at ESC?

- three
- two
- four
- one

Question

04/10

What color are runway lights? Check all that apply.

- [ ] white
- [ ] amber
- [ ] green
- [ ] blue

Question

05/10

Match the airfield sign type with the correct description

≡ 1 Runway Distance Remaining Sign	red sign with white lettering
≡ 2 Location Sign	yellow sign with black inscriptions that always include an arrow
≡ 3 Runway Hold Position Sign	black sign with yellow inscriptions
≡ 4 Destination & Direction Sign	black sign with white numbering

Question

06/10

What is the purpose of the Localizer?

- Pilots use the localizer to help them line up with the centerline of the taxiway during poor weather conditions.
- Pilots use the localizer to help them line up with the centerline of the runway during fair weather conditions.
- Pilots use the localizer to help them line up with the centerline of the runway during poor weather conditions.
- Pilots use the localizer to help them line up with the end of the runway during poor weather conditions.

Question

07/10

The RSA extends ____ feet from the centerline of RWY 10/28, and 1000 feet past the landing threshold on each end. The RSA for RWY 01/19 extends ____ feet from the centerline and 1000 feet from the landing thresholds.

Type your answer here

Question

08/10

According to the TSA, which of the below security categories does ESC fall under?

- CAT IV
- CAT III
- CAT I
- CAT X

Question

09/10

Which of the following are examples of non-movement areas at ESC? Check all that apply.

- [ ] TWY B
- [ ] RWY 10/28
- [ ] compass rose
- [ ] apron

Question

10/10

What is the CTAF/UNICOM frequency at ESC?

- 122.80 MHz
- 121.60 MHz
- 128.00 MHz
- 122.08 MHz