Federal Aviation Administration

55054001 EN ROUTE RADAR ASSOCIATE CONTROLLER TRAINING PART A: BASIC CONCEPTS

Lesson 11: Initiating Emergency Procedures

Version: 1.0 2022.08

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LESSON PLAN DATA SHEET

Course Name	En Route Radar Associate Controller Training Part A: Basic Concepts
Course Number	55054001
Lesson Title	Initiating Emergency Procedures
Duration	2 hours, 15 minutes (includes lesson and ELT)
Version	1.0 2022.08
Reference(s)	JO 7110.65, Air Traffic Control; JO 7210.3, Facility Operation and Administration; JO 7610.4, Special Operations; TI 6110.108, ERAM Quick Reference Controller Card; 47 CFR, Telecommunications
Prerequisites	NONE
Handout(s)	NONE
Exercise / Activity	NONE
Scenario	NONE
Assessments	⊙ YES - Written
Materials and Equipment	⊙ Pencil and/or pen
Other Pertinent Information	⊙ **Ensure lesson materials are downloaded to the classroom computer** ⊙ This lesson is based on ERAM EAE410 ⊙ The lesson has been reviewed and reflects current orders and manuals as of April 2022

LESSON ICON LEGEND

	Description
	The Activity icon indicates an exercise, lab, or hands-on activity.
	The Discussion Question icon signals a discussion question to be asked to the students.
	The Handout icon indicates a handout is to be distributed to the students.
	The Instructor Note icon is in hidden text and indicates text that is for the instructor only.
	The Multimedia icon indicates a video or audio clip is in the presentation.
	The Phraseology icon indicates that phraseology is in the content.
	The WBT icon indicates a component of web-based training.
	The Click icon indicates a PPT slide with click-based functionality to present additional information.
	The Definition icon indicates a published definition.

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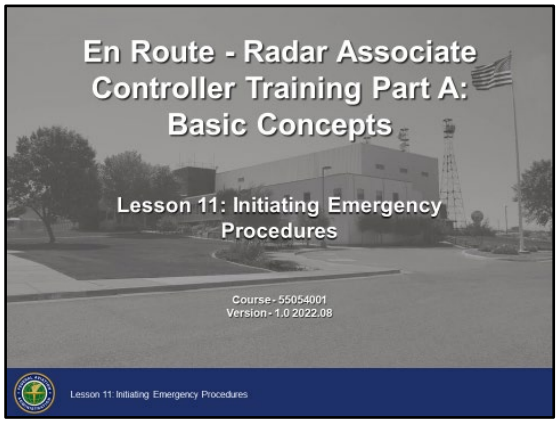
LESSON INTRODUCTION

Overview

JO 7110.65, Pilot/Controller Glossary

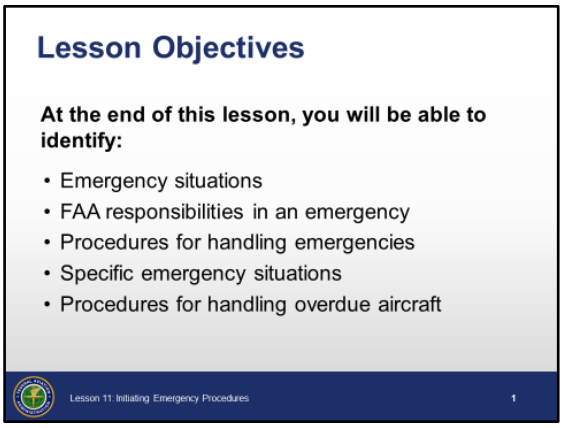


Overview

Knowledge of the basic procedures for handling emergency situations is necessary for you to be able to provide pilots with the proper information and assistance. In this lesson, we will discuss guidelines for specific procedures for emergency situations.

LESSON INTRODUCTION *(CONT'D)*

Lesson Objectives



Objectives

⊙ At the end of this lesson, you will be able to identify:

- Emergency situations
- FAA responsibilities in an emergency
- Procedures for handling emergencies
- Specific emergency situations
- Procedures for handling overdue aircraft

NOTE: There will be a graded end-of-lesson test upon completion of the lesson. The passing score is 70%. If you do not achieve a score of 70%, you will be provided study time and one retake of an alternate end-of-lesson test.

Emergency Keywords

JO 7110.65, par. 10-1-1 and PCG

Emergency Keywords

- ⊙ An emergency is a distress or urgency condition
  - Distress is a condition of being threatened by serious and/or imminent danger and of requiring immediate assistance

    MAYDAY
    - Preferably repeated three times by the pilot
  - Urgency is a condition of being concerned about safety and of requiring timely but not immediate assistance - a potential distress condition

    PAN-PAN
    - Preferably repeated three times by the pilot
- ⊙ An Emergency Autoland transmission from an aircraft is a declaration of emergency

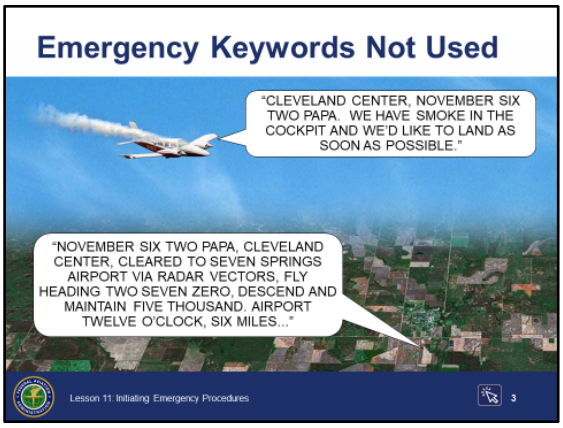
EMERGENCY AUTOLAND SYSTEM - This system, if activated, will determine an optimal airport, plot a course, broadcast the aircraft's intentions, fly to the airport, land, and (depending on the model) shut down the engines. Though the system will broadcast the aircraft's intentions, the controller should assume that transmissions to the aircraft will not be acknowledged.

NOTE: An autoland system if activated may squawk 7700. In situations where hypoxic conditions may exist, the system will descend the aircraft to a lower altitude to allow the pilot(s) to recover and then initiate the autoland sequence if necessary.

- ⊙ When an emergency exists or is imminent:
  - Pursue the most appropriate course of action from a safety perspective

Emergency Keywords Not Used

JO 7110.65, pars. 10-1-1, 10-1-2



Emergency Keywords Not Used

- If the words MAYDAY or PAN-PAN are not used but you believe an emergency or an urgent situation exists, handle it as though it were an emergency

Example: PILOT - "CLEVELAND CENTER, NOVEMBER SIX TWO PAPA. WE HAVE SMOKE IN THE COCKPIT AND WE'D LIKE TO LAND AS SOON AS POSSIBLE."

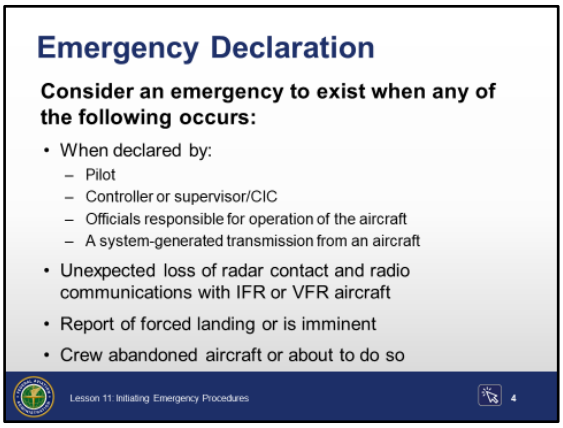
CONTROLLER -"NOVEMBER SIX TWO PAPA, CLEVELAND CENTER, CLEARED TO SEVEN SPRINGS AIRPORT VIA RADAR VECTORS, FLY HEADING TWO SEVEN ZERO, DESCEND AND MAINTAIN FIVE THOUSAND. AIRPORT TWELVE O'CLOCK, SIX MILES..."

- Declaration by an Emergency Autoland system

Example: "AIRCRAFT, N123B, PILOT INCAPACITATION, 12 MILES SOUTHWEST OF KOJC, LANDING KIXD AIRPORT. EMERGENCY AUTOLAND IN 13 MINUTES ON RUNWAY 36."

Emergency Declaration

JO 7110.65, par. 10-2-5



Emergency Declaration

⊙ Consider an emergency to exist when any of the following occurs:

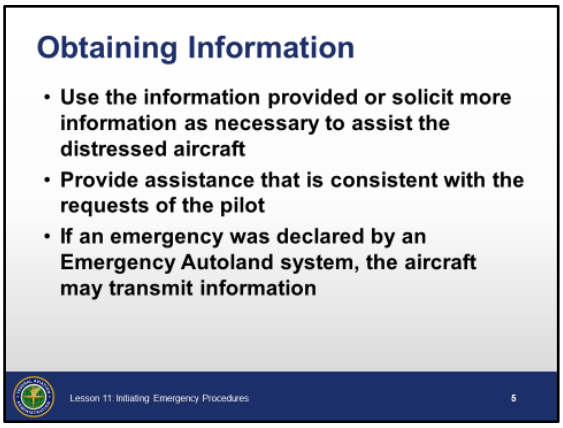
- When declared by:
  - Pilot
  - Controller or supervisor/CIC
  - Officials responsible for operation of the aircraft
  - A system-generated transmission from an aircraft, e.g., message from an Emergency Autoland system
- There is an unexpected loss of radar contact and radio communications with IFR or VFR aircraft
- A report of a forced landing has been made or is imminent
- Crew has abandoned the aircraft or is about to do so
- Emergency radar beacon response has been received
  - Code 7700 - Causes EMRG to blink in Field E of data block
- Intercept or escort services are required
- Need for ground rescue appears likely
- Emergency Locator Transmitter (ELT) signal is heard or reported

NOTE: Because of the infinite variety of possible emergency situations, specific procedures cannot be prescribed.

Obtaining Information

JO 7110.65, par. 10-1-2

14 CFR Part 91



Obtaining Information

- ⊙ Use the information provided or solicit more information as necessary to assist the distressed aircraft
- ⊙ Provide assistance that is consistent with the requests of the pilot
  - If you believe an alternative course of action may prove more beneficial, transmit your recommendation(s) to the pilot
- ⊙ If an emergency was declared by an Emergency Autoland system, the aircraft may transmit the following:
  - Callsign
  - That Emergency Autoland has been activated
  - Position (mileage and direction) relative to a nearby airport
  - The intended emergency landing airport and the planned landing runway
  - An ETE to the emergency landing airport

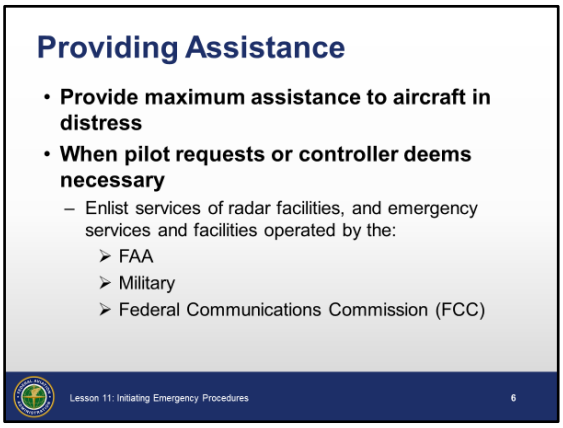
Example: "AIRCRAFT, N56CM, PILOT INCAPACITATION, 30 MILES SOUTH OF TAYLOR VORTAC, LANDING KGNV AIRPORT. EMERGENCY AUTOLAND IN 13 MINUTES ON RUNWAY 11."

NOTE: In the event of frequency congestion, an Emergency Autoland system may transmit on 121.5 or Common Traffic Advisory Frequency (CTAF) instead of the last assigned ATC frequency.

Providing Assistance

JO 7110.65, par. 10-1-3

47 CFR 2.401

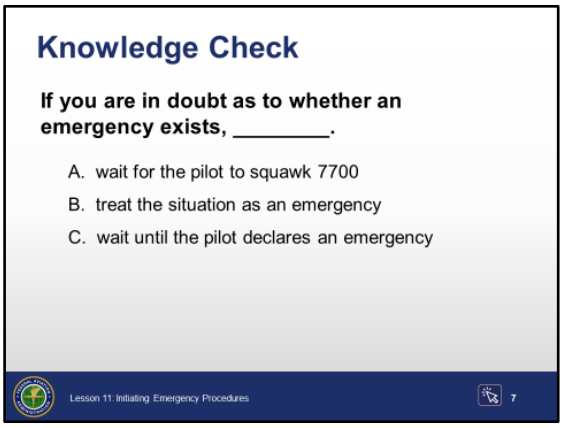


Providing Assistance

- Provide maximum assistance to aircraft in distress
- When pilot requests or controller deems necessary
  - Enlist services of radar facilities, and emergency services and facilities operated by the:
    - FAA
    - Military
    - Federal Communications Commission (FCC)

EMERGENCY SITUATIONS *(CONT'D)*

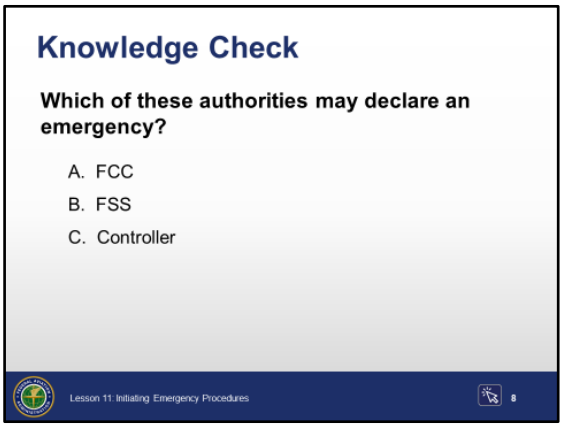
Knowledge Check



Question: If you are in doubt as to whether an emergency exists, _____.

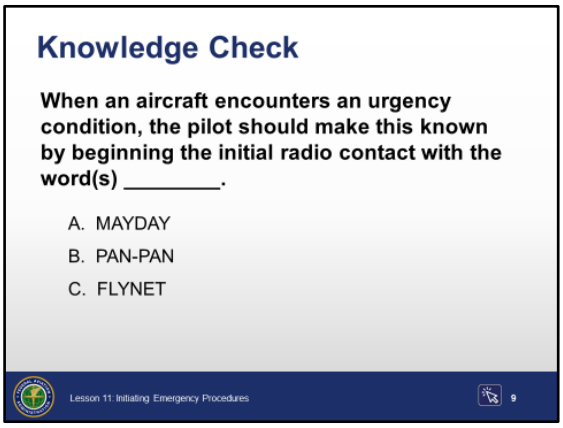
EMERGENCY SITUATIONS *(CONT'D)*

Knowledge Check



Question: Which of these authorities may declare an emergency?

Knowledge Check

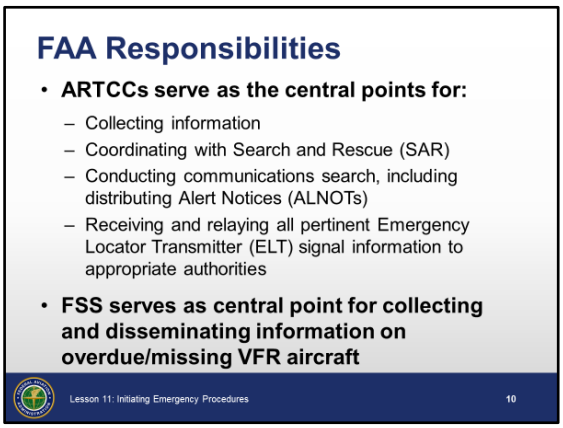


Question: When an aircraft encounters an urgency condition, the pilot should make this known by beginning the initial radio contact with the word(s) _____.

FAA RESPONSIBILITIES

FAA Responsibilities

JO 7110.65, pars. 10-1-4, 10-2-10, 10-3-2 thru 10-3-4



FAA Responsibilities

- ARTCCs serve as the central points for:
  - Collecting information
  - Coordinating with Search and Rescue (SAR)
  - Conducting communications search, including distributing Alert Notices (ALNOTs)
  - Receiving and relaying all pertinent Emergency Locator Transmitter (ELT) signal information to appropriate authorities
- The ARTCC must alert the Rescue Coordination Center (RCC) when:
  - An aircraft is considered to be in emergency status, or
  - An IFR aircraft is overdue
- FSS serves as the central point for collecting and disseminating information on overdue/missing VFR aircraft
  - Notifying the center about a VFR aircraft emergency allows provision for IFR separation, if necessary

NOTE: Non-FSS ATC facilities that receive telephone calls or other inquiries regarding these flights must refer these calls and inquiries to the appropriate FSS.

FAA RESPONSIBILITIES *(CONT'D)*

Controller Responsibilities

JO 7110.65, par. 10-1-4

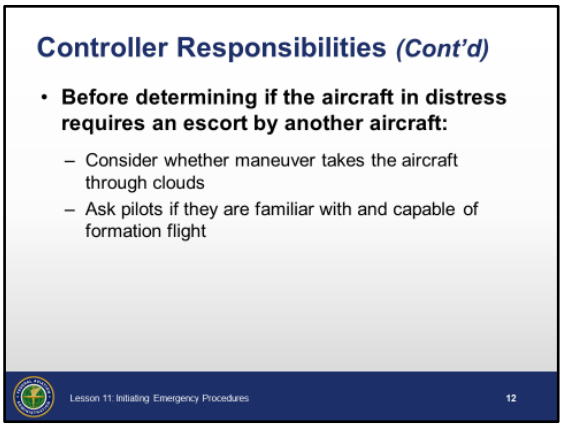
Controller Responsibilities

- If you are in communication with aircraft in distress:
  - Handle the emergency
  - Coordinate and direct activities of assisting facilities
  - Transfer responsibility to another facility only if better handling will result
- If you are not in communication with the aircraft in distress:
  - Forward data about an aircraft in distress to the center in whose area the emergency exists
- When a foreign air carrier is involved:
  - Notify ARTCC serving departure or destination airport, when either point is in the U.S., for relay to the aircraft operator

FAA RESPONSIBILITIES *(CONT'D)*

Controller Responsibilities (Cont'd)

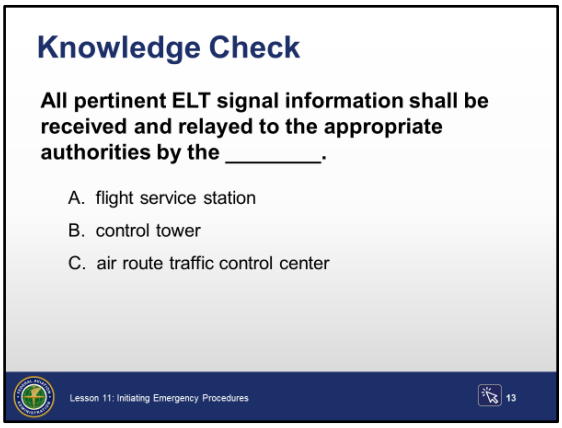
JO 7110.65, par. 10-1-4



- Before determining if the aircraft in distress requires an escort by another aircraft:
  - Consider whether maneuver takes the aircraft through clouds
  - Ask pilots if they are familiar with and capable of formation flight
    - Do not allow aircraft to join up in formation during emergency conditions, unless pilots:
      - Are familiar with and capable of formation flight
      - Can communicate with one another, and have visual contact with each other
    - If aircraft that are not designated as search and rescue aircraft need to get closer to one another than radar separation standards allow, the maneuver must be accomplished, visually, by aircraft involved

FAA RESPONSIBILITIES *(CONT'D)*

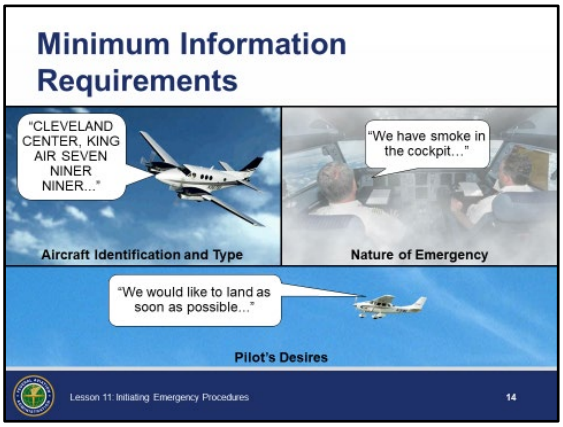
Knowledge Check



Question: All pertinent ELT signal information shall be received and relayed to the appropriate authorities by the _____.

Minimum Information Requirements

JO 7110.65, par. 10-2-1

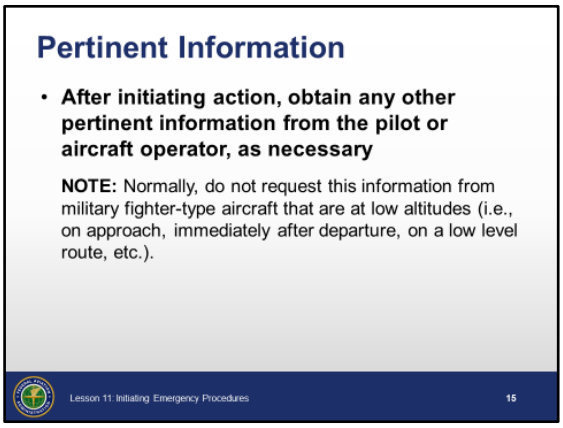


Minimum Information Requirements

- Start providing assistance when enough information has been obtained upon which to act
  - Minimum information requirements:
    - Aircraft identification and type
    - Nature of emergency
    - Pilot's desires

Pertinent Information

JO 7110.65, par. 10-2-1



Pertinent Information

⊙ After initiating action, obtain the following items or any other pertinent information from the pilot or aircraft operator, as necessary:

- Aircraft altitude
- Fuel remaining in time
- Pilot reported weather
- Pilot capability for IFR flight
- Time and place of last known position
- Heading since last known position
- Airspeed
- Navigation equipment capability
- NAVAID signals received
- Visible landmarks
- Aircraft color
- Number of people on board
- Point of departure and destination
- Emergency equipment on board

NOTE: Normally, do not request this information from military fighter-type aircraft that are at low altitudes (i.e., on approach, immediately after departure, on a low level route, etc.). However, request the position of an aircraft that is not visually sighted or displayed on the Situation Display if the location is not given by the pilot.

Pertinent Information (Cont'd)

JO 7110.65, par. 10-2-1

Autoland Information

- ⊙ Emergency Autoland systems may not provide all of the required information for emergencies
  - Use the information provided to develop an appropriate course of action to assist the aircraft

NOTE: If an emergency has been declared by an Emergency Autoland system, transmissions to the aircraft may go unanswered.

NOTE: Airborne technology has been developed that, in the event of a pilot death or incapacitation, the flight computer will take control of the aircraft. The computer will declare an emergency with ATC, change the squawk code to 7700, select a suitable airport, broadcast its intentions, navigate to that airport, land, and shut down the engine(s). Or, in situations where hypoxic conditions may exist, the system will descend the aircraft to a lower altitude to allow the pilot(s) to recover and then initiate the autoland sequence if necessary.

Coordination

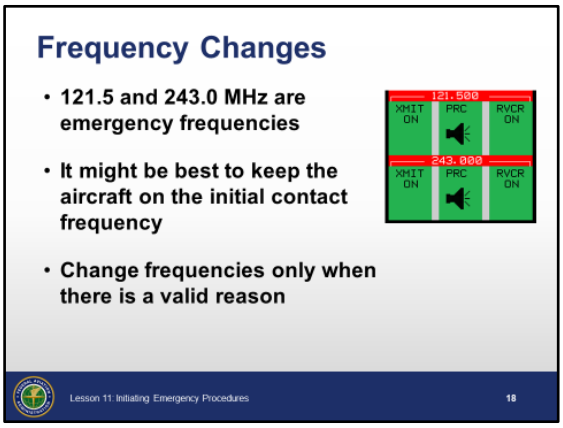
JO 7110.65, par. 10-1-5

Coordination

- Coordinate efforts to the extent possible to assist any aircraft believed overdue, lost, or in emergency status

Frequency Changes

JO 7110.65, par. 10-2-2

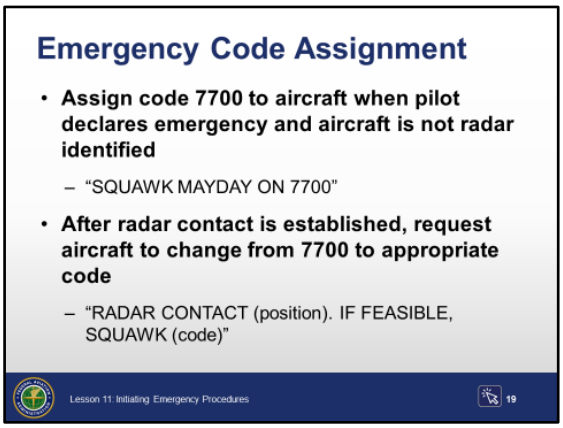


Frequency Changes

- 121.5 and 243.0 MHz are emergency frequencies
- It might be best to keep the aircraft on the initial contact frequency
- Change frequencies only when there is a valid reason

Emergency Code Assignment

JO 7110.65, par. 5-2-3



Emergency Code Assignment

- Assign code 7700 to aircraft when pilot declares emergency and aircraft is not radar identified

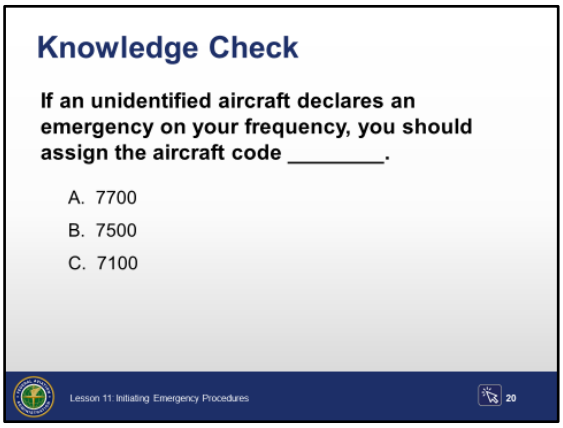
SQUAWK MAYDAY ON 7700

- After radar contact is established, request aircraft to change from 7700 to appropriate code

RADAR CONTACT (position). IF FEASIBLE, SQUAWK (code)

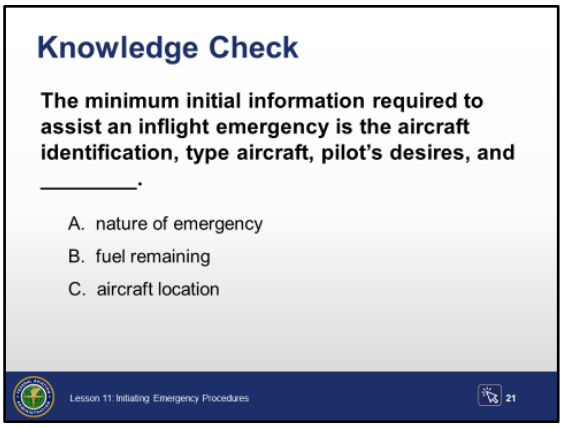
Exception: Leave single-piloted helicopters and single-piloted turbojet aircraft on code 7700.

Knowledge Check



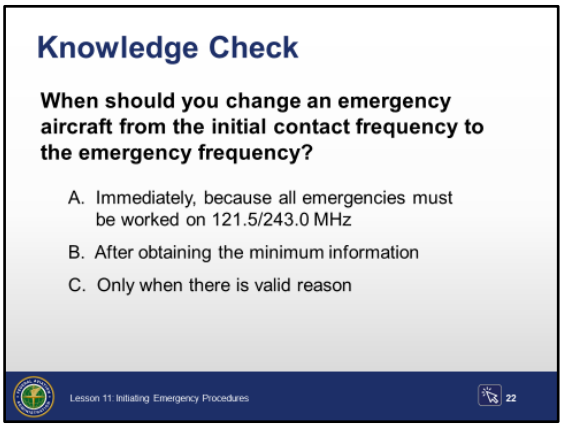
Question: If an unidentified aircraft declares an emergency on your frequency, you should assign the aircraft code _____.

Knowledge Check



Question: The minimum initial information required to assist an inflight emergency is the aircraft identification, type aircraft, pilot's desires, and _____.

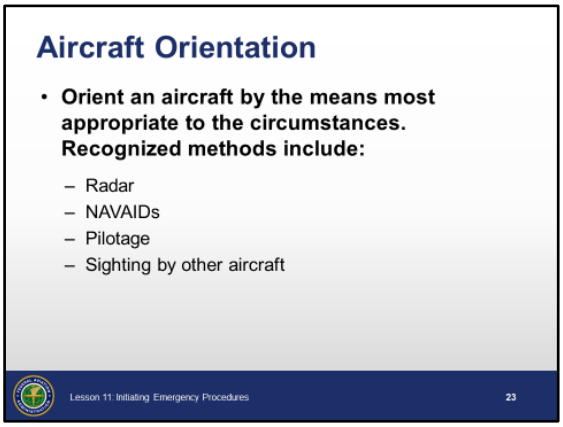
Knowledge Check



Question: When should you change an emergency aircraft from the initial contact frequency to the emergency frequency?

Aircraft Orientation

JO 7110.65, pars. 10-2-3, 5-3-2, 5-3-3



Aircraft Orientation

⊙ Orient an aircraft by the means most appropriate to the circumstances. Recognized methods include:

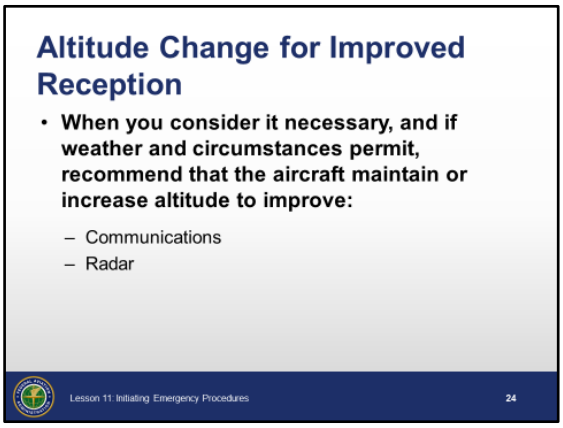
- Radar
  - Observing target make identifying turns of 30 degrees or more
  - Observing beacon response (code change, ident, standby)
- NAVAIDs
- Pilotage
  - Pilot gives visual reference to aid controller

  Example: Pilot reports over a powerplant.
- Sighting by other aircraft

NOTE: In some cases, you can request other aircraft to assist in locating a lost aircraft.

Altitude Change for Improved Reception

JO 7110.65, par. 10-2-4

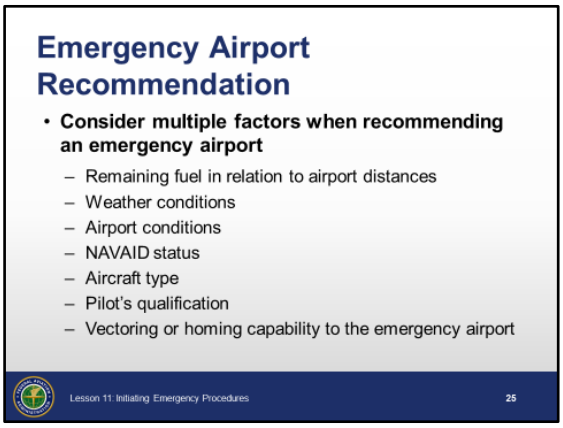


Altitude Change for Improved Reception

- When you consider it necessary, and if weather and circumstances permit, recommend that the aircraft maintain or increase altitude to improve:
  - Communications
  - Radar

Emergency Airport Recommend-ation

JO 7110.65, pars. 10-2-15, 10-2-16



Emergency Airport Recommendation

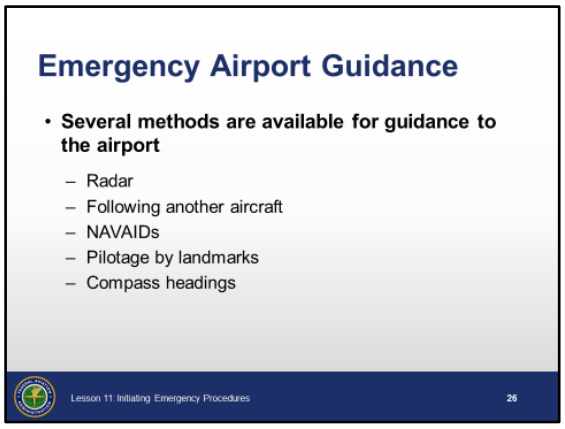
⊙ Consider multiple factors when recommending an emergency airport:

- Remaining fuel in relation to airport distances
- Weather conditions
- Airport conditions
- NAVAID status
- Aircraft type
- Pilot's qualification
- Vectoring or homing capability to the emergency airport

NOTE: In the event of an Emergency Autoland system activation, the system will select a suitable airport and advise ATC. The Emergency Autoland system does not consider closed runways, equipment on the runway, construction, or other possible airport hazards when selecting a suitable airport.

Emergency Airport Guidance

JO 7110.65, pars. 10-2-15, 10-2-16



Emergency Airport Guidance

⊙ Several methods are available for guidance to the airport:

- Radar
  - Vectors/orientation
- Following another aircraft
- NAVAIDs
- Pilotage by landmarks
- Compass headings

NOTE: Guidance to emergency airport must be used in conjunction with the information derived from any automated emergency airport information source.

VFR Aircraft in Weather Difficulty

JO 7110.65, par. 10-2-7

TI 6110.108, p. 4

VFR Aircraft in Weather Difficulty

⊙ If a VFR aircraft requests assistance when it encounters or is about to encounter IFR weather conditions:

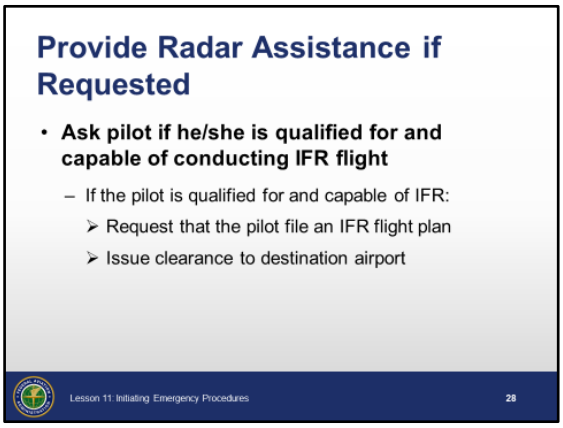
- Determine the facility best able to provide assistance
- If frequency change is necessary:
  - Advise pilot of reason for frequency change
  - Request aircraft to contact appropriate control facility
  - Inform the facility of the situation
- If aircraft is unable to communicate with appropriate control facility, relay information and clearances

⊙ For VFR aircraft which are an emergency but no longer require the assignment of Code 7700, ensure En Route Minimum Safe Altitude Warning (E-MSAW) alarm processing is enabled via keyboard entry

Syntax: CO ✱VO <FLID>

VFR Aircraft in Weather Difficulty (Cont'd)

JO 7110.65, par. 10-2-8



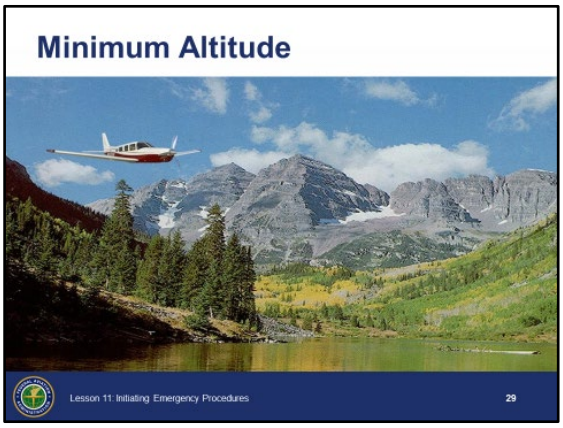
Provide Radar Assistance if Requested

⊙ Ask pilot if he/she is qualified for and capable of conducting IFR flight

- If the pilot is qualified for and capable of IFR flight:
  - Request that the pilot file an IFR flight plan
  - Issue clearance to destination airport
- If the pilot is not qualified for or not capable of IFR flight, or refuses to file an IFR flight plan:
  - Inform pilot of airports where VFR conditions are reported
  - Provide other available pertinent weather information
  - Ask if he/she will elect to conduct VFR flight to airport
  - If VFR flight is not feasible or the pilot declines to conduct VFR flight to another airport, provide radar assistance if:
    - Pilot declares an emergency
    - Pilot refuses to declare an emergency and you determine exact nature of desired radar services

VFR Aircraft in Weather Difficulty (Cont'd)

JO 7110.65, par. 10-2-8



Minimum Altitude

⊙ If the aircraft has already encountered IFR conditions:

- Inform the pilot of the appropriate terrain/obstacle clearance minimum altitude
- If the aircraft is below appropriate terrain/obstacle clearance minimum altitude and sufficiently accurate position information has been received or radar identification is established:
  - Furnish a heading or radial on which to climb to reach appropriate terrain/obstacle clearance minimum altitude

VFR Aircraft in Weather Difficulty (Cont'd)

JO 7110.65, par. 10-2-9

TI 6110.108, p. 4

Radar Assistance Techniques

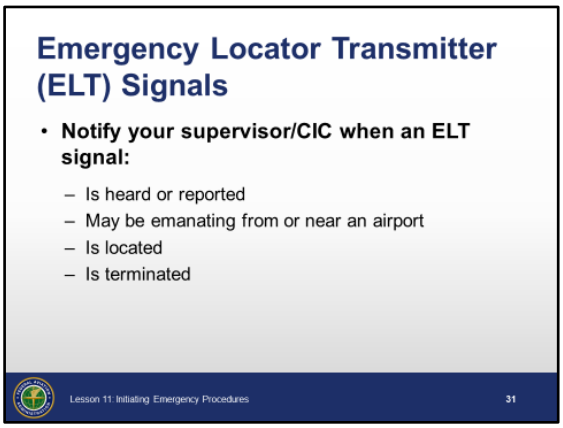
⊙ Use the following techniques to the extent possible when providing radar assistance to a pilot not qualified to operate in IFR conditions:

- Avoid radio frequency changes, except when necessary to provide a clear communications channel
- Make turns while aircraft is in VFR conditions so it will be in a position to fly a straight course while in IFR conditions
- Have pilot lower landing gear and slow to approach speed while in VFR conditions
- Avoid requiring a climb or descent while in a turn if in IFR conditions
- Avoid abrupt maneuvers
- Vector aircraft to VFR conditions
- On Mode C VFR aircraft, ensure E-MSAW is activated via keyboard entry

  Syntax: CO ✱VO <FLID>

Emergency Locator Transmitter (ELT) Signals

JO 7110.65, par. 10-2-10



Emergency Locator Transmitter (ELT) Signals

EMERGENCY LOCATOR TRANSMITTER - A radio transmitter attached to the aircraft structure which operates from its own power source. It aids in locating downed aircraft and is designed to function without human action after an accident.

⊙ Notify your supervisor/CIC when an ELT signal:

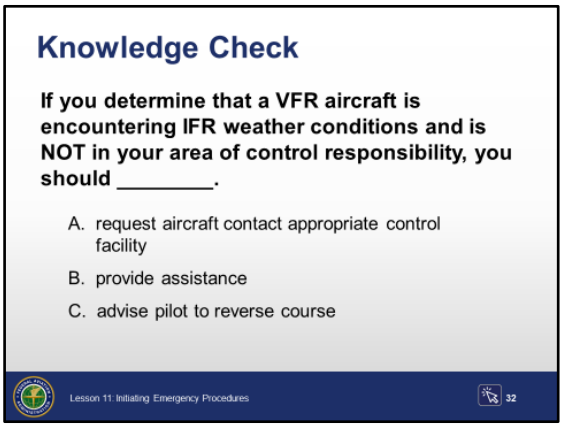
- Is heard or reported
- May be emanating from or near an airport
- Is located
- Is terminated

NOTE: Supervisor/CIC initiates coordination with RCC.

⊙ Solicit assistance of other aircraft operating in signal area

NOTE: ELTs may be tested within the first 5 minutes of each hour.

Knowledge Check



Question: If you determine that a VFR aircraft is encountering IFR weather conditions and is NOT in your area of control responsibility, you should _____.

Threat Levels

JO 7610.4, par. 7-4-2

Threat Levels

- Aircrew may use a four-tiered scheme of threat levels to relay the status of their situation
  - Level 1: Disruptive behavior - suspicious or threatening
  - Level 2: Physically abusive behavior
  - Level 3: Life-threatening behavior (weapon)
  - Level 4: Attempted or actual breach of the flight deck
- Tell your supervisor/CIC
  - The Domestic Events Network (DEN) must be notified immediately of any threat level relayed

NOTE: The escalation between threat levels can happen rapidly.

EMERGENCY SITUATIONS *(CONT'D)*

Hijacked Aircraft

JO 7110.65, par. 10-2-6

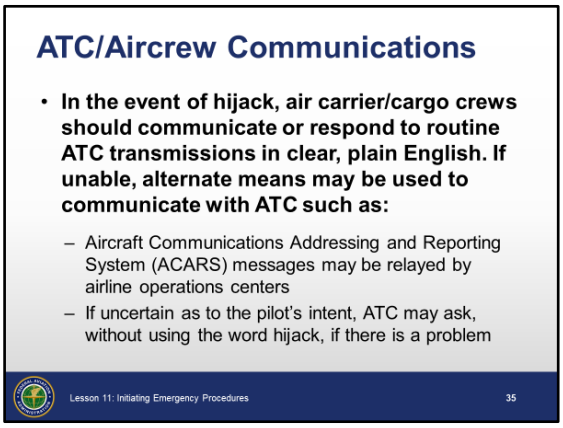
JO 7610.4, par. 7-4-1

Hijacked Aircraft

- Hijack attempts or actual events are a matter of national security and require special handling
- In any suspected or actual hijack attempt, the aircrew's basic objective is to get the aircraft on the ground as quickly as possible and keep it there
  - If a pilot needs to land quickly, the pilot will request an emergency descent clearance

Hijacked Aircraft (Cont'd)

JO 7610.4, pars. 7-4-1, 7-4-2, 7-4-3



ATC/Aircrew Communications

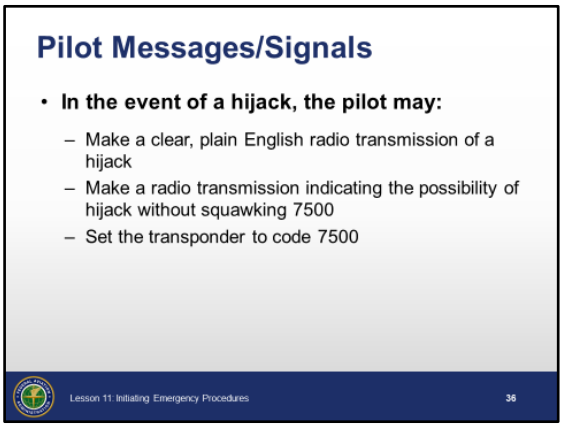
- In the event of hijack, air carrier/cargo crews should communicate or respond to routine ATC transmissions in clear, plain English. If unable, alternate means may be used to communicate with ATC such as:
  - Aircraft Communications Addressing and Reporting System (ACARS) messages may be relayed by airline operations centers
  - Verbal aircrew notification that code 7500 is selected
- When ATC knows or believes that a hijack situation exists, no reference shall be made in radio communications to the nature of the emergency:
  - Unless it has first been referred to in communications from the aircraft involved, or
  - Unless the pilot is transmitting in plain English and it is certain that such reference will not aggravate the situation
- During an incident, ATC may be asked to query the pilot as to whether plain English communication is possible
  - If the response is affirmative, ATC may be directed to pass information to or solicit information from the pilot
  - If the response is negative or unfamiliar/unnecessarily formal, ATC should limit transmissions to essential ATC functions
- If an aircrew indicates in any way that clear, plain English communication with ATC is not possible, ATC shall confine communications to regular ATC coordination unless otherwise directed

Hijacked Aircraft (Cont'd)

JO 7110.65, par. 5-2-11

TI 6110.108, p. 23

JO 7610.4, par. 7-4-3



Pilot Messages/Signals

⊙ In the event of a hijack, the pilot may:

- Make a clear, plain English radio transmission of a hijack
  - ATC shall assign code 7500 to the aircraft
- Make a radio transmission indicating the possibility of hijack without squawking 7500
  - ATC shall assign code 7500 to the aircraft
  - If the pilot questions such assignment or otherwise indicates that no hijack exists, ATC can determine the specific nature of the situation
  - If the pilot acknowledges the assignment without further communication or fails to acknowledge or communicate further, ATC shall assume the flight is being hijacked
- Set the transponder to code 7500
  - HIJK will blink in the data block
  - ATC will acknowledge receipt of code 7500 by asking the pilot to confirm squawking 7500

  (Identification) (facility name) CONFIRM THAT YOU ARE INTENTIONALLY SQUAWKING SEVEN FIVE ZERO ZERO
- If unable to change transponder code, transmit a radio message indicating a code change to 7500

⊙ Due to air-to-ground capabilities such as data links or cell phones, ATC may learn of a hijack situation from sources other than the aircrew itself

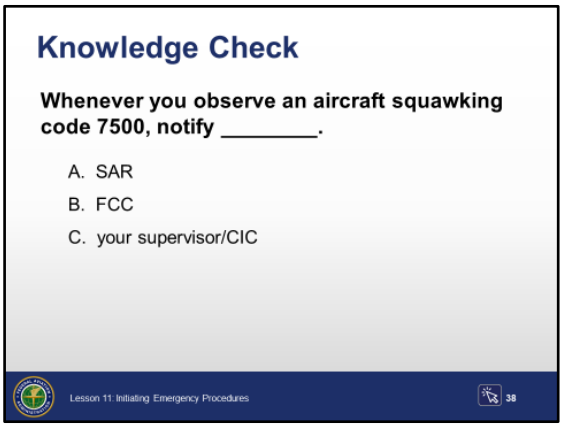
Hijacked Aircraft (Cont'd)

JO 7610.4, pars., 7-4-1, 7-4-3, 7-5-1, 7-5-2, 7-5-4

ATC Procedures

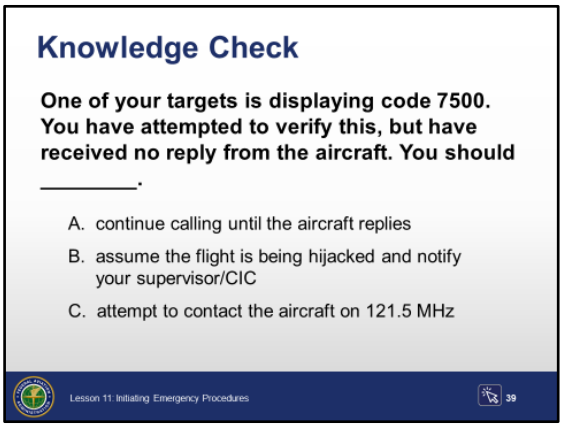
- Aircraft squawking or indicating code 7500 will be considered under hijack, and the appropriate procedures shall be followed
  - Notify your supervisor/CIC
- ATC shall honor clearance requests, traffic conditions permitting
- To the extent possible, aircraft that appear headed toward prohibited/restricted airspace or orbiting/lingering over a highly sensitive area shall be advised to change course and/or altitude
  - ATC shall not divulge unnecessary information about the nature of the airspace/area and use their judgment while advising aircraft to change course and/or altitude
- If escort aircraft are dispatched, every precaution shall be taken to prevent the hijacker(s) from gaining knowledge that an escort is being conducted
  - Communications with escort aircraft must be on a different frequency than the one used to communicate with the hijacked aircraft and must not be simultaneously broadcast on a frequency that may be heard by the hijacked aircraft
- When escort aircraft are under FAA control, approved ATC separation shall be applied
  - In no case shall any clearance or instruction to the aircraft compromise ATC standards
- Escort aircraft may request ATC approval to set transponders to standby for Mode 3 in order to prevent TCAS detection of the escort by a hijacked aircraft

Knowledge Check



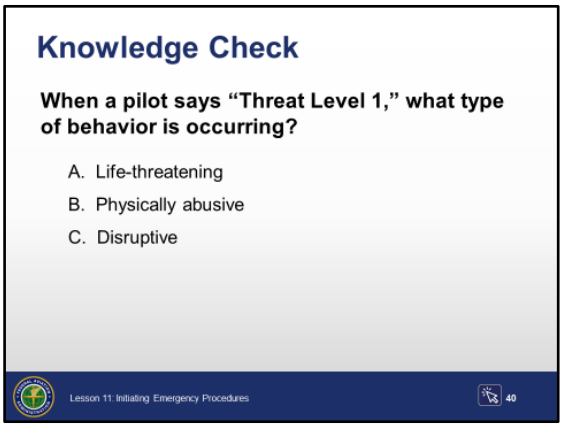
Question: Whenever you observe an aircraft squawking code 7500, notify _____.

Knowledge Check



Question: One of your targets is displaying code 7500. You have attempted to verify this, but have received no reply from the aircraft. You should _____.

Knowledge Check

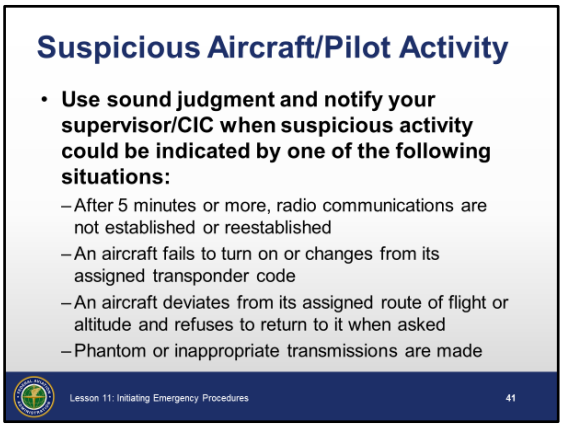


Question: When a pilot says "Threat Level 1," what type of behavior is occurring?

Suspicious Aircraft/Pilot Activity

JO 7610.4, par. 7-3-1

JO 7110.65, par. 10-4-4



Suspicious Aircraft/Pilot Activity

⊙ Use sound judgment and notify your supervisor/CIC when suspicious activity could be indicated by one of the following situations:

- After 5 minutes or more, radio communications are not established or reestablished
  - This includes all aircraft (general aviation, law enforcement, military, aeromedical, etc.); however, VFR aircraft receiving traffic advisories often change frequencies without advising ATC. Use sound judgment to determine if such a frequency change is suspicious.
- An aircraft fails to turn on or changes from its assigned transponder code (other than approved emergency/radio failure beacon codes)
- An aircraft deviates from its assigned route of flight or altitude and refuses to return to it when asked
- Phantom or inappropriate transmissions are made, such as unusual questions about military activities or sensitive/secure areas
- Inconsistent or abnormal repetitive aircraft activity occurs, such as flights over/near sites of interest or prohibited/restricted airspace, inappropriate speed or rate of climb/descent, or missed crossing restrictions or reporting points
- A pilot reports flight difficulties with no eventual explanation or response to ATC

Continued on next page

EMERGENCY SITUATIONS *(CONT'D)*

Suspicious Aircraft/Pilot Activity (Cont'd)

JO 7610.4, par. 7-3-1

JO 7110.65, par. 10-4-4

- Any air carrier, cargo, or scheduled air taxi requests to divert from its original destination or route for any reason other than weather
- General aviation and non-scheduled air taxi or charter services request to divert from their original destination or route for any unusual reason (other than weather, company request, passenger request, mechanical, etc.)
- Any other situation that may indicate a suspicious aircraft, including any reported or observed unauthorized unmanned aircraft activity or remote controlled model aircraft that deviate from normal practice areas/flight activities would be considered suspicious or a safety hazard
- Any other situation occurs that may indicate a suspicious aircraft/pilot activity, such as background noise or change in pilot's voice characteristics

Security Notice (SECNOT)

JO 7110.65, PCG and par. 9-2-12

SECURITY NOTICE (SECNOT) - A request originated by the Air Traffic Security Coordinator (ATSC) for an extensive communications search for aircraft involved, or suspected of being involved, in a security violation, or are considered a security risk. Will include the aircraft identification, search area, and expiration time.

⊙ Upon receiving notification of a SECNOT, the controller must forward all information on the subject aircraft to the supervisor/CIC

⊙ If information is not known, broadcast call sign on all frequencies and advise the supervisor/CIC of the response

Special Interest Sites

JO 7110.65, par. 9-2-9

Special Interest Sites

⊙ Relay immediately to supervisory personnel any reports or information regarding unusual aircraft activities in the vicinity of special interest sites such as nuclear power plants, power plants, dams, refineries, etc.

Bomb Threat

JO 7110.65, par. 10-2-11

Bomb Threat

- ⊙ When information is received from any source that a bomb has been placed on or near an aircraft:
  - Notify supervisor/CIC or facility air traffic manager
- ⊙ If threat is general in nature, handle it as a suspicious activity

  NOTE: Suspicious activity is covered in JO 7210.3, paragraph 2-7-6 and JO 7610.4, paragraph 7-3-1.
- ⊙ If threat is targeted against a specific aircraft and you are in contact with that aircraft:
  - Advise pilot of threat
  - Inform pilot that technical assistance is available from an FAA aviation explosives expert
    - Technical advice can be relayed
  - Ask if pilot desires to descend/climb to equalize pressure
    - Issue or relay an appropriate clearance considering:
      - MEA
      - MOCA
      - MRA
      - Weather

  NOTE: Equalizing existing cabin air pressure with outside air pressure is a key step which the pilot may wish to take to minimize the damage potential of a bomb.

Continued on next page

EMERGENCY SITUATIONS *(CONT'D)*

Bomb Threat (Cont'd)

JO 7110.65, par. 10-2-11

- ⊙ Handle aircraft as an emergency and/or provide the most expeditious handling with respect to safety of other:
  - Aircraft
  - Ground facilities
  - Personnel

  NOTE: Emergency handling is discretionary and should be based on the situation. With certain types of threats, plans may call for a low-key action or response.
- ⊙ Issue or relay clearance to a new destination, if requested
- ⊙ When pilot requests technical assistance or it is apparent that pilot needs such assistance:
  - Do not suggest what actions pilot should take
  - Obtain the following information:
    - Type, series, and model of aircraft
    - Precise location/description of bomb device, if known
    - Other pertinent details
  - Notify supervisor/CIC, who will then contact FAA explosives expert

Bomb Threat (Cont'd)

JO 7110.65, par. 10-2-11

Bomb Threat on the Ground

- If aircraft is on the ground and in radio contact:
  - At airports where tower control or FSS advisory service is not available:
    - Recommend delay of takeoff until pilot or aircraft operator establishes that a bomb is not on board
    - If pilot insists on taking off and it will not adversely affect other traffic, issue or relay an ATC clearance
  - Advise aircraft to:
    - Remain as far away from other aircraft and facilities as possible
    - Clear the runway, if appropriate
    - Taxi to an isolated or designated search area
  - Advise other aircraft to remain clear of suspect aircraft by at least 100 yards if pilot takes alternative actions (e.g. parking and off-loading immediately)
- If unable to inform pilot of a bomb threat, or if radio contact is lost:
  - Advise your supervisor/CIC
  - Relay details to concerned facilities
- If a bomb or suspected bomb is discovered on aircraft:
  - Determine pilot's intentions
  - Comply with pilot's requests to the extent possible
- Give special consideration to handling of aircraft when hijacker has or is suspected of having a bomb
  - Be responsive to pilot's request
  - Notify supervisor/CIC
  - Apply hijack procedures

Bomb Threat (Cont'd)

JO 7110.65, par. 10-2-12

JO 7210.3, par. 2-1-12

Explosive Detection K-9 Teams

- When an aircraft requests explosive detection K-9 team:
  - Obtain aircraft ID and position
  - Advise supervisor of pilot's request
  - Relay location of nearest K-9 team to pilot
    - If aircraft wants to divert to K-9 team airport location:
      - Obtain ETA from pilot
      - Advise supervisor/CIC

Ground Missile Emergencies

JO 7110.65, pars. 10-7-1 thru 10-7-5

Ground Missile Emergencies

⊙ When you receive information concerning ground missile emergencies:

- Notify other concerned facilities
- Take action to have alert advisories issued by:
  - Companies that may have VFR aircraft operating in the vicinity of the emergency
  - FSS adjacent to emergency location
- Reroute IFR and Special VFR aircraft to avoid emergency location by one of the following minima:
  - Lateral separation - 1 mile around area:
    - Location determined on radar, or
    - Airspace protected for route being flown
  - Vertical separation - 6,000' above emergency location

  NOTE: Minima may be increased by notifying official.
- Advise VFR aircraft to avoid area by the following minima or greater when suggested by notifying official:
  - Lateral separation - 1 mile around area
  - Vertical separation - 6,000' above emergency location
- Advise all aircraft to avoid smoke columns in the area
- A Notice to Air Missions (NOTAM) may be issued when reports indicate that an emergency will exist for an extended period of time

Volcanic Ash

JO 7110.65, par. 10-2-18

Volcanic Ash

⊙ If a volcanic ash cloud is known or forecast to be present:

- Relay the following ash cloud information to pilots:
  - Position
  - Altitude
- Suggest reroute to avoid area

⊙ If aircraft advises that it has entered a volcanic ash cloud and indicates that a distress situation exists:

- Consider aircraft to be an emergency
- Do not initiate climb clearances to turbine-powered aircraft
- Do not provide escape vectors without pilot concurrence

NOTE: The recommended escape maneuver is to reverse course and begin descent, terrain permitting. The pilot determines the safest escape route. Controllers should be aware of the possibility of complete loss of power to any turbine-powered aircraft encountering an ash cloud.

MANPADS Alert

JO 7110.65, par. 10-2-13

MANPADS Alert

⊙ When a threat or attack from Man-Portable Air Defense Systems (MANPADS) is determined to be real, notify and advise aircraft as follows:

- Do not withhold landing clearance
  - To the extent possible, issue information on MANPADS threats, confirmed attacks, or post-event activities in time for it to be useful to the pilot
    - The pilot or parent company will determine the pilot's actions
- Disseminate via controller-to-pilot transmission until the appropriate MANPADS information is broadcast via the ATIS and pilots indicate they have received the appropriate ATIS code

ATTENTION (aircraft identification), MANPADS ALERT. EXERCISE EXTREME CAUTION. MANPADS THREAT/ATTACK/POST-EVENT ACTIVITY OBSERVED/REPORTED BY (reporting agency) (location) AT (time, if known). (When transmitting to an individual aircraft) SAY INTENTIONS.

Unauthorized Laser Illumination of Aircraft

JO 7110.65, par. 10-2-14

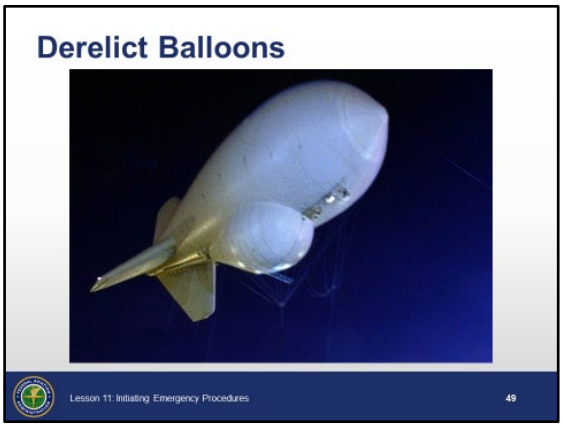
Unauthorized Laser Illumination of Aircraft

- When a laser event is reported to an air traffic facility, broadcast a general caution warning on all appropriate frequencies every 5 minutes for 20 minutes following the last report

UNAUTHORIZED LASER ILLUMINATION EVENT, (location), (altitude)

Derelict Balloons

JO 7110.65, par. 9-6-2



Derelict Balloons

⊙ Balloons become derelict when a moored balloon slips its mooring and becomes a hazard to air navigation, or when an unmanned free balloon flight cannot be terminated as planned. When this occurs:

- In the case of a moored balloon which has slipped its moorings, issue traffic advisories
- In the case of an unmanned free balloon, flight follow the balloon and, to the extent possible, provide aircraft under your control separation from the balloon
- Forward balloon position information received from pilot reports or derived from radar returns to your supervisor for further dissemination

Continued on next page

Derelict Balloons (Cont'd)

JO 7110.65, par. 9-6-2

- If radar contact with the balloon is lost, broadcast an advisory to all aircraft operating in the airspace affected by the derelict balloon at 10-minute intervals continuing until the derelict balloon is no longer a factor

ADVISORY TO ALL AIRCRAFT. DERELICT BALLOON REPORTED IN THE VICINITY OF (location),

or

ESTIMATED IN VICINITY OF (location),

or

REPORTED OVER (location),

or

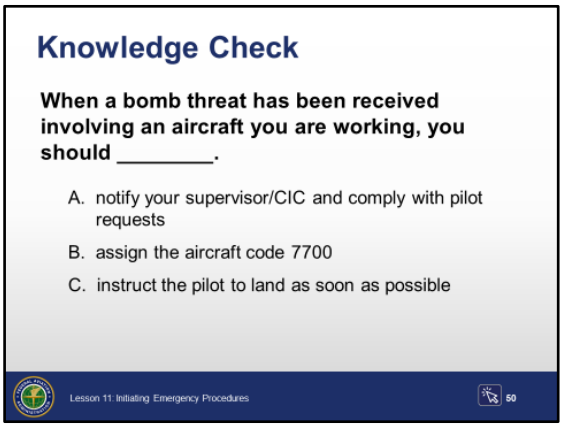
RADAR REPORTED OVER (location).

LAST REPORTED ALTITUDE/FLIGHT LEVEL AT(altitude/flight level as reported by operator or pilot report),

or

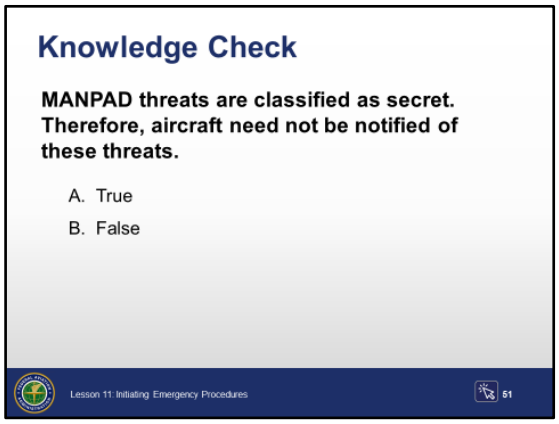
ALTITUDE/FLIGHT LEVEL UNKNOWN

Knowledge Check



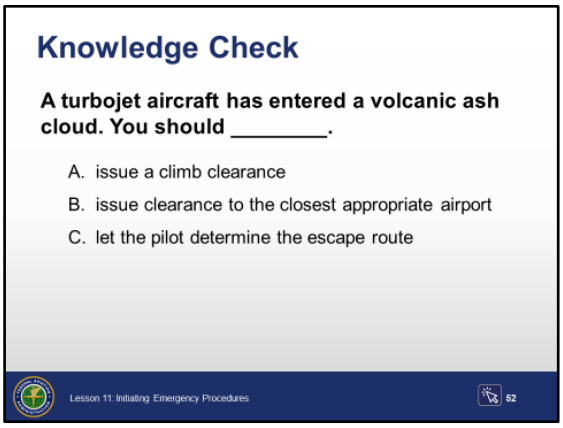
Question: When a bomb threat has been received involving an aircraft you are working, you should _____.

Knowledge Check



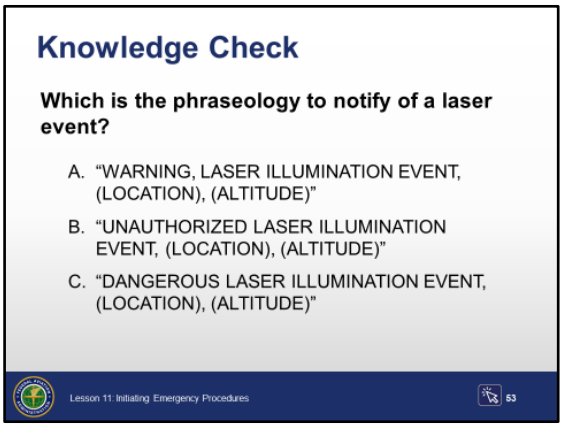
Question: MANPAD threats are classified as secret. Therefore, aircraft need not be notified of these threats.

Knowledge Check



Question: A turbojet aircraft has entered a volcanic ash cloud. You should _____.

Knowledge Check

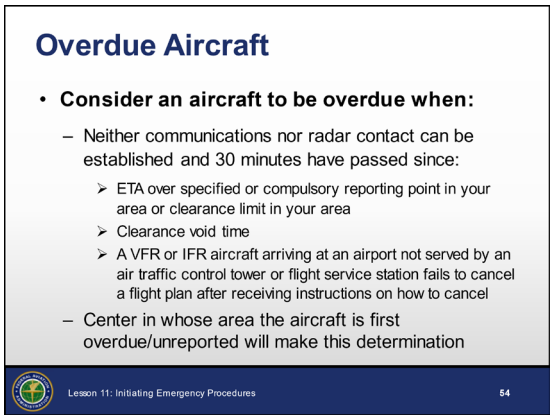


Question: Which is the phraseology to notify of a laser event?

OVERDUE AIRCRAFT

Overdue Aircraft

JO 7110.65, par. 10-3-1



Overdue Aircraft

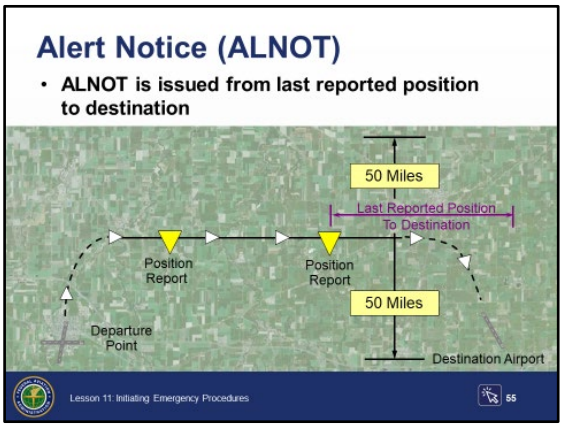
- Consider an aircraft to be overdue when:
  - Neither communications nor radar contact can be established and 30minutes have passed since:
    - ETA over specified or compulsory reporting point in your area orclearance limit in your area
    - Clearance void time
    - A VFR or IFR aircraft arriving at an airport not served by an air traffic control tower or flight service station fails to cancel a flight plan after receiving instructions on how to cancel

    NOTE: If you have reason to believe an aircraft is overdue prior to 30 minutes, take appropriate action immediately
- Center in whose area the aircraft is first overdue/unreported will makethis determination

OVERDUE AIRCRAFT *(CONT'D)*

Alert Notice (ALNOT)

JO 7110.65, par. 10-3-4 and PCG



Alert Notice

ALERT NOTICE (ALNOT) - A request originated by a flight service station (FSS) or an air route traffic control center (ARTCC) for an extensive communication search for overdue, unreported, or missing aircraft.

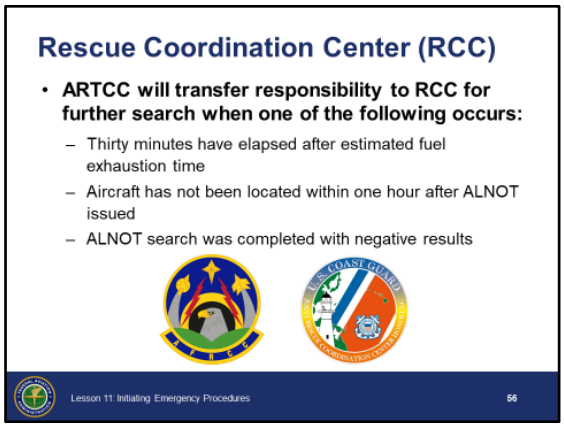
- ⊙ Provide supervisor/CIC with the following:
  - Original or amended flight plan
  - Last known position of aircraft
- ⊙ Search may be conducted 50 miles either side of the route of flight from last reported position to destination
- ⊙ When recommended by RCC or at your discretion, the ALNOT may be issued to cover maximum range of aircraft

NOTE: ALNOT must be issued before RCC can initiate Search and Rescue (SAR) procedures.

OVERDUE AIRCRAFT *(CONT'D)*

Rescue Coordination Center (RCC)

JO 7110.65, pars. 10-3-5, 10-3-7



Rescue Coordination Center

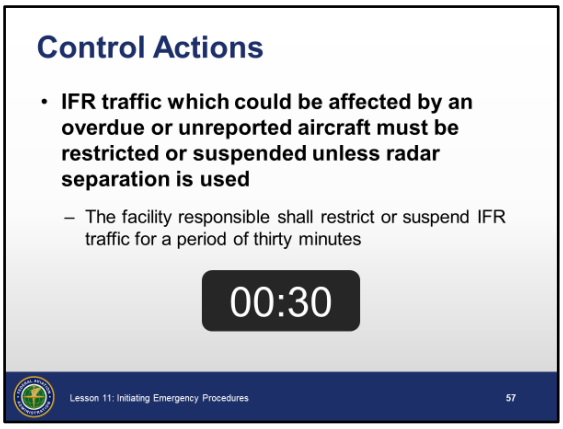
RESCUE COORDINATION CENTER (RCC) - A Search and Rescue (SAR) facility equipped and manned to coordinate and control SAR operations in an area designated by the SAR plan. The U.S. Coast Guard and the U.S. Air Force have responsibility for the operation of RCCs.

- ARTCC will transfer responsibility to RCC for further search when one of the following occurs:
  - Thirty minutes have elapsed after estimated fuel exhaustion time
  - Aircraft has not been located within one hour after ALNOT issued
  - ALNOT search was completed with negative results
- When directed by the RCC, the ALNOT will be canceled when the aircraft
  - Is located, or
  - Search is abandoned

OVERDUE AIRCRAFT *(CONT'D)*

Control Actions

JO 7110.65, pars. 10-4-1, 10-4-3



Control Actions

⊙ Traffic Restriction

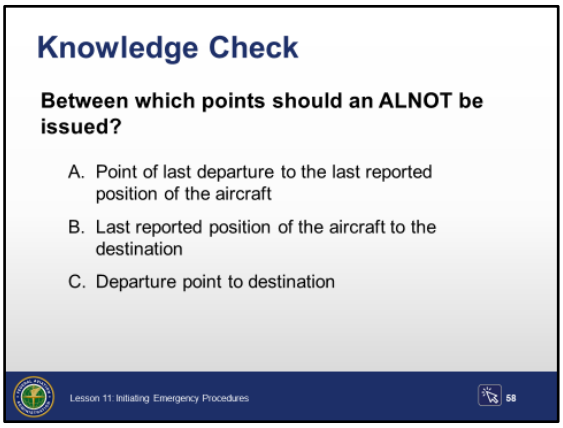
- IFR traffic which could be affected by an overdue or unreported aircraft must be restricted or suspended unless radar separation is used. The facility responsible shall restrict or suspend IFR traffic for a period of 30 minutes following the applicable time listed below:
  - Time at which approach clearance was delivered
  - EFC
  - Arrival time over the NAVAID serving the destination airport
  - Release time and, if issued, the clearance void time
  - Current estimate, either the control facility's or the pilot's, whichever is later, at:
    - Appropriate en route NAVAID or fix, and
    - NAVAID serving the destination airport

⊙ Traffic Resumption

- Resume normal air traffic control after 30-minute traffic suspension has expired if operators or pilots of other aircraft concur
  - Concurrence must be maintained for 30 minutes after suspension period has expired

OVERDUE AIRCRAFT *(CONT'D)*

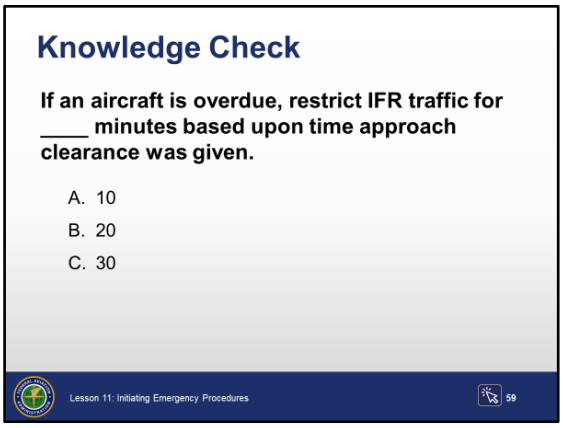
Knowledge Check



Question: Between which points should an ALNOT be issued?

OVERDUE AIRCRAFT *(CONT'D)*

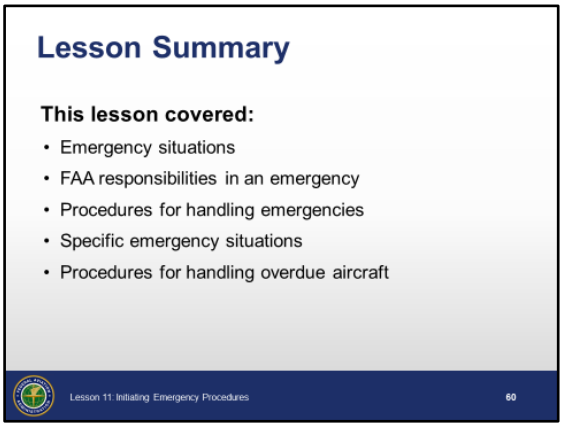
Knowledge Check



Question: If an aircraft is overdue, restrict IFR traffic for ____ minutes based upon time approach clearance was given.

CONCLUSION

Lesson Summary



Summary

- Emergency situations
  - Keywords used
  - No keywords used
  - Emergency declaration
  - Obtain enough information to handle the emergency intelligently

  NOTE: You will provide maximum assistance possible.
- FAA responsibilities in an emergency
  - Center responsibilites
  - FSS responsibilites
  - Controller responsibilites
- Procedures for handling emergencies
  - Information requirements
    - Minimum
    - Pertinent
  - Coordination
  - Frequency changes

Continued on next page

Lesson Summary (Cont'd)

- Emergency code assignment

⊙ Specific emergency situations

- Aircraft orientation
  - Improved reception
  - Radar assistance techniques
  - Emergency airport recommendation
  - Guidance to emergency airport
- VFR aircraft in weather difficulty
- ELT signals
- Suspicious aircraft/activities
- Threat level number
- Hijacked aircraft - general
  - Aircrew objectives HIJK
  - ATC/aircrew communications
  - Possible pilot messages/signals
  - ATC procedures
- Security notice
- Special interest sites
- Bomb threat
- Ground missile emergencies
- MANPADS
- Unauthorized laser illumination
- Derelict balloons
- Volcanic ash

Continue on next page

CONCLUSION *(CONT'D)*

Lesson Summary (Cont'd)

- Procedures for handling overdue aircraft
  - ALNOT iniated by FSS or ARTCC
    - RCC
    - ALNOT cancellation
  - Control actions
    - Traffic restrictions
    - Traffic resumption