BASICS FOR AIR TRAFFIC CONTROL – INTRODUCTION TO EMERGENCIES

MODULE OVERVIEW

Purpose: The purpose of this module is to describe different types of aircraft emergencies and the roles of the air traffic controller in these situations.

MODULE OUTLINE

Lesson: Emergencies

Purpose: The purpose of this lesson is to identify emergency situations, required information, and the roles and responsibilities involved in assisting an aircraft during an emergency.

Objectives:

- Describe characteristics that constitute an emergency
- Identify required information for reporting an emergency
- Identify roles and responsibilities of the controller during emergencies
- Identify roles and responsibilities of the pilot during emergencies

Topics:

- Emergency Determination
- Distress and Urgency Conditions
  - Distress
  - Urgency
- Emergency Frequencies
- Declaring an Emergency
  - Loss of Radar/Communications
  - Forced Landing
  - Abandoned Aircraft
  - Code 7700
  - Intercept/Escort Assistance
  - Ground Rescue
  - ELT Signal
- Emergency Locator Transmitter
  - Power Source
  - Signal Emission
  - Signal
- Knowledge Check
- Information Requirements
- In-Flight Equipment Malfunctions
- Knowledge Check
- Reporting Essential Flight Information
- Roles and Responsibilities
  - Pilot in Command
  - Controller
- Knowledge Check

- Review/Summary

Exercise – Obtaining Information in an Emergency

Lesson: Types of Emergencies

Purpose: The purpose of this lesson is to identify types of possible emergency situations aircraft encounter and procedures controllers follow during these emergencies.

Objective:

- Identify types of aircraft emergencies

Topics:

- Emergency Types
    - Radio Failure
    - Bomb Threats
    - MANPADS Alerts
    - VFR Aircraft in Weather Difficulty
    - Unauthorized Laser Illumination
    - Volcanic Ash Hazards to Aviation
- Knowledge Check
- Minimum Fuel
- Knowledge Check
- Review/Summary

Exercise – Avianca 052 Accident Report – Executive Summary

Question and Answer Session – *Parking Lot*

End-of-Module (EOM) Test

INTRODUCTION

LESSONS	■ Emergencies ■ Types of Emergencies
TOTAL ESTIMATED RUN TIME	2 hrs. 20 mins.
MODULE CONTENT	■ Module Overview ■ Lesson: Emergencies ■ Exercise: Obtaining Information in an Emergency ■ Lesson: Types of Emergencies ■ Exercise: Avianca 052 Accident Report – Executive Summary ■ Q&A Session – Parking Lot ■ End-of-Module Test

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Instruct students to select *Introduction to Emergencies* module link within Blackboard	Blackboard
■ As part of the introduction, instruct students to view the video *Introduction to Emergencies* by selecting the play button	**EST. RUN TIME**
■ *Note:* Estimated video play time is 1 minute	5 mins.

The knowledge and application of procedures learned in this module will give you confidence that will ease stress and may mean the difference between a situation ending in tragedy or the satisfaction of knowing you prevented a disaster.

Remaining calm during an emergency offers the best chance of:

■ Thinking clearly
■ Following procedures properly
■ Obtaining maximum assistance
■ Ensuring minimum loss of life

The purpose of this module is to describe different types of aircraft emergencies and the role of the air traffic controller in these situations. Select the play button below to view a video clip illustrating an emergency situation involving aircraft.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ **ENABLE** *Emergencies* lesson in Blackboard ■ Instruct students to navigate to the *Emergencies* lesson in Blackboard ■ Instruct students to work individually through the lesson content ■ Upon completion of the lesson, students should review previously introduced content or wait quietly until other students have completed	Blackboard
	EST. RUN TIME
	15 mins.

EMERGENCIES

Purpose: The purpose of this lesson is to identify emergency situations, required information, and the roles and responsibilities involved in assisting an aircraft during an emergency.

Objectives:

■ Describe characteristics that constitute an emergency
■ Identify required information for reporting an emergency
■ Identify roles and responsibilities of the controller during emergencies
■ Identify roles and responsibilities of the pilot during emergencies

References for this lesson are as follows:

■ FAA Order JO 7110.65, Air Traffic Control
■ Aeronautical Information Manual (AIM)

Emergency Determination

Because of the infinite variety of possible emergency situations, specific procedures cannot be prescribed. Pursue a course of action that appears to be most appropriate under the circumstances.

■ Aircraft equipment failure
■ Aircraft communication failure
■ Air Traffic Control (ATC) equipment failure

Distress and Urgency Conditions

Emergency situations can be classified as either distress or urgency.

Distress MAYDAY! MAYDAY! MAYDAY!	**Distress** is a condition of being threatened by serious and/or imminent danger and requiring immediate assistance. Examples include but are not limited to: ■ Aircraft on fire ■ Smoke in the cockpit ■ Critically ill passenger ■ Emergency fuel status ■ Bird strike ■ Visual Flight Rules (VFR) pilot in Instrument Flight Rules (IFR) conditions
Urgency PAN-PAN! PAN-PAN! PAN-PAN!	**Urgency** is a condition of being concerned about safety and of requiring timely, but not immediate assistance; a potential distress condition. Examples include but are not limited to: ■ Unsafe gear indication ■ Sick or rowdy passenger ■ Door open ■ Seat belt outside door

Note: A pilot who encounters a Distress condition should declare an emergency by beginning the initial communication with the word "Mayday", preferably repeated three times. For an Urgency condition, the word Pan-Pan should be used in the same manner. If pilot does not use the words "MAYDAY" or "PAN-PAN" and you are in doubt that an emergency exists, handle as an emergency.
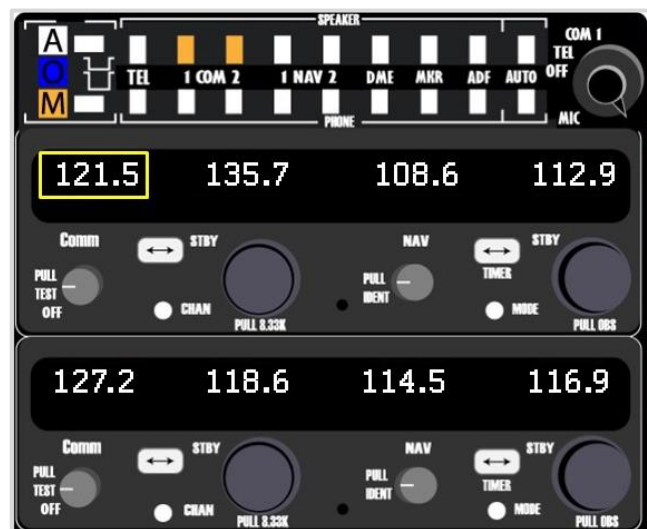
Emergency Frequencies

The universal emergency frequencies are:

■ Very high frequency (VHF) 121.5 MHz
■ Ultra high frequency (UHF) 243.0 MHz

Although 121.5 and 243.0 are emergency frequencies, it might be best to leave the aircraft on the frequency they initially used to contact you.

Change frequency only if there is a valid reason.

5

Declaring an Emergency

Consider that an emergency exists if declared by the:

- Pilot
- ATC facility personnel
- Aircraft owner or officials responsible for operation of the aircraft

Consider that an emergency exists in these situations:

Loss of Radar/Communications	There is an unexpected loss of radar contact and radio communications with any IFR or VFR aircraft.
Forced Landing	Reports indicate an aircraft has made or will make a forced landing.
Abandoned Aircraft	Reports indicate the crew has abandoned or is about to abandon the aircraft.
Code 7700	Emergency transponder code 7700 is received.
Intercept/Escort Assistance	Intercept or escort aircraft services are required.
Ground Rescue	Need for ground rescue seems likely.
ELT Signal	Emergency Locator Transmitter (ELT) signal is heard or reported.

Note:
- *Code 7700 causes "EMRG" (en route) or "EM" (terminal) to appear on the controller's radar scope*
- *Code 7700 will trigger an alarm or a special indicator light in the control room*

Emergency Autoland System

Airborne technology has been developed that you, as a controller, need to be aware of. In the event of a pilot death or incapacitation, for aircraft equipped with the emergency autoland system, 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.

Emergency Locator Transmitter

Properly installed and maintained, an ELT can expedite search and rescue operations and save lives. ELTs have several features.

Power Source

ELTs are electronic, battery-operated transmitters.

Signal Emission

- ELTs emit a distinct audio tone on 121.5 MHz and 243.0 MHz
- Newest generation ELTs
  - Transmit a stronger signal on 406 MHz
  - Can send a digitally encoded message containing owner's information, aircraft data, and exact position, allowing for a quicker response by SAR

Signal

If "armed" and when subject to crash-generated forces, they are designed to automatically activate and continuously emit signal for 48 hours.

Note:

ELTs:
- *Are required for most general aviation airplanes*
- *Must be registered with National Oceanic and Atmospheric Administration (NOAA)*
- *Are monitored by Cospas-Sarsat satellite system and allow Search and Rescue (SAR) to initiate a response within minutes (Cospas-Sarsat satellite system no longer monitors 121.5 or 243.0 MHz)*

✅ *Knowledge Check A*

REVIEW what you have learned so far about emergencies. ANSWER the questions listed below.

1. What are the two classifications of emergencies? *(Select the correct answer.)*
   - ❑ Immediate and urgent
   - ❑ **Distress and urgency**
   - ❑ Code red and code orange
   - ❑ MAYDAY and PAN-PAN

2. What are the two universal emergency frequencies? *(Select the correct answer.)*
   - ❑ VHF 115.2 MHz and UHF 250.1 MHz
   - ❑ **VHF 121.5 MHz and UHF 243.0 MHz**
   - ❑ UHF 121.3 MHz and VHF 243.8 MHz

3. Who can declare an emergency for an aircraft? *(Select all correct answers that apply.)*
   - ❑ **Owner/operator**
   - ❑ **Pilot**
   - ❑ **Air traffic controller**

4. Newer ELTs can send a digitally encoded message containing which types of information? *(Select all correct answers that apply.)*
   - ❑ **Aircraft data**
   - ❑ Flight plan information
   - ❑ **Owner's information**
   - ❑ **Exact position**

7

Information Requirements

You must obtain enough information to handle the emergency intelligently.

Minimum required information:

- Aircraft identification and type
  Example: AAL83 MD80

- Nature of emergency
  Examples: Icing, cracked canopy, flame out

- Pilot's desires
  Examples: Dump fuel, lower altitude, bail out

"CENTER, UNITED 211, WE HAVE SMOKE IN THE COCKPIT AND NEED TO LAND IMMEDIATELY."

Obtain other information 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

In-Flight Equipment Malfunctions

When a pilot reports an in-flight equipment malfunction:

- Determine the nature and extent of any special handling desired
- Provide the maximum assistance possible
- Relay all pertinent details concerning the aircraft and any special handling required or being provided to other controllers or facilities who will subsequently handle the aircraft

In-flight equipment malfunctions may include partial or complete failure of equipment, which may affect:

- Safety
- Separation
- Ability of the flight to proceed under IFR or Reduced Vertical Separation Minima (RVSM) rules

✅ *Knowledge Check B*

REVIEW what you have learned so far about emergencies. ANSWER the question listed below.

1. Which types of information are the minimum required for handling an emergency*? (Select all correct answers that apply.)*
   - ❏ Altitude
   - ❏ **Nature of emergency**
   - ❏ **Pilot's desires**
   - ❏ Fuel remaining in time
   - ❏ **Aircraft identification and type**

Reporting Essential Flight Information

Report as soon as possible any information concerning components of the National Airspace System (NAS) or any flight conditions that may have an adverse effect on air safety.

Report to the appropriate:

- Flight Service Station (FSS)

- Airport manager's office

- Air Route Traffic Control Center (ARTCC)

- Approach control facility

- Operations office

- Military operation office

Roles and Responsibilities

The pilot and the controller each have specific responsibilities during an emergency situation.

Pilot in Command	- The pilot in command of an aircraft is directly responsible for and is the final authority as to the operation of that aircraft - In an in-flight emergency, the pilot in command may deviate from any rule in 14 CFR Part 91 to the extent required to meet that emergency
Controller	If you are in communication with an aircraft in distress, handle the emergency and: - Coordinate and direct activities of assisting facilities - Transfer responsibility to another facility only if better handling can be provided - Although 121.5 MHz 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 When you receive information about an aircraft in distress, forward detailed data to the center in whose area the emergency exists. ARTCC shall be responsible for receiving and relaying all pertinent ELT signal information to appropriate authorities. ***Note:*** *ALNOTs are not covered in this lesson* *Terminals relay ELT signal information to ARTCC for further dissemination*

✅ Knowledge Check C

REVIEW what you have learned so far about emergencies. ANSWER the questions listed below.

1. Which of the following actions should be taken when a pilot reports an in-flight equipment malfunction?
   (Select all correct answers that apply.)
   - ❑ **Determine any special handling desired**
   - ❑ Instruct the pilot to land the aircraft
   - ❑ **Relay information to other involved facilities**
   - ❑ Let your manager to handle the situation

2. Who is the final authority as to the operation of an aircraft in an emergency? *(Select the correct answer.)*
   - ❑ ARTCC
   - ❑ **Pilot-in-command**
   - ❑ Owner/operator

3. Who is responsible for handling an emergency and directing the activities of assisting facilities? *(Select the correct answer.)*
   - ❑ **Controller**
   - ❑ Pilot
   - ❑ ATC manager

Emergencies Summary

At any moment, a pilot in distress could be contacting you for help. How immediate is it? How do you decide whether the situation is an emergency? This lesson described different situations that would qualify as emergencies, your roles and responsibilities during those situations, and the types of information you're going to need in order to help the pilot to the best of your ability. It is crucial to be prepared for emergency situations. In a split second, you must make decisions that lives may depend on.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ **ENABLE** *Obtaining Information in an Emergency* dialogue file in the *Exercise and Activities* folder	Exercise
■ *Note:* Estimated run time of audio file is 3 minutes	**EST. RUN TIME**
■ Instruct students to navigate to the *Exercise and Activities* folder in Blackboard	30 mins.
■ Instruct students to locate *Obtaining Information in an Emergency* dialogue file	
■ Instruct students to locate *Obtaining Information in an Emergency Worksheet* in the printed *Student Guide*	
■ Instruct students to listen to the audio clip of the dialogue between the air traffic controllers and the Turkish airbus	
■ While listening to the file determine if the required and minimum emergency information was obtained during the dialogue	
■ Allow students to replay the audio file more than once to complete the exercise	
■ Have the students check the appropriate boxes on the worksheet as they listen to the recording	
■ Upon completion, facilitate a discussion of the types of information that were obtained and evaluate the information-gathering skills during this incident	

11

EXERCISE: OBTAINING INFORMATION IN AN EMERGENCY

Purpose
This exercise promotes listening awareness and gives you an opportunity to evaluate the controller's information-gathering skills.

Directions
Listen to the dialogue and evaluate how effectively the controllers gathered information by placing check marks in the appropriate boxes below. Determine if the controllers obtained the information, already knew it, or didn't need it. Record your findings on the worksheet and be able to justify your assessment.

Detailed Facilitator Instructions: Locate the **Obtaining Information in an Emergency** *dialogue file in the Emergencies module Exercise and Activities folder and the worksheet in the Student Guide. Have students listen to the audio file and record on the worksheet information gathered during the dialogue. After completion, select students to report and justify their evaluation of the controllers. Encourage student discussion with this exercise. If necessary, replay audio file to capture content.*

Overview
This is a recording of an actual emergency situation. The Airbus pilot said he had a maximum of 10 minutes of fuel remaining. The situation required immediate action to ensure the safety of the passengers. Notice the calm way in which the controllers handled this emergency and obtained all the information necessary to deal with this very unusual predicament. Also note how the controllers worked as a team to provide the maximum assistance possible.

This event was recorded between a Turkish Airbus A330 and Potomac Terminal Radar Approach Control (PCT). PCT is a facility that covers the nation's capital region and its underlying airports, which handle a large number of international flights. Although the pilots of these flights are required to use standard phraseology, language barriers can make them difficult to understand. On July 8, 2011, a series of problems occurred. Listen to how the PCT controller was able to deftly handle the challenges and help an Airbus A330 commercial jet land without incident.

Minimum required information	Obtained	Already knew	Didn't need
1. Aircraft identification and type		✔	
2. Nature of emergency	✔		
3. Pilot's desires	✔		
4. Aircraft altitude		✔	
5. Fuel remaining in time	✔		
6. Pilot-reported weather			✔
7. Pilot capability for IFR flight		✔	
8. Time and place of last known position		✔	
9. Heading since last known position		✔	
10. Airspeed		✔	
11. Navigation equipment capability		✔	

12. NAVAID signals received		✔	
13. Visible landmarks			✔
14. Aircraft color		✔	
15. Number of people on board	✔		
16. Point of departure and destination		✔	
17. Emergency equipment on board			✔

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ **ENABLE** *Types of Emergencies* lesson in Blackboard ■ Instruct students to navigate to the *Types of Emergencies* lesson in Blackboard ■ Instruct students to work individually through the lesson content ■ Upon completion of the lesson, students should review previously introduced content or wait quietly until other students have completed	Blackboard
	EST. RUN TIME
	10 mins.

TYPES OF EMERGENCIES

Purpose: The purpose of this lesson is to identify types of possible emergency situations aircraft encounter and procedures controllers follow during these emergencies.

Objective:

■ Identify types of aircraft emergencies

References for this lesson are as follows:

■ FAA Order JO 7110.65, Air Traffic Control

Emergency Types

There are an infinite variety of possible emergency situations, and not all can be covered in this lesson. This lesson will cover a few of the more commonly known emergencies.
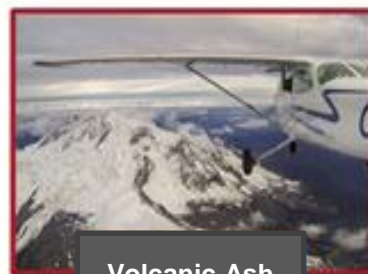
Radio Failure

Bomb Threats

MANPAD Alerts

Unauthorized Laser Illumination

VFR Aircraft in Weather Difficulty

Volcanic Ash

Radio Failure

An aircraft experiencing two-way radio failure is expected to squawk code 7600.

Note: Code 7600 causes "RDOF" (en route) or "RF" (terminal) appear on the controller's radar scope, and an alarm/indicator light may be activated.

- Controller attempts to reestablish communications using various methods, including use of emergency frequencies, NAVAIDs with voice capability, and relaying through other aircraft
- Pilot actions are anticipated based on procedures and recommended practices contained in the Federal Aviation Regulations (FARs), AIM, and pertinent military regulations
- Consider the aircraft's activity to be possibly suspicious if radio communications have not been established or reestablished with the aircraft after five minutes

Bomb Threats

For information on bomb threats received from any source:

- Inform your supervisor or facility air traffic manager

If threat is general in nature, it is to be handled as a suspicious activity and reported to the appropriate authorities.

If the threat is targeted against a specific aircraft and you are in contact with the suspect aircraft:

- Advise the pilot of the threat and comply with any pilot requests
- Handle the aircraft as an emergency and/or provide the most expeditious handling possible with respect to safety of other aircraft, ground facilities, and personnel

When a pilot request technical assistance, or if it is apparent that a pilot may need such assistance, do **NOT** suggest what actions the pilot should take concerning a bomb, but obtain the following information:

- Type, series, and model of aircraft
- Precise location/destination of bomb device if known
- Other details that may be pertinent

MANPADS Alerts

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

- **DO NOT** withhold landing clearance
- Issue information in time for it to be useful to the pilot
    - Pilot or parent company will determine the pilot's course of action
- Report MANPADS threat/attack/post–event activity via the ATIS and/or controller–to–pilot transmissions until notified otherwise by the Domestic Events Network (DEN) Air Traffic Security Coordinator (ATSC)

VFR Aircraft in Weather Difficulty

If a Visual Flight Rules (VFR) aircraft requests assistance when it encounters or is about to encounter Instrument Flight Rules (IFR) weather conditions:

- Determine the facility best available to provide service
- If a frequency change is necessary, advise the pilot of the reason for the change and request the aircraft contact the appropriate control facility
- If the aircraft is unable to communicate with the control facility, relay information and clearances

Unauthorized Laser Illumination

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

Terminal facilities shall include reported unauthorized laser illumination of aircraft on the ATIS for one hour following the last report.

- This report includes time, location, altitude, color, and direction of the laser as reported by the pilot

Note: All personnel can expect aircrews to regard lasers as an inflight emergency and may take evasive action to avoid laser illumination. Additionally, other aircraft may request clearance to avoid the area.

Volcanic Ash Hazards to Aviation

- Relay all information available to pilots to ensure that they are aware of the ash cloud's position and altitude(s)
- Consider the aircraft to be in an emergency situation
- Controllers should be aware of the possibility of complete loss of power to any turbine−powered aircraft that encounters an ash cloud

Note: *When aircraft begin a taxi or takeoff roll on ash contaminated surfaces, large amounts of volcanic ash will again become airborne. This newly airborne ash will significantly reduce visibility and will be ingested by the engines of following aircraft.*

✓ Knowledge Check D

REVIEW what you have learned so far about types of emergencies. ANSWER the questions listed below.

1. When a bomb threat involving an aircraft you are working has been received, you should inform the pilot of the threat and _____. *(Select the correct answer.)*
   - ❑ Instruct the pilot to land as soon as possible
   - ❑ Assign code 7700
   - ❑ **Comply with any pilot requests**

2. What is the exclusive transponder code for radio failure? *(Select the correct answer.)*
   - ❑ 7700
   - ❑ **7600**
   - ❑ 7500

Minimum Fuel

Minimum fuel indicates that an aircraft's fuel supply is such that it can accept little or no delay upon reaching destination.

- This is not an emergency situation
- An emergency situation is possible should any **undue delay** occur

Note: *This is not an emergency situation but merely an advisory that indicates an emergency situation is possible should any undue delay occur. A minimum fuel advisory does not imply a need for traffic priority*

 Knowledge Check E

REVIEW what you have learned so far about types of emergencies. ANSWER the question listed below.

1. What does an aircraft with minimum fuel indicate? *(Select the correct answer.)*
   - ❑ An emergency situation has occurred
   - ❑ The aircraft will not be able to reach its destination
   - ❑ **An emergency situation is possible should any undue delay occur**

Types of Emergencies Summary

Emergencies can take many forms, though some are more common than others. An emergency involves an aircraft in some sort of distress or condition of urgency. The source of distress can divert the aircraft to the nearest airport, which requires assistance from ATC. As a controller in an emergency situation, you follow training and, in some situations, are allowed to modify basic procedures if necessary to reach a safe outcome.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
■ Instruct students to locate *Avianca 052 Accident Report – Executive Summary* in the printed *Student Guide*	Exercise
■ Instruct students to read the accident report and consider what actions the pilot or controller could have taken to avoid the disaster	**EST. RUN TIME**
■ Upon completion of reading the accident report, facilitate a brief discussion encouraging students to discuss what actions the pilot or controller could have taken to avoid the disaster	30 mins.

EXERCISE: AVIANCA 052 ACCIDENT REPORT – EXECUTIVE SUMMARY

Directions
Read the report and consider what actions the pilot or controller could have taken to avoid the disaster. Be prepared to contribute to class discussion and share your recommendations.

Detailed Facilitator Instructions: Instruct students to read the accident report and consider what actions the pilot or controller could have taken to avoid the disaster. Upon completion of reading the accident report, facilitate a brief discussion allowing students to discuss what actions the pilot or controller could have taken to avoid the disaster.

Date: January 25, 1990
Type: Boeing 707-321B
Operator: Avianca
Where: Cove Neck, New York
Report Date: April 30, 1991

On January 25, 1990, at approximately 2134 Eastern Standard Time, Avianca Airlines flight 052, a Boeing 707-321B with Colombian registration HK 2016, crashed in a wooded residential area in Cove Neck, Long Island, New York. AVA052 was a scheduled international passenger flight from Bogota, Colombia, to John F. Kennedy International Airport, New York, with an intermediate stop at Jose Maria Cordova Airport near Medellin, Colombia. Of the 158 persons aboard, 73 were fatally injured.

Because of poor weather conditions in the northeastern part of the United States, the flight crew was placed in holding three times by air traffic control (ATC) for a total of about 1 hour and 17 minutes. During the third period of holding, the flight crew reported that the airplane could not hold longer than 5 minutes, that it was running out of fuel, and that it could not reach its alternate airport, Boston-Logan International. Subsequently, the flight crew executed a missed approach to John F. Kennedy International Airport. While trying to return to the airport, the airplane experienced a loss of power to all four engines and crashed approximately 16 miles from the airport.

The National Transportation Safety Board determined that the probable cause of this accident was the failure of the flight crew to adequately manage the airplane's fuel load and their failure to communicate an emergency fuel situation to ATC before fuel exhaustion occurred. Contributing to the accident was the flight crew's failure to use an airline operation control dispatch system to assist them during the international flight into a high-density airport in poor weather. Also contributing to the accident was inadequate traffic flow management by the FAA and the lack of standardized understandable terminology for pilots and controllers for minimum and emergency fuel states.

The Safety Board also determined that wind shear, crew fatigue, and stress were factors that led to the unsuccessful completion of the first approach and thus contributed to the accident.

The safety issues raised in this report include:

1. Pilot responsibilities and dispatch responsibilities regarding planning, fuel requirements, and flight following during international flights
2. Pilot-to-controller communications regarding the terminology to be used to convey fuel status and the need for special handling
3. ATC flow control procedures and responsibilities to accommodate aircraft with low fuel states
4. Flight crew coordination and English language proficiency of foreign crews

Recommendations concerning these issues were addressed to the FAA and the Director, Departmento Administrativo de Aeronautico Civil (DAAC), Colombia.

19

SUMMARY

This purpose of this module was to describe different types of aircraft emergencies and the role of the air traffic controller in these situations.

In accordance with FAA Order JO 7110.65, Air Traffic Control, and the Aeronautical Information Manual (AIM), you should now be able to:

- Describe characteristics that constitute an emergency
- Identify required information for reporting an emergency
- Identify roles and responsibilities of the controller during emergencies
- Identify roles and responsibilities of the pilot during emergencies
- Identify types of aircraft emergencies

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
- Navigate to the *Parking Lot* link within Blackboard and review any student questions - Address *Parking Lot* questions and facilitate a brief discussion of the lesson content - Instruct students to prepare for the End-of-Module test by putting away their Student Guides	Facilitated Discussion
	EST. RUN TIME
	15 mins.

FACILITATOR INSTRUCTIONS	DELIVERY METHOD
ENABLE *Introduction to Emergencies End-of-Module Test* link in Blackboard - Instruct students: - Clear desks - Do not write anything during or after the test - Navigate to the *Introduction to Emergencies End-of-Module Test* link in Blackboard - Once they are satisfied with their responses, click "Save and Submit;" do not click "OK" to review results until directed to do so - Choose "Cancel" if they receive a warning message that the test has unanswered questions; choosing OK will submit the test and not allow them to go back and answer the questions - Leave the room after submitting the test and return at the "Be Back" time ***Note:*** *This test is scored but not graded* - During test, monitor students to ensure a secure testing environment - Identify the most commonly missed questions by reviewing student statistics in Blackboard - Instruct students to click "View Results" when ready to review commonly missed questions - Review commonly missed questions with students	Blackboard Assessment
	EST. RUN TIME
	15 mins.

20

END-OF-MODULE TEST (ANSWER KEY)

Note: Test questions in Blackboard are presented to the students in random order. Please be aware the test key question order will not match the student version.

1. Which of the following refers to a condition of being concerned about safety and requiring timely, but **NOT** immediate, assistance? *(Select the correct answer.)*
   - ❑ **Urgency**
   - ❑ Flight assistance
   - ❑ Routine emergency
   - ❑ Distress

   Reference(s): JO 7110.65, Chap.10; Pilot Controller Glossary

2. What other information may be obtained in an emergency? *(Select the correct answer.)*
   - ❑ **All of the answers**
   - ❑ Pilot's capability for IFR flight
   - ❑ Aircraft color
   - ❑ Emergency equipment on board

   Reference(s): JO 7110.65, Chap.10

3. If you are a controller in communication with an aircraft in distress, which of the following responsibilities do you assume? *(Select the correct answer.)*
   - ❑ **Coordinate and direct activities of assisting facilities**
   - ❑ Receive and relay all ELT signal information
   - ❑ Ensure RCC is notified
   - ❑ Issue an ALNOT

   Reference(s): JO 7110.65, Chap.10

4. What is a pilot allowed to do during an in-flight emergency? *(Select the correct answer.)*
   - ❑ **Deviate from any rule to the extent required to meet that emergency**
   - ❑ Determine when to discontinue communication
   - ❑ Determine which facilities coordinate assistance
   - ❑ Relinquish final authority and assume no responsibility

   Reference(s): AIM, Chap. 6

5. Which of the following is **NOT** an appropriate action if a VFR aircraft requests assistance when it encounters or is about to encounter IFR weather conditions? *(Select the correct answer.)*
   - ❑ **Instruct pilot to land as soon as possible**
   - ❑ Determine the facility best able to provide service
   - ❑ If necessary, advise pilot of frequency change and contact facility
   - ❑ Relay information and clearances to control facility if aircraft is unable to communicate

   Reference(s): JO 7110.65, Chap. 10