Federal Aviation Administration

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

Lesson 4: General Control and Board Management

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	General Control and Board Management
Duration	1 hour (includes lesson, and ELT)
Version	1.0 2022.08
Reference(s)	JO 7110.65, Air Traffic Control; JO 7610.4 Special Operations; JO 7210.3 Facility Operation and Administration; InFO 19002, Human Trafficking Recognition and Response Flight Training
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** ⊙ Familiarize yourself with local procedures for strip marking, strip posting, and board management. Be prepared to present them where indicated in the lesson plan. ⊙ Course 57833, GENERAL CONTROL and BOARD MANAGEMENT, current course is available as supplemental training for this lesson ⊙ 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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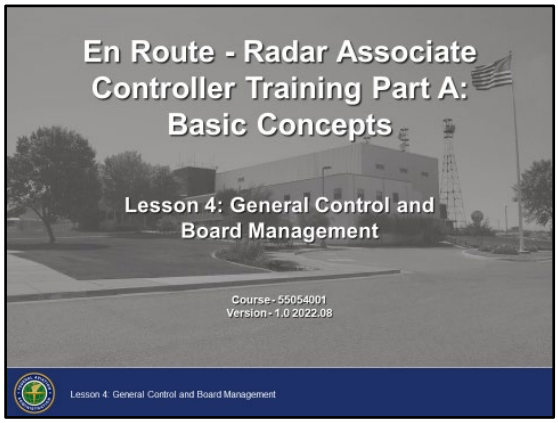
LESSON INTRODUCTION

Lesson Overview



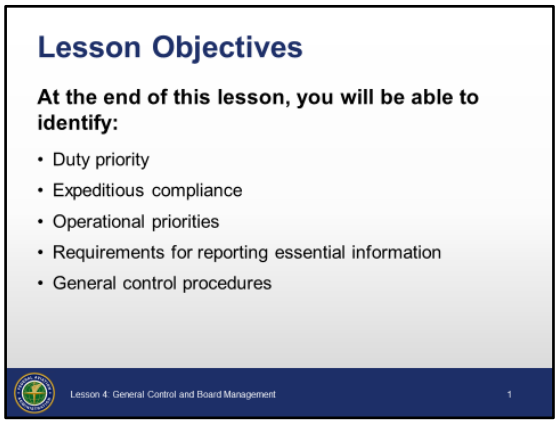
Overview

The primary purpose of the ATC system is to prevent a collision involving aircraft operating in the system. When controlling traffic, it is necessary to prioritize the myriad of tasks that may arise. Some events will require your immediate attention, while others are less critical. In this lesson you will learn about duty priority, procedural preference, and operational priority.

This lesson also covers board management, which includes using flight strips to form a mental picture of traffic within your sector.

LESSON INTRODUCTION *(CONT'D)*

Lesson Objectives



Objectives

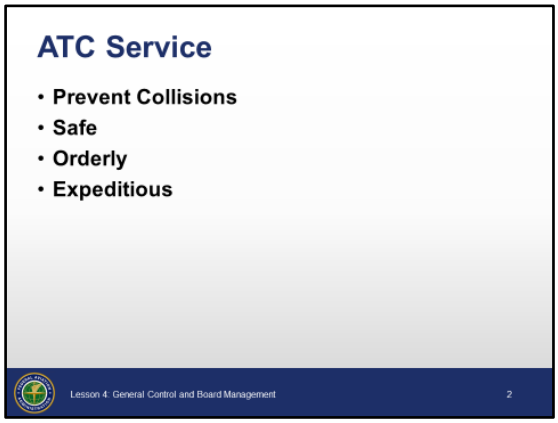
- At the end of this lesson, you will be able to identify:
  - Duty priority
  - Expeditious compliance
  - Operational priorities
  - Requirements for reporting essential information
  - General control procedures

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.

DUTY PRIORITY

ATC Service

JO 7110.65, par. 2-1-1



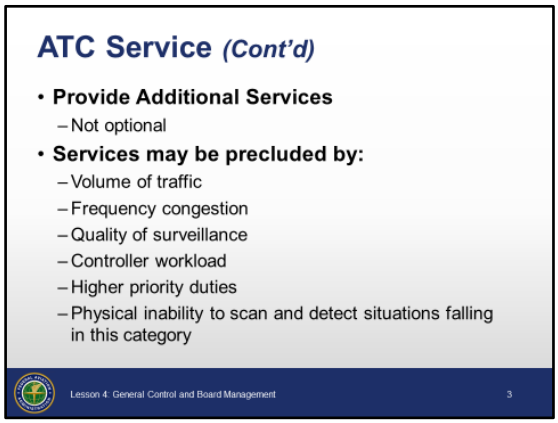
ATC Service

- The primary purpose of the ATC system is to prevent a collision involving aircraft operating in the system
- Provide a safe, orderly, and expeditious flow of air traffic
  - Safe
    - Can never be compromised, our primary goal
    - All situations must be safe at all times
  - Orderly
    - Chaotic situations are difficult to manage and/or resolve
    - ATC is a team effort. If one sector is experiencing higher than normal workload it has a negative effect on others.
    - Choose the more orderly action where safety is not compromised
  - Expeditious
    - Time and distance are costly to airborne operations
      - Crew expenses, fuel, passenger time
    - Consider expeditious plans/clearances if safe and orderly

DUTY PRIORITY *(CONT'D)*

ATC Service (Cont'd)

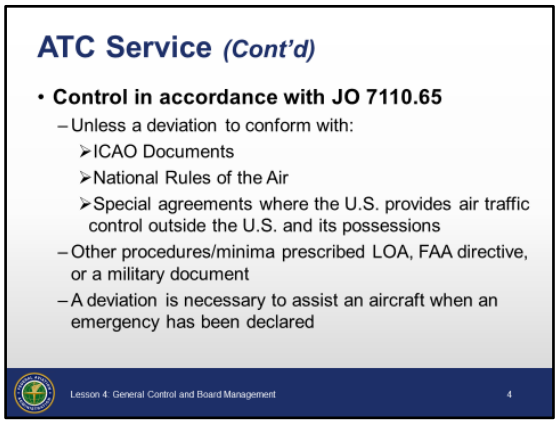
JO 7110.65, par. 2-1-1



- Provide additional services to the extent permitted. This is:
  - Not optional
  - Required when workload permits
- It is recognized that the provision of these services may be precluded by various factors, including, but not limited to:
  - Volume of traffic
  - Frequency congestion
  - Quality of surveillance
  - Controller workload
  - Higher priority duties
  - Physical inability to scan and detect situations falling in this category

ATC Service (Cont'd)

JO 7110.65, par. 2-1-1



⊙ Controllers must provide air traffic control service in accordance with the procedures and minima in JO 7110.65, except when one or more of the following conditions exist:

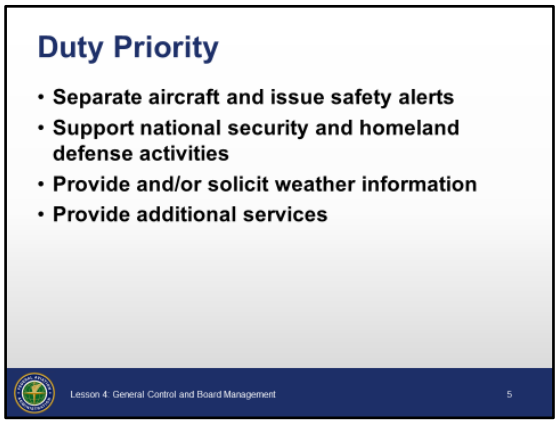
- A deviation is necessary to conform with:
  - International Civil Aviation Organization (ICAO) documents
  - National Rules of the Air
  - Special agreements where the U.S. provides air traffic control service in airspace outside the U.S. and its possessions
- Other procedures/minima are prescribed in a letter of agreement, FAA directive, or a military document
- A deviation is necessary to assist an aircraft when an emergency has been declared

NOTE: Air traffic control services are not provided for model aircraft operating in the National Airspace System (NAS). This does not prohibit ATC from providing services to civil and public Unmanned Aircraft Systems (UAS).

DUTY PRIORITY *(CONT'D)*

Duty Priority

JO 7110.65, par. 2-1-2



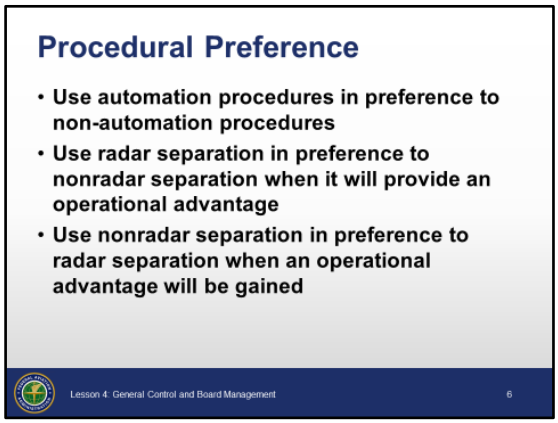
Duty Priority

- Duty priority concerns the tasks you must perform, in order of importance
- Give first priority to separating aircraft and issuing safety alerts
  - Good judgment must be used in prioritizing all other situations
- Provide support to national security and homeland defense activities, to include, but not be limited to reporting of suspicious and/or unusual aircraft/pilot activities
- Provide and/or solicit weather information
- Provide additional services to the extent possible

NOTE: Because there are many variables involved, it is virtually impossible to develop a standard list of duty priorities that would apply uniformly to every conceivable situation. Each set of circumstances must be evaluated on its own merit, and when more than one action is required, controllers must exercise their best judgement based on the facts and circumstances known to them. The most critical from a safety standpoint is performed first.

Procedural Preference

JO 7110.65, par. 2-1-3

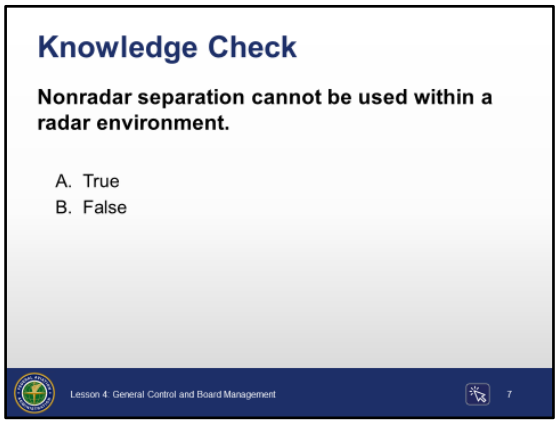


Procedural Preference

- Procedural preference is choosing which form of separation/coordination to use
- Use automation procedures in preference to non-automation procedures when permitted by:
  - Workload
  - Communications
  - Equipment capabilities
- Use radar separation in preference to nonradar separation when it will provide an operational advantage and when permitted by:
  - Communications
  - Workload
  - Equipment capabilities
- Use nonradar separation in preference to radar separation when an operational advantage will be gained

  NOTE: One example of procedural preference is using vertical separation in lieu of excessive vectoring.

Knowledge Check

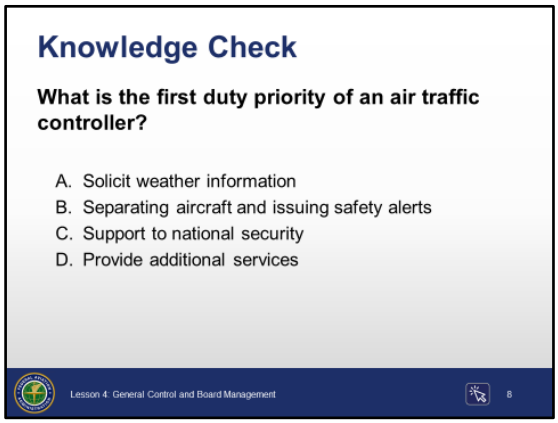


True or False:

Nonradar separation cannot be used within a radar environment.

DUTY PRIORITY *(CONT'D)*

Knowledge Check

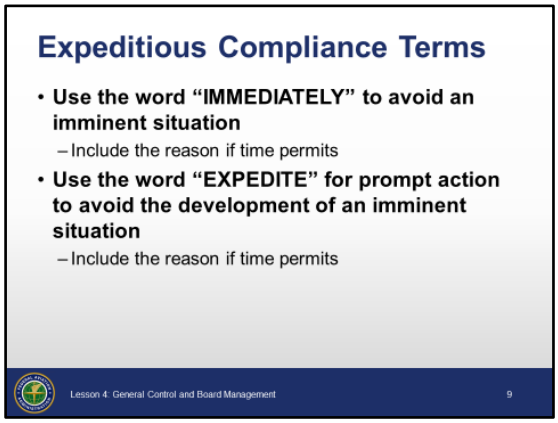


Question: What is the first duty priority of an air traffic controller?

EXPEDITIOUS COMPLIANCE

Expeditious Compliance Terms

JO 7110.65, par. 2-1-5



Expeditious Compliance Terms

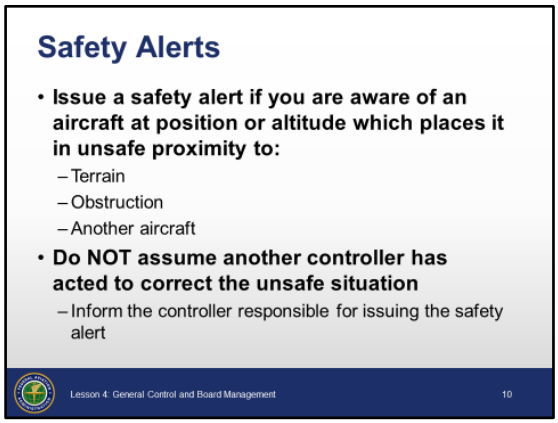
- Use the word "IMMEDIATELY" to avoid an imminent situation
  - Include the reason if time permits
- Use the word "EXPEDITE" for prompt action to avoid the development of an imminent situation
  - Include the reason if time permits

NOTE: If "EXPEDITE" is used when issuing climb/descent clearances, and subsequently the altitude to maintain is changed or restated without an "EXPEDITE" instruction, the "EXPEDITE" instruction is cancelled.

EXPEDITIOUS COMPLIANCE *(CONT'D)*

Safety Alerts

JO 7110.65, par. 2-1-6

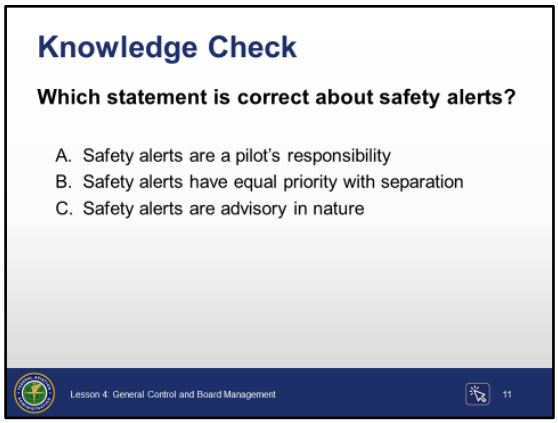


Safety Alerts

- Issue a safety alert if you are aware of an aircraft at a position or altitude which places it in unsafe proximity to:
  - Terrain
  - Obstructions
  - Another aircraft
- Do not assume another controller has acted to correct the unsafe situation
  - Inform the controller responsible for issuing the safety alert
- Once informed by the pilot that corrective action is being taken, you may discontinue the issuance of further alerts

EXPEDITIOUS COMPLIANCE *(CONT'D)*

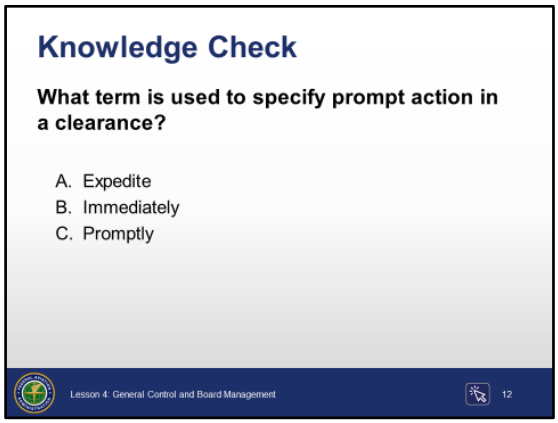
Knowledge Check



Question: Which statement is correct about safety alerts?

EXPEDITIOUS COMPLIANCE *(CONT'D)*

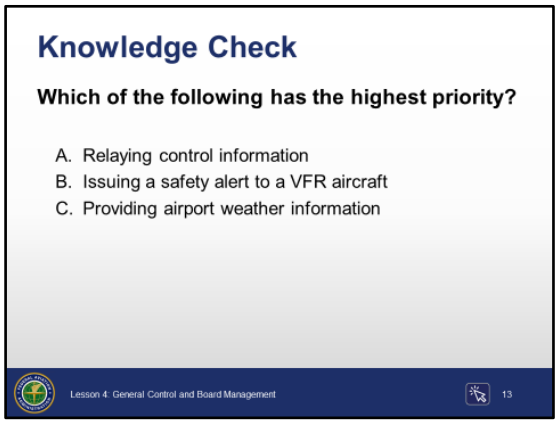
Knowledge Check



Question: What term is used to specify prompt action in a clearance?

EXPEDITIOUS COMPLIANCE *(CONT'D)*

Knowledge Check

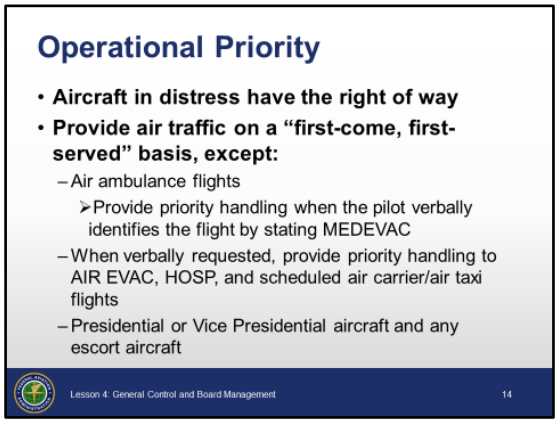


Question: Which of the following has the highest priority?

OPERATIONAL PRIORITY

Operational Priority

JO 7110.65, par. 2-1-4



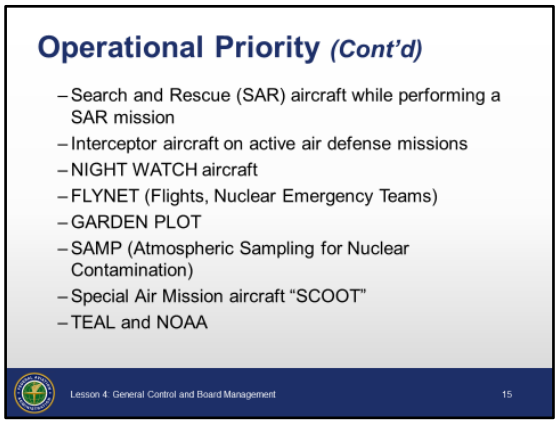
Operational Priority

- Operational priority is the set of rules that governs who gets what first
- Aircraft in distress have the right of way over all other traffic
- Provide air traffic control service to aircraft on a "first come, first served" basis as circumstances permit, except the following flights have priority:
  - Air ambulance flights
    - Provide priority handling when the pilot verbally identifies the flight by stating MEDEVAC followed by the FAA authorized call sign or the full civil registration letters/numbers
  - When verbally requested, provide priority handling to AIR EVAC, HOSP, and scheduled air carrier/air taxi flights
  - Presidential or Vice Presidential aircraft and any escort aircraft

OPERATIONAL PRIORITY *(CONT'D)*

Operational Priority (Cont'd)

JO 7110.65, par. 2-1-4



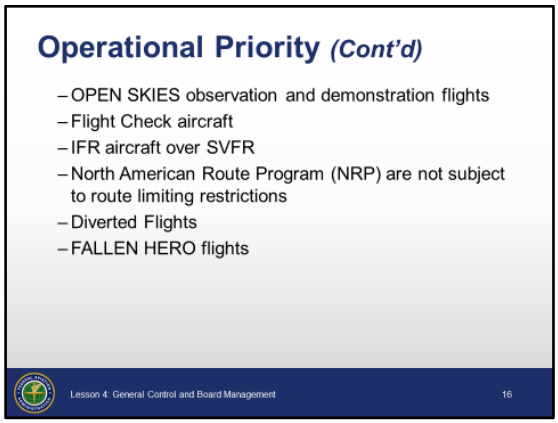
- Search and Rescue (SAR) aircraft while performing a SAR mission
- Interceptor aircraft on active air defense missions
- NIGHT WATCH aircraft
  - "NAOC" will not be part of the call sign, but may be used in remarks or air/ground communications to indicate that special handling is required
- FLYNET (Flights, Nuclear Emergency Teams)
  - Civil or military aircraft using this code name
- GARDEN PLOT
  - When notified by Central Altitude Reservation Function (CARF)
- SAMP (Aerial sampling/surveying missions, sampling for nuclear, chemical, or hazardous material contamination)
- Special Air Missions when "SCOOT" is indicated in the remarks section of the flight plan or in air/ground communications
  - "SCOOT" will not be part of the call sign, but may be used when aircraft is airborne to indicate a request for special handling
- TEAL and NOAA (National Oceanic and Atmospheric Administration)
  - May be requested by the pilot via telephone or in remarks section of the flight plan

OPERATIONAL PRIORITY *(CONT'D)*

Operational Priority (Cont'd)

JO 7110.65, pars. 2-1-4, 2-2-15

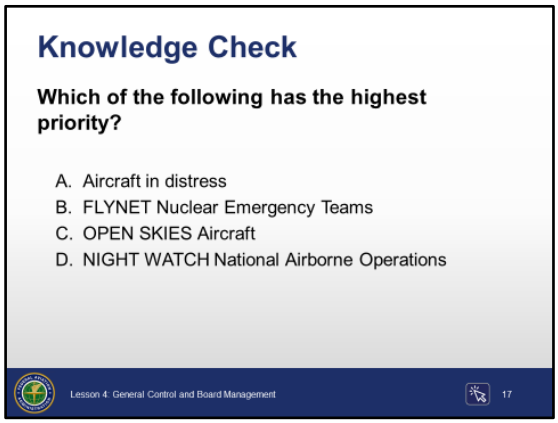
JO 7210.3, par. 18-18-5



- OPEN SKIES observation and demonstration flights
- Flight Check aircraft
- IFR aircraft must have priority over SVFR aircraft
- Aircraft operating under the North American Route Program (NRP)
  - Flights must be on preferred IFR routes for that portion of flight within 200 NM from the point of departure or destination
  - Outside this portion, these aircraft are NOT subject to route limiting restrictions; e.g., published preferred IFR routes, LOA requirements, SOPs
- Diverted flights
  - DVRSN in remarks of flight plan or being placed on the Diversion Recovery Tool (DRT)
- FALLEN HERO flights
  - Indicated in the remarks section of the flight plan or requested in air/ground communications

OPERATIONAL PRIORITY *(CONT'D)*

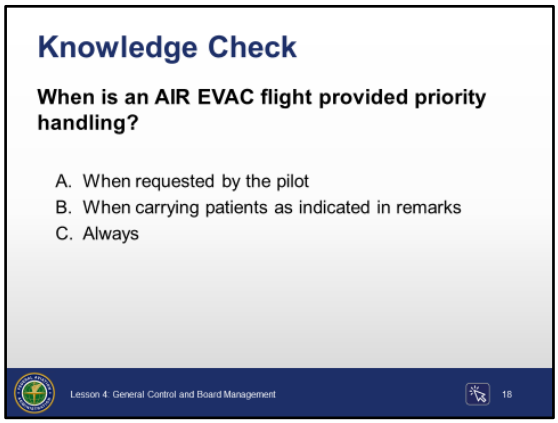
Knowledge Check



Question: Which of the following has the highest priority?

OPERATIONAL PRIORITY *(CONT'D)*

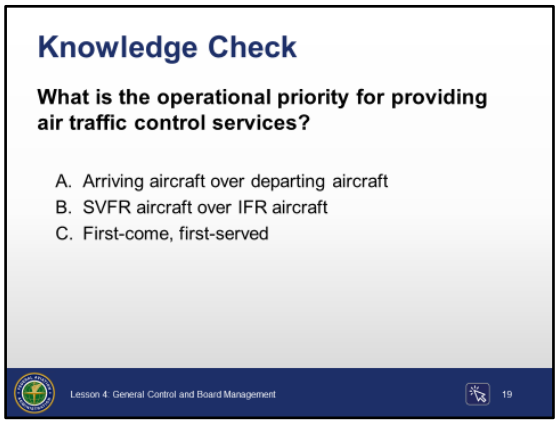
Knowledge Check



Question: When is an AIR EVAC flight provided priority handling?

OPERATIONAL PRIORITY *(CONT'D)*

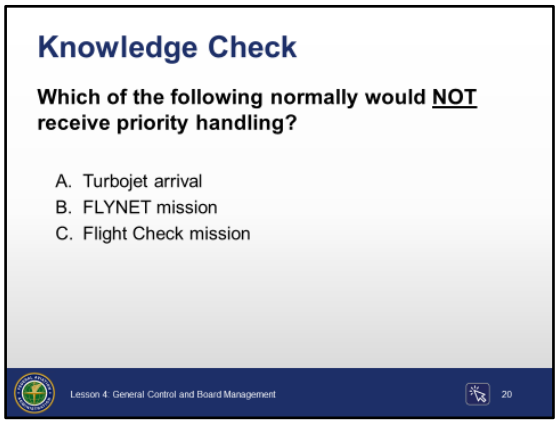
Knowledge Check



Question: What is the operational priority for providing air traffic control services?

OPERATIONAL PRIORITY *(CONT'D)*

Knowledge Check

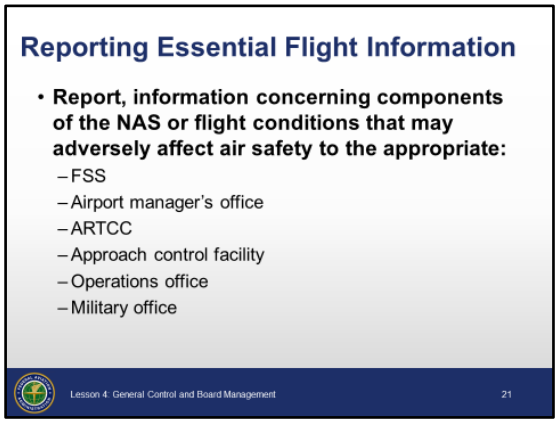


Question: Which of the following normally would NOT receive priority handling?

REPORTING ESSENTIAL FLIGHT INFORMATION

Reporting Essential Flight Information

JO 7110.65, par. 2-1-9



Reporting Essential Flight Information

⊙ Report, as soon as possible, any information concerning components of the NAS or flight conditions that may adversely affect air safety to the appropriate facility, such as:

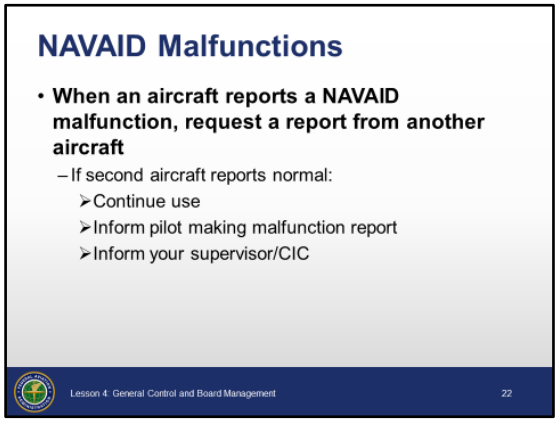
- FSS
  - FSS is responsible for Notice to Air Missions (NOTAM) action, if necessary
- Airport manager's office
- ARTCC
- Approach control
- Operations office
- Military operations office

NOTE: Examples of conditions that might be reported: NAVAID outages, radar system failures, computer outages, turbulence, and weather conditions.

REPORTING ESSENTIAL FLIGHT INFORMATION
(CONT'D)

NAVAID Malfunctions

JO 7110.65, par. 2-1-10



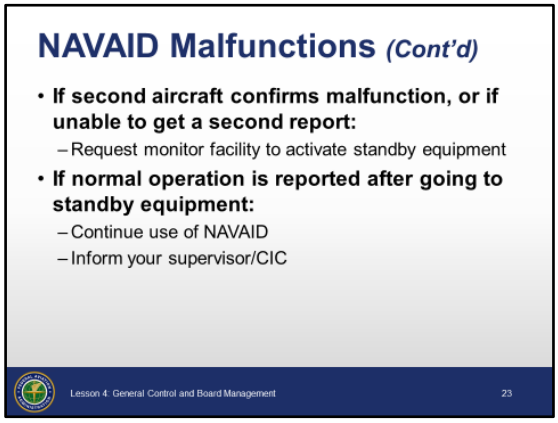
NAVAID Malfunctions

- ⊙ When an aircraft reports a ground-based NAVAID malfunction, request a report from another aircraft
  - If the second aircraft reports normal:
    - Continue use of NAVAID
    - Inform pilot making malfunction report
    - Inform your supervisor/CIC

REPORTING ESSENTIAL FLIGHT INFORMATION
(CONT'D)

NAVAID Malfunctions (Cont'd)

JO 7110.65, par. 2-1-10

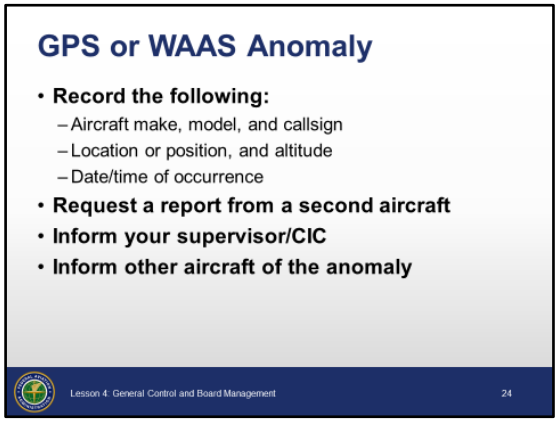


- If a second aircraft confirms malfunction, or if unable to get a second report:
  - Request monitor facility to activate standby equipment
- If normal operation is reported after going to standby equipment:
  - Continue use of NAVAID
  - Inform your supervisor/CIC

REPORTING ESSENTIAL FLIGHT INFORMATION
(CONT'D)

GPS or WAAS Anomaly

JO 7110.65, par. 2-1-10



GPS or WAAS Anomaly

GLOBAL POSITIONING SYSTEM (GPS) - The worldwide positioning, navigation, and timing determination capability available from the U.S. satellite constellation.

WIDE-AREA AUGMENTATION SYSTEM (WAAS) - A satellite navigation system consisting of the equipment and software which augments the GPS Standard Positioning Service (SPS). The WAAS provides enhanced integrity, accuracy, availability, and continuity over and above GPS SPS. The differential correction function provides improved accuracy required for precision approach.

⊙ When an aircraft reports a GPS or WAAS anomaly, request the following information and/or take the following actions:

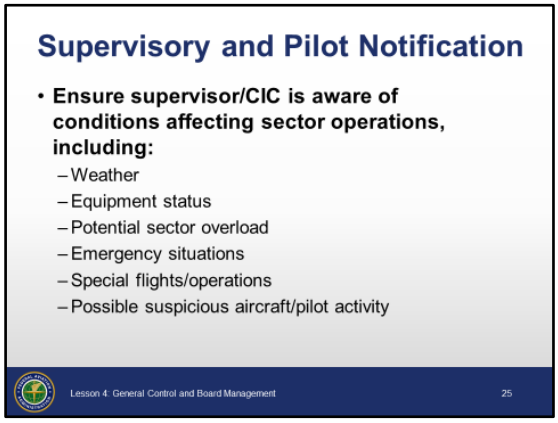
- Record the following minimum information:
  - Aircraft make, model, and call sign
  - Location or position, and altitude at the time where GPS or WAAS anomaly was observed
  - Date/time of occurrence
- Request a report from a second aircraft
- Inform your supervisor/CIC
- Inform other aircraft of the anomaly

REPORTING ESSENTIAL FLIGHT INFORMATION
(CONT'D)

Supervisory and Pilot Notification

JO 7110.65, par. 2-1-26

JO 7610.4, par. 7-3-1



Supervisory and Pilot Notification

⊙ Ensure supervisor/CIC is aware of conditions affecting sector operations, including, but not limited to, the following:

- Weather
- Equipment status
- Potential sector overload
- Emergency situations
- Special flights/operations
- Aircraft/pilot activity, including:
  - Unmanned Aircraft System (UAS) operation that is considered suspicious
  - Unauthorized, hazardous, and/or threatening operations

NOTE: The intent is for controllers to use common sense about suspicious activity. Controller actions to determine this will vary.

Examples: Ask the aircraft in plain English to confirm flight deck is secure/crew is not being interfered with.

Check crew response to other routine ATC communication (radio check, etc.).

Inform the supervisor/CIC, who would then notify/check with the Domestic Events Network (DEN).

REPORTING ESSENTIAL FLIGHT INFORMATION
(CONT'D)

Blue Lightning Events

JO 7110.65, par. 2-1-31

JO 7210.3, par. 2-7-7

FAA InFO 19002

Blue Lightning Events

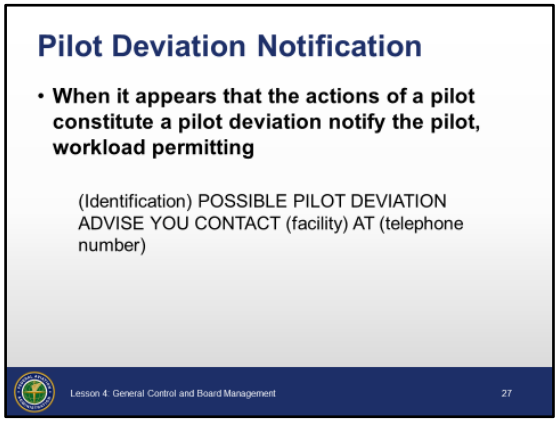
- Reports of possible human trafficking
  - Ensure that the supervisor/CIC is notified

NOTE: Human trafficking is a crime involving the exploitation of someone for the purposes of compelled labor or a commercial sex act through the use of force, fraud, or coercion.

REPORTING ESSENTIAL FLIGHT INFORMATION
(CONT'D)

Pilot Deviation Notification

JO 7110.65, par. 2-1-27



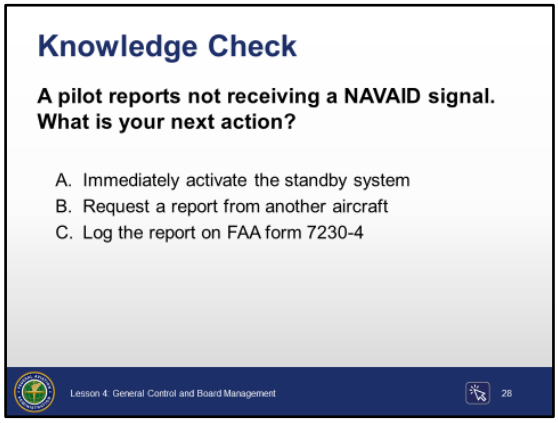
Pilot Deviation Notification

- When it appears that the actions of a pilot constitute a pilot deviation, notify the pilot, workload permitting

(Identification) POSSIBLE PILOT DEVIATION ADVISE YOU CONTACT (facility) AT (telephone number)

REPORTING ESSENTIAL FLIGHT INFORMATION
(CONT'D)

Knowledge Check



Question: A pilot reports not receiving a NAVAID signal. What is your next action?

Formation Flights

JO 7110.65, par. 2-1-13, PCG

Formation Flights

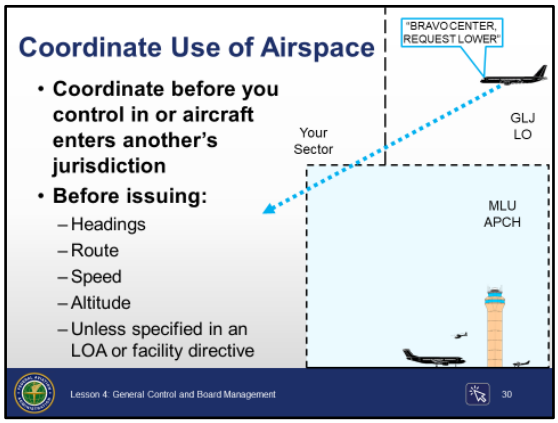
FORMATION FLIGHT - More than one aircraft which, by prior arrangement between the pilots, operate as a single aircraft with regard to navigation and position reporting. Separation between aircraft within the formation is the responsibility of the flight leader and the pilots of the other aircraft in the flight.

⊙ Control formation flights as a single aircraft

- Issue control instructions to formation leader
- Ensure flight plan data accurately reflects the number of aircraft

Coordinate Use of Airspace

JO 7110.65, par. 2-1-14



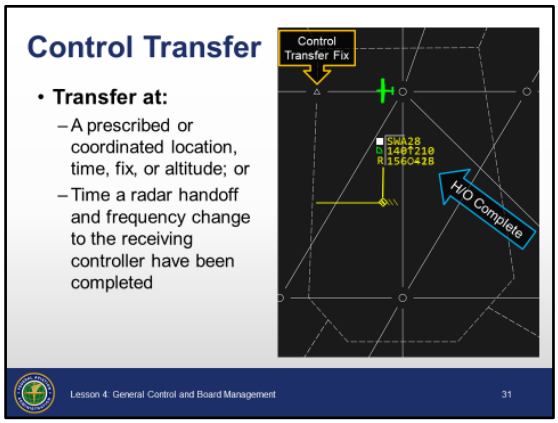
Coordinate Use of Airspace

- Ensure necessary coordination has been accomplished before allowing an aircraft under your control to enter another controller's area of jurisdiction
- Before issuing control instructions that will change the heading, route, speed, or altitude of an aircraft not in your airspace ensure that coordination has been accomplished with all controllers affected by those instructions, including:
  - The controller within whose area of jurisdiction the control instructions will be issued
  - The receiving controller (when you as the transferring controller have issued instructions in the receiving controller airspace)
  - Any intervening controller(s) through whose airspace the aircraft will pass

  NOTE: Unless specified in a Letter of Agreement (LOA) or facility directive.

Control Transfer

JO 7110.65, par. 2-1-15

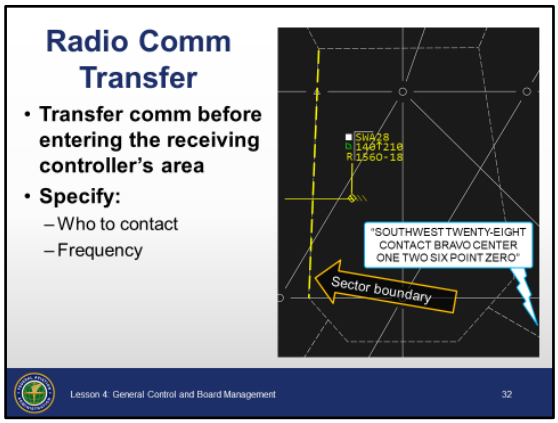


Control Transfer

- Transfer control responsibility at:
  - A prescribed or coordinated location, time, fix, or altitude; or
  - Time a radar handoff and frequency change to the receiving controller has been completed
    - When authorized by a facility directive or LOA specifying type and extent of control that is transferred
- Transfer control only after eliminating any potential conflict with other aircraft for which you have separation responsibility

Radio Communica-tions Transfer

JO 7110.65, par. 2-1-17



Radio Communications Transfer

- Transfer communications before an aircraft enters the receiving controller's area, unless:
  - Coordinated
  - Specified by LOA or facility directive
- Transfer communications by specifying the following:
  - Who to contact, including:
    - Facility name, or
    - Location name and terminal function

    Examples: "ATLANTA CENTER," "JACKSON RADIO," "SAINT LOUIS APPROACH," "CRAIG TOWER"
  - Frequency
    - Optional for:
      - FSS
      - Departure, if previously given or published on SID chart
  - Time, fix, altitude, or specified condition when to change frequency
    - May be omitted if compliance is expected upon receipt

    Example: "SOUTHWEST TWENTY-EIGHT CONTACT BRAVO CENTER ONE TWO SIX POINT ZERO"

Continued on next page

GENERAL CONTROL *(CONT'D)*

Radio Communications Transfer (Cont'd)

JO 7110.65, par. 2-1-17

⊙ Transfer communications within your sector when:

- A sector has multiple frequencies
- Sectors are combined using multiple frequencies and aircraft will remain under your jurisdiction
- Instruct the aircraft to change to your frequency

(Identification) CHANGE TO MY FREQUENCY (frequency)

⊙ Avoid issuing frequency change to single-piloted helicopters during:

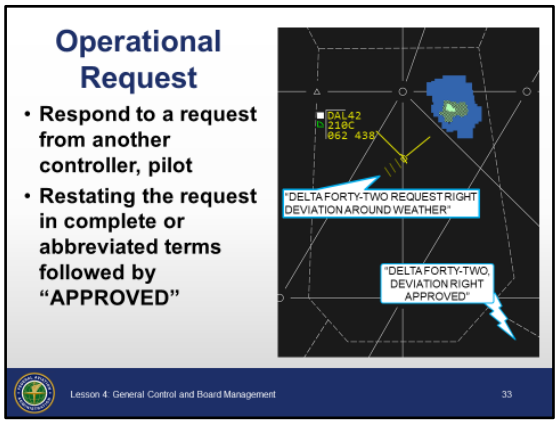
- Air-taxiing
- Hovering
- Low-level flight

⊙ In situations in which the controller does not want the pilot to leave the frequency, advise the pilot to remain on your frequency

REMAIN THIS FREQUENCY

Operational Request

JO 7110.65, par. 2-1-18



Operational Request

⊙ Respond to a request from another controller, pilot, or vehicle operator by stating one of the following:

- Restate the request in complete or abbreviated terms followed by the word APPROVED

  (Requested operation) APPROVED

- In lieu of a lengthy clearance, use:

  APPROVED AS REQUESTED

- State restrictions followed by the word APPROVED

  (Restriction and/or additional instructions, requested operation) APPROVED

Example: Pilot – "DELTA FORTY-TWO REQUEST RIGHT DEVIATION AROUND WEATHER"

Controller – "DELTA FORTY-TWO, DEVIATION RIGHT APPROVED"

Operational Request (Cont'd)

JO 7110.65, par. 2-1-18

- State the word UNABLE and, time permitting, a reason or additional instructions

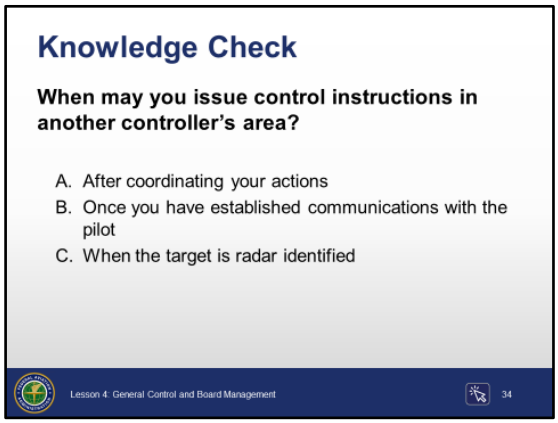
   UNABLE (requested operation)

- State the words STAND BY

   STAND BY

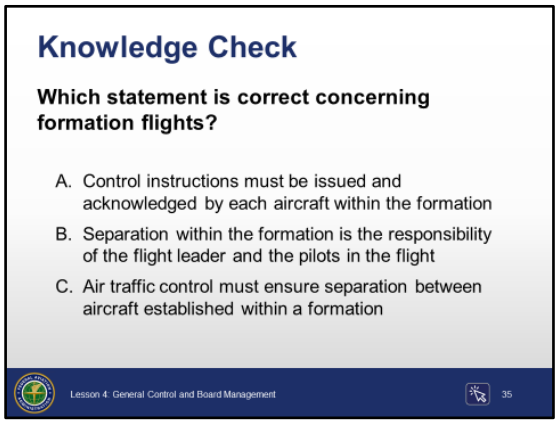
  NOTE: STAND BY is not an approval or denial. The controller acknowledges the request and will respond at a later time.

Knowledge Check



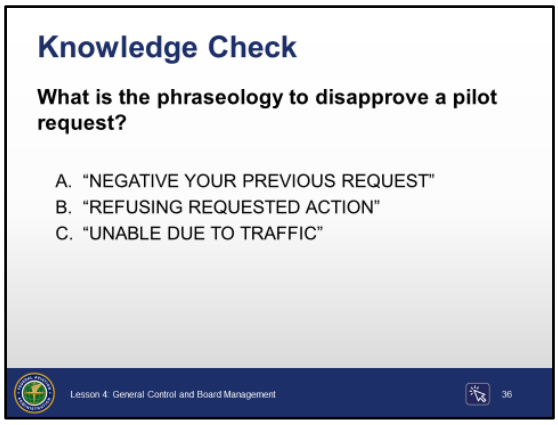
Question: When may you issue control instructions in another controller's area?

Knowledge Check



Question: Which statement is correct concerning formation flights?

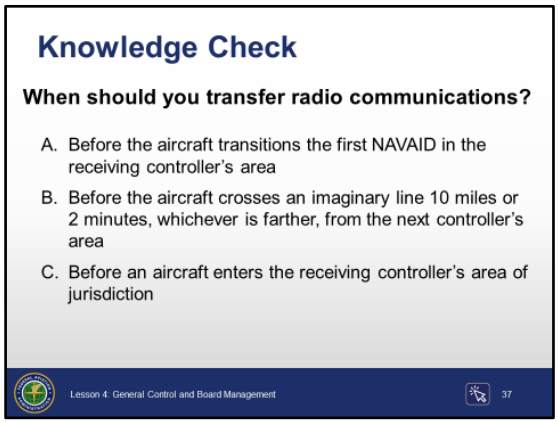
Knowledge Check



Question: What is the phraseology to disapprove a pilot request?

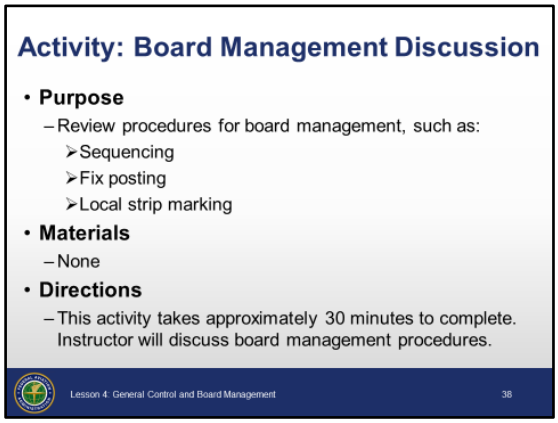
GENERAL CONTROL *(CONT'D)*

Knowledge Check



Question: When should you transfer radio communications?

ACTIVITY: BOARD MANAGEMENT DISCUSSION



Purpose

Review procedures for board management, such as:

- Sequencing
- Fix posting
- Local strip marking

Materials

- None

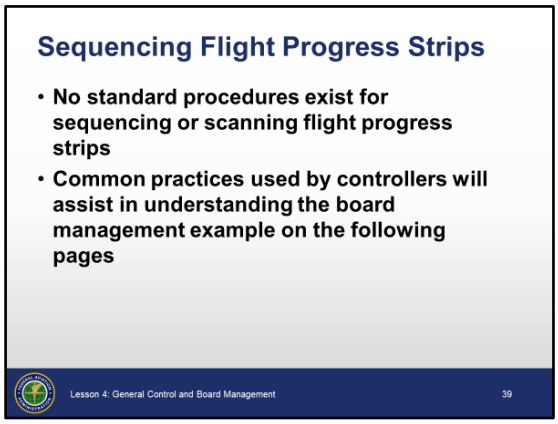
Directions

This activity takes approximately 30 minutes to complete. Instructor will discuss board management procedures.

ACTIVITY: BOARD MANAGEMENT DISCUSSION *(CONT'D)*

Sequencing Flight Progress Strips

JO 7210.3, par. 6-2-2,e,4



No standard procedures exist for sequencing or scanning flight progress strips.

Common practices used by controllers will assist in understanding the board management example on the following pages.

A sector may have more than one fix posting. It is common practice to sequence strips by fix posting and then by time, with earliest fix estimate on bottom.

It is common practice to scan flight progress strips for:

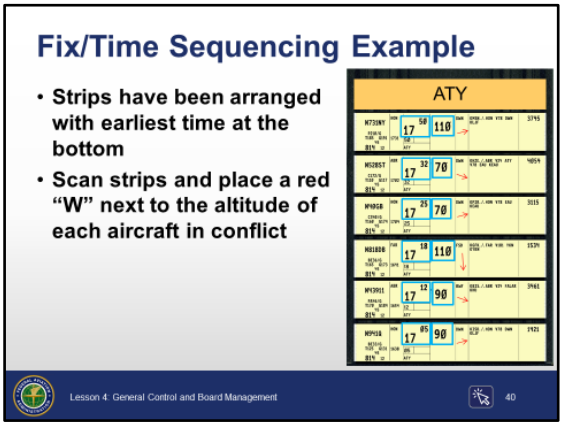
- Proper sequence
- Conflicts
- Inappropriate Altitude for Direction of Flight (IAFDOF)
- Arrivals
- MEA violations
- Route errors
- Coordination functions
- Type aircraft
- Number of aircraft, if more than one
- Category, if aircraft is heavy
- Non-DME
- Speed

NOTE: Each sector will have information specifying flight progress strips to be posted and the location to place them.

ACTIVITY: BOARD MANAGEMENT DISCUSSION
(CONT'D)

Fix/Time Sequencing

JO 7210.3, par. 6-2-2,e,4

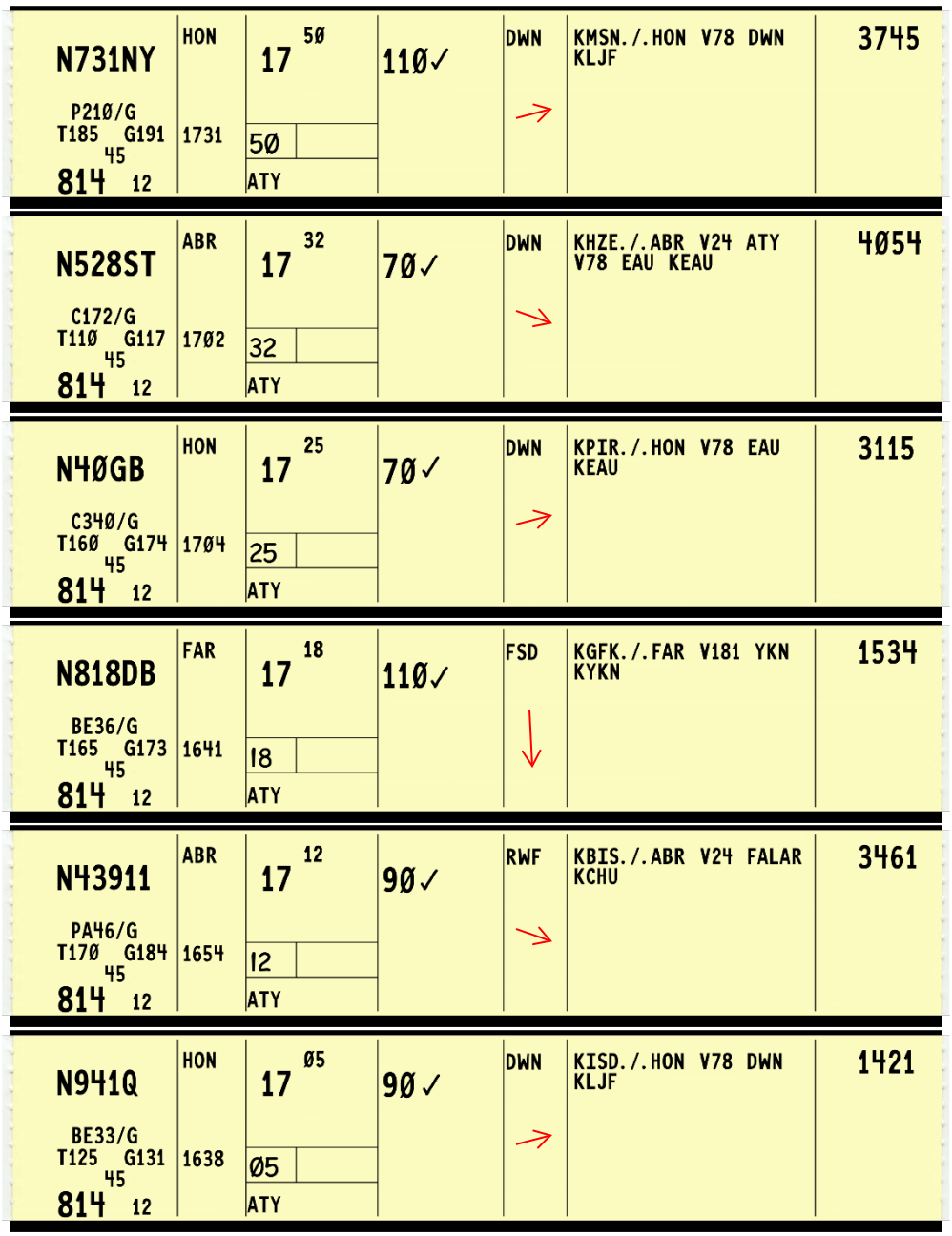


Fix/Time Sequencing Example:

- Strips have been arranged with earliest time at the bottom.
- Scan strips and place a red "W" next to the altitude of each aircraft in conflict, i.e., less than approved separation is predicted.

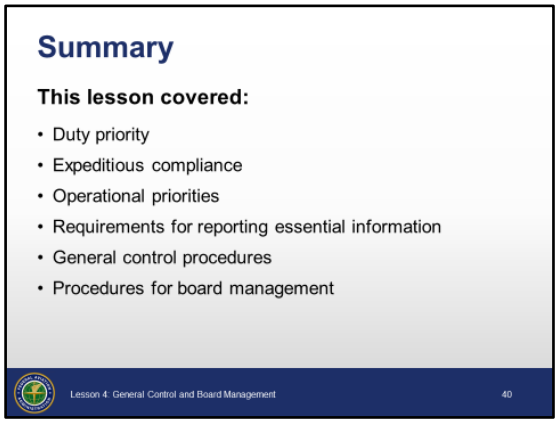
ACTIVITY: BOARD MANAGEMENT DISCUSSION
(CONT'D)

Fix/Time Sequencing (Cont'd)



CONCLUSION

Lesson Summary



Summary

- Duty priority
  - Separate traffic
  - Issue safety alerts
- Expeditious compliance
  - Safety alerts
    - Imminent situation (use “Immediately”)
    - Avoidance of imminent situation (use “Expedite”)
- Operational priorities
  - Aircraft in distress
  - Priority handling
  - First come, first served
- Requirements for reporting essential information
  - Report, as soon as possible, any information concerning components of the NAS or flight conditions that may adversely affect air safety

Continued on next page

CONCLUSION *(CONT'D)*

Lesson Summary (Cont'd)

- General control procedures
  - Use radar and/or nonradar separation as the situation dictates
  - Coordinate use of airspace
    - Obtain approval before entering another controller's area
    - Transfer communications prior to boundary
  - Flight data requirements for formation flights
    - Control the flight as one aircraft
    - Ensure the proper flight plan amendments are made if aircraft join/depart the flight
- Procedures for board management