



**Federal Aviation
Administration**

55054001

EN ROUTE

RADAR ASSOCIATE

***CONTROLLER TRAINING PART A:
BASIC CONCEPTS***

**Lesson 15: Military and Special
Operations**










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	Military and Special Operations
Duration	2 hours, 45 minutes (includes lesson and ELT)
Version	1.0 2022.08
Reference(s)	JO 7110.65, Air Traffic Control; JO 7610.4, Special Operations; DOD AP/1B, Department of Defense Flight Information Publication, Area Planning; 14 CFR Part 99, Security Control of Air Traffic; 14 CFR 91.185, IFR Operations: Two-way Radio Communications Failure; 32 CFR Part 245, Plan For The Emergency Security Control Of Air Traffic (ESCAT); DODI 4540.01, Use of International Airspace by U.S. Military Aircraft and for Missile and Projectile Firings
Prerequisites	NONE
Handout(s)	NONE
Exercise / Activity	NONE
Assessments	☉ YES - Written
Scenario	NONE
Materials and Equipment	☉ Pencil and/or pen
Other Pertinent Information	<ul style="list-style-type: none"> ☉ Ensure lesson materials are downloaded to the classroom computer ☉ The instructor needs to be prepared to give examples from JO 7400.10 ☉ Course 57004, Military Operations: Aerial Refueling (or current course is required training for this lesson) ☉ Course 57022, Military Operations: Military Training Routes (or current course is required training for this lesson) ☉ Course 57072, Military Operations: Formation Flights (or current course is required training for this lesson) ☉ Course 57073, Military Operations: Special Operations (or current course is required 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

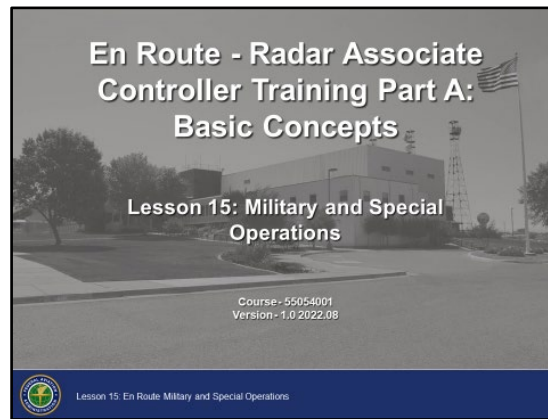
LESSON ICON LEGEND

	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

Overview



Overview

This lesson covers several types of military operations, including aerial refueling, military training routes, formation flights and special operations. Knowledge of these subjects is an important aspect of air traffic control and national security.


LESSON INTRODUCTION (CONT'D)

Lesson Objectives

Lesson Objectives

At the end of this lesson, you will be able to recall the attributes of:

- Formation flights
- Aerial refueling
- Military training routes
- Special operations



Lesson 15: En Route Military and Special Operations

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Objectives

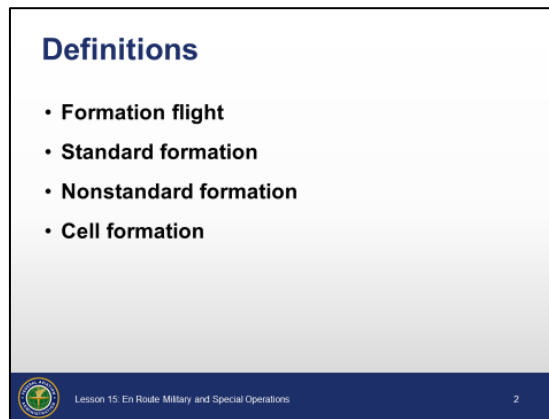
- ☉ At the end of this lesson, you will be able to recall the attributes of:
 - Formation flights
 - Aerial refueling
 - Military training routes
 - Special operations

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.

FORMATION FLIGHTS

Definitions

JO 7610.4,
Appendix 2



Definitions



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. This includes transition periods when aircraft within the formation are maneuvering to attain separation from each other to effect individual control and during join-up and breakaway.



STANDARD FORMATION - A formation in which a proximity of no more than 1 mile laterally or longitudinally and within 100' vertically from the flight leader is maintained by each aircraft.



NONSTANDARD FORMATION - Formations operating under any of the following conditions:

- When the flight leader has requested and ATC has approved other than standard formation dimensions
- When operating within an authorized ALTRV or under the provisions of a Letter of Agreement (LOA)
- When the operations are conducted in airspace specifically designated for a special activity



CELL FORMATION - A nonstandard formation of two or more aircraft with the same intended route of flight, maintaining station keeping operations by visual or electronic means.

FORMATION FLIGHTS (CONT'D)

Formation Flights

JO 7110.65, par.
2-1-13

Formation Flights

- **Control formation flights as a single aircraft**
 - All instructions are issued to the flight leader
- **Flight leader and other pilots of the flight are responsible for separation between aircraft within the formation**
- **Support formation flight join-up for aircraft when all of the following occur:**
 - Requested by any participating pilot
 - All pilots must concur when entering a formation
 - One of the participating pilots reports the other(s) in sight

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Formation Flights

- ⦿ Control formation flights as a single aircraft
 - All instructions are issued to the flight leader
- ⦿ Flight leader and the other pilots of the flight are responsible for separation between aircraft within the formation
- ⦿ Support formation flight join-up for aircraft when all of the following occur:
 - Requested by any participating pilot
 - All pilots must concur when entering a formation
 - One of the participating pilots reports the other(s) in sight

Examples: "ROOK ZERO ONE HAS EAGLE ZERO THREE IN SIGHT, REQUEST FORMATION JOIN-UP WITH EAGLE ZERO THREE AT FLIGHT LEVEL TWO ZERO ZERO. EAGLE ZERO THREE WILL BE THE LEAD"

"EAGLE ZERO THREE VERIFY REQUESTING FLIGHT JOIN-UP WITH ROOK ZERO ONE"

If affirmative:

"ROOK ZERO ONE CLIMB AND MAINTAIN FLIGHT LEVEL TWO ZERO ZERO. REPORT WHEN FORMATION JOIN-UP IS COMPLETE"


FORMATION FLIGHTS (CONT'D)

Formation Flights - RVSM Airspace

JO 7110.65, par.
2-1-13

Formation Flights - RVSM

- **If all aircraft in flight are RVSM capable:**
 - Use RVSM vertical separation standards
- **Formation flight above FL290 which does not consist of all RVSM approved aircraft:**
 - Use non-RVSM vertical separation standards

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Formation Flights - RVSM Airspace

- ⦿ If all aircraft in flight are RVSM capable:
 - Use RVSM vertical separation standards
 - ⦿ Formation flight above FL290 which does not consist of all RVSM approved aircraft:
 - Use non-RVSM vertical separation
 - ⦿ If aircraft are requesting to form a formation flight to FL290 or above, the controller who issues the clearance creating the formation flight is responsible for ensuring that the proper equipment suffix is entered for the lead aircraft
 - ⦿ If the flight departs as a formation, and is requesting FL290 or above, the first center sector must ensure that the proper equipment suffix is entered
 - ⦿ If the formation flight is below FL290 and later requests FL290 or above, the controller receiving the RVSM altitude request must ensure the proper equipment suffix is entered
-



FORMATION FLIGHTS (CONT'D)

Standard Formation - Lateral Separation

JO 7110.65, par. 5-5-8

Standard Formation - Lateral Separation

- **Add 1 mile to the appropriate radar separation minima for each of the following:**
 - Other aircraft
 - Adjacent airspace
 - Obstructions
- **Separate two standard formation flights by adding 2 miles to the appropriate radar separation minima**

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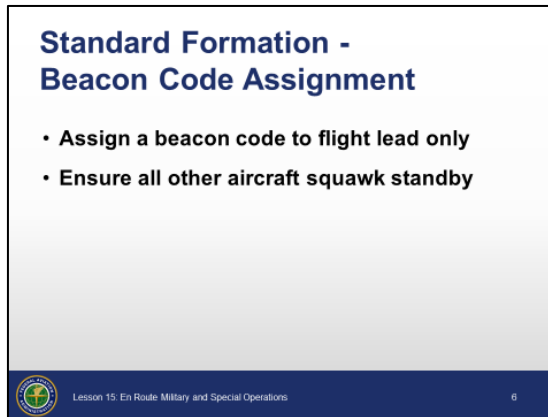
Standard Formation - Lateral Separation

- ⦿ Add 1 mile to the appropriate radar separation minima for each of the following:
 - Other aircraft
 - Adjacent airspace
 - Obstructions
 - ⦿ Separate two standard formation flights by adding 2 miles to the appropriate radar separation minima
-

FORMATION FLIGHTS (CONT'D)

Standard Formation - Beacon Code Assignment

JO 7110.65, par. 2-1-13



Standard Formation - Beacon Code Assignment

- ⦿ Assign a beacon code to the flight lead only
 - ⦿ Ensure all other aircraft in the flight squawk standby
-


FORMATION FLIGHTS (CONT'D)

Nonstandard Formation - Lateral Separation

JO 7110.65, par. 5-5-8

Nonstandard Formation - Lateral Separation

- **Apply the appropriate separation minima to:**
 - Perimeter of the airspace encompassing the nonstandard formation,
 - or*
 - The outermost aircraft of the nonstandard formation

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Nonstandard Formation - Lateral Separation

- ⦿ Apply the appropriate lateral separation minima to:
 - Perimeter of the airspace encompassing the nonstandard formation,
 - or*
 - The outermost aircraft of the nonstandard formation
-


FORMATION FLIGHTS (CONT'D)

Nonstandard Formation - Beacon Code Assignment

JO 7110.65,
pars. 2-1-13,
5-5-8

Nonstandard Formation - Beacon Code Assignment

- **Each aircraft should squawk an ATC assigned beacon code**
 - Controller discretion allows aircraft in a nonstandard formation to squawk standby if operationally advantageous

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Nonstandard Formation - Beacon Code Assignment

- ⦿ Each aircraft should squawk an ATC assigned beacon code
 - Controller discretion allows aircraft in a nonstandard formation to squawk standby if operationally advantageous
 - ⦿ If necessary for separation between a nonstandard formation and other aircraft, assign a beacon code to:
 - Each aircraft in the flight,
 - or
 - The first and last aircraft in-trail
-

FORMATION FLIGHTS (CONT'D)


Nonstandard Formation - ATC Procedures

JO 7110.65,
pars. 2-1-13,
5-5-8


JO 7610.4, par.
12-11

Nonstandard Formation - Procedures

- **A nonstandard flight must be approved by ATC**
 - Assign block altitudes which allow 500' of vertical separation between each aircraft in the flight
 - Control these operations as MARSAs until approved separation is established and acknowledged by ATC
 - Separate a nonstandard formation flight by applying the appropriate separation minima to the perimeter of the airspace encompassing the nonstandard formation, or from the outermost aircraft of the nonstandard formation, whichever applies



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Nonstandard Formation - Procedures

⦿ A nonstandard flight must be approved by ATC

- Assign block altitudes which allow 500' of vertical separation between each aircraft contained in the flight
- Control these operations as MARSAs until approved separation is established and acknowledged by ATC
- Separate a nonstandard formation flight by applying the appropriate separation minima to the perimeter of the airspace encompassing the nonstandard formation, or from the outermost aircraft of the nonstandard formation, whichever applies


FORMATION FLIGHTS (CONT'D)

Flight Breakup

JO 7110.65, par.
2-1-13

Flight Breakup

- **Issue control instructions and/or clearances which will result in approved separation**
 - Pilots are responsible for separation until approved separation has been attained and MARSA terminated
- **Ensure the correct equipment suffix has been assigned to each aircraft departing the flight**

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Flight Breakup

- ⦿ When formation breakup is requested, issue control instructions and/or clearances which will result in approved separation through the lead or directly to the requesting aircraft in the formation
 - Pilots are responsible for separation until approved separation has been attained and MARSA terminated
- ⦿ Ensure the correct equipment suffix has been assigned to each aircraft departing the flight

Examples: “CENTER, BAMA21. BAMA23 IS REQUESTING TO RETURN TO BASE”

“BAMA21 HAVE BAMA23 SQUAWK 5544, DESCEND AND MAINTAIN FLIGHT LEVEL ONE-NINER-ZERO AND CHANGE TO MY FREQUENCY”

“CENTER, BAMA23 WITH YOU LEVEL FL190”

“BAMA23 RADAR CONTACT (position if required).
CLEARED TO SHAW AIR FORCE BASE VIA DIRECT”

FORMATION FLIGHTS (CONT'D)

Knowledge Check

Knowledge Check

What is required to apply RVSM separation standards to a formation flight?

- A. Only the lead aircraft is required to be RVSM capable
- B. All aircraft in the flight must be RVSM capable
- C. If standard formation, none are required to be RVSM capable



Lesson 15: En Route Military and Special Operations



Question: What is required to apply RVSM separation standards to a formation flight?

FORMATION FLIGHTS (CONT'D)

Knowledge Check

Knowledge Check

How many miles of separation must be added between a standard formation flight and other aircraft?

- A. No extra separation is required with a standard flight
- B. 1 additional mile for each aircraft contained within the flight
- C. 1 additional mile added to the entire flight, regardless of how many aircraft



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Question: How many miles of separation must be added between a standard formation flight and other aircraft?

FORMATION FLIGHTS (CONT'D)

Knowledge Check

Knowledge Check

Which aircraft are assigned beacon codes in a standard formation flight?

- A. Only the flight lead
- B. Each aircraft within the flight
- C. Only the first and last trailing aircraft



Lesson 15: En Route Military and Special Operations



Question: Which aircraft are assigned beacon codes in a standard formation flight?


AERIAL REFUELING

Definitions

JO 7610.4,
Appendix 2, par.
10-2-1

Definitions

- Air Refueling Initial Point (ARIP)
- Air Refueling Control Point (ARCP)
- Navigational Check Points
- Exit Point

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Definitions



AIR REFUELING INITIAL POINT (ARIP) - The geographical point at which the receiver aircraft enters the refueling track/anchor, initiates radio contact with the tanker, and begins maneuver to rendezvous.



AIR REFUELING CONTROL POINT (ARCP) - The geographical point over which the receiver arrives in the observation/refueling position with respect to the assigned tanker.



NAVIGATIONAL CHECK POINTS - Degree-distance and coordinate values specified between the ARCP and exit point, as required, to facilitate navigation along the track and for departure from the track subsequent to refueling.



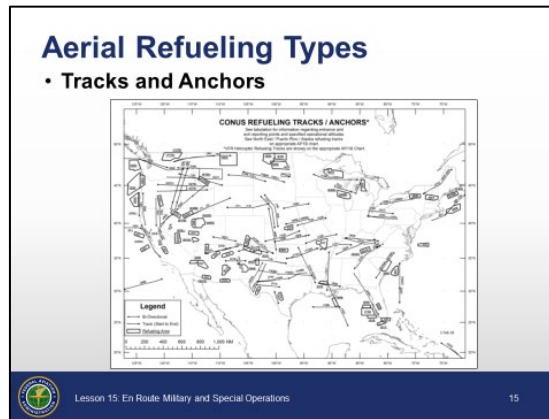
EXIT POINT - A point which denotes the end of a particular route of flight; i.e., Military Training Route (MTR), air refueling track, etc.

AERIAL REFUELING (CONT'D)

Aerial Refueling Types

DOD AP/1B;

JO 7610.4, pars.
10-6-1, 10-6-7



Aerial Refueling Types

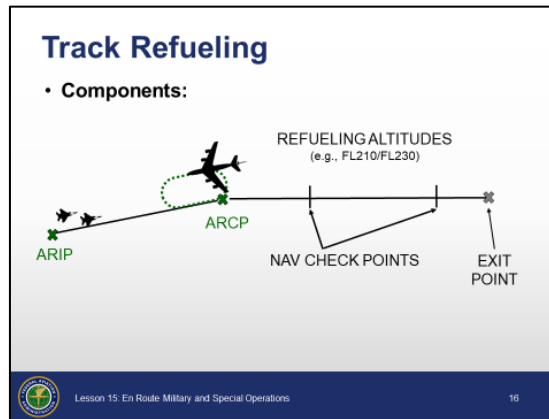
- ⦿ There are two types of aerial refueling: tracks and anchors
 - Information about refueling tracks and anchors is published in the AP/1B
 - Where published tracks or anchors are inadequate for special missions, a special track or anchor may be established in an LOA
 - Special tracks and anchors may be established for one time use by coordination between the military and the appropriate ATC facility
 - NOTAMs must be issued for special tracks or anchors outside Class A airspace to define the refueling area as specifically as mission security will allow

NOTE: DOD AP/1B - This chart contains detailed information on Military Training Routes (IR and VR), Slow Routes (SR), Refueling Tracks or Anchors, Helicopter Aerial Refueling Tracks (AR's) and Avoidance Locations.

AERIAL REFUELING (CONT'D)

Track Refueling

JO 7610.4, pars.
10-1-6, 10-2-1,
10-4-5;



Track Refueling

- ⊙ Track refueling consists of a tanker and at least one receiver refueling along a published aerial refueling route
- ⊙ Aerial refueling tracks consist of the following components:
 - Air Refueling Initial Point (ARIP)
 - Air Refueling Control Point (ARCP)
 - Navigation check points, as required to facilitate navigation along the track
 - Exit point
 - Altitude block(s) assigned for the track
- ⊙ Initiating refueling:
 - Tanker requests delay at the ARCP and advises ATC of the requested refueling block altitudes
 - ATC approves the delay and issues clearance, or advises the tanker to expect clearance
 - Tanker enters orbit pattern at the ARCP
 - Receivers are cleared to requested altitude, and IFR separation is established prior to the ARIP and release to tanker frequency
 - Tanker declares MARSA
 - ATC releases receiver to rendezvous frequency no later than the ARIP
 - ATC issues clearance to conduct aerial refueling along the track

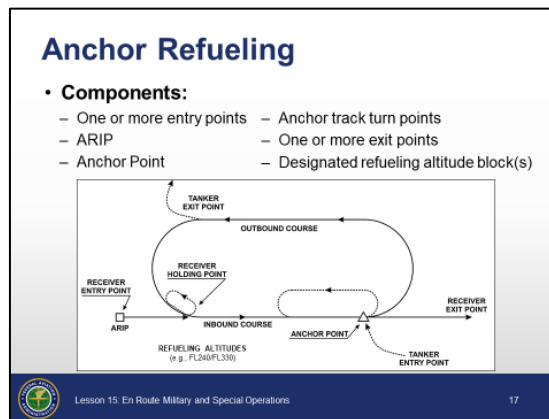
NOTE: Aerial refueling tracks include a tanker orbit pattern at the ARCP.

AERIAL REFUELING (CONT'D)

Anchor Refueling

JO 7610.4, par. 10-3-1;

JO 7610.4, Appendix 2, Definitions



Anchor Refueling

- ⦿ A refueling anchor is normally a left-hand racetrack pattern with legs at least 50 miles in length
 - The legs will normally be separated by at least 20 miles
 - The location of the pattern is determined by the anchor point
 - Four turn points are designated to describe the anchor track



ANCHOR AREA - A defined area encompassing both a racetrack shape aerial refueling track and its protected airspace.



ANCHOR POINT - A designed reference point upon which an anchor refueling track is oriented.

- ⦿ Standard anchor areas contain the following components:
 - One or more entry points
 - ARIP
 - Anchor point
 - Anchor track turn points
 - One or more exit points
 - Designated refueling altitude block(s)
- ⦿ Anchor aerial refueling operations involve the same basic procedures as required for track refueling, except:
 - Both tanker and receiver aircraft file a delay in the anchor area
 - All air refueling activity is conducted within the anchor


AERIAL REFUELING (CONT'D)

Deviations from Tracks/ Anchors

JO 7610.4, par.
10-1-5

Deviations from Tracks/Anchors

- **When established tracks and anchors do not support military requirements, the FAA may authorize alternative aerial refueling options**
 - Random refueling occurs along the filed flight path of the formation flight
 - The tanker and receiver may start and stop refueling at any point along the route; however they still need an ATC clearance to split up from the flight

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Deviations from Tracks/Anchors

- ⦿ When established tracks and anchors do not support military requirements, the FAA may authorize alternative aerial refueling options, which may include, but are not limited to:
 - Within a moving or stationary ALTRV
 - Random refueling along the filed route of flight
 - The tanker and receiver(s) may start and stop refueling at any point along the route; however an ATC clearance is required for flight breakup
-

AERIAL REFUELING (CONT'D)

Knowledge Check

Knowledge Check

What is the geographical point at which the receiver aircraft enters the refueling track/anchor, initiates radio contact with the tanker, and begins maneuver to rendezvous?

- A. Air Refueling Initial Point (ARIP)
- B. Air Refueling Control Point (ARCP)
- C. Air Refueling Start Point (ARSP)



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Question: What is the geographical point at which the receiver aircraft enters the refueling track/anchor, initiates radio contact with the tanker, and begins maneuver to rendezvous?



AERIAL REFUELING (CONT'D)

Knowledge Check

Knowledge Check

What are two types of aerial refueling?

A. Paths and Moorings
B. Trails and Hooks
C. Tracks and Anchors

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Question: What are two types of aerial refueling?

AERIAL REFUELING (CONT'D)

Aerial Refueling Procedures

JO 7110.65,
pars. 2-1-11,
9-2-13, PCG



Aerial Refueling Procedures

- ⦿ During aerial refueling, tanker aircraft are responsible for receiver aircraft communication with ATC, navigation, and declaring MARSA
- ⦿ MARSA begins between the tanker and receiver when the tanker and receiver(s) have entered the air refueling airspace and the tanker advises ATC they are accepting MARSA
- ⦿ Provide radar assistance to the rendezvous for participating aircraft:
 - When requested,
 - and
 - By providing vertical separation prior to MARSA declaration
- ⦿ After MARSA is declared, ATC changes to heading or altitude, prior to rendezvous (join up), will void MARSA
- ⦿ Once rendezvous is completed:
 - The tanker must keep receiver aircraft within 3 miles until MARSA is terminated
 - Heading and altitude assignments may be made with tanker concurrence with MARSA remaining in effect
- ⦿ Unless a vector or alternative route has been furnished, clear the aircraft to depart the refueling track at a navigational reference point or egress fix

NOTE: The egress fix is the point where the aircraft leaves the track.

- ⦿ MARSA ends between the tanker and receiver when the tanker advises ATC that the tanker and receiver aircraft are vertically positioned within the air refueling airspace and ATC advises MARSA is terminated

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AERIAL REFUELING (CONT'D)

Aerial Refueling Procedures (Cont'd)

JO 7110.65,
pars. 2-1-11,
9-2-13, PCG

- ⦿ Authorize aircraft to conduct aerial refueling



CLEARED TO CONDUCT REFUELING ALONG (number) TRACK,

or

FROM (fix) TO (fix),

and

MAINTAIN BLOCK (altitude) THROUGH (altitude)

or

COMMENCING AT (altitude), DESCENDING TO (altitude).

- ⦿ Request an aircraft to report the ARIP, ARCP, or egress fix as necessary



REPORT A-R-I-P,

or

A-R-C-P,

or

EGRESS FIX.

AERIAL REFUELING (CONT'D)

Nonparticipating Aircraft Separation

JO 7110.65,
pars. 9-2-13,
9-2-21

Nonparticipating Aircraft Separation

- Aerial refueling routes are not sterilized and other aircraft may transit this airspace provided vertical or lateral separation is provided from refueling aircraft



The image shows a large military tanker aircraft (KC-135) performing aerial refueling on a smaller fighter jet (F-16). A third, smaller aircraft is visible in the background, illustrating the concept of nonparticipating aircraft in the same airspace.

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Nonparticipating Aircraft Separation

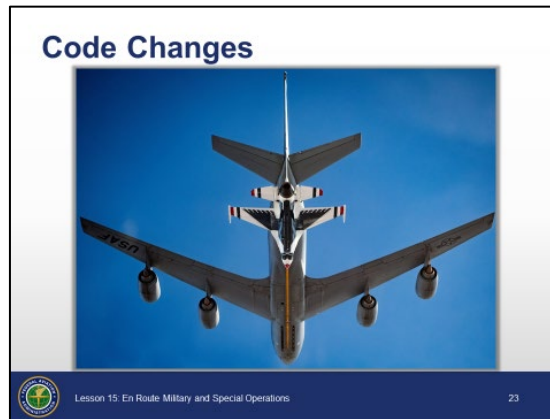
- ⦿ Aerial refueling routes are not sterilized and other aircraft may transit this airspace provided vertical or lateral separation is provided from refueling aircraft
- ⦿ Use approved separation criteria for nonparticipating aircraft and the refueling nonstandard formation envelope
- ⦿ Do not assign the altitude vacated until the refueling aircraft has reported reaching the next IFR altitude

NOTE: If refueling is entirely contained within an active ATCAA or SUA, use the appropriate separation from the boundary of that airspace.

AERIAL REFUELING (CONT'D)

Code Changes

JO 7110.65, par.
9-2-13



Code Changes

- ⦿ Do not request receiver aircraft that have been cleared to conduct air refueling and have departed the ARIP to:
 - Make code changes when less than 5 miles from the tanker
 - Squawk standby when less than 1 mile or more than 3 miles from the tanker
- ⦿ When issuing an initial air refueling clearance, you may request a receiver aircraft to squawk standby when it reaches a point 3 miles from the tanker

NOTE: Receiver aircraft will squawk normal when separation from the tanker is greater than 3 miles.


AERIAL REFUELING (CONT'D)

Lost Communications Procedures

JO 7110.65, par. 9-2-13

Lost Communications Procedures

- Aircraft will squawk 7600 for at least 2 minutes prior to departing track/anchor
 - Tanker departs track/anchor from highest altitude in block
 - Receiver departs track/anchor from lowest altitude in the block

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Lost Communications (NORDO) Procedures

- ⦿ Aircraft will squawk 7600 for at least 2 minutes prior to departing track/anchor
 - The tanker will depart the track/anchor from the highest altitude in the block
 - The receiver will depart the track/anchor from the lowest altitude in the block
 - ⦿ After exiting, aircraft will follow loss of two-way communication procedures
-



AERIAL REFUELING (CONT'D)

Knowledge Check

Knowledge Check

When may headings be issued to refueling aircraft without voiding already declared MARSA?

A. Prior to rendezvous
B. After rendezvous
C. After Air Refueling Initial Point

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Question: When may headings be issued to refueling aircraft without voiding already declared MARSA?


AERIAL REFUELING (CONT'D)

Knowledge Check


Knowledge Check

NORDO refueling aircraft will squawk 7600 for at least ____ minutes prior to departing the track.

- A. 2
- B. 5
- C. 10



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Question: NORDO refueling aircraft will squawk 7600 for at least ____ minutes prior to departing the track.

AERIAL REFUELING (CONT'D)

Knowledge Check

Knowledge Check

Minimum separation of nonparticipating aircraft from refueling track/anchor operations is best described by which of the following?

- A. Aircraft must be vertically separated from the track if within 5 miles of its centerline
- B. Aircraft must be separated from the protected airspace of the track by 5 miles
- C. Aircraft are allowed to fly in the airspace of the track as long as separation is maintained from refueling aircraft



Lesson 15: En Route Military and Special Operations

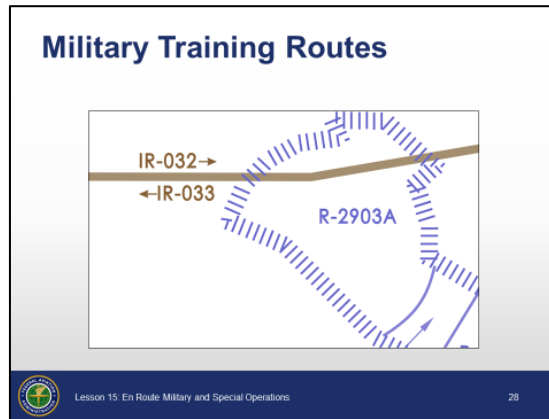
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Question: Minimum separation of nonparticipating aircraft from refueling track/anchor operations is best described by which of the following?

MILITARY TRAINING ROUTES

Definitions

JO 7110.65,
PCG



Definitions



MILITARY TRAINING ROUTE (MTR) - Airspace of defined vertical and lateral dimensions established for the conduct of military flight training at airspeeds in excess of 250 knots.



IFR MILITARY TRAINING ROUTES (IR) - Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training in both IFR and VFR weather conditions below 10,000' MSL at airspeeds in excess of 250 knots.



VFR MILITARY TRAINING ROUTES (VR) - Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training under VFR below 10,000' MSL at airspeeds in excess of 250 knots.

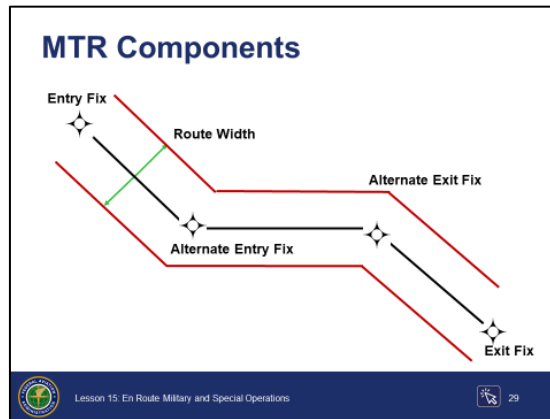
NOTE: The DOD Flight Information Publication (FLIP) contains a description of these routes.

MILITARY TRAINING ROUTES (CONT'D)

MTR Components

JO 7610.4, pars.
11-4-1, 11-4-4,
11-4-5

DOD AP/1B



MTR Components

- ⦿ Entry fix allows aircraft to enter the MTR at the beginning of the route
 - ⦿ Alternate entry fixes allow aircraft entry at a specified point when only a portion of the route is to be utilized
 - ⦿ Exit fix is the endpoint of the route. It is the point where aircraft exit the MTR and resume flight plan routing.
 - ⦿ Alternate exit fixes are specified fixes along the MTR that provide for aircraft early exit, when only portions of the MTR are to be used
 - Aircraft may exit routes only at published exit or alternate exit fixes
 - ⦿ Route widths for individual routes are determined by the military and are included in the route descriptions contained in the AP/1B
 - The route width must be of sufficient size to contain all planned activities
 - ⦿ Consistent with ATC capabilities, routes may have re-entry segments. To the extent practicable, re-entry segments should avoid ARTCC/CERAP (Combined Center/RAPCON) boundaries.
-

MILITARY TRAINING ROUTES (CONT'D)

Knowledge Check

Knowledge Check

Which is true of both IR and VR Military Training Routes?

- A. Aircraft may never exceed 250 knots
- B. Aircraft may exceed 250 knots
- C. Aircraft are only speed limited below 3,000' AGL



Lesson 15: En Route Military and Special Operations



Question: Which is true of both IR and VR Military Training Routes?

MILITARY TRAINING ROUTES (CONT'D)

Knowledge Check

Knowledge Check

What is the width of a Military Training Route?

- A. The width is determined by the pilot
- B. The width changes depending on the number of aircraft using the route
- C. Sufficient size to contain all planned activities



Lesson 15: En Route Military and Special Operations



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Question: What is the width of a Military Training Route?

MILITARY TRAINING ROUTES (CONT'D)

IFR Military Training Routes (IR)

JO 7110.65,
PCG

JO 7610.4, par.
11-2-2

IFR Military Training Routes (IR)

- Conducted on IFR or ALTRV flight plans
- Designated as follows:
 - IR followed by three numbers for IRs that include one or more segments above 1,500' AGL
 - IR followed by four numbers for IRs with no segments above 1,500' AGL

 Lesson 15: En Route Military and Special Operations 32

IFR Military Training Routes (IR)

- ⦿ Conducted on IFR or ALTRV flight plans



Altitude Reservation (ALTRV) - Airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished.

- ⦿ Designated as follows:

- IR followed by three numbers for IRs that include one or more segments above 1,500' AGL

Example: IR046

- IR followed by four numbers for IRs with no segments above 1,500' AGL
- Depicted on low altitude charts

Example: IR1001


MILITARY TRAINING ROUTES (CONT'D)

Prior to IR Entry

JO 7110.65, par.
9-2-6

Prior to IR Entry

- **Prior to aircraft entering an IR, request:**
 - Estimate for the exit/alternate exit fix
 - Requested altitude after exit
 - Number of re-entries if applicable

 Lesson 15: En Route Military and Special Operations 33

Prior to IR Entry

- ⦿ Prior to aircraft entering an IR, request:
 - Estimate for the exit/alternate exit fix
 - Requested altitude after exit
 - The number of re-entries if applicable



(Call sign) VERIFY YOUR EXIT FIX ESTIMATE AND REQUESTED ALTITUDE AFTER EXIT,

and if applicable,

THE NUMBER OF REENTRIES


MILITARY TRAINING ROUTES (CONT'D)

IR Entry Procedures

JO 7110.65,
pars. 2-5-1
9-2-6

IR Entry Procedures

- When clearing aircraft into an IR, provide ATC separation between successive aircraft, except when:
 - Other aircraft are operating in the same ALTRV
 - Other procedures are established by a LOA

 Lesson 15: En Route Military and Special Operations 34

IR Entry Procedures

- ⦿ When clearing aircraft into an IR, provide ATC separation between successive aircraft, except when:
 - Other aircraft are operating in the same ALTRV
 - Other procedures are established by an LOA



CLEARED INTO IR (designator)

MAINTAIN (altitude),

or

MAINTAIN IR (designator) ALTITUDE(S),

or

CRUISE (altitude),

and if required,

CROSS (fix) AT OR LATER THAN (time)

Example: “FOX TWO ONE CLEARED INTO I-R FORTY-SIX,
MAINTAIN IR FORTY SIX ALTITUDES, CROSS POINT
CHARLIE AT OR LATER THAN TWO ONE ZERO ZERO”

MILITARY TRAINING ROUTES (CONT'D)


IR Exit Procedures

JO 7110.65, par.
9-2-6

IR Exit Procedures

- **Unless covered in a LOA, clear aircraft to exit an IR**

Example: "FOX TWO ONE CLEARED TO HUNTER ARMY AIRFIELD FROM I-R FORTY SIX POINT JULIETT VIA DIRECT SAVANNAH DIRECT, CLIMB AND MAINTAIN FLIGHT LEVEL TWO THREE ZERO"

 Lesson 15: En Route Military and Special Operations 35

IR Exit Procedures

- ⦿ Unless covered in an LOA, clear aircraft to exit an IR



CLEARED TO (destination/clearance limit) FROM IR (designator/exit fix) VIA (route). MAINTAIN (altitude)

Example: "FOX TWO ONE CLEARED TO HUNTER ARMY AIRFIELD FROM I-R FORTY SIX POINT JULIETT VIA DIRECT SAVANNAH DIRECT, CLIMB AND MAINTAIN FLIGHT LEVEL TWO THREE ZERO"

MILITARY TRAINING ROUTES (CONT'D)



IR Lost Communications - Pilot Procedures

JO 7110.65, par. 9-2-6;

14 CFR Part 91.185

IR Lost Communications - Pilot Procedures

- If communications are lost during:
 - VFR Conditions: Continue VFR and land as soon as able
 - IFR Conditions: Maintain to the exit/alternate exit fix the higher of the following altitudes:
 - The minimum IFR altitude for each of the remaining route segment(s) remaining on the route
 - The highest altitude assigned in the last ATC clearance

 Lesson 15: En Route Military and Special Operations  38

IR Lost Communications - Pilot Procedures

- ⊙ Provide separation to the destination airport based on the aircraft complying with the following:
 - VFR Conditions:
 - Continue VFR and land as soon as able
 - IFR Conditions:
 - Maintain to the exit/alternate exit fix the higher of the following altitudes:
 - The minimum IFR altitude for each of the remaining route segment(s)
 - The highest altitude assigned in the last ATC clearance
 - Depart the exit/alternate exit fix at the appropriate altitude specified above, then climb/descend to the altitude filed in the flight plan for the remainder of the flight, or
 - Proceed in accordance with the lost communication procedure contained in an LOA

NOTE: Pilots who experience a two-way radio failure will adjust their transponder to Code 7700 during climb/descent to altitude filed for the next leg of the flight plan; then change to Code 7600 for a period of 15 minutes. At the end of each 15 minute period, they will squawk 7700 for a period of one minute; all other times they will squawk 7600.


MILITARY TRAINING ROUTES (CONT'D)

IR Delays

JO 7110.65, par.
9-2-6

IR Delays

- If nonparticipating IFR traffic conflicts with planned IR usage, you should:
 - Not deny use of the IR route
 - but*
 - Impose delays to eliminate conflict
 - and*
 - Advise pilot of expected length and reason for delay

 Lesson 15: En Route Military and Special Operations 37

IR Delays

- ⦿ If nonparticipating IFR traffic conflicts with planned IR usage, you should:
 - Not deny use of the IR route
 - but*
 - Impose delays to eliminate the conflict,
 - and*
 - Advise pilot of the expected length and reason for the delay

Example: “JOKER ONE TRAFFIC CONFLICTION NEAR POINT ALPHA,
EXPECT I-R TWELVE CLEARANCE IN FIVE MINUTES”


MILITARY TRAINING ROUTES (CONT'D)

Low Altitude Air to Air Training

JO 7610.4, par.
11-4-8,
Appendix 2

Low Altitude Air to Air Training (LOWAT)

- Must be accomplished only on specifically designated IRs
- Specific procedures covered in LOAs
- Training maneuvers conducted on IRs are limited

 Lesson 15: En Route Military and Special Operations 39

Low Altitude Air to Air Training



Low Altitude Air to Air Training (LOWAT) - Maneuvers within MTRs for the purpose of simulating an aerial attack and defensive response, that provides observation and analysis of an aerial attack and initiation of the appropriate defensive response.

- ⦿ LOWAT must be accomplished only on specifically designated IRs
 - ⦿ Specific procedures for LOWAT are contained in LOAs
 - ⦿ LOWAT training maneuvers conducted on IRs must be limited to the following conditions:
 - No more than a 90-degree turn will be performed on the IR
 - Maneuvers will be terminated as soon as visual and/or radio contact is made by the defending aircraft
 - Weather minimums on IRs at maneuvering altitudes must be 1,500' from clouds and 3 miles flight visibility
-

MILITARY TRAINING ROUTES (CONT'D)


VFR Military Training Route (VR) Procedures

JO 7110.65, par. 5-2-1, PCG

JO 7610.4, pars. 11-1-4, 11-2-2, 11-9-5, 11-9-9

VFR Military Training Routes (VR)

- **VRs are designated as follows:**
 - VR followed by three numbers for VRs that include one or more segments above 1,500' AGL
 - VR followed by four numbers for VRs with no segments above 1,500' AGL

 Lesson 15: En Route Military and Special Operations 39

VFR Military Training Routes (VR)

⦿ VRs are designated as follows:

- VR followed by three numbers for routes that include one or more segments above 1,500' AGL
 - Depicted on low altitude charts

Example: VR193

- VR followed by four numbers for routes that contain no segments above 1,500' AGL
 - Depicted on VFR sectional charts

Example: VR1939

⦿ Prior to VR entry

- Aircraft squawk code 4000 unless otherwise assigned by ATC
- Pilots departing on an IFR clearance intending to fly VRs are required to file to the fix/radial/distance of their entry/alternate entry point
- Pilots transitioning to IFR upon exiting the VR are required to have a previously filed IFR flight plan from the appropriate fix/radial/distance of their exit point

NOTE: Composite IFR-VFR-IFR flight plans may be filed with the appropriate FSS.



COMPOSITE FLIGHT PLAN - A flight plan which specifies VFR operation for one portion of flight and IFR for another portion. It is used primarily in military operations.

MILITARY TRAINING ROUTES (CONT'D)

Knowledge Check

Knowledge Check

Which is the phraseology to clear an aircraft to operate via an IR?

- A. "CLEARED ON I-R SIXTEEN, MAINTAIN POSTED ALTITUDES"
- B. "CLEARED INTO I-R SIXTEEN, MAINTAIN I-R SIXTEEN ALTITUDES"
- C. "CLEARED INTO I-R SIXTEEN, ALTITUDES AT PILOT'S DISCRETION"



Lesson 15: En Route Military and Special Operations





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Question: Which is the phraseology to clear an aircraft to operate via an IR?

MILITARY TRAINING ROUTES (CONT'D)

Knowledge Check

Knowledge Check
What items must be requested prior to giving clearance into the IR?
A. Estimate for exit fix, requested altitude after exit
B. Estimate for entry fix, requested altitude after exit
C. Estimate for exit fix, requested altitude in IR

 Lesson 15: En Route Military and Special Operations  41

Question: What items must be requested prior to giving clearance into the IR?

MILITARY TRAINING ROUTES (CONT'D)

Knowledge Check

Knowledge Check

What should you do if nonparticipating aircraft conflict with the assignment of an IR?

- A. Impose a delay
- B. Deny clearance into IR
- C. Offer clearance into alternate IR



Lesson 15: En Route Military and Special Operations

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Question: What should you do if nonparticipating aircraft conflict with the assignment of an IR?


SPECIAL OPERATIONS

Special Use Frequencies

JO 7110.65, par.
9-2-15

Special Use Frequencies

- **Assign special use frequency to:**
 - USAF, U.S. Navy (USN), and Air National Guard single-pilot jet aircraft formations when operating:
 - At night
 - In instrument weather conditions
 - Formations of five or more USAF aircraft deploying to a U.S. staging base or nonstop to an overseas location, usually within an Altitude Reservation (ALTRV)

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Special Use Frequencies

- ⦿ Assign special use frequency to:
 - USAF, U.S. Navy (USN), and Air National Guard single-pilot jet aircraft formations when operating:
 - At night
 - In instrument weather conditions
 - Formations of five or more USAF aircraft deploying to a U.S. staging base or nonstop to an overseas location, usually within an Altitude Reservation (ALTRV)
 - Pressure suit flights at all altitudes/flight levels
 - Examples:** All U-2 aircraft, and B-57 aircraft using the call sign KITE
 - All aircraft during supersonic flight
 - E-3A Airborne Warning and Control System (AWACS) when operating as a Military Radar Unit (MRU)
 - ⦿ Special use frequencies are assigned to ARTCCs so that adjacent ARTCCs will not have the same frequency
 - ⦿ The special use frequency may be assigned as backup for the high-altitude sector when direct communications are essential because of a potential emergency control situation
 - ⦿ Do not assign the special use frequency to aircraft when they will operate in airspace assigned for special military operations
-

SPECIAL OPERATIONS (CONT'D)

Celestial Navigation Training

JO 7110.65, par.
9-2-2

JO 7610.4, par.
9-3-8

Celestial Navigation Training

- Pilot must obtain ATC clearance prior to beginning celestial navigation training
- Flight must remain within 30 miles of route centerline unless otherwise approved by ATC



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Celestial Navigation Training (CELNAV)

- ⦿ Pilot must obtain an ATC clearance prior to beginning celestial navigation training
 - ⦿ Flight must remain within 30 miles of route centerline unless otherwise approved by ATC
 - ⦿ Pilot must advise ATC:
 - When resuming conventional navigation
 - Heading changes of more than 20 degrees
 - ⦿ Within contiguous U.S. airspace, limit celestial navigation training to:
 - Transponder-equipped aircraft
 - Within ARTCC radar coverage
 - ⦿ Receiving controller must be informed of the celestial navigation training leg
 - ⦿ Used for USAF/U.S.Navy aircraft only
-

SPECIAL OPERATIONS (CONT'D)

Weather Reconnaissance Flights

JO 7110.65,
pars. 2-1-4, 9-2-19, PCG



Weather Reconnaissance Flights

- ⦿ Responsible for flying weather reconnaissance/research missions
- ⦿ Call signs
 - TEAL - 53rd Weather Recon Squadron (WRS)
 - NOAA - National Oceanic and Atmospheric Administration
- ⦿ When requested, provide priority handling to TEAL and NOAA mission aircraft
- ⦿ May utilize Weather Reconnaissance Areas (WRA)
 - WRA characteristics:
 - Airspace with defined dimensions identified in a WRA NOTAM
 - Only TEAL/NOAA flights are permitted within the WRA
 - ATC services are not provided

Continued on next page

SPECIAL OPERATIONS (CONT'D)

Weather Reconnaissance Flights (Cont'd)

JO 7110.65, par. 9-2-19, PCG

⊙ Control Action

- When a dropsonde release time is received from a TEAL or NOAA mission aircraft, advise the mission aircraft of any traffic estimated to pass through the area of the drop at altitudes below that of the mission aircraft

NOTE: A dropsonde is a cylinder that has a parachute attached that is used to track storm conditions.

- When released from the aircraft it will fall at a rate of approximately 2,500' per minute

Example: A dropsonde released at FL310 will be a factor for traffic at FL210 four minutes later.

- Traffic advisory must include:
 - Altitude
 - Direction of flight
 - ETA at the point closest to drop area (or at the fix/intersection where drop will occur)
 - Aircraft commanders will delay release of dropsondes based solely upon traffic as issued by ATC
-

SPECIAL OPERATIONS (CONT'D)

Military Operations Above FL600

JO 7110.65,
pars. 4-5-1, 9-2-14



Military Operations Above FL600

- ⦿ Route of flight must be defined by at least one high altitude fix within each ARTCC
- ⦿ Elapsed times from takeoff to the first fix in each ARTCC must be included in the flight plan
- ⦿ The ARTCC that originates the flight plan must forward departure time to all ARTCCs responsible for processing the flight plan
- ⦿ ATC approval of the flight plan indicates approval of both route and flight levels including operations below FL600
- ⦿ Separation Minima
 - 5,000' vertically
 - 25 miles either side of the route centerline except when turning:
 - Supersonic aircraft 75 miles on the overflown side and 25 miles on the other side
 - Subsonic aircraft 34 miles on the overflown side and 25 miles on the other side
- ⦿ Pilots will report their altitude, using the coded plan, and intended flight profile on initial contact with each ARTCC

NOTE: The security requirements of the military services preclude the transmission of actual altitude information on the air/ground or landline circuits. Altitude information for the day should be readily available to controllers at their positions of operation. The classification requirements of the altitude information remain unchanged.



SPECIAL OPERATIONS (CONT'D)

Knowledge Check

Knowledge Check

When should aircraft be assigned a special use frequency?

- A. All formation flights
- B. Pressure suit flights
- C. All flight breakups

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Question: When should aircraft be assigned a special use frequency?



SPECIAL OPERATIONS (CONT'D)

Knowledge Check

Knowledge Check

What is the appropriate vertical separation minima for military aircraft operating above FL600?

- A. 3,000'
- B. 5,000'
- C. 1,000'

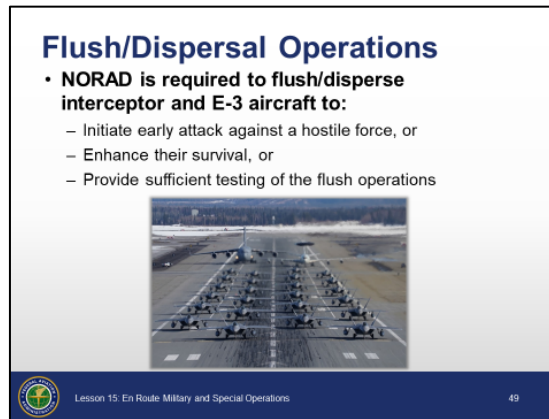
 Lesson 15: En Route Military and Special Operations  48

Question: What is the appropriate vertical separation minima for military aircraft operating above FL600?

SPECIAL OPERATIONS (CONT'D)

Flush/ Dispersal Operations

JO 7610.4, pars.
4-8-1 through
4-8-6



Flush/Dispersal Operations

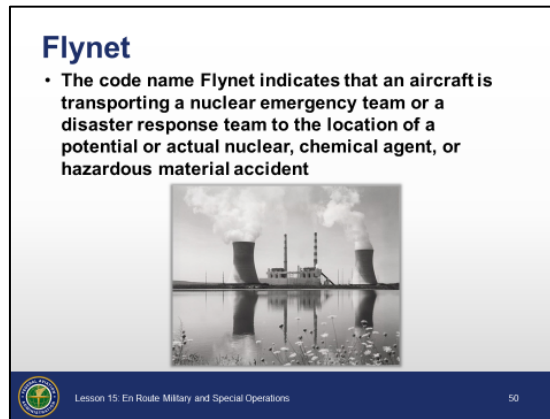
- ⊙ North American Aerospace Defense Command (NORAD) is required to flush/disperse interceptor and E-3 aircraft to:
 - Initiate early attack against a hostile force,
or
 - Enhance their survival,
or
 - Provide sufficient testing of the Flush operations
 - ⊙ Operations must be conducted on an ATC clearance
 - ⊙ Procedures must be contained in an LOA
 - ⊙ Actual Flush Operations
 - The phraseology for an actual flush operation is FLUSH
 - ⊙ Flush Exercise
 - Testing of flush/dispersal operations may be conducted in conjunction with exercises or evaluations during IFR or VFR conditions
 - The military agency ordering a flush/dispersal operation must notify the appropriate center and terminal facilities at least one hour in advance of the exercise or in accordance with an LOA
 - The phraseology for testing flush operations is EXERCISE FLUSH
-

SPECIAL OPERATIONS (CONT'D)

Flynet

JO 7610.4, par.
12-4-1;

JO 7110.65, par.
9-2-5



Flynet

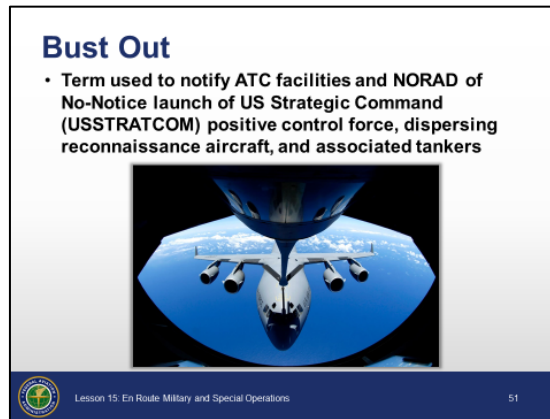
- ⦿ The code name Flynet indicates that an aircraft is transporting a nuclear emergency team or a disaster response team to the location of a potential or actual nuclear, chemical agent, or hazardous material accident
 - Flynet is included in remarks of flight plan
 - U.S. Government, civil, and military aircraft may be used
 - ATC personnel must make every effort to expedite the movement of Flynet aircraft

NOTE: Teams are established by Defense Nuclear Agency (DNA) and Department of Energy (DOE).

SPECIAL OPERATIONS (CONT'D)

Bust Out

JO 7610.4,
par.12-3-1



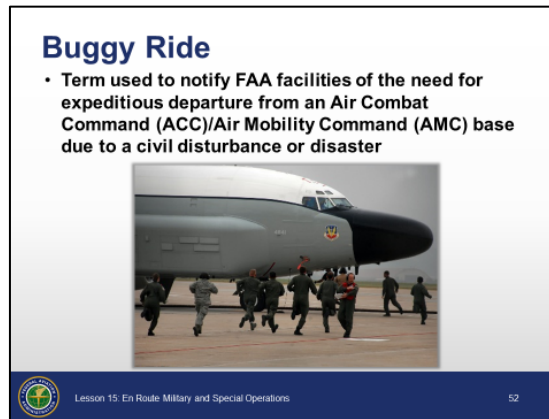
Bust Out

- ⦿ Term used to notify ATC facilities and NORAD of No-Notice launch of US Strategic Command (USSTRATCOM) positive control force, dispersing reconnaissance aircraft, and associated tankers
 - ⦿ If an ATC facility receives notice of this operation, that facility must immediately notify the Domestic Events Network (DEN)
-

SPECIAL OPERATIONS (CONT'D)

Buggy Ride

JO 7610.4, par.
12-3-2



Buggy Ride

- ⦿ Term used to notify FAA facilities of the need for expeditious departure from an Air Combat Command (ACC)/Air Mobility Command (AMC) base due to a civil disturbance or disaster
 - ⦿ Particular aircraft with their associated tankers may, for reasons of safety and survival, need an immediate departure
 - ⦿ The term "buggy ride" will not appear in any flight plan but will be transmitted to the appropriate ATC facilities via base operations at the time the aircraft commences taxi
 - ⦿ If an ATC facility receives notice of this operation, that facility must immediately notify the DEN
-

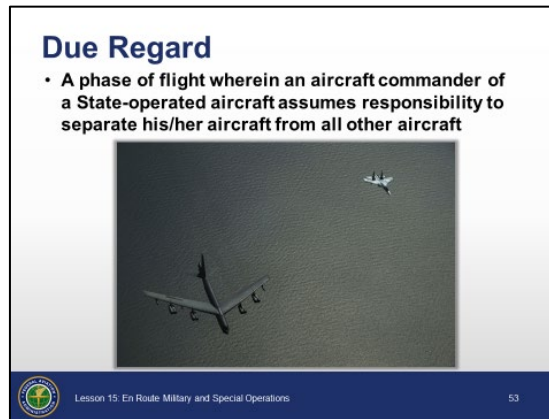
SPECIAL OPERATIONS (CONT'D)

Due Regard

JO 7610, par. 4-7-3

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

DODI 4540.01, Enclosure 3



Due Regard



Due Regard - A phase of flight wherein an aircraft commander of a State-operated aircraft assumes responsibility to separate his/her aircraft from all other aircraft.

- ⦿ All DOD missions not under established ATC procedures will be conducted under the due regard concept for operation over the high seas

NOTE: High seas are the area of international waters commencing 12 nautical miles from the land mass.

- ⦿ The aircraft commander assumes responsibility for providing separation between the aircraft for which due regard is declared and all observed traffic
- ⦿ Aircraft must operate under at least one of the following conditions:
 - In Visual Meteorological Conditions (VMC)
 - Within radar surveillance and radio communications of a radar facility
 - Equipped with airborne radar that is sufficient to provide separation between themselves, aircraft they might be controlling, and other aircraft
 - Operate within Class G airspace
- ⦿ Air Defense Missions
 - Prior to authorizing due regard operations, the appropriate Air Defense Control Facility (ADCF) must coordinate with the applicable ATC facility to obtain clearance and/or restrictions required for ATC separation of these aircraft from known IFR air traffic
 - If operation within the ATC system will degrade the mission, the ADCF must inform the ATC facility concerned that the operation will continue under due regard


SPECIAL OPERATIONS (CONT'D)

Night Watch

JO 7610.4, par.
12-1-1

Night Watch

- The National Airborne Operations Center (NAOC) is a special military operation named Night Watch
- Provide priority handling to Night Watch aircraft when NAOC is indicated in:
 - Remarks section of the flight plan; or
 - Air/ground communications

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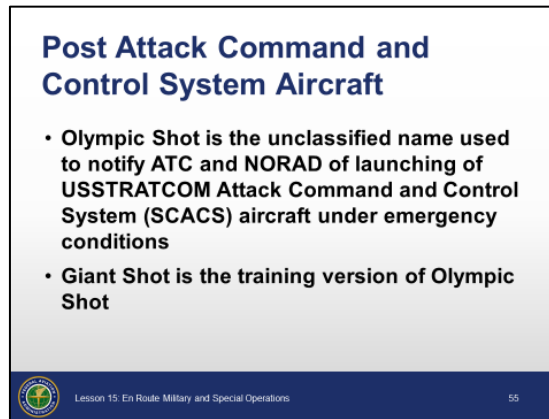
Night Watch

- ⦿ The National Airborne Operations Center (NAOC) is a special military operation named Night Watch
 - ⦿ Provide priority handling to Night Watch aircraft when NAOC is indicated in:
 - Remarks section of the flight plan; or
 - Air/ground communications
-

SPECIAL OPERATIONS (CONT'D)

Post Attack Command and Control System Aircraft

JO 7610.4, pars.
12-2-2, 12-2-4



Post Attack Command and Control System Aircraft

⦿ Olympic Shot

- Unclassified name used to notify ATC and NORAD of launching of USSTRATCOM Attack Command and Control System (SCACS) aircraft under emergency conditions
- Emergency launch of the SCACS aircraft may occur prior to, or in conjunction with launch of Bust Out aircraft
- Specific information contained in the instructions is not classified, however, the purpose and status of the operation to which it relates are classified as secret

⦿ Giant Shot

- The training version of Olympic Shot
 - Notice to concerned ATC facilities will be made prior to planned launch
-


SPECIAL OPERATIONS (CONT'D)

Nuclear Weapon Accident

JO 7610.4, par.
12-4-2,
Appendix 2

**Nuclear Weapon Accident
(Broken Arrow)**

- **Upon receipt of notification of a Broken Arrow, the center must:**
 - Clear the predicted hazardous area of over-flying IFR traffic; land or divert traffic as requested by the military
 - Expedite the arrival of Flynet aircraft
 - Expedite all aeromedical aircraft and any other aircraft specified by the military

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Broken Arrow



Nuclear Weapon Accident (Broken Arrow) - An accident, incident, or unexpected event involving US nuclear weapons where creating a risk of outbreak of a nuclear war does not exist.

- ⦿ Upon receipt of notification of a Broken Arrow, the center must:
 - Clear the predicted hazardous area of over-flying IFR traffic; land or divert traffic as requested by the military
 - Expedite the arrival of Flynet aircraft
 - Expedite all aeromedical aircraft and any other aircraft specified by the military

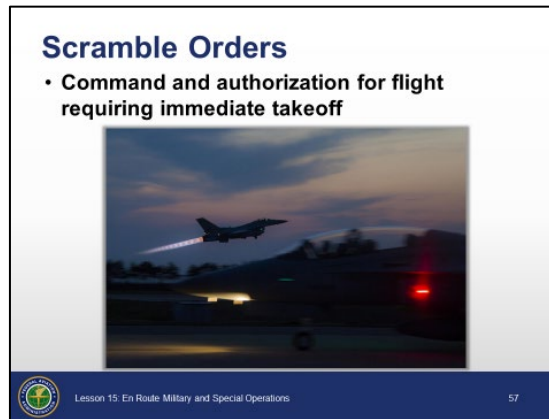
NOTE: There may be intent to evacuate base aircraft by use of Flush, Buggy Ride, or other procedures.

SPECIAL OPERATIONS (CONT'D)

Scramble/ Airborne Orders

JO 7610.4, pars.
4-11-1, 4-11-3,
Appendix 2

JO 7110.65, par.
2-1-4, 9-2-7



Scramble/Airborne Orders



SCRAMBLE ORDER - A command and authorization for flight requiring immediate takeoff.



AIRBORNE ORDER - A command and authorization for flight to become airborne with takeoff at a specified time.



DO NOT PASS TO AIR DEFENSE RADAR (NOPAR) - An instruction to refrain from verbally passing aircraft movement information to any air defense radar facility.

- ⦿ The ADCF initiating a SCRAMBLE must identify the mission as an active air defense mission
- ⦿ ATC facilities will be notified of the mission and the flight plan of the aircraft
 - The ADCF or the departure base command post must file airborne orders with en route and/or terminal facilities, as appropriate, as early as possible
 - Active air defense (scramble) flight plan information received must be relayed to other affected ATC facilities
- ⦿ ATC will provide maximum assistance to expedite the movement of interceptor aircraft on active air defense (scrambles) missions

NOTE: Air sovereignty over US airspace is routinely tested using NOPAR aircraft to test the detection, identification, and reporting functions of air defense forces (ADCF and interceptor or fighter units). Every precaution must be taken to safeguard the execution time and date of a No-Notice mission.

SPECIAL OPERATIONS (CONT'D)

Knowledge Check

Knowledge Check

What term is used to notify ATC and NORAD of No-Notice launch of USSTRATCOM positive control force, dispersing reconnaissance aircraft, and associated tankers?

- A. Bust Out
- B. Night Watch
- C. Airborne Orders



Lesson 15: En Route Military and Special Operations



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Question: What term is used to notify ATC and NORAD of No-Notice launch of USSTRATCOM positive control force, dispersing reconnaissance aircraft, and associated tankers?



SPECIAL OPERATIONS (CONT'D)

Knowledge Check

Knowledge Check

When is the term Broken Arrow used?

- A. Nuclear testing
- B. Nuclear launch
- C. Nuclear weapon accident

 Lesson 15: En Route Military and Special Operations  59

Question: When is the term Broken Arrow used?

SPECIAL OPERATIONS (CONT'D)


Electronic Attack Mission

JO 7610.4, pars.
2-8-1 through
2-8-6

JO 7110.65, par.
5-1-3

Electronic Attack (EA) Mission

- DOD operations where electromagnetic signals or chaff are used to cause RFI to other military units
- Applicable to non-GPS missions only
- Electronic warfare environment for:
 - DOD testing
 - Training
 - Combat exercises
- Refer all EA activity requests to your supervisor/CIC

 Lesson 15: En Route Military and Special Operations 60

Electronic Attack (EA) Mission

- ⦿ DOD operations where electromagnetic signals or chaff are used to cause Radio Frequency Interference (RFI) to other military units
 - ⦿ Applicable to non-GPS missions only
 - ⦿ Electronic warfare environment for:
 - DOD testing
 - Training
 - Combat exercises
 - ⦿ Refer all EA activity requests to your supervisor/CIC
-


SPECIAL OPERATIONS (CONT'D)

EA Mission Phraseology

JO 7110.65, par.
5-1-3

EA Mission Phraseology

- **Suspend activity:**
BIG PHOTO (identification, if known) (name)
CENTER/TOWER/APPROACH CONTROL. STOP
STREAM/BURST IN AREA (area name) (degree and
distance from facility),
or
STOP BUZZER ON (frequency band or channel).
- **Resume activity:**
RESUME STREAM/BURST,
or
RESUME BUZZER ON (frequency band or channel).

 Lesson 15: En Route Military and Special Operations 61

EA Mission Phraseology

- ⦿ When EA activity interferes with the operational use of radar request the responsible military unit or aircraft, if initial request was received directly from pilot, to suspend the activity
 - Use STOP STREAM/BURST/BUZZER to request DOD agencies to suspend EA missions
 - Use the term Big Photo to call the aircraft performing the EA attack
 - When feasible, include expected duration of suspension



BIG PHOTO (identification, if known) (name)
CENTER/TOWER/APPROACH CONTROL. STOP STREAM/BURST
IN AREA (area name) (degree and distance from facility),

or

STOP BUZZER ON (frequency band or channel).

Example: “BIG PHOTO, OAKLAND CENTER, STOP STREAM IN THE
AREA OF MUSTANG VORTAC”

NOTE: Your facility may specify a procedure for suspending activity.

- ⦿ To resume EA activity:



RESUME STREAM/BURST,

or

RESUME BUZZER ON (frequency band or channel).


SPECIAL OPERATIONS (CONT'D)

GPS Interference Mission

JO 7610.4, pars.
2-7-1 through
2-7-7

GPS Interference Mission

- **Electromagnetic signals are radiated to cause Radio Frequency Interference (RFI)**
- **Electronic warfare environment for:**
 - DOD testing / Training / Combat exercises
- **ATC should use STOP BUZZER to suspend GPS interference missions for:**
 - Safety of flight concerns
 - VIP aircraft
 - OPEN SKIES Treaty priority flight (F or D)
 - Other reasons specified by System Operations Security

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GPS Interference Mission

- ⦿ Electromagnetic signals are radiated to cause Radio Frequency Interference (RFI)
- ⦿ Electronic warfare environment for:
 - DOD testing
 - Training
 - Combat exercises
- ⦿ ATC should use STOP BUZZER to suspend GPS interference missions for the following reasons:
 - Safety of flight concerns
 - When VIP aircraft (including POTUS, VPOTUS, and other public figures when designated by the White House) are approaching an active GPS interference mission area
 - If an OPEN SKIES Treaty priority flight (F or D) encounters GPS Radio Frequency Interference (RFI) when operating in an active GPS interference mission area
 - Other reasons specified by System Operations Security on a per mission basis

Example: “THIS IS XX (operator’s initial’s) AT XX (facility). REQUEST STOP BUZZER FOR ON-GOING GPS MISSION”

SPECIAL OPERATIONS (CONT'D)

Authorization for Interceptor Operations

JO 7610.4, pars.
4-12-6, 4-13-1



Authorization for Interceptor Operations (AFIO)

⊙ ATC procedures

- Provide traffic advisory services to the interceptors and all other affected aircraft, including the Track of Interest (TOI)
 - Do not inform the TOI about the interceptor(s)
- Provide approved separation and safety alerts when interceptor(s) are under ATC control
- Except when air safety is the primary consideration, take precautions to prevent the TOI from gaining knowledge that an intercept mission is being conducted
- Provide ATC priority to interceptor(s) engaging in an active air defense mission
- Provide traffic information on other known aircraft that are between the interceptor and the TOI
- Provide the most direct clearance to the TOI
- Assign a block altitude to the interceptor(s) once the TOI is intercepted
 - Block altitudes should only be assigned if approved separation can be applied between all other traffic and the TOI/interceptors and not below the Minimum IFR Altitude (MIA) or Minimum Vectoring Altitude (MVA)
 - Traffic permitting, assign an initial altitude block of at least 2,000' above and below the TOI, unless a different altitude block is requested by the interceptors
 - Expect the interceptor(s) to operate within a 5 NM radius of the TOI and in the assigned altitude block




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SPECIAL OPERATIONS (CONT'D)

Authorization for Interceptor Operations (Cont'd)

JO 7610.4, pars.
4-12-1 through
4-13-1

NOTE: Unless otherwise informed, once the interceptor(s) communicate the TOI is intercepted, ATC facilities are not required to provide separation between the TOI and the interceptor(s); however, if the interceptor(s) do not declare "TOI Intercepted," then ATC retains separation responsibility for all aircraft and should not issue the block altitudes.

- Advise interceptor(s) of any anticipated delays, restrictions, etc.
 - ⊙ ADCF procedures
 - Within the NORAD/USINDOPACOM chains of command, act as the competent military authority for determining and invoking AFIO
 - Coordination with ATC
 - Advise interceptor to squawk 7777
 - Establish and maintain two-way radio communications and radar identification of interceptors
 - Provide and/or confirm with ATC facilities the TOI location the interceptors are proceeding to as soon as possible
 - Upon termination of AFIO, instruct the interceptor to contact ATC to request an IFR clearance
 - ⊙ Interceptor procedures
 - Comply with ATC facility instructions unless the military authority invokes AFIO
 - Maintain two-way communications with the appropriate Air Traffic Control facility
 - Advise the controlling facility of adverse weather conditions affecting the intercept
 - Request altitude change to remain with the TOI
 - Maintain separation from TOI
 - Inform ATC when TOI has been acquired
 -  (Callsign) RADAR CONTACT TOI
 - Inform ATC when TOI has been intercepted
 -  (Callsign) TOI INTERCEPTED
 - Request IFR clearance when AFIO is terminated
 -  INTERCEPT TERMINATED
-

SPECIAL OPERATIONS (CONT'D)

Emergency Security Control of Air Traffic

JO 7610.4, par. 6-4-5, and Appendix 3 Document 4

32 CFR Part 245

14 CFR Part 99



Emergency Security Control of Air Traffic (ESCAT)

- ⊙ Security control of civil and military air traffic during various emergency conditions
 - The ESCAT Plan provides policy, assigns responsibilities, and prescribes procedures to be followed in the interest of national security
 - ⊙ ESCAT directives are maintained at each ARTCC/CERAP
 - ⊙ ATC procedures
 - When ESCAT is implemented and the military specifies that air traffic will be diverted and/or required to land, take the following actions:
 - Treat the convenience of pilots and passengers as secondary to landing of aircraft with reasonable safety, should mandatory landing be required
 - Consider selecting an airport which typically accommodates the aircraft being diverted, circumstances permitting; i.e., weather, instrument approach minima, military instructions, etc.
 - Base the landing of civil or military aircraft at military facilities on prior coordination with appropriate military authorities
-



SPECIAL OPERATIONS (CONT'D)

Knowledge Check

Knowledge Check

What term should ATC use to suspend Electronic Attack (EA) missions?

- A. CEASE OPERATIONS
- B. HALT MISSION
- C. STOP BUZZER

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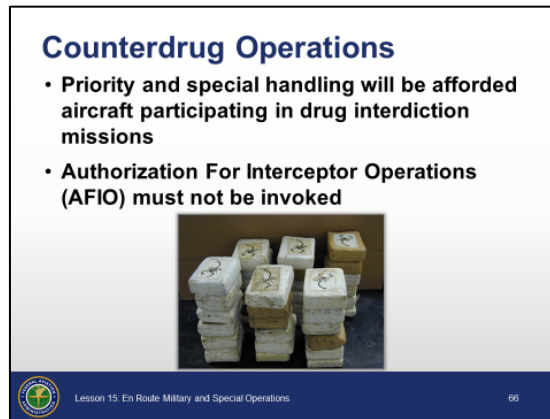
Question: What term should ATC use to suspend Electronic Attack (EA) missions?

SPECIAL OPERATIONS (CONT'D)

Counterdrug Operations

JO 7610.4, pars.
8-1-3, 8-1-4

JO 7110.65, par.
9-2-12



Counterdrug Operations

- ⦿ Priority and special handling will be afforded aircraft participating in drug interdiction missions
- ⦿ Authorization For Interceptor Operations (AFIO) must not be invoked
- ⦿ International airspace
 - ATC will control the departure phase of the mission and, when clear of IFR traffic, release control of the surveillance aircraft to the appropriate Air Defense Control Facility (ADCF)
 - The ADCF will control the aircraft during the intercept and surveillance phase
- ⦿ Domestic airspace
 - ATC will control the surveillance aircraft during all phases of the mission
 - If you cannot provide IFR services, for any reason, inform the pilot and, if appropriate, offer an amended clearance
 - The pilot may elect to remain within the ATC system and accept an amended clearance, cancel IFR and proceed under visual flight rules, or terminate the surveillance mission and return to base
 - When tanker aircraft are employed, they must be under ATC control
 - Approved air traffic control separation must be applied to all aircraft
- ⦿ Canadian airspace
 - Surveillance aircraft entering Canadian airspace from the United States must be transferred to NORAD
 - Surveillance aircraft entering the United States airspace from Canada will be transferred from NORAD control to ATC


SPECIAL OPERATIONS (CONT'D)

Counterdrug Surveillance Procedures

JO 7610.4, pars.
8-1-6, 8-3-1,
8-3-2, 8-3-3

Counterdrug Surveillance Procedures

- ATC must use discrete UHF frequencies whenever possible
- ATC should assist the pilot to a position where the surveillance aircraft can acquire the suspect aircraft on airborne radar or visual contact
- Surveillance aircraft must be in radar contact at all times

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Counterdrug Surveillance Procedures

- ⦿ ATC must use discrete UHF frequencies whenever possible
 - Do not simultaneously broadcast drug surveillance information on VHF frequencies where equipment configuration permits
- ⦿ ATC should assist the pilot to a position where the surveillance aircraft can acquire the suspect aircraft on airborne radar or visual contact

NOTE: At 30 nautical miles, the pilot normally will request an altitude acceptable for the surveillance mission

- Route or vector surveillance aircraft approximately 10 miles behind suspect aircraft
- Fighter aircraft should be positioned within 5,000' of the suspect aircraft's known altitude, preferably above, but may be any altitude requested by the pilot

NOTE: When the suspect aircraft is at a low altitude, where communications between the surveillance aircraft and the control facility may be questionable, a higher altitude may be assigned with a greater distance in-trail provided for the surveillance aircraft.

- ⦿ Surveillance aircraft must be in radar contact at all times

NOTE: When the pilot of the surveillance aircraft has the suspect aircraft in visual or radar contact, the mission may continue without ATC radar contact of the suspect aircraft.

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SPECIAL OPERATIONS (CONT'D)

Counterdrug Surveillance Procedures (Cont'd)

JO 7610.4, pars. 8-1-5, 8-1-8, 8-3-4, 8-4-3, 8-5-1

- ⊙ When the surveillance aircraft establishes contact with the suspect aircraft
 - Pilot will notify ATC of the initial course to be flown to accomplish the surveillance mission. Changes to this course or the assigned altitude will not be made without ATC clearance.
- ⊙ Position Reports
 - When the surveillance mission is within the National Airspace System, but outside the coverage of the NORAD surveillance system, the ATC facility controlling the activity will make position reports to the appropriate NORAD facility, as requested
- ⊙ When terminating the mission, issue a heading of at least 90 degrees from the suspect aircraft's heading
- ⊙ Return to Base (RTB) will be accomplished under ATC control
 - ADCF will transfer control as soon as practical
 - May be conducted VFR
- ⊙ Communications Failure
 - The return route of flight to the base of departure will normally not be known
 - In some instances, fuel considerations may prohibit return to base of departure
 - Consider surveillance aircraft with two-way radio communications failure as an emergency and afford appropriate priority
 - Surveillance aircraft procedures
 - Squawk 7700
 - In VMC, proceed VFR to landing
 - In IMC, maintain last assigned altitude/flight level/minimum altitude/flight level for the route segment being flown, proceed to the base of departure, and land

NOTE: If weather conditions or flight safety factors make the surveillance mission impractical, the mission may be terminated by the pilot.

SPECIAL OPERATIONS (CONT'D)

Knowledge Check

Knowledge Check

Assist a pilot of a counterdrug aircraft with routing or vectors to approximately _____ behind and within _____ above suspect aircraft.

- A. 5 miles / 3,000'
- B. 10 miles / 5,000'
- C. 3 miles / 1,000'



Lesson 15: En Route Military and Special Operations



Question: Assist a pilot of a counterdrug aircraft with routing or vectors to approximately _____ behind and within _____ above suspect aircraft.


CONCLUSION

Lesson Summary

Lesson Summary

This lesson covered:

- Formation flights
- Aerial refueling
- Military Training Routes
- Special operations



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Summary

- ⊙ Formation flights
 - RVSM airspace
 - Standard formations
 - Lateral separation
 - Beacon code assignment
 - Nonstandard formations
 - Lateral separation
 - Beacon code assignment
 - Flight break up
- ⊙ Aerial refueling
 - Types
 - Tracks
 - Anchors
 - Deviations from Tracks/Anchors
 - Procedures
 - MARSA
 - Nonparticipating aircraft separation
 - Code changes
 - Lost communication

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CONCLUSION (CONT'D)

Lesson Summary (Cont'd)

- ⊙ Military Training Routes
 - Components
 - Entry/alternate entry fix
 - Exit/alternate exit fix
 - Route width
 - IR Routes
 - Prior to IR entry
 - IR entry procedures
 - IR exit procedures
 - IR Lost Communications - Pilot procedures
 - IR Delays
 - Low Altitude Air to Air Training (LOWAT)
 - VR Routes
- ⊙ Special operations
 - Special use frequency
 - Celestial navigation
 - Weather reconnaissance flights
 - Military operations above FL600
 - Flush/dispersal operations
 - Flynet
 - Bust Out
 - Buggy Ride
 - Due Regard
 - Night Watch
 - Post Attack Command and Control System Aircraft
 - Olympic Shot (Emergency)
 - Giant Shot (Training)
 - Nuclear weapon accident (Broken Arrow)
 - Scramble/Airborne orders
 - Electronic Attack mission

Continued on next page

TECHNICAL DESCRIPTION *(CONTINUED)*

Lesson Summary (Cont'd)

- GPS interference mission
 - Authorization for Interceptor Operations (AFIO)
 - Emergency Security Control of Air Traffic (ESCAT)
 - Counterdrug operations
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