

# Midair Collision Avoidance

A SUPERIOR PILOT USES SUPERIOR  
JUDGMENT TO AVOID SITUATIONS  
WHICH MIGHT REQUIRE THE USE OF  
SUPERIOR SKILLS!



3 WG/SE MACA CALL (907) 552-4681 OR (907) 552-4798  
176 WG/SE MACA CALL (907) 551-0248 OR (907) 551-0263

Electronic Version Available On-line @

<http://www.jber.af.mil/units/3rdwingsafety/index.asp>



Joint Base Elmendorf-Richardson  
June 2012



DEPARTMENT OF THE AIR FORCE  
PACIFIC AIR FORCES  
JOINT BASE ELMENDORF-RICHARDSON, ALASKA

## Additional Information

### MEMORANDUM FOR ALL ALASKAN AVIATORS

FROM: Joint Base Elmendorf-Richardson

SUBJECT: Midair Collision Avoidance

1. As more and more civilian and military aircraft take to the skies around Alaska, midair collision avoidance (MACA) becomes increasingly complicated. At Joint Base Elmendorf-Richardson (JBER) a coordinated effort by all of our units, including the Alaska Air and Army National Guard, is required to maintain vigilance and ensure safety in the air. Our goal is to make our MACA program details known to all aviators. Understanding when and where typical military traffic operates will increase our margin of safety and minimize the chance of a midair mishap.
2. The attached pamphlet includes information on routine aircraft operations flown at JBER. Though not all-inclusive, it provides guidance on locations of military aircraft entering and departing JBER airspace. Please refer to this pamphlet while operating near the JBER area. The Air Force is a 24-hour/7-day a week operation and pilots must always be alert for possible traffic conflicts and related hazards such as wake turbulence.
3. Close cooperation and effective communication with the local general aviation community on the unique challenges of flying in the vicinity of JBER airspace has resulted in an outstanding aviation safety record. Let's keep this streak going!
4. If you have any questions or suggestions about flight safety in Alaska or would like our Flight Safety Officers to visit your organization and provide a MACA seminar, please call the 3rd Wing (Active Duty) Flight Safety office at (907) 552-4681 and/or the 176th Wing (Air National Guard) Safety offices at (907) 551-0248/0263. For statewide Air Force flying information, refer to the "Alaska Airspace Info" link at [www.jber.af.mil](http://www.jber.af.mil). You may also call the 611th Air Operations Squadron at 552-5103.

  
DIRK D. SMITH, Colonel, USAF  
Commander, 3rd Wing

  
DONALD S. WENKE, Colonel, AKANG  
Commander, 176th Wing

For additional information, check out these websites:

- Elmendorf AFB Flight Safety @ <http://www.jber.af.mil/units/3rdwingsafety/index.asp>
- Alaska Military Operations Areas/Special Use Airspace Information Service @ <http://www.jber.af.mil/11af/alaskaairspaceinfo/index.asp>
- FAA Safety Team - FAAST @ <http://www.faasafety.gov/default.aspx>
- FAA Anchorage Terminal Area Pilot Bulletin @ [http://www.faa.gov/about/office\\_org/headquarters\\_offices/ato/trac/on/anchorage/](http://www.faa.gov/about/office_org/headquarters_offices/ato/trac/on/anchorage/)
- Aviation Safety Reporting System @ <http://asrs.arc.nasa.gov/>

Or call us at:

3 Wing Safety - (907)-552-4681 / 4798  
176<sup>th</sup> Wing Safety - (907) 551-0248 / 0263

## ASRS (Con't)

### The Immunity Concept: Pilots

- The filing of a report with the National Aeronautics and Space Administration (NASA) is considered by FAA to be indicative of a constructive attitude. Such an attitude will tend to prevent future violations. Accordingly, although a finding of a violation may be made, neither a civil penalty nor certificate suspension will be imposed if:
  - The violation was inadvertent and not deliberate;
  - The violation did not involve a criminal offense, accident, or action showing lack of competence or qualification;
  - The person has not been found in any prior FAA enforcement action for a period of 5 years prior to the date of the occurrence;
  - The person proves that, within 10 days after the violation, he or she completed and delivered or mailed a written report of the incident or occurrence to NASA under ASRS.
  
- **NOTE:** For air traffic controllers the immunity rules are not the same. For exact regulation details, see FAA Advisory Circular Number 00-46D and Facility Operation and Administration Handbook, 7210.3R.

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\*Considerations with this years MACA Pamphlet\*

-The use of the official base name, Joint Base Elmendorf Fort Richardson (JBER), is not being used in this pamphlet to avoid conflicts with already existing publications that identify "Elmendorf AFB" or "Elmendorf Air Field" with specific instructions on the safety of flight.

-Anchorage Class C Airspace, Near Midair Collision Avoidance Reporting and C-17/C-130 Airdrop R-2203 information has been added

## Elmendorf Airfield Aircraft

**F-22A RAPTOR** - The F-22A Raptor is the Air Force's newest fighter aircraft. Its combination of stealth, supercruise, maneuverability, and integrated avionics, coupled with improved supportability, represents an exponential leap in warfighting capabilities. The Raptor performs both air-to-air and air-to-ground missions. F-22As are equipped with both UHF and VHF radios. In training areas, expect them at all altitudes and airspeeds. In the traffic pattern, they maintain 150-350 knots.



APPROACH SPEEDS	150 - 170 KIAS
CRUISING SPEEDS	300 - 550 TAS
CEILING	60,000 FT

## Aviation Safety Reporting System

### • What is it?

- An aviation safety program funded by the FAA and administered by NASA that allows for hazard or incident reporting.
- The program is voluntary, confidential and non-punitive.
- The ASRS collects, analyzes, and responds to voluntarily submitted aviation safety incident reports in order to lessen the likelihood of aviation accidents.
- Civilian or military aviators, air traffic controllers, flight attendants, mechanics, ground personnel, and others involved in aviation operations submit reports to the ASRS when they are involved in, or observe, an incident or situation in which aviation safety was compromised.

### • How do I report a hazard or incident?

- Go to the ASRS website @ <http://asrs.arc.nasa.gov/>
- Click on the link for the appropriate form — your browser should start the free Adobe Acrobat Reader. (If not, download the form and start Acrobat Reader manually.) You have two choices for submitting an incident report.
- Fill out the form on your computer, print the completed form, attach all pages together, enclose in an envelope, seal, affix sufficient postage, and mail to ASRS at the address below, or
- Print the uncompleted form, fill it out by hand, attach all pages together, enclose in an envelope, seal, affix sufficient postage, and mail to ASRS.
- Electronic report submission is now available.
- Mail your completed form to:

NASA AVIATION SAFETY REPORTING SYSTEM  
POST OFFICE BOX 189  
MOFFETT FIELD, CALIFORNIA 94035-0189

## Near Midair Collision Avoidance Reporting

**1. Purpose and Data Uses.** The primary purpose of the Near Mid-Air Collision (NMAC) Reporting Program is to provide information for use in enhancing the safety and efficiency of the National Airspace System. Data obtained from NMAC reports are used by the FAA to improve the quality of FAA services to users and to develop programs, policies, and procedures aimed at the reduction of NMAC occurrences. All NMAC reports are thoroughly investigated by Flight Standards Facilities in coordination with Air Traffic Facilities. Data from these investigations are transmitted to FAA Headquarters in Washington, DC, where they are compiled and analyzed, and where safety programs and recommendations are developed.

**2. Definition.** An NMAC is defined as an incident associated with an aircraft in which a possibility of collision exists as a result of proximity of less than **500 feet** to another aircraft, or a report is received from a pilot or a flight crew member stating a collision hazard existed between two or more aircraft.

**3. Reporting Responsibility.** It is the responsibility of the pilot and/or flight crew to determine whether an NMAC did actually occur and, if so, to initiate a NMAC report. Be specific, as ATC will not interpret a casual remark to mean that a NMAC is being reported. The pilot should state: "I wish to report a near mid-air collision."

**4. Where to File Reports.** Pilots and/or flight crew members involved in NMAC occurrences are urged to report each incident immediately:

- a) By radio or telephone to the nearest FAA ATC facility or FSS or,
- b) In writing to the nearest Flight Standards District Office (FSDO).

5. Items to be Reported.

- a) Date and time (UTC) of incident.
- b) Location of incident and altitude.
- c) Identification and type of reporting aircraft, aircrew destination, name and home base of pilot.
- d) Identification and type of other aircraft, aircrew destination, name and home base of pilot.
- e) Type of flight plans; station altimeter setting used.
- f) Detailed weather conditions at altitude or flight level.
- g) Approximate courses of both aircraft: indicate if one or both aircraft were climbing or descending.
- h) Reported separation in distance at first sighting, proximity at closest point horizontally and vertically, and length of time in sight prior to evasive action.
- i) Degree of evasive action taken, if any (from both aircraft, if possible).
- j) Injuries, if any.

## F-22 Avoidance

### • F-22 Training Areas:

- R-2202, R-2205, R-2211, Stony, Susitna, Galena, Yukon, Fox, Eielson, Birch, Buffalo, Viper, Naknek MOA's
- Low Level Military Training Routes (MTRs) primarily used are VR1900, VR937, VR1905, IR900 and IR919.

### • F-22 Avoidance Information:

- Summer fighter operations are primarily during daylight hours, Monday through Friday. In the winter months, flying operations outside the MOAs may occur late into the night.
- In training areas, expect them at all altitudes and airspeeds.
- While in training areas, fighters monitor UHF Guard and are not normally on a frequency with Anchorage Center.
- On low level routes, expect to see the fighters at 500' AGL flying about 510 knots. When flying in the vicinity of an MTR, you must ask FSS for MTR activity. MTRs are not listed in the NOTAMs.
- Fighters on low level routes monitor Flight Service Station (FSS) frequencies (255.4 UHF) and UHF Guard.
- Fighters primarily fly in formations of two to four aircraft. If you see one, look for more, 500' to 3NM either abreast or in-trail.

## Elmendorf Airfield Aircraft (Con't)

**C-130H/HC-130N HERCULES** The C-130 performs airdrop and airland resupply while the HC-130N performs in-flight helicopter refueling, search and rescue and airdrop missions. C/HC-130s are equipped with UHF and VHF radios and all are equipped with TCAS. They can be difficult to see because of their gray camouflage paint scheme. In the pattern they fly at 150-200 knots.



APPROACH SPEEDS	120 - 145 KIAS
CRUISING SPEEDS	260 - 300 KTAS
CEILING	35,000 FT

## Radar Advisory Service

As an aid to midair collision avoidance, Anchorage Approach Control provides radar advisories to VFR aircraft upon request. A transponder is required within Class C Airspace. To obtain radar advisories, state your position, altitude, and intentions, then request radar advisories. Once radar contact is established, traffic advisories will be issued for IFR and known VFR traffic (controller workload permitting).

### Anchorage Class C Airspace

•The Anchorage Class C airspace is regulatory airspace requiring mandatory adherence to the following:

#### PILOT RESPONSIBILITIES

- (1) Equipment - Two-way radio communications capability and Mode C transponder. Operations above Class C airspace require operating Mode C transponder.
- (2) Operations - All pilots shall establish and maintain two-way radio communications with the ATC facility having jurisdiction over that area prior to entering the regulatory portion of Class C airspace.

#### ATC SERVICES AND RESPONSIBILITIES

- (1) **Sequencing Arrivals.** This service is provided to Anchorage International and Elmendorf AFB (as applicable).
- (2) **Separation Between IFR Aircraft** - Standard IFR separation.
- (3) **Separation Between IFR and VFR Aircraft** - Traffic advisories, conflict resolution\* and wake turbulence separation.

\*Conflict Resolution: The resolution of potential conflicts between aircraft that are radar identified and in communication with ATC by ensuring that radar targets do not touch. Pertinent traffic advisories shall be issued when this procedure is applied.

- (4) **Separation Between VFR Aircraft** - ATC will furnish traffic information and safety advisories as needed.

## Vision In Flight (Con't)

- **Will you have time to react?**

Compare this chart with the last page and notice the dramatic decrease in reaction time with a high performance, fast moving fighter in a head-on course.

This chart shows an F-22 closing in from 4 miles – a midair collision quickly developing!

The **600mph** column depicts a small, fast moving aircraft.  
(Based on combined airspeed of two aircraft)

Distance-Speed-Time			
MPH →	600	360	
4 MILES	24s	40s	
3 MILES	18s	30s	
2 MILES	12s	20s	
1 MILES	6s	10s	
½ MILES	3s	5s	
0 MILES	0	0	

## Elmendorf Airfield Aircraft (Con't)

**C-17 GLOBEMASTER III** - The C-17 is the newest, most flexible cargo aircraft to enter the airlift force, performing airdrop and air-land resupply. Elmendorf has received a full squadron of C-17s. They are equipped with UHF and VHF radios as well as TCAS. They are often hard to see because of their gray camouflage paint scheme. In the pattern they fly at 150-250 knots.



APPROACH SPEEDS	110 - 160 KIAS
CRUISING SPEEDS	400 - 450 KTAS
CEILING	41,000 FT

## C/HC-130/C-17 Avoidance

- **Training Areas:**

- C-130s and C-17s fly in the Mat-Su Valley and surrounding areas as low as 300' AGL and up to 6,000' MSL between 130-300 Knots.

- **Avoidance Information:**

- Alaska C-130s and C-17s are equipped with TCAS. **Using your transponder (if equipped) will help them avoid you.**
- They operate VFR and IFR in the Mat-Su Valley primarily during daylight hours, Monday through Friday. During winter months, both C-130s and C-17s operate late into the night.
- Often fly in formations of two to six aircraft at co-altitudes. If you see one, look for more 2,000' to 4,000' in-trail.
- After a flight through the Mat-Su Valley, C-130s/C-17s commonly will use R-2203 as a drop zone.
- When R-2203 is used, they enter from the north or west and may be performing an airdrop as high as 18,000 feet MSL.
- Typical recovery from R-2203 includes a turn-out to the west and climb to 2,000' MSL.
- Crews usually monitor ATC during IFR and Common Traffic Advisory Frequency (CTAF), during VFR low level, using their VHF radio.

- **NOTE:** See pg 13 for more R2203 information

## Vision In Flight (Con't)

- **Will you have time to react?**

12.5 seconds to  
perceive an aircraft  
and avoid it!

SEE OBJECT	0.1
RECOGNIZE AIRCRAFT	1.0
BECOME AWARE OF COLLISION	5.0
DECISION TO TURN LEFT OR RIGHT	4.0
MUSCULAR REACTION	0.4
AIRCRAFT LAG TIME	2.0
<b>Total</b>	<b>12.5</b>

The **360mph** column depicts a large, relatively slow moving aircraft.  
(Based on combined airspeed of two aircraft)

		↓ Distance-Speed-Time		
MPH →	600	360		
10 MILES	60s	100s		
5 MILES	30s	50s		
3 MILES	18s	30s		
2 MILES	12s	20s		
1 MILES	6s	10s		
1/2 MILES	3s	5s		
0 MILES	0	0		

## Vision In Flight (Con't)

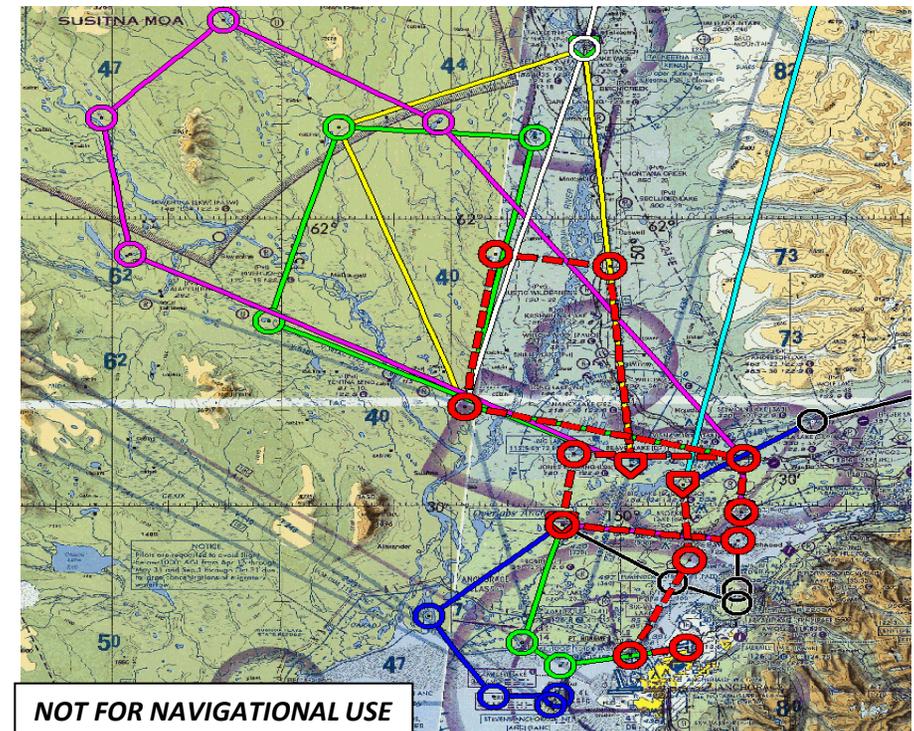
### • PROPER CLEARING/SCANNING TECHNIQUES:

- An efficient scan pattern is paramount to visual collision avoidance procedures. In developing a proper scan technique, remember that when your head is in motion, vision is blurred and the brain will not be able to identify conflicting traffic. Therefore a constant motion scan across the windscreen is practically useless.
- A proper scan technique is to divide your field of vision into blocks approximately 10 to 15 degrees wide. Examine each block individually using a system that you find comfortable, perhaps from left to right or starting from the left and moving to the right, then back to the left again. This method enables you to detect any movement in a single block. It takes only a few seconds to focus on a single block and detect conflicting traffic.
- Remember to refocus your eyes on an object far from your aircraft (> 5 miles) after each check of your instruments... otherwise, your eyes will still be focused for close vision, making your visual lookout virtually useless.
- **A moving target attracts attention and is relatively easy to see. A stationary target or one that is not moving in your windscreen is very difficult to detect and is the one that can result in a MIDAIR COLLISION.**
- The time to perceive and recognize an aircraft, become aware of a collision potential and decide on appropriate action, may vary from as little as 2 seconds to as much as 10 seconds or more depending on the pilot, type of aircraft and geometry of the closing situation. Aircraft reaction time must also be added. By the way, any evasive maneuver contemplated should include maintaining visual contact with the other aircraft, if practical.

## C-17 Operations in the Matanuska Valley

- **Cruise Speeds:** 200-250 KIAS
- **Low Level Altitude:** 300' – 2000' AGL
- **Flight Times:** normally 1000-0100
- **NVG Operations:** Navigation and Anti-Collision lights on, White lights pointed to sides
- **Ops vicinity Wasilla/Big Lake:** Usually 1500' -2000' MSL
- **Ops into R2203:** Usually 500' – 2000' AGL from North Shore Knik Arm to R2203 (see pg 13 for more R2203 info)
- **Radios/Transponder:** Mode 3C, S (TCAS), VHF (ATC), UHF (R2203)

### General C-17/C-130 Valley Low Levels (South)



## Elmendorf Airfield Aircraft (Con't)

**BOEING E-3B SENTRY (AWACS)** - The E-3 is an airborne warning and control system (AWACS) aircraft providing command and control, and capable of all-weather long range surveillance. E-3s are equipped with UHF and VHF radios , and TCAS. In the local pattern their radar is not operating and therefore they are using basic see and avoid techniques for traffic separation. They are usually seen flying in the Elmendorf traffic pattern or holding over Goose Bay, and are very visible due to their white paint scheme and large radome attached to fuselage. In the pattern they fly at 150-225 knots. They normally depart IFR to the north but also have an IFR departure to the south during single-runway operations at Elmendorf.

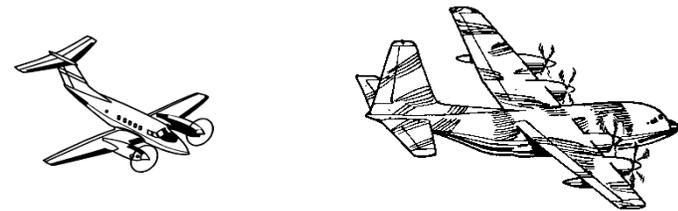


APPROACH SPEEDS	130 - 180 KIAS
CRUISING SPEEDS	380 - 450 TAS
CEILING	45,000 FT

## Vision In Flight

**Vision In Flight:** The most advanced piece of flight equipment in any aircraft is the human eye, and since the number one cause of Midair Collisions is the failure to adhere to the see-and-avoid concept, efficient use of visual techniques and knowledge of the eye's limitations will help pilots avoid collisions. Your vision's clarity is influenced by some characteristics of the objects you are viewing, including:

- Your distance from the object
- The size, shape, and movement of the object
- The amount of light reflected by the object
- The object's contrast with the surrounding environment



You cannot see all objects in your field of vision with equal clarity. Visual acuity is best in a central area of about 10 to 15 degrees and decreases steadily toward the periphery of the visual field. A similar limitation of the eyes is binocular vision. For the brain to believe what is being seen, visual cues must be received from both eyes. The mind seldom believes that the object is really there if it is visible to one eye but obstructed from the other by a strut or windshield frame.

A visual limitation that few pilots are aware of is the time the eyes require to focus on an object. Focusing is an automatic reaction, but to change focus from a nearby object, such as an instrument panel, to an aircraft one mile away, may take two or more seconds.

## Traffic Collision Avoidance System (TCAS)

TCAS is a computerized avionics device which is designed to reduce the danger of mid-air collisions between aircraft. It monitors the airspace around an aircraft, **independent of air traffic control**, and warns pilots of the presence of other aircraft which may present a threat of midair collision.

- TCAS indication
  - **Traffic Advisory (TA):** The TA warns the pilot that another aircraft is in near vicinity, announcing "*traffic, traffic*", but does not offer any suggested remedy; it is up to the pilot to decide what to do. **Without altitude encoding, TCAS is unable to show whether you are at the same altitude or not!**
  - **Resolution Advisory (RA):** The RA provides the pilot direct vocalized instructions to avoid danger. By knowing the **altitude and location** of the conflicting traffic, they system is able to determine the safest action and advise a change in altitude by announcing, "*descend, descend*" or "*climb, climb*".
- TCAS alert depends on **YOUR** transponder setting.

<b>Conflicting Aircraft Equipment</b>	<b>TCAS Response</b>
No transponder	No TCAS indications
Transponder w/out Alt	TA Only
Transponder w/ Alt	TA/RA

- VFR traffic is strongly encouraged to operate an altitude reporting transponder in all classes of airspace.
- Bottom Line - **TCAS needs YOU to squawk altitude!**

## Elmendorf Airfield Aircraft (Con't)

**C-12 F** - The C-12 is the military version of the Beechcraft Super King Air 200 and 1900C. It performs airlift support for DV's and long range radar sites. C-12's are equipped with UHF and VHF radios as well as TCAS. The C-12 is difficult to see due to its small size. It flies at 270 KTAS at altitude, and 130-180 knots in the pattern.



**UC-35A** - The UC-35 is the military version of a Cessna Citation 560 Ultra V twin engine aircraft. It is a medium range executive and priority cargo jet aircraft, providing airlift throughout the state. The UC-35 is equipped with UHF and VHF radios as well as TCAS. It flies at 415 KTAS at altitude, and 140-180 knots in the pattern.



**HH-60G PAVEHAWK** - The HH-60G is the USAF's primary combat rescue helicopter. It performs a 24-hour alert search and rescue mission and flies at very low altitudes from the surface to 1,000 AGL between 120 and 150 knots.



## Elmendorf Airfield Aircraft (Con't)

### VISITING AIRCRAFT TO ELMENDORF AIRFIELD -

Elmendorf Airfield serves as a major refueling stop for large USAF cargo aircraft. The most common transient aircraft are the C-5, KC-135, and KC-10. They are most often seen on final approach and departure to/from Runway 06, at airspeeds from 150 to 250 knots.

C-5



KC-135

KC-10



F-16



F-15



## Your Role In Collision Avoidance (Con't)

- Adhere to the necessary communications requirements.
- Traffic advisories should be requested and used when available to assist the pilot's own visual scanning -- This in no way lessens the pilots obligation to see and avoid.
- If not practical to initiate radio contact for traffic information, at least monitor the appropriate frequency.
- Make frequent position reports along your route and at uncontrolled airports broadcast your position and intentions on common traffic advisory frequency (CTAF).
- Make your aircraft as visible as possible - turn on exterior lights below 10,000 MSL and landing lights when operating within 10 miles of any airport, in conditions of reduced visibility, where any bird activity is expected or under special VFR clearance.
- **If the aircraft is equipped with a transponder, turn it on and adjust it to reply both Mode 3/A and Mode C** (if installed). According to the Aeronautical Information Manual (AIM): "Transponders substantially increase the capability of radar to see all aircraft and the Mode C feature enables the controller to quickly determine where potential traffic conflicts exist. Even VFR pilots who are not in contact with ATC will be afforded greater protection from IFR aircraft receiving traffic advisories". **Not to mention the protection provided from TCAS equipped aircraft.** Furthermore, the AIM states: "In all cases, while in controlled airspace, each pilot operating an aircraft equipped with an operable ATC transponder maintained in accordance with FAR part 91.413 shall operate the transponder, including Mode C if installed, on the appropriate Mode or as assigned by ATC. In Class G airspace, the transponder should be operating while airborne unless otherwise requested by ATC".
- Above all, **AVOID COMPLACENCY.**

## Your Role In Collision Avoidance

- Studies of midair collisions involving aircraft by the National Transportation Safety Board (NTSB) determined that:
  - Most of the aircraft involved in collisions are engaged in recreational flying, not on any type of flight plan.
  - Most midair collisions occur in VFR weather conditions during weekend daylight hours.
  - The vast majority of accidents occurred at or near uncontrolled airports and at altitudes below 1,000 feet.
  - Pilots of all experience levels were involved in midair collisions, from pilots on first solo ride, to 20,000+ hours.
  - Flight instructors were on board the aircraft during 37 percent of the accidents in the study.
  - Most collisions occur in daylight with visibility greater than 3 miles.
  - 2002-2012: 7 Midair collisions in Alaska (3 in 2011)
- Here's how you can contribute to professional flying and reduce the odds of becoming involved in a midair collision:
  - Practice the "**see and avoid**" concept at all times regardless of whether the operation is conducted under Instrument (IFR) or Visual (VFR) Flight Rules.
  - **Always use transponder with Alt Encoding (if equipped) when VFR, even when out of radar coverage. Aircraft equipped with Traffic Collision Avoidance Systems (TCAS) can receive traffic and resolution advisories directly from the system, providing immediate instructions for separation.**
  - Under IFR control, don't always count on ATC to keep you away from other aircraft. They're human, and can make mistakes.
  - Understand the limitations of your eyes and use proper visual scanning techniques. Remember, if another aircraft appears to have no relative motion, but is increasing in size, it is likely to be on a collision course.
  - Execute appropriate clearing procedures before all climbs, descents, turns, maneuvers, or aerobatics.
  - Be aware of the type airspace in which you intend to operate in and comply with the applicable rules.

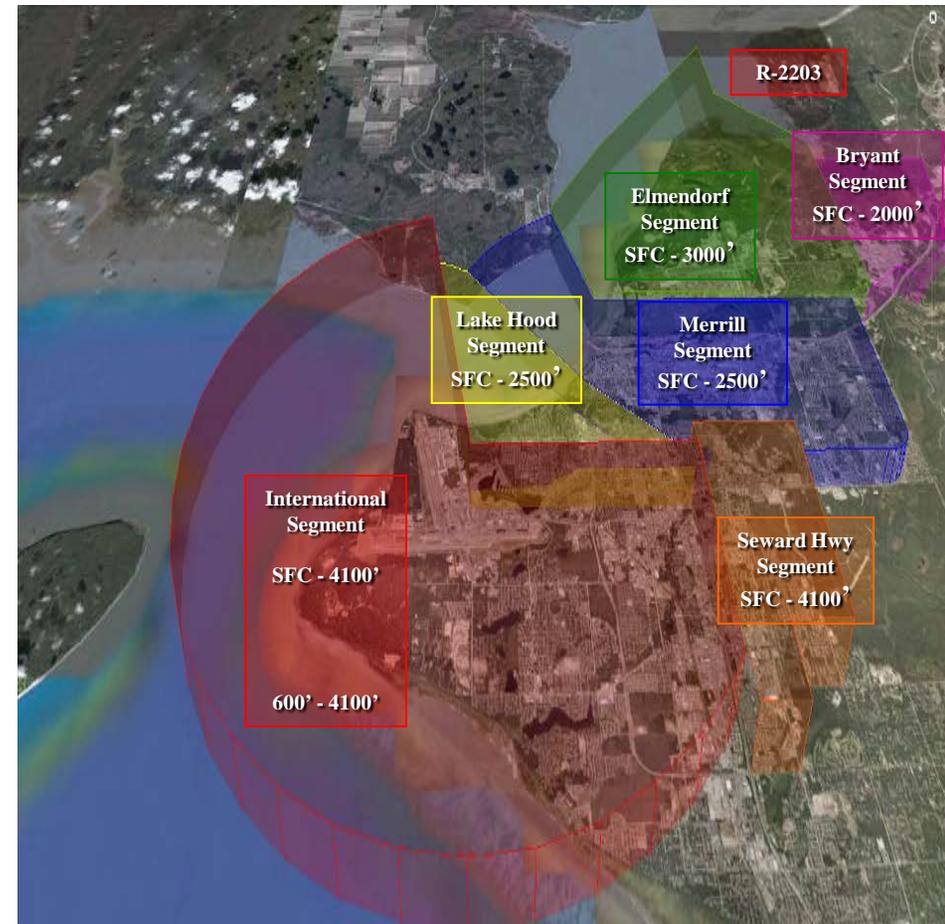
## Anchorage Terminal Area

### The Anchorage Terminal Area is subdivided as follows:

- (a) International segment
- (b) Merrill segment
- (c) Lake Hood segment
- (d) Elmendorf segment
- (e) Bryant segment
- (f) Seward Highway segment

Full description of the Anchorage terminal area available at:

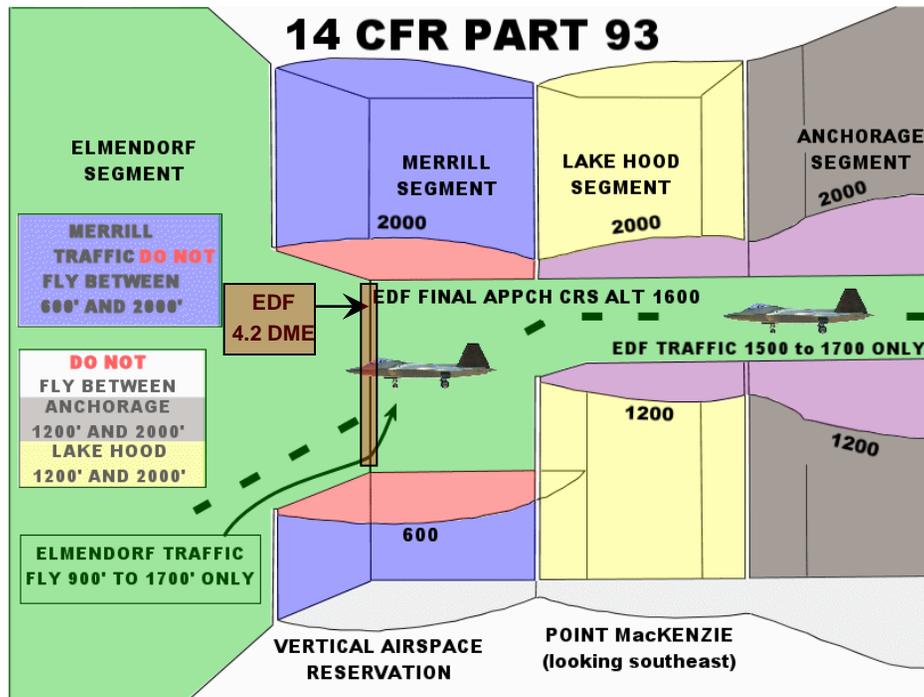
[http://www.faa.gov/about/office\\_org/headquarters\\_offices/ato/trac/on/anchorage/pilots\\_info/locproc/vtp/](http://www.faa.gov/about/office_org/headquarters_offices/ato/trac/on/anchorage/pilots_info/locproc/vtp/)



## PART 93 Airspace

All aircraft operating in the Anchorage terminal area are required to adhere to 14CFR93 restrictions. VFR procedures have been established for each field, and must be reviewed prior to operation. These procedures are now available in the NOTICES section of the Alaska Supplement.

14CFR93 also establishes a "vertical airspace reservation" over Knik Arm. The graphic simulates cockpit perspective from Point Mackenzie looking SE



**NOTE:** EDF traffic and Merrill/Lake Hood traffic are separated by only 300'. Wake turbulence from heavy aircraft has been experienced and a collision potential exists between VFR traffic and final approach corridor traffic. It is vital that EDF traffic maintain assigned altitude of 1600 +/- 100', and that civil traffic maintain appropriate altitudes.

## Lights-Out Operations

The FAA has approved military aircraft to operate with no external lighting in local MOAs and Air Traffic Control Assigned Areas (ATCAAs are all above 18,000' MSL). These operations are required to perform realistic training at night and on Night Vision Goggles (NVG's).

It is imperative that all users of Alaskan airspace be familiar with the areas where this training occurs. There are two types of reduced-light training:

**Reduced Lighting** – Aircraft anti-collision lights (strobes) off, but position lights on. This may occur in any special-use airspace (such as MOAs) without a NOTAM or in the case of the HH-60G in any airspace.

**Lights-out** – Anti-collision and position lights off. These operations will be announced at least 48 hours in advance via NOTAM and will be carried out with public safety in mind. For real-time information, please refer to NOTAMS, contact Anchorage Center, Eielson Range Control at 1-800-758-8723 or on 125.3, and visit the SUAIS website, <http://www.jberaf.mil/11af/alaskaairspaceinfo>. When calling 1-800-WX-BRIEF, you must ASK the briefer for NOTAM information on each MOA you plan to transit. When checking <http://www.notams.jcs.mil/> lights-out MOA NOTAMS may be listed under Elmendorf Airfield (PAED) or Eielson AFB (PAEI), or both.

Lights-out operation will be conducted above:

- 5,000'+ Eielson, Birch, Stony A/B, Naknek A/B MOAs
- 10,000'+ Fox 1/2, Buffalo, Yukon 1/2 MOAs
- 15,000'+ Fox 3, Susitna MOAs

**C-130 and C-17s** – C-130/C-17's will be operating with reduced lighting in the Mat-Su valley at low level. They will also operate in the Elmendorf pattern with reduced lighting, by NOTAM.

## Military Operations Areas

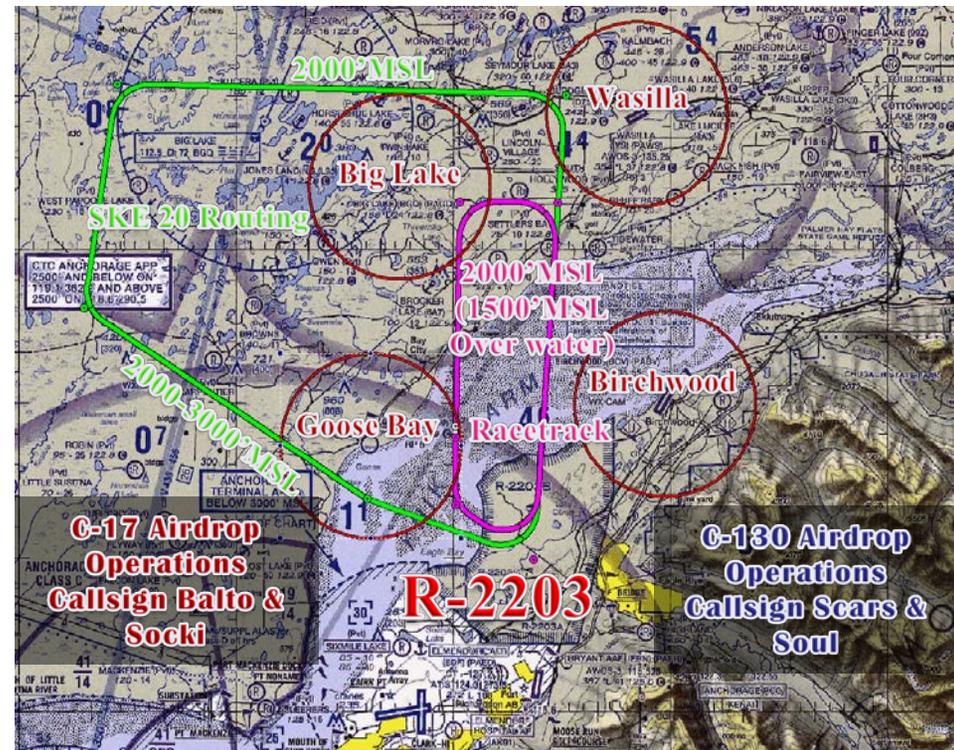
Military Operations Areas (MOA) are used by military aircraft for air-to-air and air-to-ground training. If you are flying through an active MOA, it is a good idea to consult Anchorage Center to determine if operations are being conducted and their general location. If possible, please deconflict laterally or vertically from the other participating aircraft in the MOA. According to the Aeronautical Information Manual, "Pilots operating under VFR should exercise extreme caution while flying within a MOA when military activity is being conducted. The activity status (active/inactive) of MOA's may change frequently. Therefore, pilots should contact FSS within 100 miles of the area to obtain accurate real-time information concerning the MOA hours of operation. Prior to entering an active MOA, pilots should contact the controlling agency for traffic advisories". When flying in and near the interior MOAs near Fairbanks and Delta Junction you can receive SUAIS service from Eielson Range Control at 125.3. Visit SUAIS website, <http://www.jber.af.mil/11af/alaskaairspaceinfo> or call 1-800-758-8723 for more information.

## Restricted Area R-2203

R-2203 is a three-part restricted area established on the Fort Richardson complex. It's used for weapons and artillery training. The Malemute drop and landing zones is used for pattern and landing work, and C-130, C-17 and HH-60 personnel and equipment airdrops.

Run-ins to the Drop Zone are normally flown from the north, starting west of the New Wasilla airport southbound into R-2203. Occasionally, a westerly run-in into R2203 is flown. Aircraft operating on the Landing Zone and Drop Zones within R-2203 will normally exit the area to the west toward Goose Bay, setting up for landings at Elmendorf Airfield or Anchorage International. C-17s may spend an hour or more conducting multiple drops via oval "racetrack" patterns.

R-2203 is a very active military training area, with actual drops of equipment and personnel and live artillery firing. Do not overfly when status is "HOT". Status can be obtained from Elmendorf Tower (127.2), ATIS (124.3), or Anchorage Approach (118.6/119.1).

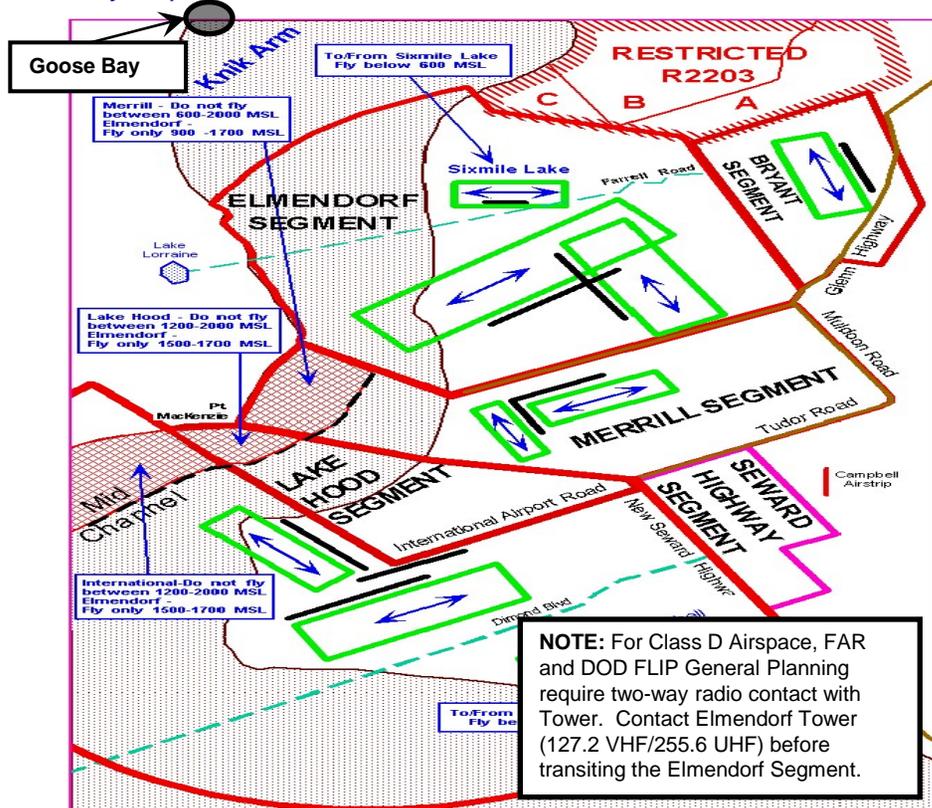


## Elmendorf Airfield Airspace

**Elmendorf Airspace** is Class D airspace, surface to 3,000' MSL. It is extremely busy with local and transient aircraft. The primary runway is usually Runway 06 with aircraft using all runways for training.

**Visual Pattern:** The visual pattern is busy with multiple aircraft from sunrise to early evening hours, Monday through Friday. Primary pattern altitudes are 1,200' MSL and 1,700' MSL (800' MSL for light planes and helicopters), but local aircraft can be anywhere from surface to 4,500' MSL.

**Goose Bay** is used by Elmendorf aircraft for VFR holding and traffic sequencing. C-130s and E-3s may be seen holding between 1,500' MSL and 2,500' MSL over Goose Bay airport and the Knik Arm.

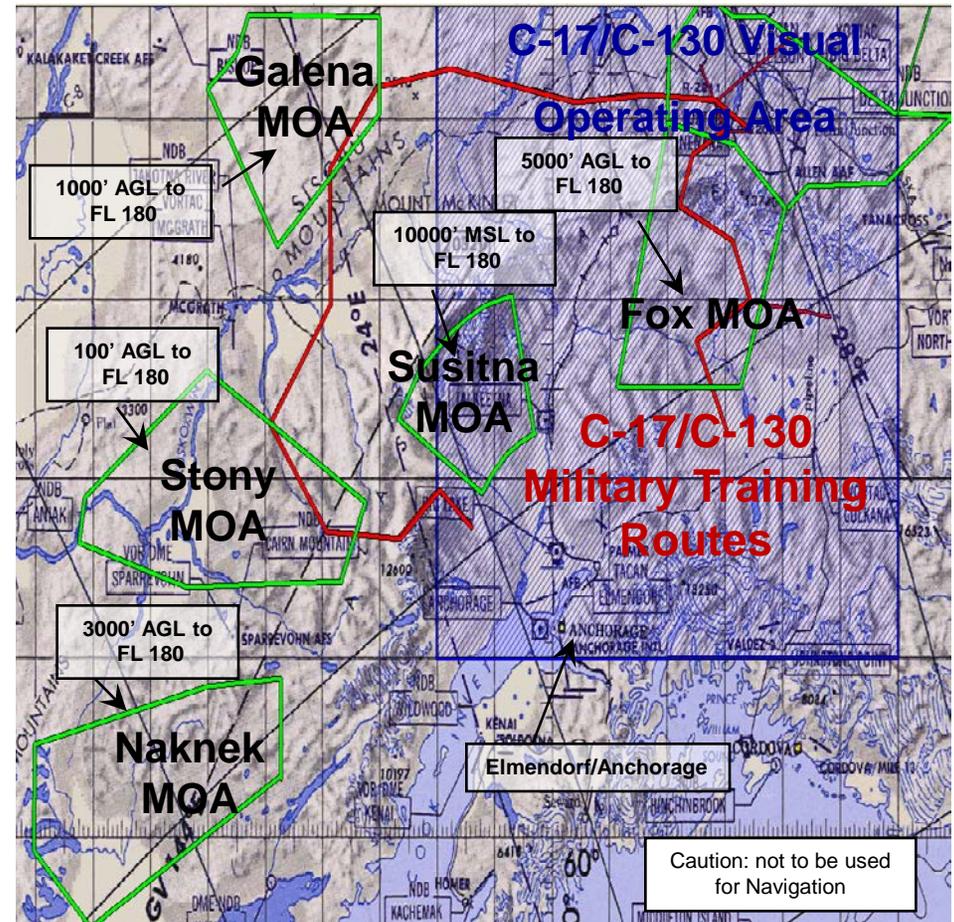


## Training Areas and Low Level Routes

**Military Operations Areas (MOA)** are primarily used by fighter aircraft at all altitudes and airspeeds.

**Military Training Routes (MTR)** are used by C-17s and F-22s as low as 300' AGL at speeds up to 550 knots.

**C-17A/C-130 Visual Operating Area** is an area used by C-130s and C-17s for low level VFR training as low as 300' AGL at speeds up to 250 knots.



## RED FLAG - Alaska

**RED FLAG - Alaska** is a series of two week, large exercises that are primarily based out of Elmendorf and Eielson. It consists of joint military flying operations by units from around the world. RED FLAG - Alaska exercises significantly increase the volume and intensity of military air traffic in the Elmendorf and Anchorage area. The earliest exercise for RED FLAG - Alaska usually begins in March and the last one usually finishes in October.

During RED FLAG - Alaska operations, as many as 30 aircraft will be departing simultaneously from Elmendorf for the Fox and Yukon Military Operating Areas (MOA) and the restricted areas near the Fox and Yukon areas. You can find what days RED FLAG - Alaska will be taking place at the web page, <http://www.jber.af.mil/11af/alaskaairspaceinfo/index.asp>. Over 10,000 SUAIS pamphlets are distributed annually. Contact your local FSS or Merrill Field management office for a free copy. Furthermore, during RED FLAG - Alaska operations, Flight Service Station or Anchorage Approach Control (118.6) can confirm the operating times for high density traffic periods and give you a good idea of their routing.

These exercises bring an enormous number of aircraft and pilots unfamiliar with the challenges of Alaska aviation. This includes pilots/aircraft from foreign militaries.

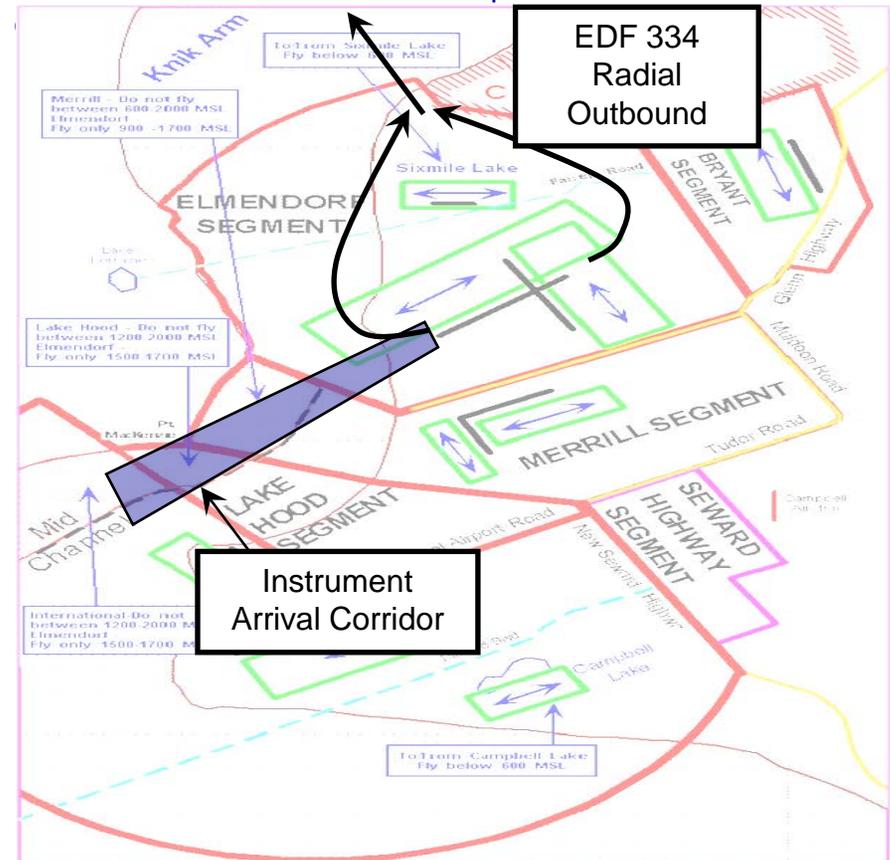


## Instrument Departures and Arrivals

### Typical Elmendorf Departures:

**Runway 06:** Fly heading 290 to intercept the EDF 334 radial outbound.

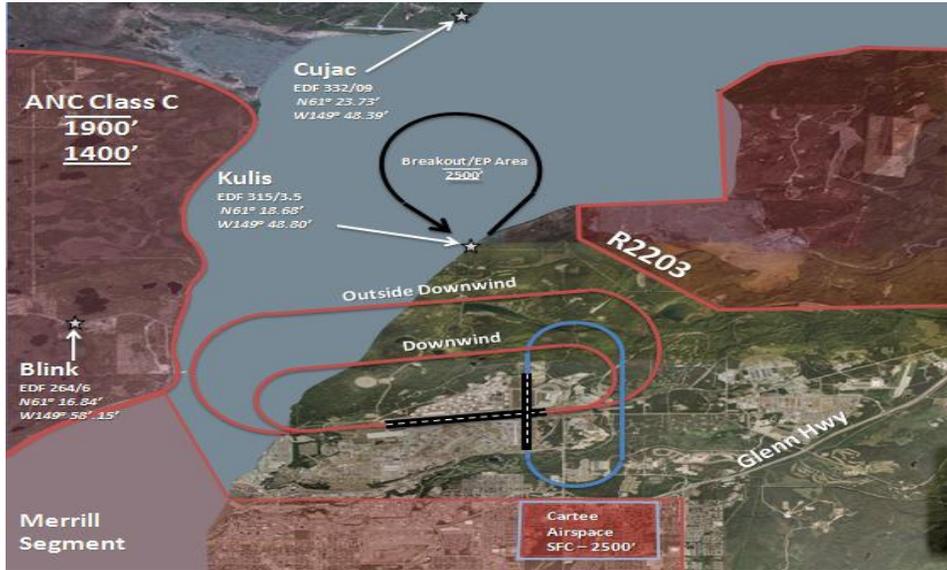
**Runway 24:** Fly heading 340, turn within 4 DME of the EDF TACAN or radar vectors to intercept the EDF 334 radial.



**Typical Elmendorf Arrival:** Instrument Landing System (ILS) to Runway 06, circle north of Runway 06 to Runway 24 or circle east of Runway 06 to Runway 34.

**Elmendorf Final Approach:** The FAF is located 1 NM southeast of Pt MacKenzie inside the Lake Hood Segment.

## Elmendorf Airfield Pattern Overview



**Pattern Alts:** Overhead – 1700'; Downwind (Fighter) – 1700'; Downwind (Cargo A/C) – 1200'; Downwind (Helo) – at or below 800'. All altitudes in the diagram are MSL.

**Cartee Airspace:** Airspace within the Merrill Class D Surface Area released to EDF for extended Rwy 16/34 operations. The Cartee airspace begins at the surface and extends to 2,500' MSL. An aircraft remaining North of the Southern edge of the Cartee baseball fields and flying no further East than Conifer Park and the bend in the Glenn Highway will remain inside of the Cartee Airspace.

**Restrictions:** Don't fly South of the Glenn Hwy w/o Merrill/Cartee Airspace Extension. Don't overfly the hospital.

**Protection of Overhead:** To provide separation from the overhead pattern during VMC, pilots executing other than full stop landings on Rwy 06/24 and Rwy 16/34 will remain at or below 1,200 feet MSL until the departure end of the runway, unless the tower approves a deviation. VFR aircraft executing other than a full stop landing on Rwy 16/34 may be instructed to remain at or below 700 feet MSL until passing the departure end of the runway to avoid crossing traffic.

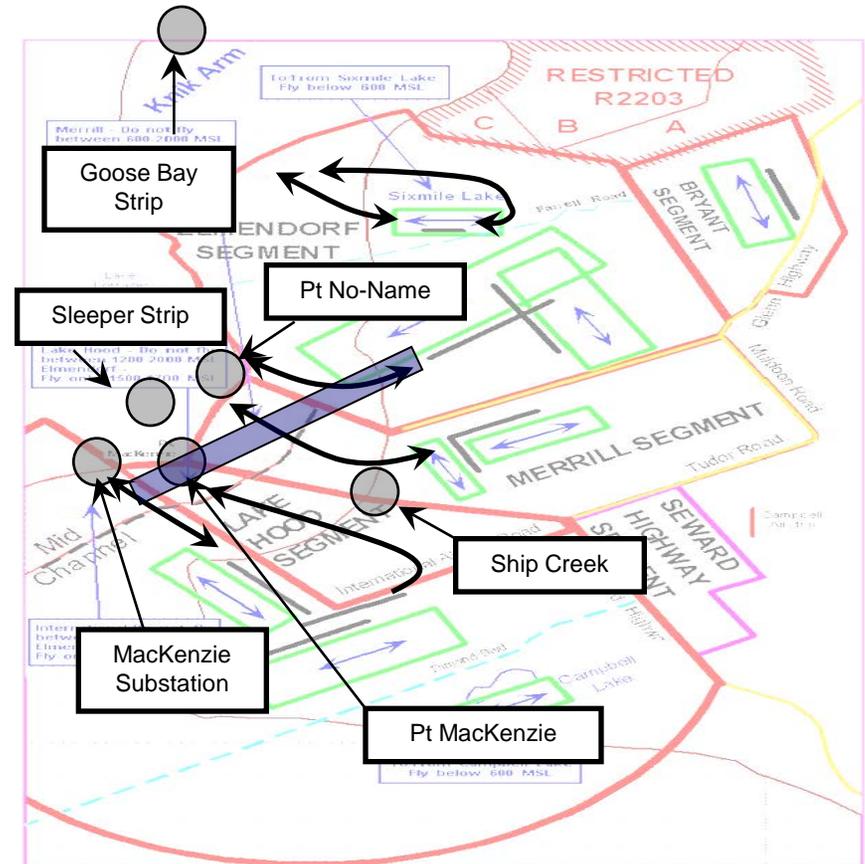
## Anchorage Bowl VFR Traffic

Arrows depict the normal VFR departure and arrival routing from Merrill Field, Lake Hood, and Anchorage International.

Areas of high VFR traffic and potential conflict are circled and named.



(Note the number of departures and arrivals that cross the Elmendorf instrument arrival corridor!)

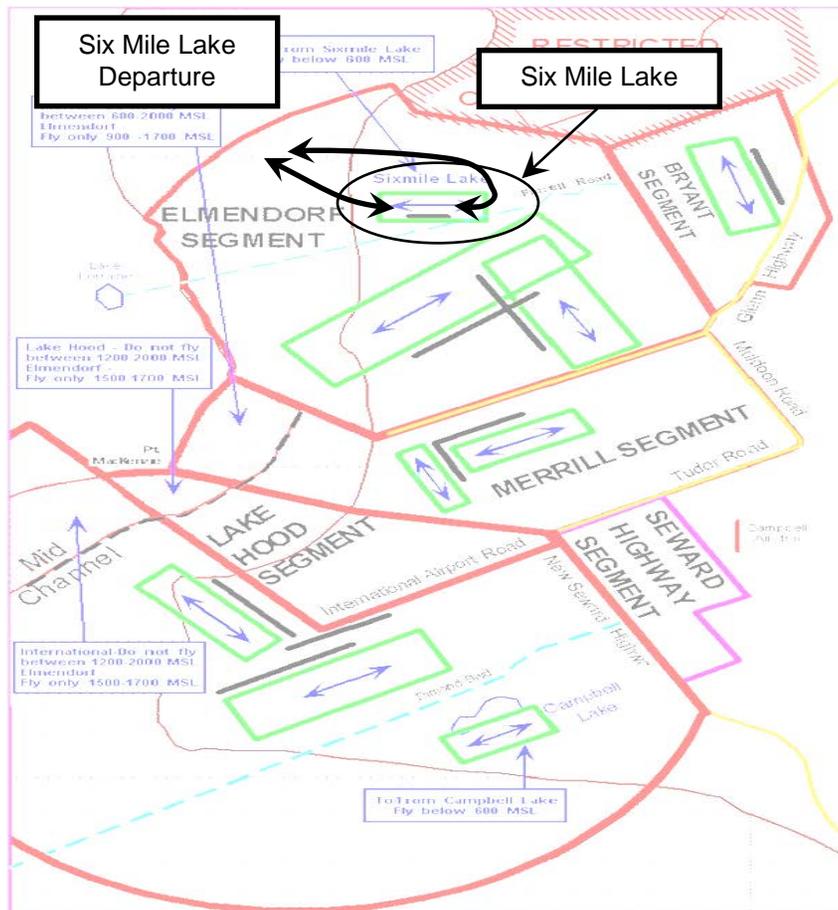


## Six Mile Lake

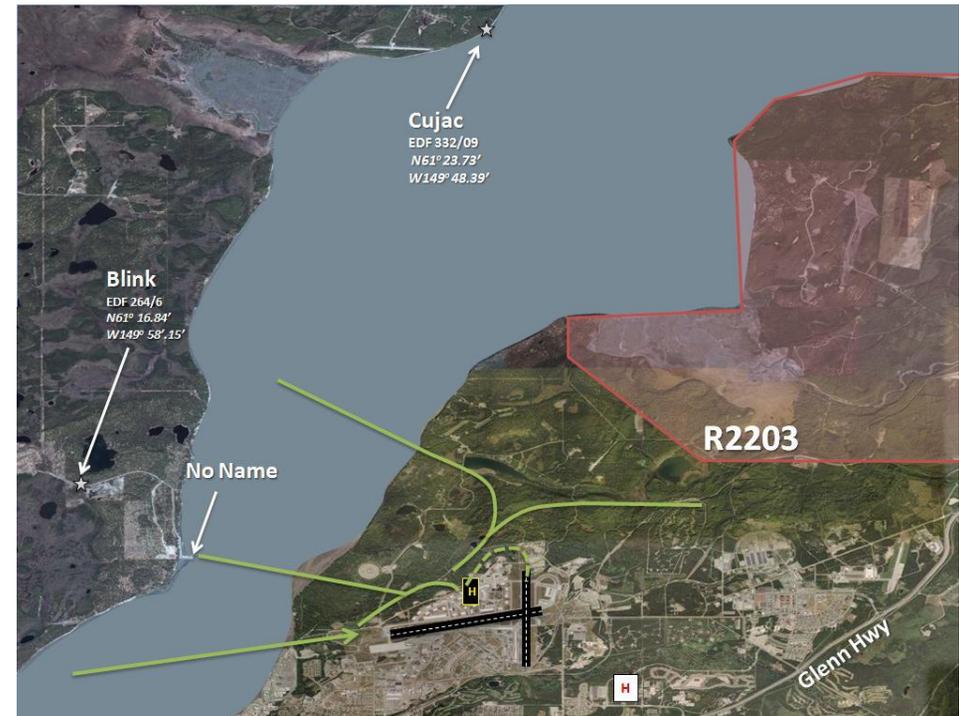
**Six Mile Lake** is located two miles north west of Elmendorf Airfield. Light aircraft departing and arriving VFR frequent this lake during both the summer and winter months.

**Six Mile Lake Departure:** Left/right climbing turn, proceed to the west end of Six Mile Lake. Remain **at or below 600' MSL** until clear of the Elmendorf segment.

**NOTE:** Light aircraft and helicopters will **maintain 800' MSL** until passing Six Mile/Otter Lake when departing north or until clear of the Elmendorf segment when departing east.



## Helicopter Departure and Arrival



**VFR:** 210th RQS Helicopter operations in and out of the Jolly Pad at Hangar 11 will remain at or below 600' MSL. Departures and arrivals will proceed via Hillberg and then North or East along a Cujac/Six-Mile transition. West departures will be via Pt. No-Name, avoiding the Antenna Farm. South departures will be via a Six-Mile or Hospital transition.

Arrivals via an Instrument approach may sidestep when VMC to a Hillberg arrival avoiding over flight of the North side of the base. Low approaches may extend to the runway intersection, and then hook north for a normal arrival into the Jolly Pad. (Dashed line in figure above).

**IFR:** To minimize FOD hazard, air taxi operations will be preferred for arrival and departure between the Jolly Pad and the active IFR runway unless visibility conditions require hover or ground taxi.

## VFR Arrivals into Elmendorf AFB (C-130/C-17)

**Cujac Transition:** Flown from CUJAC to BLINK. Aircraft will cross BLINK at 3500' MSL. Aircraft will request overhead Rwy 06, or to enter downwind patterns for Rwy 16/24/34 with tower.

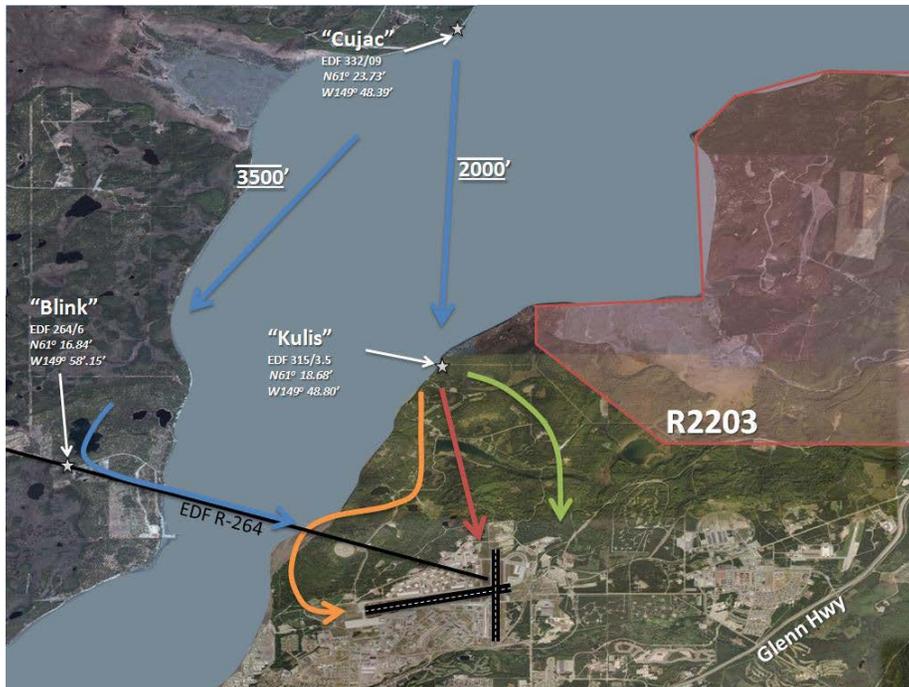
**Kulis Transition:** Flow from CUJAC to KULIS at 2000' MSL. Proceed VFR direct KULIS. Thence: Straight In: Once passing KULIS, descend as necessary to 1200' MSL and proceed direct Rwy 16 for the straight-in approach.

**Shallow Abeam:** The Shallow maneuver will be flown at or above 500 feet AGL. Over-fly KULIS, descend to no lower than 500' AGL and proceed inbound to the Runway 06/24 & 16/34 intersection for a left/right turn to Runway 16/06/34.

NOTE: When below 800 feet MSL, aircraft inbound for these approaches will normally broadcast position and intentions on Six Mile Lake CTAF 122.8

**Downwind:** Once passing KULIS, descend to 1200' MSL and enter a downwind for Runway 06/34/24.

**Overhead:** Once passing KULIS, descend to 1700' MSL and enter an initial for Runway 16/06/24.



## Aero Club

The **Aero Club** operates multiple light aircraft from Elmendorf on a daily basis. This facility also houses the Civil Air Patrol.

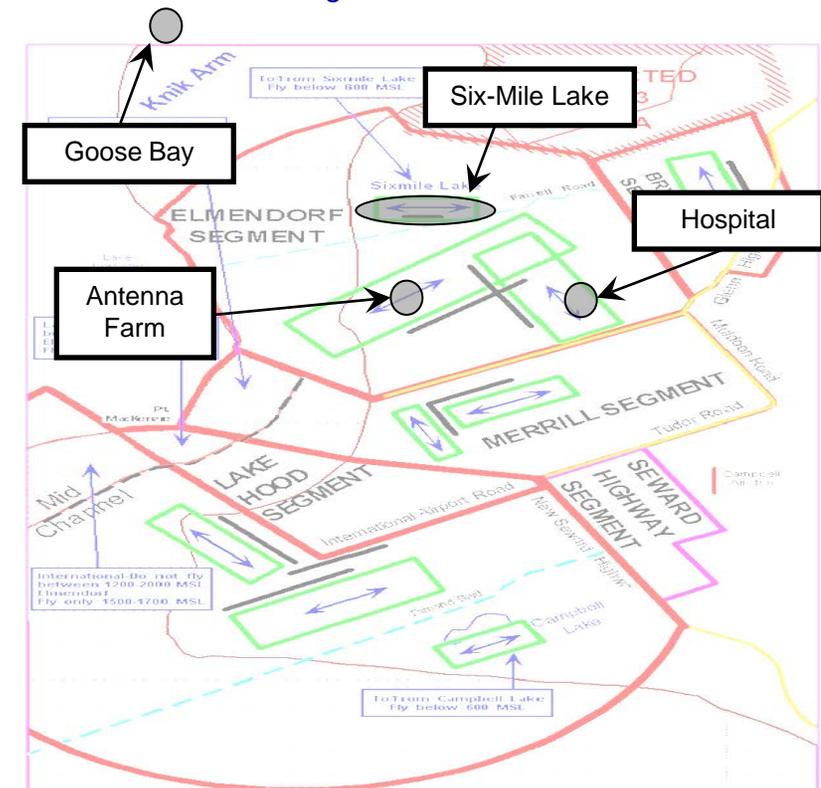
### VFR Departures

**Hospital Departure:** Left/Right climbing turn toward the Hospital

**Goose Bay Departure:** Left/Right climbing turn, direct Goose Bay

**Six-Mile Lake Departure:** Left/Right climbing turn, direct to West end of Six-Mile Lake

**Note:** Unless cleared "Climbing departure," Light aircraft and helicopters will **maintain 800' MSL** until past Six-Mile Lake or clear of Elmendorf Segment

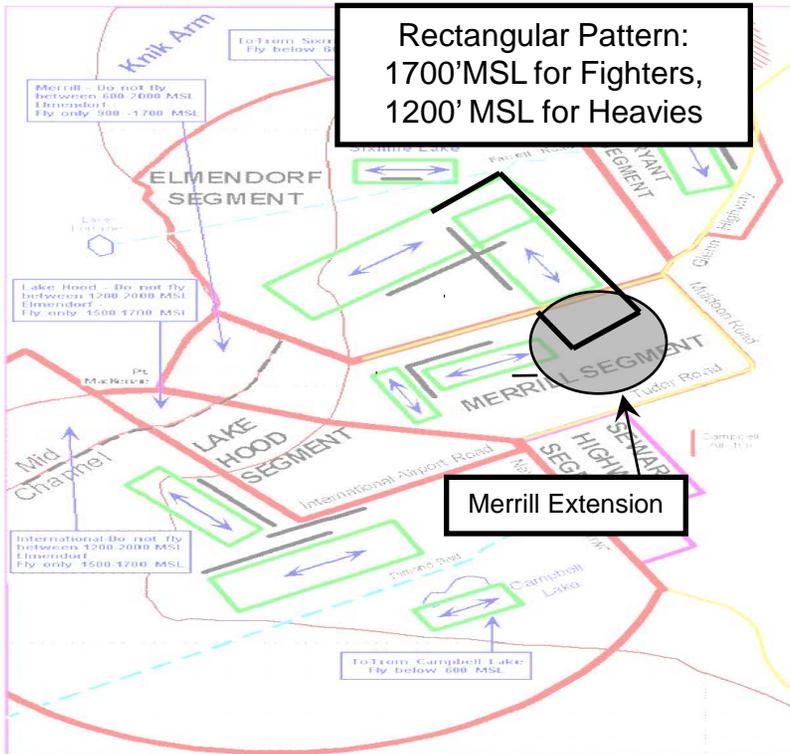


## Runway 16 and 34 Operations

**Runway 16 and 34** are generally used for training during day or night in VMC conditions.

**Instrument Weather Condition (IMC):** During IMC, Runway 16/34 may be used for instrument recovery using circling procedures from Runway 06, or from TACAN approach to runway 16.

**Merrill Extension:** If Runway 34 is needed for landing fighters, pilots will fly the base leg south of the Glenn Highway and enter into Merrill's airspace. Other Elmendorf aircraft will fly the base leg north of the Glenn Highway. There are established procedures in place for Elmendorf and Merrill towers to coordinate and communicate possible conflicts. **NOTE:** Both Elmendorf and Merrill aircraft must be especially vigilant for traffic avoidance in this area.



## Fighter Pattern Operations

