MID-AIR COLLISION AVOIDANCE GUIDE

OFFUTT AFB, NEBRASKA

Revision W (2013)

AOPA AIR SAFETY FOUNDATION

ASF is a nonprofit pilot education and safety organization that serves all pilots—not just AOPA members—by providing free or low-cost education programs to pilots and flight instructors nationwide, analyzing safety data, and conducting safety research.
Website: http://www.aopa.org/asf/

FAA SPECIAL USE AIRSPACE

The FAA provides Depicted Special Use Airspace (SUA) and Air Traffic Control Assigned Airspace (ATCAA) data that may not be complete. Pilots should use this information for planning purposes only. For the latest SUA information, call your local Flight Service Station at 1-800-WX-BRIEF. Information concerning ATCAA airspace can be obtained from the associated Air Route Traffic Control Center.
Website: http://sua.faa.gov

FAA SAFETY

Each of the eight FAA Flight Standards regions now has a Regional FAASTeam Office dedicated to this new safety program and managed by the Regional FAASTeam Manager (RFM). Based on the makeup of the aviation community in each region, the RFM has selected a group of FAASTeam Program Managers (FPM) with specific aviation specialties and assigned them to geographic areas of responsibility within the region. FPMs do not report to work where the RFM resides. They are "hosted" at FAA facilities within their assigned geographic area but they still report directly to the RFM.
Website: http://www.faasafety.gov

OTHERS

Virtual Base Operations - http://www.baseops.net
Aviation Information - http://www.airnav.com
55th Wing Flight Safety - http://www.afsec.af.mil
FAA NOTAMs - http://pilotweb.nas.faa
Military NOTAMs - https://www.notams.jcs.mil
USAF Avian Hazard Advisory System - http://www.usahas.com

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SECTION FIFTEEN

AVIATION RELATED WEBSITES

MIDAIR COLLISION AVOIDANCE TECHNOLOGY

The Traffic Alert and Collision Avoidance System (TCAS) is an airborne system developed by the FAA that operates independently from the ground-based Air Traffic Control (ATC) system. TCAS was designed to increase cockpit awareness of proximate aircraft and to serve as a "last line of defense" for the prevention of midair collisions. Website: http://adsb.tc.faa.gov/TCAS

NTSB ACCIDENT DATABASE

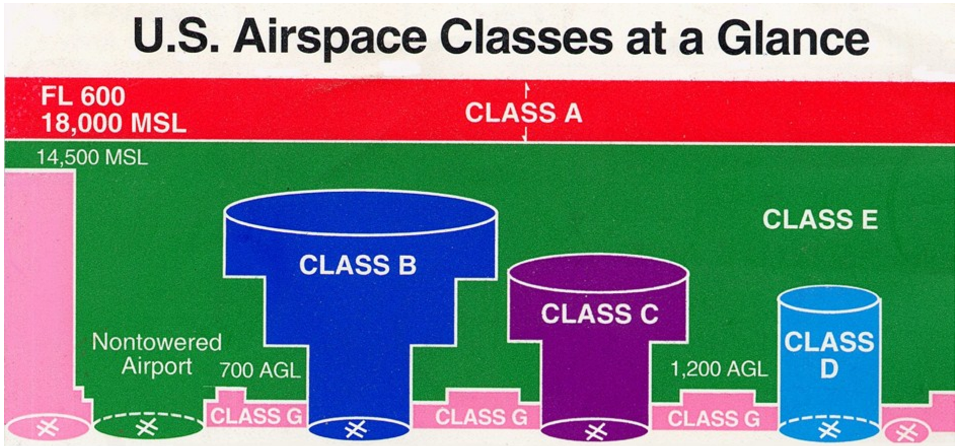
The NTSB aviation accident database contains information from 1962 and later about civil aviation accidents and selected incidents within the United States, its territories and possessions, and in international waters. Generally, a preliminary report is available online within a few days of an accident. Factual information is added when available, and when the investigation is completed, the preliminary report is replaced with a final description of the accident and its probable cause. Full narrative descriptions may not be available for dates before 1993, cases under revision, or where NTSB did not have primary investigative responsibility.
Website: http://www.ntsb.gov/ntsb

AOPA

With a membership base of more than 411,000, or two thirds of all pilots in the United States, AOPA is the largest, most influential aviation association in the world. AOPA has achieved its prominent position through effective advocacy, enlightened leadership, technical competence, and hard work. Providing member services that range from representation at the federal, state, and local levels to legal services, advice, and other assistance, AOPA has built a service organization that far exceeds any other in the aviation community.
Website: http://www.aopa.org

SECTION FOURTEEN

AIRSPACE CLASSIFICATIONS



Airspace Classes	Communications	Entry Requirements	Separation	Special VFR in Surface Area
A	Required	ATC clearance	All	N/A
B	Required	ATC clearance	All	Yes
C	Required	Two-way communications prior to entry	VFR/IFR	Yes
D	Required	Two-way communication prior to entry	Runway operations	Yes
E	Not required for VFR	None for VFR	None for VFR	Yes
G	Not required	None	None	N/A

SECTION ONE

INTRODUCTION

FLIGHT SAFETY IN THE OMAHA/LINCOLN AREA

Fellow Aviators:

We are providing this brochure to you in the hope that the information contained will be useful to you while flying in the Omaha/Lincoln area. These areas have numerous airfields which operate airplanes at all speeds and sizes. The military flying activity in the area is very busy, operating aircraft ranging from T-38s to C-5s. Offutt Air Force Base is a crossroads for both Navy and Air Force aircraft transiting the country; therefore, there are times when the Offutt traffic pattern gets saturated with different types of aircraft. Lincoln airfield, home to Nebraska Air National Guard operating KC-135 Stratotankers, gets congested with both military and civilian traffic. All pilots/aircrews, military and civilian, must be vigilant of the potential for mid-air collisions. Through education, awareness and application of the *See and Avoid* concept, we can all share the skies more safely. While this brochure may be used as an aid for all aviators, it can't compare to a good pair of eyes and proper flight planning. We hope that this may be of use to you and if you have any questions about this brochure, or if you need additional copies, please contact 55th Wing Flight Safety.

55th Wing Flight Safety

For more information, please contact us at:

513 SAC Boulevard, Suite 225 fax (402) 291-4973
Offutt AFB, NE 68113 ph. (402) 294-3404

SECTION TWO

SEE AND AVOID

http:// www.seeandavoid.org

Welcome to SeeAndAvoid.org. Originally created by the Air National Guard Aviation Safety Division, this portal is now funded by the Defense Safety Oversight Council and includes all military services. Our goal is to eliminate midair collisions and reduce close calls through continuous flight safety and proper flight planning. By promoting information exchange between civilian pilots and the military flight safety community, we hope to provide one-stop shopping to help all of us safely share the skies. This portal will allow users to find and link to all existing military Mid-Air Collision Avoidance (MACA) programs in a single web site, while also enjoying new access to information from bases that did not previously have web-based content.

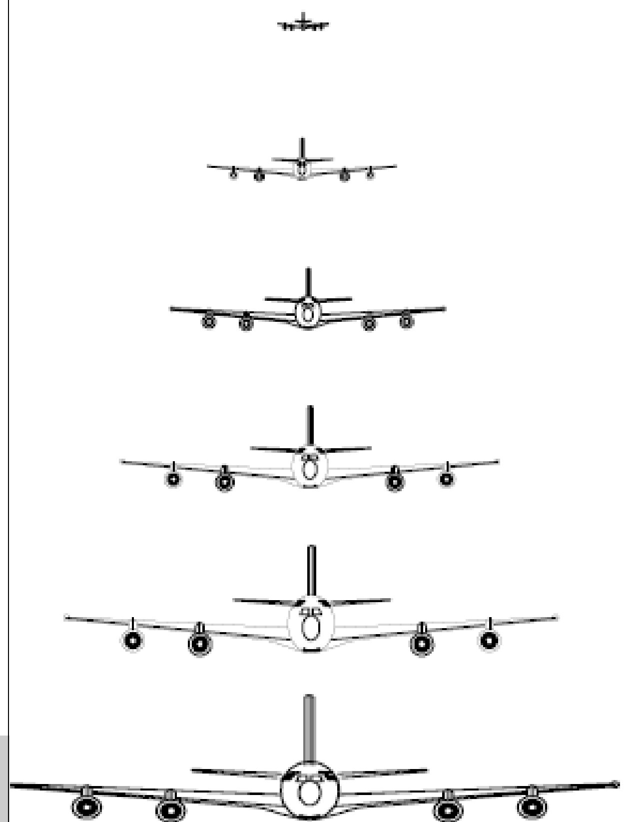
Since 1978, there has been an average of 30 midair collisions in the United States each year. These collisions resulted in an average of 75 deaths per year. There are also over 450 Near Midair Collisions (NMACs) reported each year; no one can calculate the number that have gone unreported! As recently as February, 2006 a civilian pilot was killed in a single plane crash after colliding with an Air Force jet. In many cases, one or both of the aircraft are not aware that a midair collision nearly occurred. Particularly in cases where military and civilian aircraft come into close proximity, lack of basic information regarding military flight characteristics creates problems among civilian pilots. FAA regulations and EAA guidelines just aren't enough.

The SeeAndAvoid.org portal offers a centralized, credible website that provides civilian and military pilots with reciprocal information and education on airspace, visual identification, aircraft performance, and

SECTION THIRTEEN

C-135 CLOSURE RATE CHART

Distance	Seconds	
	AT 600 MPH	**AT 210 MPH**
10MILES	60	170
5 MILES	30	85
3 MILES	18	56
2 MILES	12	38
1 MILE	6	18
.5 MILES	3	9



This is based on combined speeds of two aircraft.
The areas in gray are danger areas.
This is based on recognition times

SECTION TWELVE

BIRD AIRCRAFT STRIKE HAZARD (BASH)

Located one and a half miles off the departure end of Runway 12 (approach end of 30) lies the 113 acre base lake that houses thousands of birds annually. An additional threat is the Missouri River located two miles east of the runway and serves as the primary migration pattern to millions of geese and other migratory birds traveling the Central and Mississippi migratory flyway during the spring and fall migration seasons. Numerous area wildlife refuges also provide excellent stopover points for the migrating birds. Twenty-five miles north of the base is Desoto National Wildlife Refuge, one of the largest stopover points for Canada and Snow Geese in North America with as many as 700,000 geese on the refuge during the fall/spring migration periods. Canada and Snow geese, which may fly in flocks of 100,000 birds during the heaviest migration periods, are a serious threat to Offutt's flight operations.

On the base itself, current drainage schemes and the level of the water table allow for water to collect in open retention ponds on both sides of Runway 30. Continuous efforts are made by the Flight Safety team and USDA/WS representatives to make the field unattractive to the birds and mitigate the risk. In addition, the Flight Safety team uses a Birdstrike Avoidance Radar System (DeTect, Inc.) to track birds in real-time to alleviate potential bird hazards. Be aware that daily and seasonal bird movements create various hazardous conditions when flying in the Omaha area.

mutual hazards to safe flight; with the ultimate goal of eliminating midair collisions and reducing the close calls. After all, what price can be put on proper flight safety and flight planning?

This portal is targeting two user groups. The first group is General Aviation (GA) Pilots, who we encourage to include SeeAndAvoid.org as part of their flight planning. From weather to NOTAMs to flight planning, pilots in general and civilian pilots in particular, use the Internet to get their most important flight safety information. As important as the weather, knowing where the military operational flying areas are and how to avoid that airspace is crucial to a safe flight. Unexpected turbulence, icing, terrain obscured by fog, or a jet flying low at 500 knots; each one is just as deadly to the GA pilot if not planned for prior to takeoff.

The second group targeted are the military safety officers at all military bases. This portal site provides every participating DoD flying base in the U.S. with the opportunity to create a web-based MACA educational and public outreach program. This web-based MACA program, intended primarily for an audience of 750,000 civil pilots, is modeled on centralized support, with decentralized execution. This website integrates and links with related sites such as FAA Special Use Airspace, AOPA's Air Safety Foundation and the new FAA MADE (military airspace deconfliction) program.

The interface is simple to use with point-and-click interaction, predominately using Google maps and graphics for ease of use and is designed to include the MACA programs of all DoD aviation installations in the CONUS, Alaska, Hawaii, Virgin Islands, Guam and Puerto Rico.

SECTION THREE

AIRFIELD DESCRIPTION

1. Location:

Offutt AFB is located on the Southeast side of the Omaha area near the town of Bellevue. Coordinates are N41-06.550 W95-53.520.

2. Runway:

The airfield consists of a single concrete-surfaced runway oriented 126/306 degrees magnetic and designated as Runways 12 and 30. Runway elevation is 1,052 feet above sea level. The runway is 11,700 feet long and 150 feet wide. Runway 12 has a 1,000 foot displaced threshold and Runway 30 has a 1,100 foot displaced threshold. Both runways have TACAN, RNAV (GPS) and ILS approaches.

Figure 1 shows an airfield diagram.

3. Unique Runway Hazards:

Runway 12 at Offutt AFB presents certain problems not normally associated with runways used by heavy, multi-engine aircraft. Some important features of this runway are:

a. A relatively steep runway gradient which averages 0.7 percent downhill for the overall runway length. Runway 12 has a touchdown zone elevation of 1042' MSL (Runway 30 has a TDZE of 989' MSL).

b. The location of the approach end of Runway 12 is on top of a 50 foot-high embankment, creating unpredictable turbulence on approach and landing during medium to high surface winds.

c. The close proximity of large buildings or trees on both sides of the northwest half of the runway, creating variable mechanical turbulence and wind shear on the runway during crosswind conditions.

SECTION ELEVEN

REPORTING NEAR MID-AIR COLLISIONS

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. The data from these reports is investigated, compiled, and analyzed by the FAA, who in turn makes safety program recommendations.

2. Definition:

A near mid-air collision is defined as an incident associated with the operation of aircraft in which a possibility of collision occurs 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 that 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 a near mid-air collision 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." Report these incidents immediately or as soon as practicable to the nearest FAA ATC facility or Flight Service Station. Be as thorough in your report as possible. See the *Aeronautical Information Manual* for specific items to be reported.

SECTION TEN

WAKE TURBULENCE

You may be able to see and avoid the big airplanes, but one thing you can't see is their wake turbulence! There is an area of potential disaster behind and below every commercial and military aircraft. Wake turbulence can be deadly, especially when it is encountered close to the ground. The United States averages about one mishap per month and one fatal mishap a year (mostly to small general aviation aircraft) due to vortices. All pilots flying in the vicinity of large, heavy aircraft should exercise extreme caution and ensure 6 to 10 minutes of separation depending on the type of aircraft. Remember that wake turbulence can be so severe as to cause total loss of aircraft control and/or catastrophic structural failure. A good rule of thumb to use is: if the aircraft in front of you is larger than your aircraft, make sure you have adequate separation to allow the vortices to dissipate. Even F-15 and F-16 fighters create significant wingtip vortices, especially in a clean configuration.

Some general information on wake turbulence:

The more drag devices that an aircraft has extended (flaps, landing gear, speedbrakes, etc.) the smaller the vortices will be.

Wingtip vortices normally sink around 500 fpm.

Departing aircraft start producing wingtip vortices at rotation (when the load is changed from the landing gear to the wings).

Light crosswinds (5 knots) can cause a vortex to remain on the runway for longer periods of time than in calm conditions.

When taking-off after a departing jet, a good technique is to plan to lift-off before the rotation point of the departing aircraft and continue to climb above or away from its flightpath..

Vortices created by a C-5 or E-4 can have tangential velocities of approximately 9,000 fpm.

Heavy, slow, clean-configured aircraft create the strongest wake .

d. Caution should be used when the wind favors Runway 12 at Offutt AFB, as final traffic passes close to Millard airport at 2,800-3,000 feet MSL.

4. Taxiways:

The parallel taxiway is 100 feet wide and designated Taxiway C. Transient aircraft are parked on the upper ramp and can access the upper ramp by exiting the runway at Taxiway M or via the parallel, Taxiway C.

5. Hot Brake/Cargo Area:

The hot brake areas are located at the North hammerhead and Taxiway P. The hot cargo area is Taxiway M North.

6. Airfield Lighting:

a. Runway: Equipped with high intensity runway lights (HIRL). The five levels of intensity are controlled by the tower and may be adjusted upon pilot request.

b. Approach Lights: US lighting standard "B" with high intensity approach lights with sequenced flashers.

c. Precision Approach Path Indicators: Installed on the approach end of both runways (glide slope is 2.8 degrees for Runway 30 and 3.0 degrees for Runway 12). Runway 12 PAPI is non-standard; positioned on the right side of the runway.

d. Taxiways: The taxiways are lighted with standard blue taxiway lights.

e. Rotating Beacon: A standard military airport rotating beacon is located on top of a tower ½ mile north of the runway.

f. Obstruction Lighting: All prominent obstructions within the airfield boundary are marked with standard red obstruction.

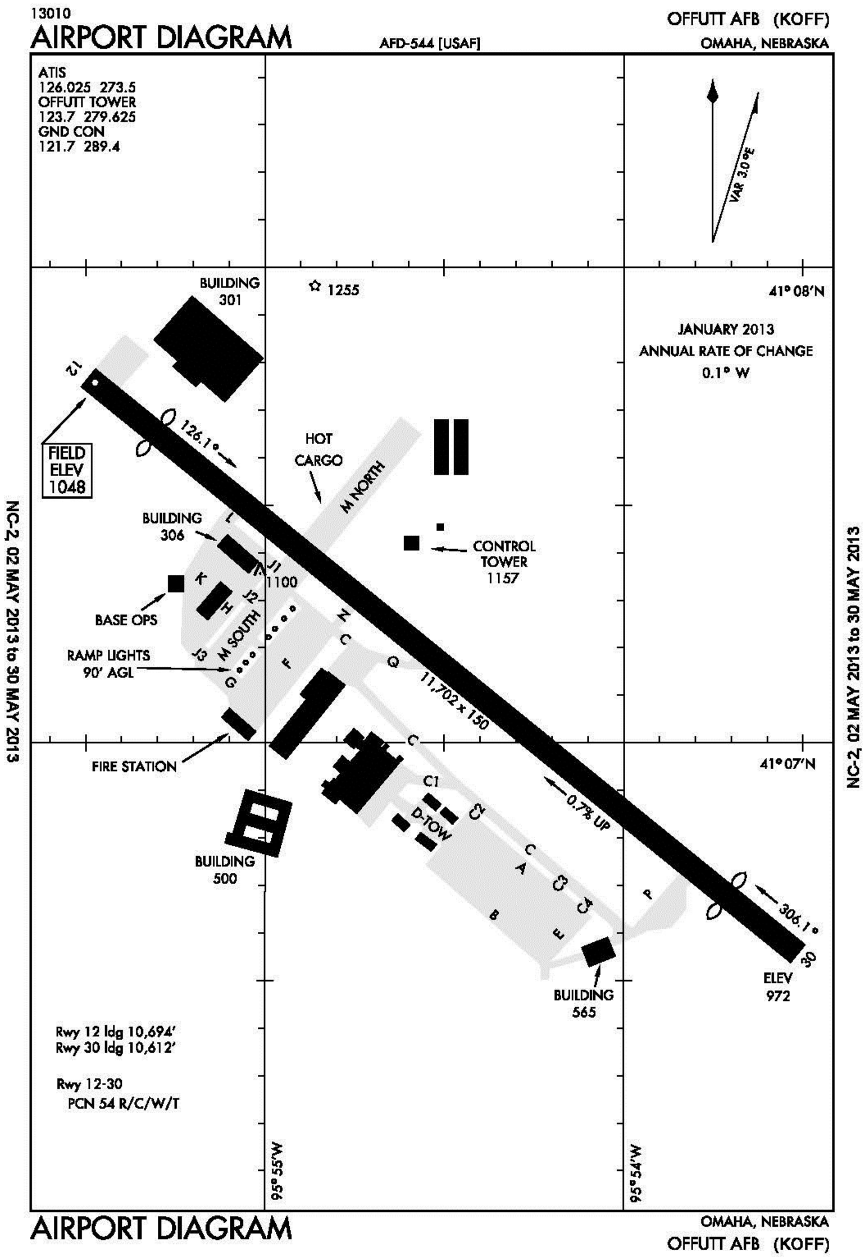
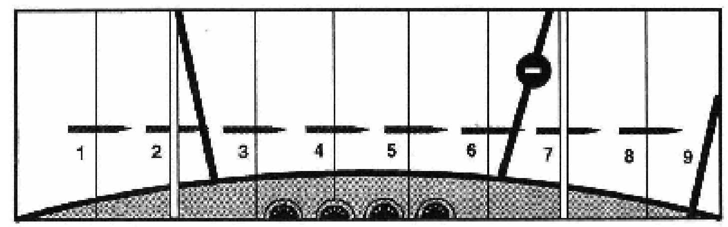
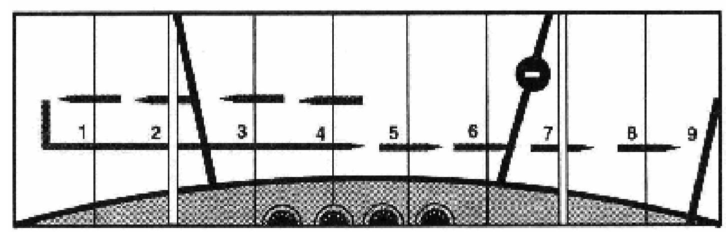


Figure 1

One method of block scanning is the 'side-to-side' motion (top picture). Start at the far left of your visual area and make a methodical sweep to the right, pausing in each block to focus. At the end of the scan, return to the instrument panel. A second form of block scanning is the 'front-to-side' version (bottom picture). Start with a fixation in the center block of your visual field. Move your eyes to the left, focusing in each block, swing quickly back to the center block, and repeat performance to the right.

There are other methods of scanning, but unless some series of fixations are made, there is little likelihood that you will be able to detect all targets in your scan area. When the head is in motion, vision is blurred and the mind will not register targets as such.





Developing an efficient scan takes a lot of work and practice, but it is just as important as developing good landing techniques. The best way is to start on the ground, in your own airplane, or the one you usually fly, and then practice your scan during every flight.

SECTION NINE

GUIDE TO AN EFFECTIVE SCAN

Your best defense against midair collisions is an effective scan pattern. There is no perfect scan, and no single scan technique that is best for all pilots. The most important thing is for each pilot to develop a scan that is both comfortable and workable.

The first step to scanning properly is knowing where to concentrate your search. Instead of trying to look everywhere, concentrate on the areas most critical to you at any given time. In the traffic pattern especially, clear yourself before every turn and always watch for other traffic coming into the pattern. On descent and climb out, make gentle S-turns to see if anyone is in your way. Also make clearing turns before attempting maneuvers such as pylons and S-turns about a road. During the very critical final approach stage, do not forget to look behind and below to avoid tunnel vision. Pilots often rivet their eyes to the point of touchdown.

In normal flight, you can generally avoid the threat of a midair collision by scanning 60 degrees to the left and right of your central viewing area. Vertically, you will be safe if you scan 10 degrees up and down from your flight vector. This will allow you to spot any aircraft that might prove hazardous to your own flight path, whether it is level with you, below and climbing, or above and descending. If another aircraft appears to have no relative motion, but is increasing in size, it is likely to be on a collision course with you.

SCAN PATTERNS

The scan that works best for most pilots is called the 'block' system. This type of scan is based on the theory that traffic detection can be made only through a series of eye fixations at different points in space. By fixating every 10-15 degrees, you should be able to detect any contrasting or moving object in each block. This gives you 9-12 blocks in your scan area, each requiring a minimum of one to two seconds for acclimation and detection.

SECTION FOUR

IFR/VFR PROCEDURES

1. IFR Procedures:

a. General: Offutt AFB is in Class C airspace. Omaha Radar Approach Control (RAPCON) controls the Class C airspace.

b. Departures: Departures are normally restricted to 3,000 ft MSL, and runway heading due to low altitude airways and arriving/departing commercial aircraft's flight path into Eppley Airfield.

c. Radar Traffic Pattern: The radar traffic pattern altitude for Offutt is 3,000 ft MSL. There are two smaller airfields near the edges of Offutt's radar pattern. These are Plattsmouth Municipal and Millard Field. Aircraft operating near 3,000 feet around these airfields need to be especially alert for military aircraft operating in the instrument pattern.

2. VFR Procedures:

a. Traffic Pattern: The rectangular VFR traffic pattern is at 2,500 ft MSL for large aircraft and 2,000 ft MSL for small aircraft. The overhead pattern is 3,000 ft MSL. Traffic will always be to the southwest of the runway, with right-hand traffic for Runway 12 and left-hand traffic for Runway 30. Deviations will only be authorized by the control tower.

b. Departures: Aircraft will maintain runway heading at or below 3,000 ft MSL until directed to turn by tower or approach control.

c. South Practice Area: Aircraft operating out of the Offutt AFB Aero Club use an area south of Offutt as a practice area. This area is located 10 miles south of Offutt and just west of the Plattsmouth Airport. Heavy VFR traffic can be expected in this area.

3. Low-Level Routes:

There is one low-level military training route that encompasses the Omaha area. It is mainly used by F-16 aircraft practicing tactical low -level formation and ground attack tactics. The altitude boundaries range from 500 ft AGL up to 10,000 ft MSL. The route is labeled as VR 540/541. Figure 2 depicts the low-level route.

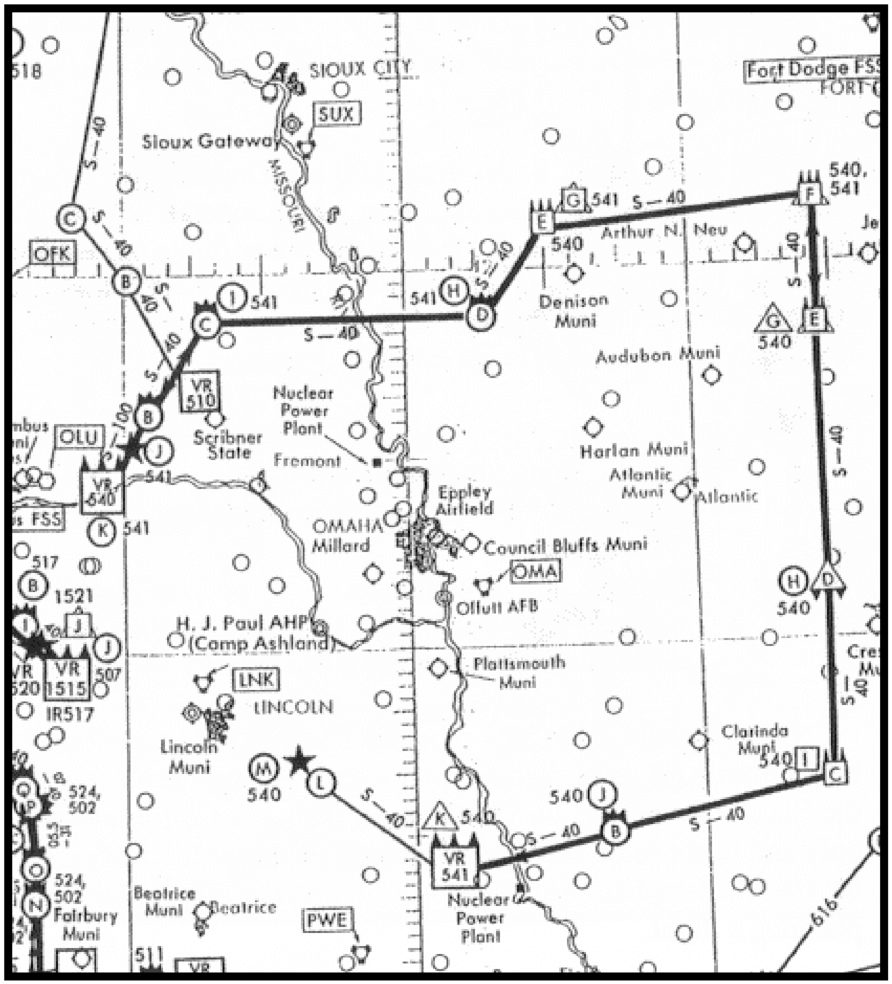


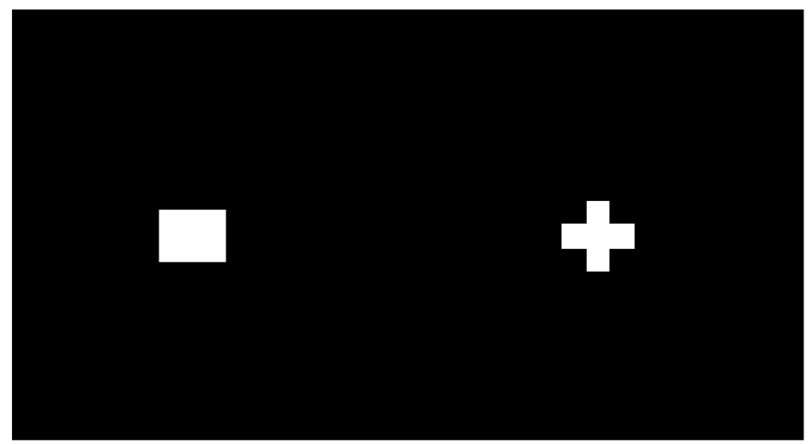
Figure 2

Do Not Use For Navigation Purposes

9. BLIND SPOT: The human eye has a blind spot where the optic nerve attaches to the retina in the back of the eye. The location of the blind spot for most people is about 30 degrees right of center. With both eyes unobstructed, the peripheral vision of one eye cancels out the blind spot on the other eye. However, a windshield post, a large smashed bug or other obstruction to your vision could negate how your brain compensates for your blind spot. Under certain conditions, visual blocking occurs at 1 nautical mile for a C-135 and 1 1/2 miles for an E-4B (B-747). Some of the most important times to have your head out of the cockpit are during descent and climbout, when flying on airways, and especially while on final approach. Don't forget to look behind, below, and to the side at least once. Avoid tunnel vision--pilots often rivet their eyes to the touchdown zone.

BLIND SPOT SELF-TEST

Cover or close your right eye and focus your left eye on the cross. Move the diagram toward you until the square disappears. To try this on your right eye, turn the diagram upside down.



5. HYPOXIA: Hypoxia can affect the ability of the eyes to detect distant objects, especially at night. Due to the lack of oxygen in the blood, the eyes suffer a loss of acuity and have difficulty in focusing. Smokers must be especially aware of this factor. The smoker's blood is carrying carbon monoxide which displaces some of the oxygen and makes the effects of hypoxia more apparent at lower altitudes than for non-smokers.

6. LACK OF RELATIVE MOTION: This factor is one of the more dangerous ones because aircraft that are on a collision course have no relative motion. When there is a lack of motion, there is more time needed to detect and identify other aircraft. Objects that move across the windscreen are much easier to detect. In order to avoid the apparent collision, take evasive maneuvers to cause the other aircraft to move in some direction on your windscreen.

7. NEARSIGHTEDNESS: The normal eye with 20/20 vision can detect an aircraft with a fuselage diameter of 7 feet from about 4 miles away. If you are nearsighted (myopic), you will not be able to see the aircraft until it is closer. How close depends on how nearsighted you are. The more severe the myopia, the closer the aircraft must be before it is detected. For safety's sake, please wear your prescription glasses.

8. SCANNING: Where and how you look is important too. There is no scan that works best for all pilots. The most important thing is for each pilot to develop and **USE** a scan that is usable for them--in their own aircraft. One of the best techniques in scanning is to scan in sectors, both vertically and horizontally.

4. Class C Airspace: (please consult the current VFR sectional)

a. Boundaries: The boundaries of the Omaha/Offutt Class C airspace are as follows:

1. First, there is an inner "core" which consists of a 5 NM radius which extends outward from each airport. It extends from the surface up to 5,000' MSL.

2. Second, there are shelf areas which have a 10 NM radius around each airfield. These areas encompass an area from 2,500' ft to 5,000 ft MSL. There is some overlap of these areas because of the close proximity of the two airfields.

b. Outer Area: Both Offutt AFB and Omaha Eppley Airfield Class C airspaces have an outer area which extends 20 NM from each airfield. This area extends from the lower limits of radar/radio coverage up to a ceiling of 10,000 ft MSL where Minneapolis ARTCC provides radar service. While pilot participation in this area is strongly encouraged, it is not a VFR requirement.

c. Rules and Requirements:

Certification: Student pilot or higher

Equipment: Two-way radio communication and Mode C transponder

Arrivals and Overflights: To operate in Class C airspace two-way radio communication must be established with Omaha RAPCON prior to entry.

d. Omaha RAPCON provides Class C radar service within both Offutt AFB and Omaha Eppley areas.

Offutt AFB Operations

Figure 3 is a depiction of Offutt's VFR and IFR pattern. Notice the proximity to Milliard airport. Aircraft transitioning north and south of Omaha area are strongly encouraged to avoid Offutt's pattern altitudes and take advantage of Class C radar services.

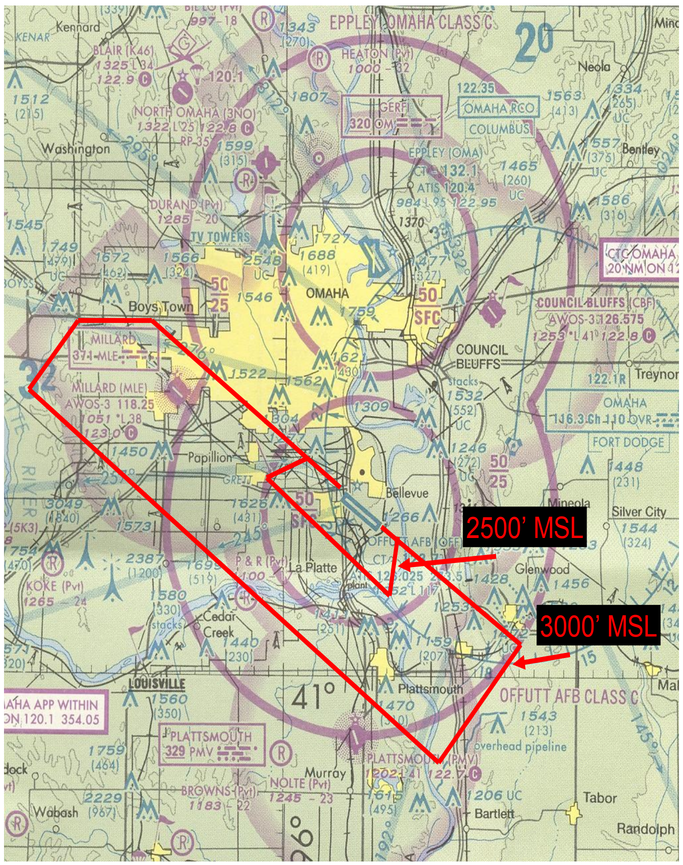


Figure 3

Do Not Use For Navigation Purposes

SECTION EIGHT

FACTORS AFFECTING VISION

Eye sight is essential to avoiding other aircraft, yet our eyes have limitations too. Being aware of these limitations will improve our ability to see and avoid. The following is a brief discussion of some factors affecting our vision.

1. SPACE MYOPIA: At high altitudes, without objects to focus on, (horizon, clouds, etc.) the eyes tend to focus at the windscreen or just outside the cockpit, greatly reducing the sighting distances. Shifting your gaze frequently to instrument panel, ground features, distant objects (if available), etc. will help overcome this factor.

2. FIXATION: Avoid the tendency for fixation. Scan in sectors, shifting your gaze vertically as well as horizontally; practice focusing on objects of known or accurately estimable distances when available.

3. FOCUSING: The time required for the eyes to change their focus from one object to another (accommodation time) is at least 2 1/2 seconds--for example the time it takes to change focus from the instrument panel to outside the aircraft. This time increases with fatigue and age.

4. CONTRAST: Contrast of objects is very important in avoiding other aircraft. Sky conditions on many occasions make it much more difficult to detect another aircraft, especially during periods of low-light illumination.

SECTION SEVEN

TIPS ON MID-AIR COLLISION AVOIDANCE

Studies on mid-air collisions show that most occur below 8000 ft MSL and near airports, navaids, and other high-density traffic areas. Here are some ideas to help reduce your mid-air collision potential:

1. Know where high-density traffic areas are located.
2. Fly as high as practical.
3. Obtain an IFR clearance or participate in radar flight following whenever possible and continue to practice "*see and avoid*" at all times.
4. Use landing lights at lower altitudes, especially when near airports.
5. Announce your intentions on UNICOM and use standard traffic pattern procedures at uncontrolled fields.
6. Always use your Mode C transponder and cross-check its accuracy with ATC whenever possible
7. Use hemispheric altitudes. Practice altimeter discipline!
8. Constantly clear for other aircraft, both visually and on the radio.
9. Keep your windshield clean and clear.
10. Don't get complacent during instruction! Instructors make mistakes too. Many mid-air collisions occur during periods of instruction or supervision.
11. When flying at night, don't use white interior lights if you don't have to. It takes your eyes a while to adjust to low light levels.
12. 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 on a direct collision course with you.
13. Execute appropriate clearing procedures before and during all climbs, descents, turns, abnormal maneuvers, or aerobatics.
14. Above all, **AVOID COMPLACENCY**! Remember, there is no guarantee that everyone is flying by the rules, or that anyone is where they are supposed be.

SECTION FIVE

LINCOLN OPERATIONS

Offutt assigned aircraft, among other military aircraft, frequent Lincoln field for training. The lack of congestion, runway available, and other KC-135 agencies make the field attractive for pattern work and divert options. It isn't uncommon to see two or three 135's and E-4's in the pattern performing touch and go's anytime of the day. Figure 4 depicts the IFR and VFR pattern.

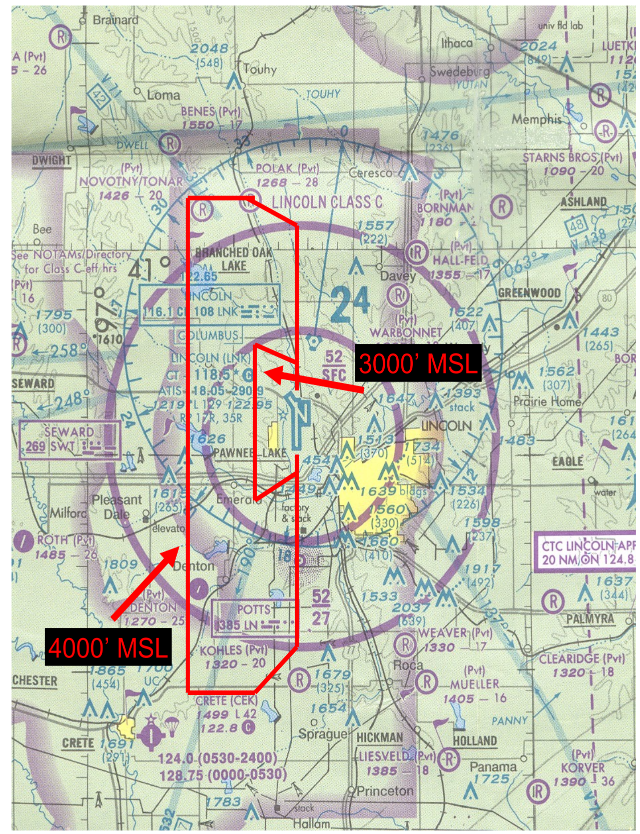


Figure 4

Do Not Use For Navigation Purposes

SECTION SIX

LOCAL AIRCRAFT DESCRIPTION

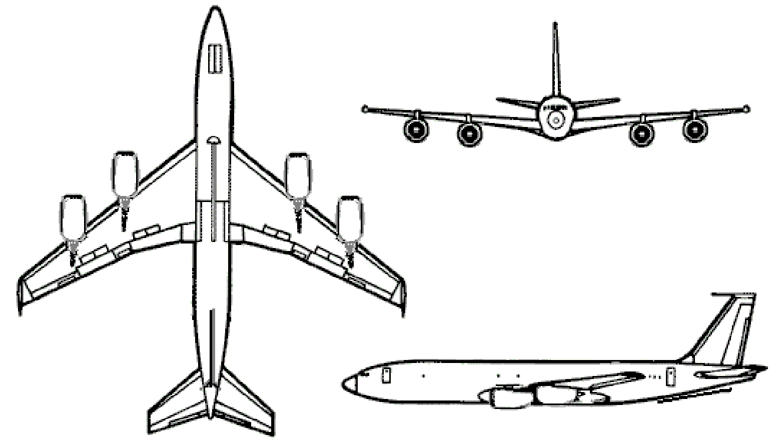
Offutt AFB has many different aircraft assigned to the base. The most common aircraft are variations of the C-135 series aircraft including OC/RC/TC/WC-135 aircraft, in the following models: E, S, T, U, V and W. They are equipped with either TF-33 or CFM-56 turbofan engines which produces 22,000 pounds of thrust at takeoff. Maximum takeoff weight exceeds 300,000 lbs.

There are also E-4B aircraft stationed at Offutt. This aircraft is the military version of the Boeing 747. They are equipped with CF6-50 turbofan engines which produce 52,500 pounds of thrust at takeoff. They can take off at weights up to ***800,000*** lbs!

Other aircraft which frequently transition Offutt AFB are the C-12, MC-12 and Gulfstream G-3, G-4, G-5 and G-550

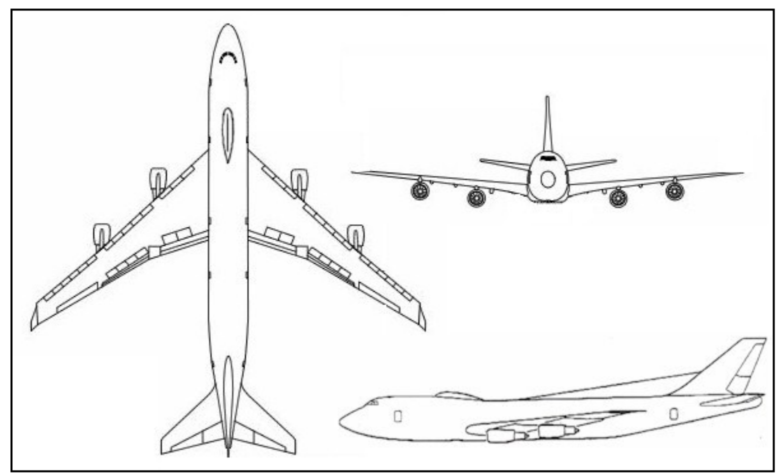
Offutt AFB also has an Aero Club which operates numerous types of light, single and twin-engine civilian aircraft.

C-135 (Boeing 707)



RATE OF CLIMB	**1000 - 4000 FPM**
APPROACH SPEEDS	**130 - 180 KIAS**

E-4B (Boeing 747)



RATE OF CLIMB	**1000 - 2500 FPM**
APPROACH SPEEDS	**140 - 165 KIAS**