Mid-Air Collision Avoidance

MACA

Barksdale AFB, LA (KBAD)

August 2020

Prepared in the interest of Aviation Safety by:

2d Bomb Wing Flight Safety Office – Barksdale AFB, LA

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WARNING

The enclosed material is for informational purposes only!
It is not to be used for in-flight navigation other than as a source to enhance situational awareness and mid-air collision avoidance. All information, descriptions, routes, and procedures are subject to change without notice.

www.SEEandAVOID.org

www.faasafety.gov

Introduction

Mid-Air Collision Avoidance (MACA) is a very important topic within military and civilian aviation. The United States Air Force and the 2d Bomb Wing at Barksdale Air Force Base, LA, are committed to working with the aviation community to keep all aviators safe. This pamphlet contains information regarding locally based aircraft operations, traffic patterns, arrival, and departure routes at Barksdale AFB. Our goal is to provide sufficient information to pilots and aircrew to enable recognition of potential mid-air collision hazards as well as techniques to heighten awareness. However, nothing in this pamphlet replaces guidance found in Federal Aviation Regulations, your Standard Operating Procedures, or your checklists but it will help you in complete your flight in a safer manner.

Barksdale is home to Air Force Global Strike Command, 8th Air Force, the 2d Bomb Wing, and the 307th Bomb Wing. The only aircraft currently stationed at Barksdale is the B-52H; a long-range, all-weather bomber. Barksdale is also home to the several operational, reserve, and test squadrons as well as the B-52 Formal Training Unit (FTU), which trains all of the new aircrew. All units regularly use the traffic pattern and the surrounding areas. The B-52H has a 185' wing span, eight engines, and flies patterns between 130-250 KIAS with a gross weight around 290,000 pounds.

Additionally, transient aircraft from the US Navy and Air Force regularly visit Barksdale with their size ranging from a T-6A to a Boeing 747. Once every two years, Barksdale hosts the Defenders of Liberty Airshow, which is a three-day event involving a wide range of civilian/military aircraft. During Hurricane season Barksdale can host evacuating aircraft.










The 2d Bomb Wing Flight Safety Office is the office of primary responsibility (OPR) for the development, publishing, and maintenance of the Barksdale AFB MACA program pamphlet. Additionally, we would like to give credit to the Federal Aviation Administration for some of the information provided in this pamphlet. We encourage you to visit **http://www.faasafety.gov** and **http://www.seeandavoid.org** for additional important information. If you have any questions, concerns, feedback, or updates regarding the information presented in the pamphlet, please contact the 2d Bomb Wing Flight Safety Office at (318) 456-5602 or via email at 2bwWingSafety@us.af.mil.

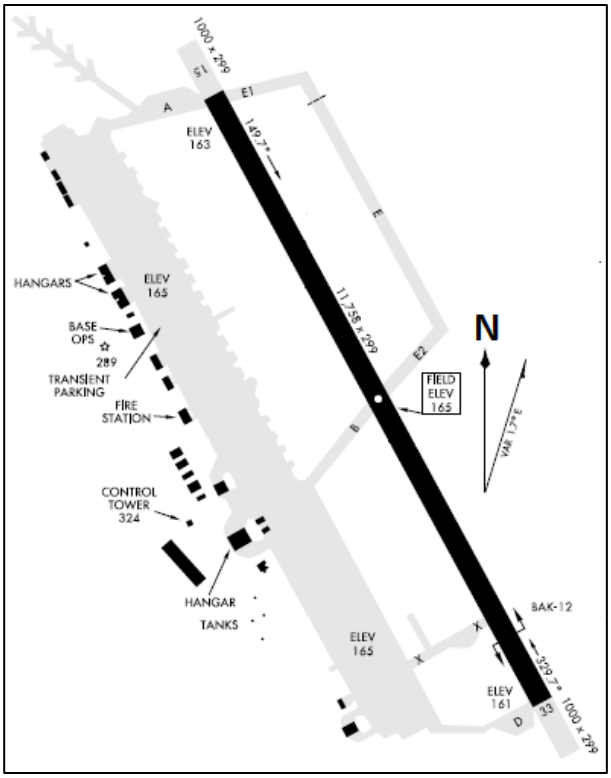
Air Traffic Control Services

The Shreveport-Barksdale area contains Class C airspace, two-way radio and a MODE C transponder are required to fly within this airspace. Two-way radio communication must be established with Shreveport Approach prior to entry to, and maintained while in, the Class C airspace. Pilots of arriving aircraft should contact Shreveport Approach on the published frequency and give their position, altitude, radar beacon code, destination, and request Class C service. Radio contact should be initiated far enough from the Class C airspace boundary to preclude entering Class C airspace before two-way radio communications are established. Pilot participation in the outer area is strongly encouraged.

Class C airspace procedures are set up so that ATC can provide traffic advisories and conflict resolution as required. When two-way radio communications and radar contact are established, all participating VFR aircraft are: 1.) Sequenced to the primary airport 2.) Provided Class C services within the Class C airspace and the outer area. 3.) Provided basic radar services beyond the outer area on a workload permitting basis, but this can be terminated by the controller if workload dictates. Additionally, VFR aircraft are separated from IFR aircraft within the Class C airspace by any of the following: 1.) Visual separation. 2.) 500 feet vertical; except when operating beneath a heavy jet. 3.) Target resolution.

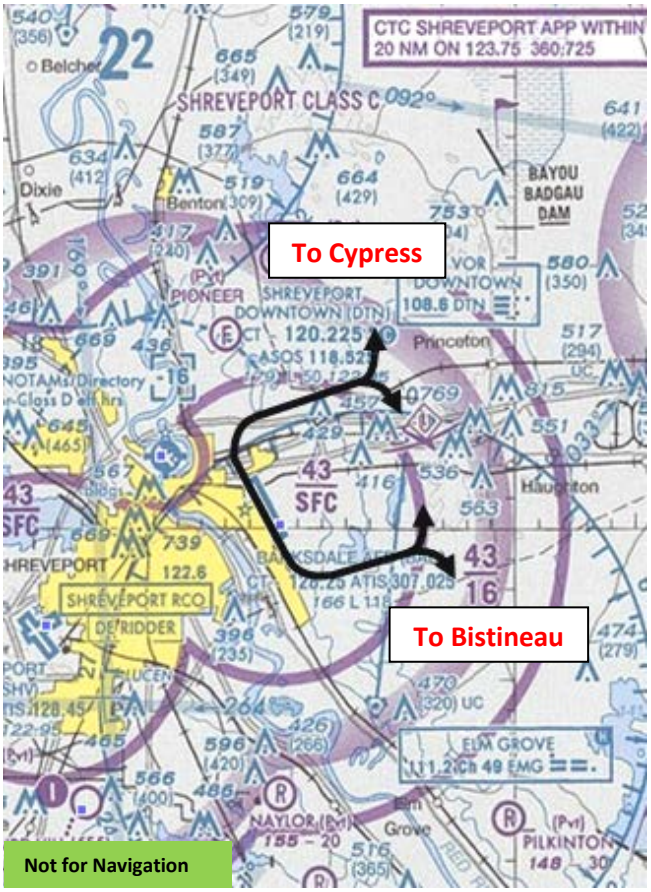
Local Frequencies	**VHF**	**UHF**
Shreveport Approach		
0600 – 1200Z ++	121.4	381.6
All other times ++		
320° – 152°	118.6	350.2
153° – 319°	119.9	335.55
Shreveport Regional		
Shreveport Tower	121.4	381.6
UNICOM	122.95	
ATIS	128.45	
Shreveport Downtown		
Downtown Tower / CTAF	120.225	284.6
UNICOM	122.95	
Barksdale AFB (Open 24 hrs / Closed Federal Holidays)		
Barksdale Tower	128.25	278.3
ATIS		307.025

NAVAIDS		
TACAN	Ch 105X	
VORTACs		
Elm Grove	Ch 49	111.2
Belcher	Ch 121	117.4



Barksdale AFB Airfield Diagram

Departure Procedures



Standard B-52 Departure

Single ship B-52s depart Barksdale on runway heading to 2,000’ MSL until cleared by ATC for higher.

A formation of B-52s departs in 30 – 60 second intervals on runway heading to 11,000’-12,000’ MSL.

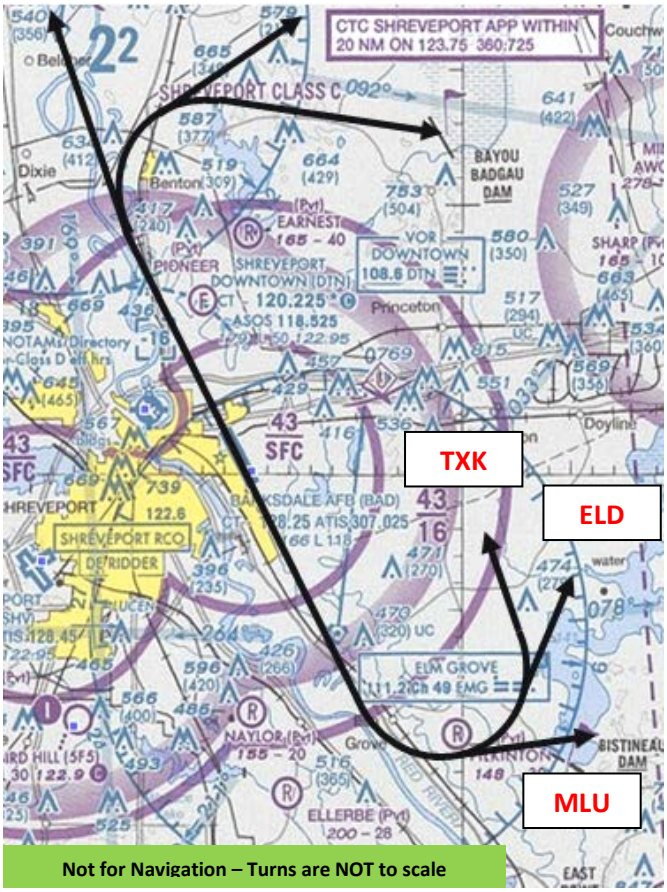
By approximately 10 NM from the departure end, B-52s will make a climbing turn toward Texarkana, El Dorado, or Monroe.

Cypress / Bistineau VFR Departures

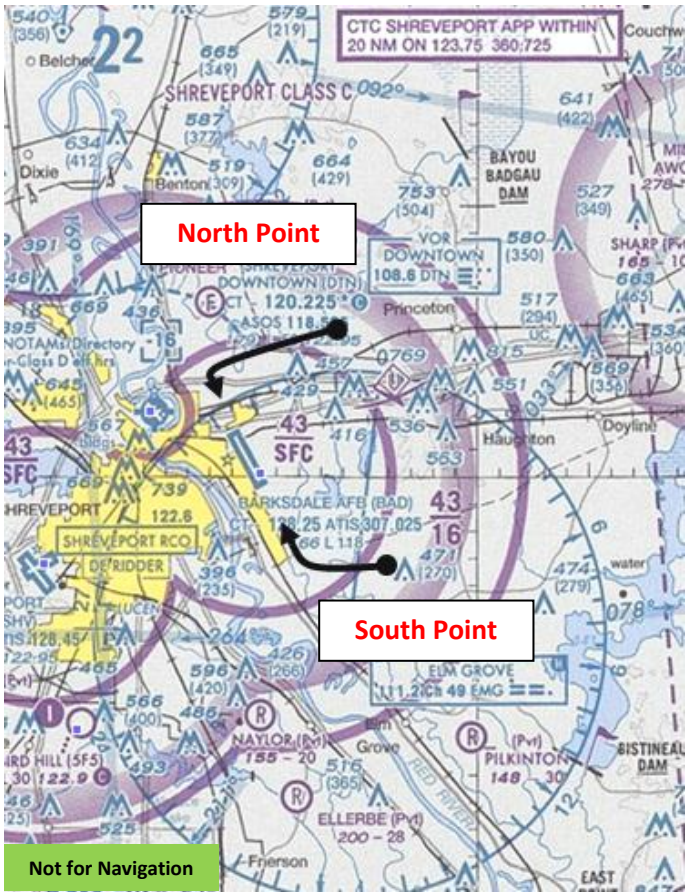
Used exclusively by fighter aircraft departing Barksdale AFB enroute to the Warrior Military Operating Area (MOA) near Alexandria, the Anne MOA near Texarkana, or the Hackett/Jena MOA near Natchitoches.

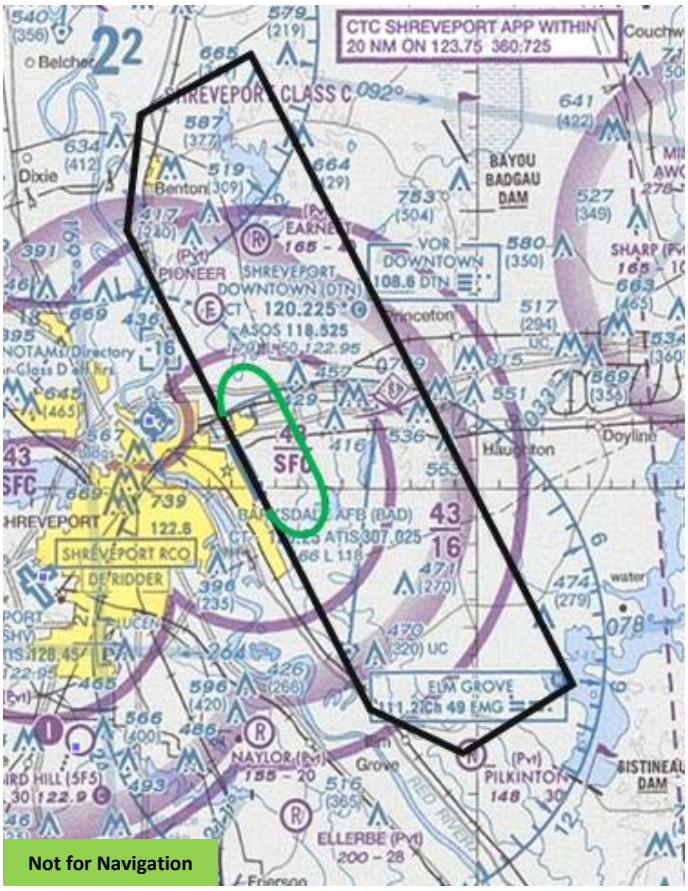
- Be advised: As many as four aircraft may depart at one time, spaced as far as 30 seconds in trail until joining as a 4-ship enroute.

On departure, aircraft turn within 2 miles of runway departure end to a 050° heading, maintaining at 1500’ MSL. At 6 DME, aircraft turn on course and proceed to Cypress or Bistineau, while maintaining at or below 1,500’ MSL until cleared by ATC for higher.



Barksdale Arrival Procedures





VFR Overhead Traffic Pattern

Aircraft usually enter the pattern via North or South Point depending on active runway at 2,500' MSL

North Point: BAD 012° / 6 DME

South Point: BAD 120° / 6 DME

Pilots descend to pattern altitude and fly direct to a 3 to 4 mile initial

Pattern altitude is 1,700' MSL for fighter type aircraft or small jet trainers and 1,200' MSL for heavy or cargo aircraft

Fighter or trainer type aircraft may fly a "tactical initial" with a wingman flying beside the lead aircraft

Note: When spacing is insufficient, Barksdale Tower may direct or pilot's may request a 180° turn away from the runway. After separation requirements are met aircraft will initiate another 180° turn towards the runway.

IFR Radar Pattern

Pattern altitude is between 2,000' to 3,000' MSL

Aircraft on final to Runway 15 are in close proximity to Shreveport Downtown airport. Extra vigilance is required by all pilots when operating in this area.

Aircraft departing Barksdale for the local radar pattern start a climbing turn to a 050° heading and climb to 2,000' MSL.

The IFR pattern depicted may be widened, narrowed, lengthened, or shortened based on ATC requirements for spacing.

NOTE: B-52H's are not monitoring VHF, do not have TCAS, or any sensors to determine the location of traffic other than visual acquisition and ATC advisories

Common Operating Areas

Anne MOA
Low: 100’ AGL – 6,999’ MSL
High: 7,000’ MSL – 17,999’ MSL
Sunrise to Sunset*
Monday – Friday
Agency: Fort Worth ARTCC

Hackett MOA
7,000’ MSL – 17,999’ MSL
0730 – 2200hrs (Local)*
Monday – Friday
Agency: Fort Worth ARTCC

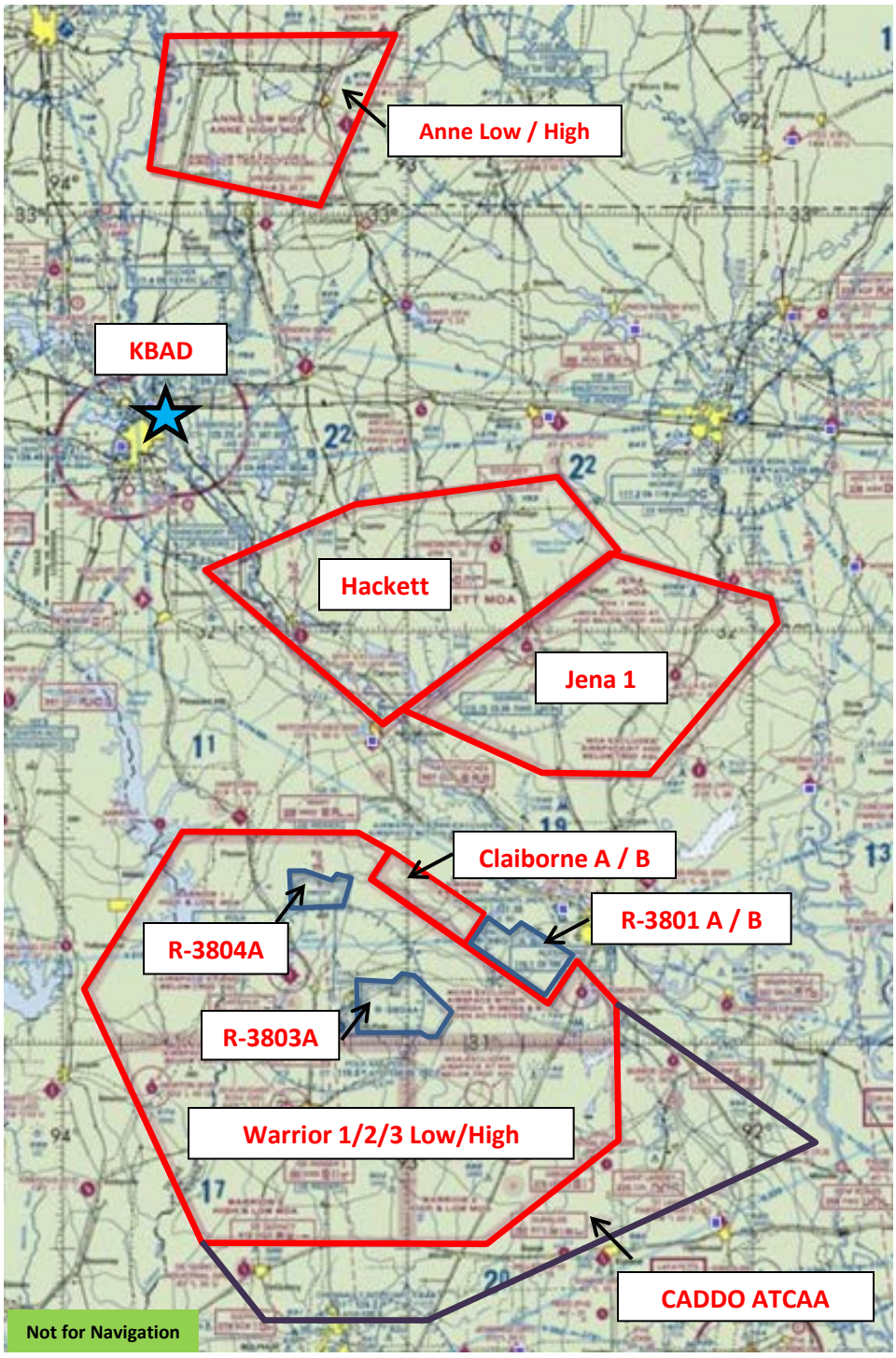
Jena 1 MOA
100’ AGL – 5,000’ MSL
0800 – 2200hrs (Local)*
Monday – Friday
Agency: Houston ARTCC

Claiborne MOA
A: 100’ AGL – 9,999’ MSL
B: 10,000’ MSL – 17,999’ MSL
0730 – 2200hrs (Local)*
Monday – Friday
Agency: Fort Polk Approach

Warrior 1/2/3
Low: 100’ AGL – 9,999’ MSL
High: 10,000’ MSL – 17,999’ MSL
0700 – 2200hrs (Local)*
Monday – Friday
Agency: Houston ARTCC

R-3803A & R-3804A
Surface – 18,000’ MSL
Continuous
Agency: Houston ARTCC

R-3801A/B
A: Surface – 9,999’ MSL
B: 10,000’ – 17,999’ MSL
0800 – 2200hrs (Local)*
Monday – Friday
Agency: Polk Approach



Caddo ATCAA Extension (Effective 29 May 2104)
FL180 – FL230 (Includes lateral boundaries of Warrior 1/2/3)
Times by NOTAM and as needed
Sunday - Saturday
Agency: Houston ARTCC

* *Other times by NOTAM*

Please reference a current VFR sectional for updates.

Other Local Operations of Concern

Pipeline Flight Operations

Common tracks are depicted in Black.

Gas pipeline flight operations are conducted in C-172/C-182s in the Shreveport/Bossier City area. These flight depart from civilian airports in the Shreveport and East Texas area and fly along the gas pipelines depicted at 500’ AGL. These aircraft normally cruise between 90 – 120 knots.

Normal hours of operations are Monday – Friday during daylight hours. Additional lines flown on Wednesday afternoons include a line from 8 miles Southeast of Barksdale, northeast to Haynesville, and another line from two miles east of Barksdale to Houston.

Ultralight Flight Operations

Depicted by a blue circle over Touchstone Ridge Ultralight Flight Park (84LA). The grass airstrip used to house a single ultralight aircraft, however the field has fallen into disuse. Flight operations were only conducted during daylight hours below 900’ AGL.

Skydiving Operations

Depicted by a red circle over the town of Gilliam, LA. All operations take place in the vicinity of the private airfield. The jumpers free-fall for 30 to 50 seconds depending on the jump altitude which is typically between 10,000’ to 13,000’ MSL. Operations are normally conducted on Saturdays and Sunday from Sunrise to Sunset and occasionally during the week.

Collision Avoidance Checklist

1. Check Yourself
Start with a check of your own condition. Your eyesight and consequently your safety depend on your mental and physical condition.

2. Plan Ahead
Plan your flight ahead of time. Have charts folded in proper sequence and with handy reach. Keep your cockpit free of clutter. Be familiar with headings, frequencies, distances, etc., ahead of time; so, that you spend minimum time with your head down in your charts.

3. Clean Windows
During the walk-around, make sure your windshield is clean. If possible, keep all windows clear of obstructions.

4. Adhere to Standard Operating Procedures
Stick to Standard Operating Procedures and observe the regulations of flight, such as correct altitudes and proper pattern practices. In most in-flight collisions, at least one of the pilots involved was not where he was supposed to be.

5. Avoid Crowds
Avoid crowded airspace enroute, such as directly over a VOR by passing slightly to the left or right of the VOR stations. Pass over airports at a safe altitude, being particularly careful within a 25-mile radius of military airports and busy civil fields. Military airports usually have a very high concentration of fast-moving jet traffic in the vicinity and a pattern that extends to 2,500 feet above the surface. Jets in climbout may be going as fast as 500 mph.

6. Compensate for Design
Compensate for your aircraft's design limitations. All planes have blind spots; know where they are in your aircraft. One of the most critical midair potential situations is a faster low-wing plane overtaking and descending on a high wing on final approach.

7. Equip for Safety
Your airplane can help avoid collisions. Certain equipment that was once priced way above the light plane owner's reach is now available at reasonable cost to all aviation segments. High intensity strobe lights increase your contrast by as much as 10 times day or night. In areas of high density, use your strobes or your rotating beacon constantly, even during daylight hours. The cost is pennies per hour; a small price to pay for making your aircraft easier for other pilots to see. Transponders significantly increase your safety by allowing radar controllers to keep your traffic away from you and vice versa. Transponders also increase your chances of receiving radar traffic advisories, even on VFR flights.

8. Speak Up, Listen Up
Use your radio, as well as your eyes, when approaching an airport. If you are operating close enough to the airport in terms of altitude and location to be near traffic going to or from that airport, consider making a call to state your position, altitude and intentions. Find out what the local traffic situation is. At an airport with radar service, call the approach control frequency and let them know where you are and what you are going to do. At non-towered fields, listen to the common traffic advisory frequency (CTAF) to develop a mental picture of traffic around you.

9. Scan, Scan, Scan!
The most important part of your checklist, of course, is to keep looking where you're going and to watch for traffic. Make use of your scan constantly. If your traffic seems to be moving, you're not on a collision course, so continue your scan and watch it from time to time. If it doesn't appear to have motion, however, you need to watch it very carefully, and get out of the way, if necessary.

Basically, if you adhere to good airmanship, keep yourself and your plane in good condition, and develop an effective scan time-sharing system, you should have no trouble avoiding in-flight collisions. As you learn to use your eyes properly, you will benefit in other ways. Remember, despite their limitations, your eyes provide you with color, beauty, shape, motion and excitement. As you train them to spot minute targets in the sky, you'll also learn to see many other important "little" things you may now be missing, both on the ground and in the air. If you couple your eyes with your brain, you'll be around to enjoy these benefits of vision for a long time.

Source: Federal Aviation Administration

Scan Techniques and Patterns

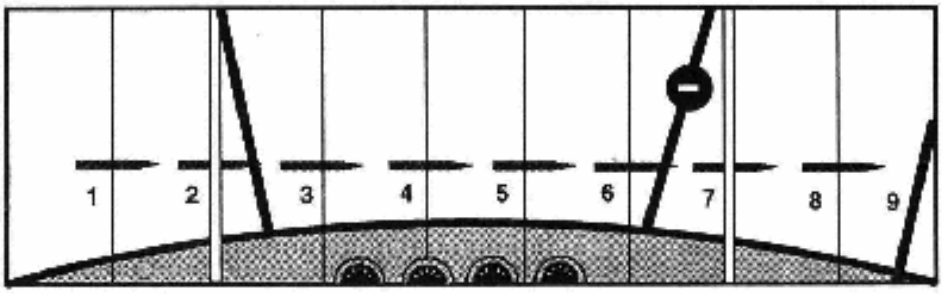
In normal flight, you can generally avoid the threat of an in-flight collision by scanning an area *60 degrees to the left and to the right of your center visual area.* This advice does not mean you should forget the rest of the area you can see from side windows every few scans. Horizontally, the statisticians say, you will be safe if you *scan 10 degrees up and down from your flight vector*. This technique will allow you to spot any aircraft that is at an altitude that might prove hazardous to your own flight path, whether it is level with you, below and climbing, or above and descending.

Block System

Your best defense against in-flight collisions is an efficient scan pattern. Two basic scans that have proved best for most pilots are variations on a technique 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. Each of these fixes becomes the focal point of your field of vision (a block 10-15° wide). By fixating every 10-15 degrees wide), 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 accommodation and detection.

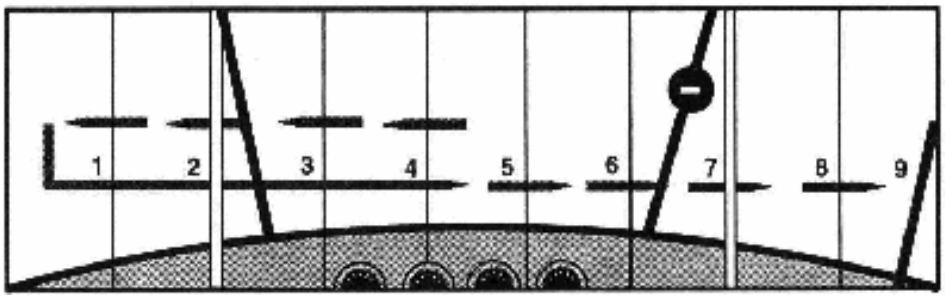
Side-to-Side Block Scan

One method of block scan is the "side-to-side" motion. 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 panel.



Front-to-Side Block Scan

The second form is the "front-to-side" version. Start with a fixation in the center block of your visual field (approximately the center of the front windshield in front of the pilot). Move your eyes to the left, focusing in each block, swing quickly back to the center block, and repeat the performance to the right.



Source: Federal Aviation Administration

Wake Turbulence

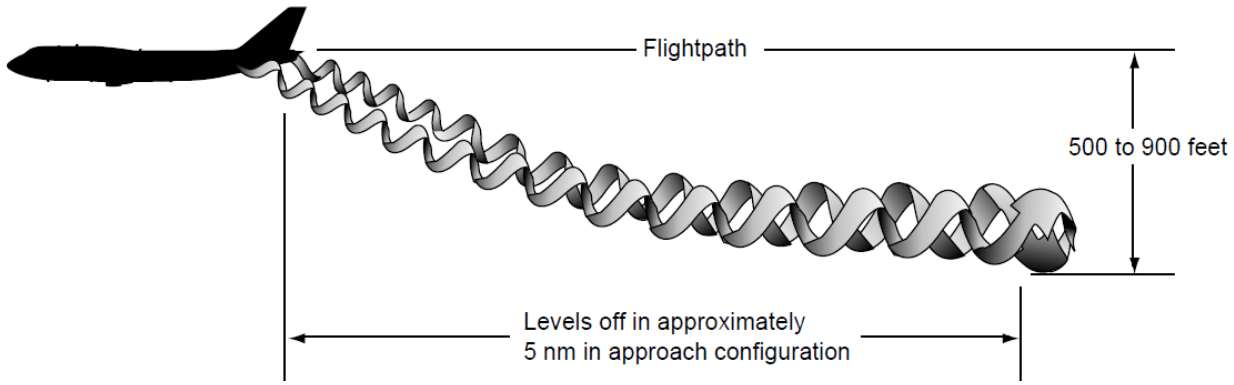
Near a B-52H, wake turbulence is a major concern for smaller aircraft. Flight tests have shown that the vortices from larger aircraft sink at a rate of several hundred feet per minute, slowing their descent and diminishing in strength with time and distance behind the generating aircraft. Atmospheric turbulence hastens breakup.

Pilots should fly at or above the preceding aircraft's flight path, altering course as necessary to avoid the area behind and below the generating aircraft.

Avoid the area below and behind the generating aircraft (500 to 900 feet and 5 NM), especially at low altitude where even a momentary wake encounter could be hazardous.

Under certain conditions, airport traffic controllers apply procedures for separating IFR aircraft. If a pilot accepts a clearance to visually follow a preceding aircraft, the pilot accepts responsibility for separation and wake turbulence avoidance. The controllers will also provide to VFR aircraft, with whom they are in communication and which in the tower's opinion may be adversely affected by wake turbulence from a larger aircraft, the position, altitude and direction of flight of larger aircraft followed by the phrase “CAUTION - WAKE TURBULENCE.”

After issuing the caution for wake turbulence, the airport traffic controllers generally do not provide additional information to the following aircraft unless the airport traffic controllers know the following aircraft is overtaking the preceding aircraft. ***Whether or not a warning or information has been given, however, the pilot is expected to adjust aircraft operations and flight path as necessary to preclude serious wake encounters.***



Source: Aeronautical Information Manual (3 Apr 14)


U.S. AIR FORCE