

Mid-Air Collision Avoidance



***120AW, MONTANA AIR NATIONAL
GUARD
C-130H***

***40HS & 550HS, MALMSTROM AFB
UH-1N Huey / MH-139A Grey Wolf***

***Great Falls, Montana
Current as of 15 March 2026***

INTRODUCTION

Midair collision avoidance (MACA) is of vital importance to all pilots, and those of us flying in Big Sky Country are no exception. Along with scheduled airline traffic and various types of military traffic in the region, Montana is home to a large base of general aviation enthusiasts.

Although midair collisions between military and civilian aircraft are fairly rare when considering the total number of midair collisions, nearly 80% of near midair collisions reported by military aircraft involve general aviation aircraft.

This pamphlet was designed to increase pilot awareness of the complex flying activities occurring in the local area. Please take a few minutes to review this information— you may learn something about local flight hazards that will make your next flight a safer, more educated experience.

Please contact the 120th Airlift Wing Safety Office at (406) 791-0410, or the 40th Helicopter Squadron Flight Safety Office at (406) 731-6727 with any questions or concerns you might have regarding military flight operations conducted in the local area.

-Fly Safe!
120AW Safety Office
Montana Air National Guard

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Great Falls IAP (KGTF)

Home to the 120AW C-130H Hercules

- Montana Air National Guard (MTANG)
- C-130 flying operations are based at the Great Falls IAP



Runway 03

- MTANG shares the airfield with:
 - General Aviation pilots
 - Department of Homeland Security
 - FedEx, AvMax
 - Airline Operators
 - Malmstrom AFB Helicopters



C-130H

Specifications:

Max Speed: 318 KIAS

Max T/O Weight: 155,000 lbs

Service ceiling: 25,000 ft

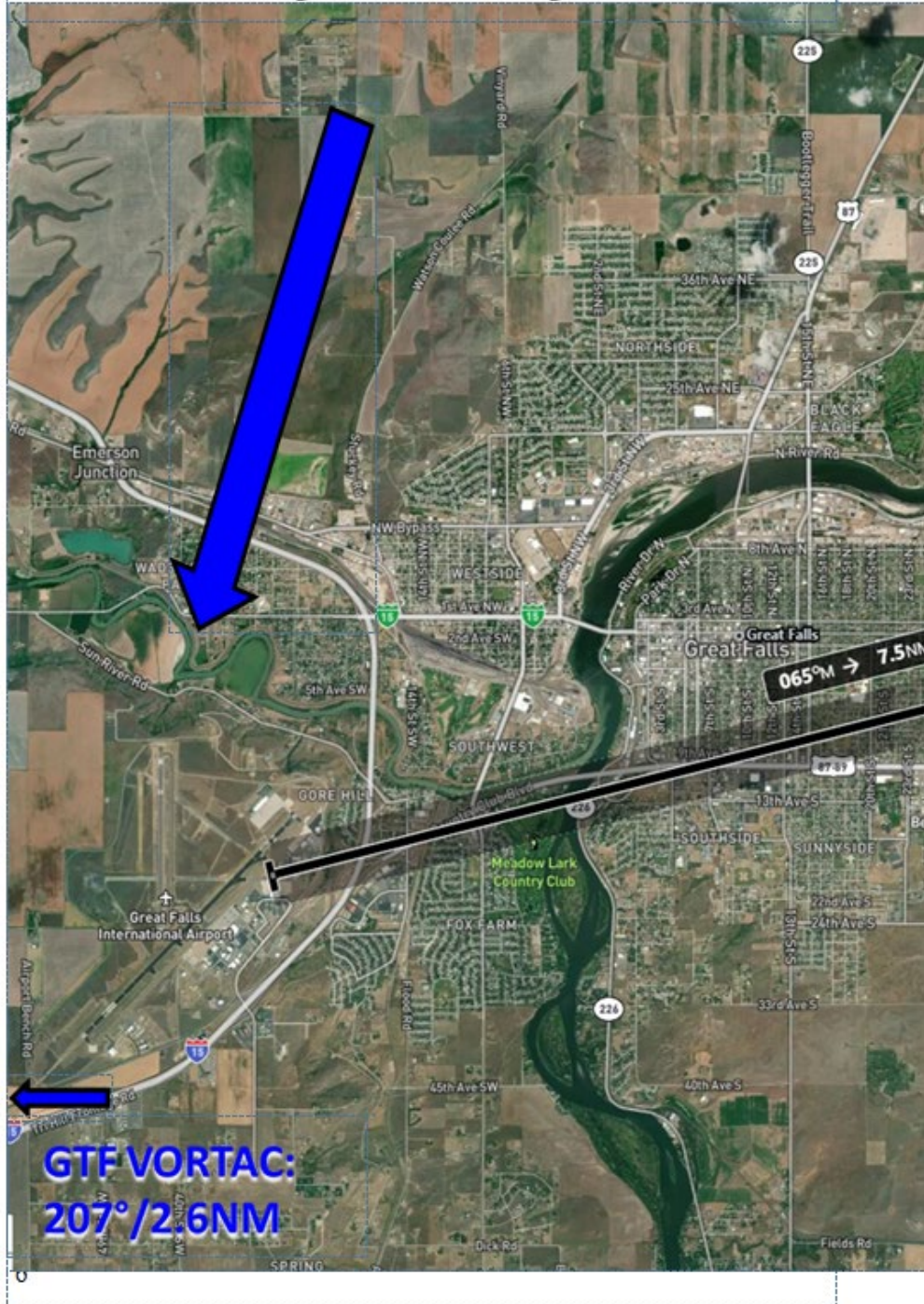
Length: 97 ft 9 in

Wingspan: 132 ft 7 in

Height: 38 ft 5 in

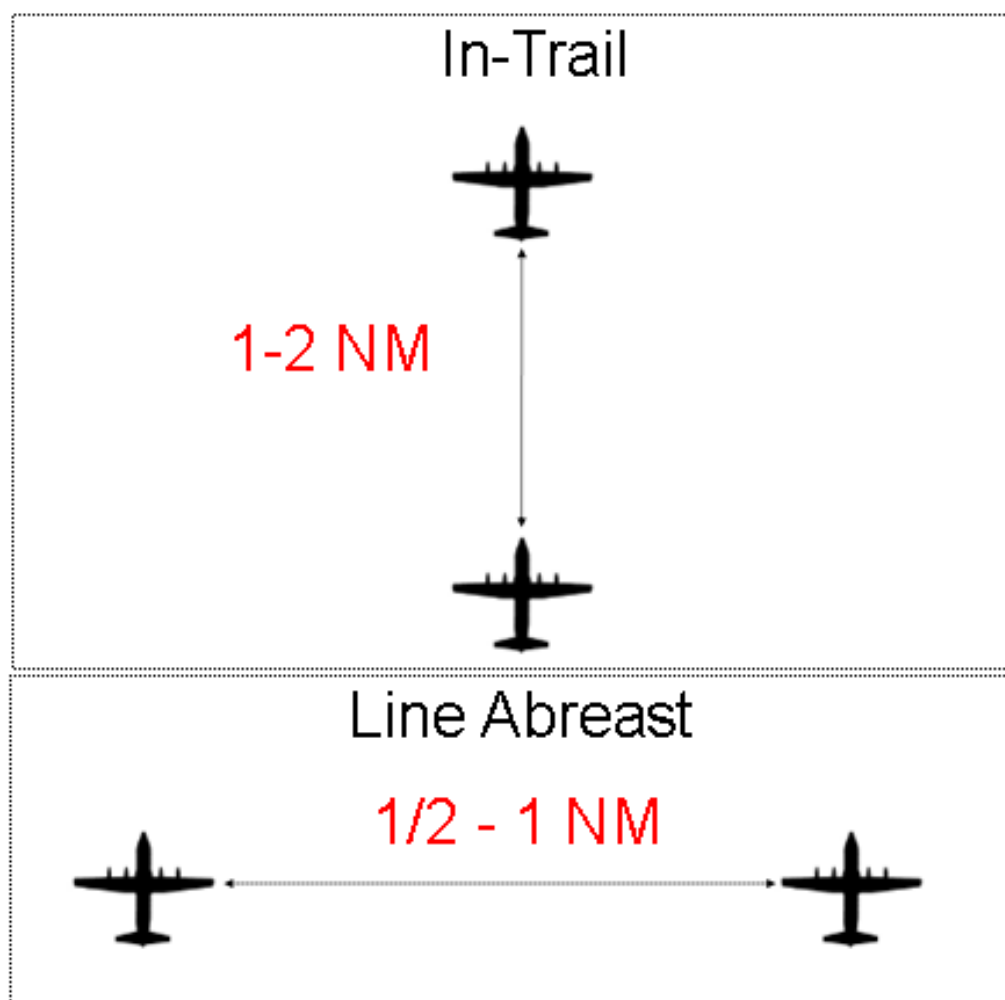


Great Falls IAP (KGTF) Primary Runway 03/21



Formations

- All C-130's are equipped with both UHF and VHF radios, but primarily use VHF frequencies for ATC communication but UHF for air-drops.
- C-130's do have TCAS capability; but air-crew also clear their flight paths with visual lookout.
- Expect C-130's to fly 120-250 KIAS enroute to and from the training airspace!



**One of the best ways to
avoid
a
Mid-Air
while flying in the local area
is to file an
IFR Flight Plan
or request
Flight Following,
and

SEE and AVOID!**

KGTF Military Flight Procedures and Operations

Military aircraft based at Great Falls IAP generally depart KGTF in all directions for their local training missions

On departure, military aircraft quickly climb to an enroute altitude of 300 ft AGL to 14,000 ft MSL

During arrival, C-130 aircraft are most



frequently inbound from all directions and remain at or below 13,000' MSL until within approximately 30 miles of the Great Falls International airport. The C-130's will typically land out of an overhead pattern in VFR conditions.

KGTF Military Pattern

1. **Pattern altitude.** Standard pattern altitude is 4700' MSL
2. **Traffic direction.** Patterns/maneuvers should be flown primarily to the northwest to avoid built up areas.
3. **Downwind.** Enter midfield downwind at pattern altitude
4. **Overhead.** Enter at 5200' MSL. Break northwest / as directed.
5. **Abeam.** Ingress at 500' – 1000' AGL from the south/east avoiding built up areas. Descent to 300' at approximately 1NM prior to break is permitted.
6. **Bootlegger North/South.** Climb to 13,000' MSL or as coordinated and fly 25NM straight in to runway 3 (Bootlegger South) or 21 (Bootlegger North).

Abeam



Aircraft overfly the runway perpendicularly at 500-1,000 feet AGL and between 200-220 KIAS.

Next, aircraft turn in the appropriate direction to intercept a normal downwind.

Slowdown and configuration take place on the downwind leg. Normal approach speeds are flown after this point (usually around 140 KTAS).

Overhead



Aircraft will intercept runway heading at “initial” at 1,500 feet above field elevation and between 200-220 KIAS. Initial is typically 4-6 miles from the approach end of the runway, but can vary. The “break point” is where aircraft turn to intercept downwind. Slowdown and configuration take place on the downwind leg. Normal approach speeds are flown once on final (usually around 140 KTAS).

Military Operating Area (MOA)

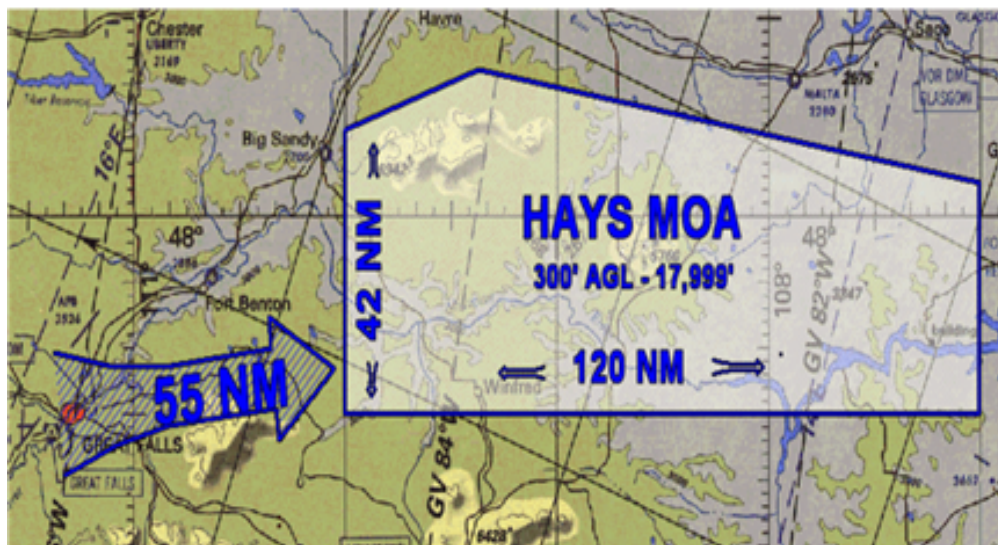
Montana ANG C-130's fly combat training missions at low to medium altitude. The Hays MOA is seldom used by the C130's but B-1 bombers and air-to-air refueling KC-135s often use this airspace.

MOAs are areas designated for use by military aircraft for air-to-air and air-to-ground combat mission training. This provides freedom to perform aggressive tactical maneuvers in airspace reasonably clear of VFR traffic. IFR flights are restricted from entering the airspace while it is being used by military aircraft.

If you plan to fly through the Hays MOA, it is a good idea to contact Salt Lake Center to determine if the MOA is in use. The airspace status changes frequently each day, so it is essential to ensure you have the most current information.



HAYS MOA



- 55 miles northeast of KGTF
- 300' AGL up to 17,999'
- Recommend calling 186 AS Operations or Salt Lake Center to determine status before flying through the MOA
- During flight planning use www.sua.faa.gov to determine active times

If possible, please deconflict laterally from the MOA while it is in use.

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.”

Most Commonly Flown Low Level Routes:

- Expect C-130's to operate at 180-250 KI-AS from 300 - 1500 feet AGL
- Recommend crossing perpendicular to the route above 2000' AGL
- If you see one aircraft, always assume there are more aircraft in the formation and aggressively clear your flight path



“Chargin’ Vis South”



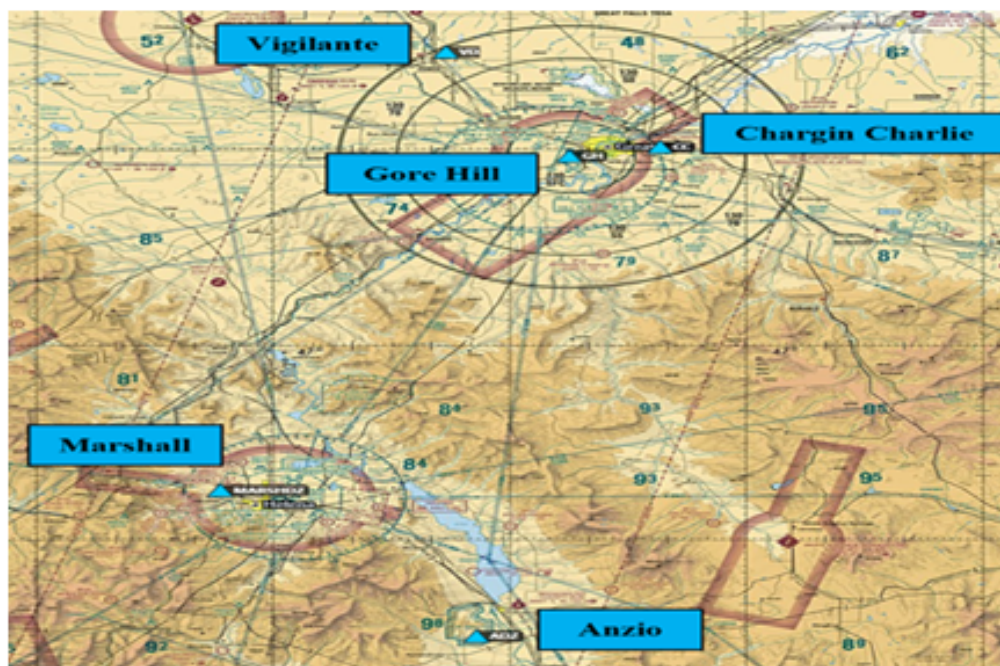
“Gore Vis East”



“Chargin’ Vis West”

120 AW Drop Zones (DZ)

Local Drop Zones used by the 120th AW



- **Vigilante DZ is located 2 miles NE of power:
N47 44.92 / W111 38.12**
 - **Gore Hill DZ located at Great Falls IAP:
N47 29.03 / W111 22.42**
 - **Chargin Charlie located at Malmstrom AFB:
N47 30.47 / W111 10.84**
 - **Marshall DZ located at Ft. Harrison near Helena:
N46 37.65 / W112 06.58**
 - **Anzio DZ located SW of Townsend:
N46 15.00 / W111 34.25**
-
- **Check the DINS NOTAM website for airdrop NOTAMs and location.**
 - **For any question on airdrop operations or military flying, please contact the 186 Airlift Squadron at 406-791-0192/0186**

Gore Hill Drop Zone

Gore Hill DZ is located at Great Falls IAP



Close up view of Gore Hill DZ



Chargin Charlie DZ

Chargin Charlie DZ located at Malmstrom AFB



Close up view of Chargin Charlie DZ



Marshall DZ

Marshall Drop Zone is located at Ft. Harrison



Close up view of Marshall DZ



Anzio Drop Zone

Anzio Drop Zone is located SSW of the Townsend Airfield



Due to Anzio DZ being a circular DZ, the run-in heading can vary from any direction.



Vigilante Drop Zone

Vigilante Drop Zone is located 2 miles NE of the town of Power



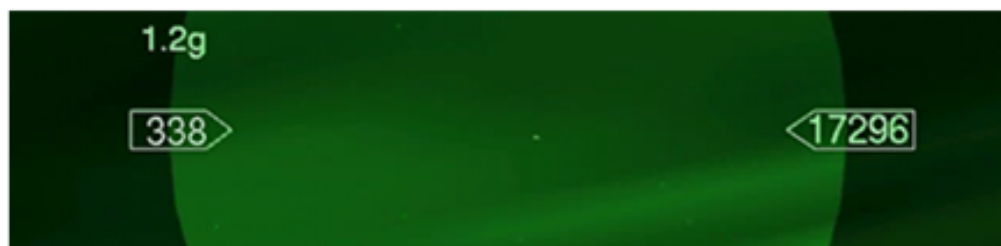
Vigilante DZ can also be a circular DZ, the run-in heading can vary from any direction.



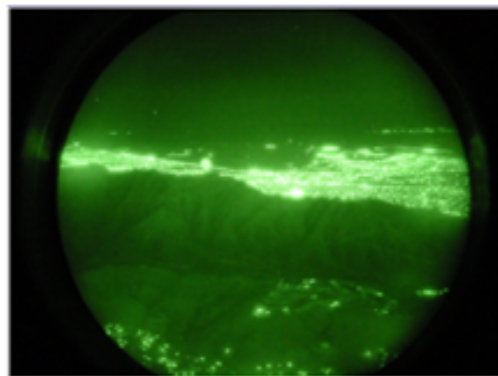
Night Military Operations

The 120th AW C-130's conduct night training missions throughout the year. Night training can occur during any day of the week.

During night operations, military pilots use Night Vision Goggles (NVGs) to enhance night vision. Unfortunately, NVGs can also lead to misperception of traffic conflicts, as depth perception is very poor, and other aircraft can easily be mistaken for lights on the ground, or even stars.



In the above NVG example, one of the tiny specks of light is a star, and one is another aircraft. Can you tell the difference?



In the NVG picture to the left, one can see how easily external lights from another aircraft can blend into the bright glow of cultural lighting around more populated areas.

Lights-Out Operations

In order to allow military pilots to train in the mission-critical lights-out night environment, the FAA has approved military Lights-Out operations in local MOAs.

While undergoing Lights-Out training operations, military pilots reduce or completely turn off all external aircraft lighting. Pilots are then able to use NVGs to engage in high-performance combat maneuvering, while remaining covert.

Two types of covert lighting may be used by military aircraft:

- Reduced Lighting: Aircraft anti-collision lights (stobes) off, but all position lights on. This type of Reduced-Lighting training may be conducted in any Special-Use Airspace without a NOTAM.
- Lights-Out Training: Both aircraft anti-collision and position lights are turned off. Lights-Out operations



must be NOTAM'd at least 48 hours in advance.



UH-1N Huey



Malmstrom AFB

Specifications:

Length: 57 feet, 3 inches

Width: 9 feet, 5 inches

Height: 12 feet, 10 inches

Maximum Speed: 130 KIAS

Ceiling: 15,000'





MH-139A Grey Wolf



Malmstrom AFB

Specifications:

Length: 54 feet, 8 inches

Width: 10 feet

Height: 16 feet, 4 inches

Maximum Speed: 167 KIAS

Ceiling: 20,000'



**40HS & 550HS helicopters
operate out of
numerous small
airstrips and landing zones
around the local area, up to 275
miles away from Malmstrom
AFB.**





Potential conflicts exist between Malmstrom Helicopter traffic and other low-flying aircraft operating in uncontrolled airspace, such as general aviation pilots, crop-dusters, etc.



Helicopters from Malmstrom provide missile field security, support, and civil Search and Rescue.

- Typical altitudes range from 50ft AGL to 3000ft AGL
- UH-1Ns cruise at 60-110KIAS. MH-139As cruise at ~135KIAS
- Crews have UHF and VHF radios, and usually monitor Great Falls Approach or the nearest CTAF frequency.
- Due to security requirements, helos may not always broadcast ADSB-out.

Visual scanning is imperative!

- Crews can receive transponder and ADSB signals—**broadcasting your position is highly beneficial!**



- Malmstrom helos frequently fly at night, and may operate with reduced lighting for formation

Malmstrom AFB

- Malmstrom AFB (KGFA) sits 8NM Northeast of Great Falls Int'l Airport (KGTF)
- KGFA is an active military heliport (the runway is CLOSED)
- KGFA frequency 271.9MHz.
- Helicopters frequently operate below 5,500MSL.
- Note- "Pilots should avoid Malmstrom AFB at all times."



See-and-Avoid

The number one cause of Mid-Air collisions is the failure to “See-and-Avoid.” One of the primary factors is a lack of proper visual scanning techniques. Knowledge of the limitations of the human eye and how to maximize the effectiveness of your visual lookout may someday save your life.

Many factors determine how the human eye detects objects. Some considerations are:

- Object size, shape and movement
- Object distance
- Reflectivity of an object
- Environmental contrast

All areas of your field of vision are not equal. The best visual acuity is within a central area of approximately 10-15 degrees, and acuity continues to decrease toward the outer limits of your field of vision.

A moving target is much easier to spot, thanks to the help of peripheral vision. Unfortunately, it is the object that appears stationary that is on a collision course with you! These are the most difficult to detect, drastically reducing available reaction time.

Proper Clearing & Scanning

Focus Time:

One of the most important, as well as most commonly “overlooked” limitations of the eye is the amount of time required to actually focus on an object. Adjusting the eye’s focal point (which all pilots do while timesharing their scan between the instrument panel and clearing their flightpath for potential traffic) can take several seconds.

Clearing / Scanning Techniques:

- Remember that anytime your head is in motion, vision is momentarily blurred and the brain will not be able to identify traffic.**
- To counter the above limitation, divide your scan into sections of airspace approximately 10-15 degrees wide. Scan each section separately for traffic for a few seconds before moving on to scan the next section of airspace.**
- Each time you adjust your scan from inside the cockpit to outside, remember to allow a few seconds for your eyes to refocus on a far object.**

Aviation Safety Reporting System (ASRS)

ASRS is an aviation safety program funded by the FAA and administered by NASA that is designed to encourage hazard and incident reporting, thereby reducing accidents. The program is:

voluntary, confidential and non-punitive,

if the incident is reported within 10 days of the violation/occurrence and:

- Was inadvertent and not deliberate
- Did not involve a criminal offense
- Did not cause an accident
- The reporting individual was qualified and held a valid operating certificate
- The reporting individual was not previously found in violation of regulations w/in the last five years

How Do I Report a Hazard or Incident on a NASA form?

- Go to the ASRS website at

<http://asrs.arc.nasa.gov>

- Submit electronically or mail your completed copy to: NASA AVIATION SAFETY REPORTING SYSTEM

DO NOT REPORT AIRCRAFT ACCIDENTS AND CRIMINAL ACTIVITIES ON THIS FORM.
 ACCIDENTS AND CRIMINAL ACTIVITIES ARE NOT INCLUDED IN THE ASRS PROGRAM AND SHOULD NOT BE SUBMITTED TO NASA.
 ALL IDENTITIES CONTAINED IN THIS REPORT WILL BE REMOVED TO ASSURE COMPLETE REPORTER ANONYMITY.

IDENTIFICATION STRIP: Please fill in all items to ensure return of strip.
 NO RECORD WILL BE KEPT OF YOUR IDENTITY. This section will be returned to you.



TELEPHONE NUMBERS where we may reach you for further details of this occurrence.

HOME HOURS

OTHER HOURS

NAME (required)

ADDRESS BOX (required)

ADDRESS LINE 2

CITY (required) STATE ZIP (required)

TYPE OF EVENT/SITUATION

DATE OF OCCURRENCE (MM/DD/YYYY)

MM/DD/YYYY

LOCAL TIME (24 HR. CLOCK) (HH:MM)

HH:MM

PLEASE FILL IN APPROPRIATE SPACES AND CHECK ALL ITEMS WHICH APPLY TO THIS EVENT OR SITUATION.

REPORTER

FLYING TIME (IN HOURS)

- Captain
 First Officer
 Pilot Flying
 Pilot Not Flying
 Relief Pilot
 Check Airman
- Single Pilot
 Instructor
 Dispatcher: yrs
 Other:

Total Time: hrs

Last 90 Days: hrs

Time in Type: hrs

CERTIFICATES & RATINGS

ATC EXPERIENCE

- Flight Instructor
 Multiengine
 Other:
- Instrument
 Flight Engineer

FPL Developmental

Radar yrs Supervisory yrs

Non-Radar yrs Military yrs

AIR SPACE

CONDITIONS / WEATHER ELEMENTS

LIGHT / VISIBILITY

ATC / ADVISORY SVC.

- Class A
 Class B
 Class C
 Class D
 Class E
 Class G
 Special Use
 TFR

- Fog
 Hail
 Icing
 Rain
 Other:
- Snow
 Thunderstorm
 Turbulence
 Windshear

Ceiling: feet

Visibility: miles

RVR: feet

ATC Facility Name:

AIRCRAFT 1

Your Aircraft Type

(Make / Model, e.g. B737, ND1 N 8, F18, etc)

Operator FAR Part

Other:

Operator

Other:

Mission

Other:

Every Pilot's Role in Collision Avoidance

- **Request Flight Following**
- **Ensure transponder is on and reporting mode 3 and C at all times**
- **Broadcast intentions via CTAF at uncontrolled airports**
- **Ensure proper exterior lighting; it is recommended to turn landing/ taxi lights on when operating within 10nm of any airport.**
- **If operating IFR, don't count on ATC to keep a mid-air from happening– remain vigilant and SEE and AVOID.**
- **Use all available resources to plan for a safe and enjoyable flight.**

Profile of a Mid-Air:

A three year study by the NTSB determined that:

- **Most midair collisions occurred during a pleasure flight with no flight plan.**
- **Nearly all occurred in VFR conditions during weekend, daylight hours.**
- **The majority were the result of faster aircraft overtaking and hitting a slower aircraft.**
- **No pilot is immune. Experience levels ranged from initial solo to the 15,000 hour veteran.**
- **The vast majority occurred at uncontrolled airports below 3,000 feet.**
- **En-route midairs occurred below 8,000' and within 25nm of an airport.**
- **Flight instructors were onboard one of the aircraft in 37% of the midairs.**



**BIGGER SKIES.
NO LIMITS.**



**AIR NATIONAL
GUARD**
GoANG.com/MT ▶ 406-791-0665



RESOURCES

- **Special-Use Airspace Information:**
www.faa.gov
- **AOPA Air Safety Foundation:**
<http://www.aopa.org>
- **Montana Air National Guard Website:**
<https://www.120thairliftwing.ang.af.mil/>
- **Malmstrom AFB Safety website:**
<http://www.malmstrom.af.mil>
- **FAA Safety Team (FAAST):**
<http://www.faasafety.gov>
- **Aviation Safety Reporting System:**
<http://asrs.arc.nasa.gov>

Contact Information:

- **120AW Flight Safety Office, Montana ANG:**
(406) 791-0410
- **186AS Operations, Montana ANG:**
(406) 791-0192/0186
- **40HS Flight Safety Office, Malmstrom AFB:**
(406) 731-6727
- **550HS Flight Safety Office, Malmstrom AFB:**
(406) 731-1267