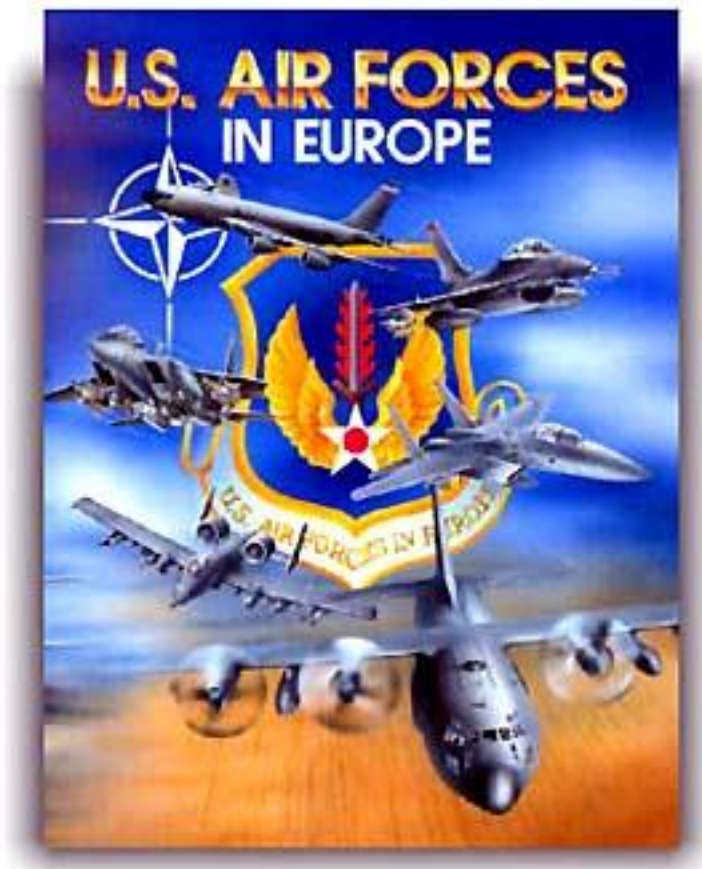


RAF LAKENHEATH AND RAF MILDENHALL

MID AIR COLLISION AVOIDANCE

2016



MID AIR COLLISION AVOIDANCE

Mid-Air Collision Avoidance (MACA) is an important topic within both military and civilian aviation. The purpose of this pamphlet is to provide information about the RAF Lakenheath/RAF Mildenhall area to help aircrew recognize and avoid mid-air collision hazards.

Both RAF Lakenheath and RAF Mildenhall have been active military installations since World War II. However, RAF Lakenheath and RAF Mildenhall aircraft frequently deploy to areas throughout Europe, the Mediterranean, Southwest Asia, and the United States. The resulting fluctuation in traffic density may lull some pilots into relaxing their vigilance when flying through/near the local area. This is a potential hazard. RAF Lakenheath is home to the 48th Fighter Wing with F-15E, F-15C and HH-60G aircraft. These aircraft fly upward of 40 to 50 missions per day. RAF Mildenhall supports the 100th Air Refueling Wing, which supports KC-135R aircraft; the 352d Special Operations Group, comprised of three squadrons of MC-130P/N, MC-130E, and CV-22 aircraft; the U.S. Navy's BE-200, and a multitude of transient Air Mobility Command aircraft, including C-5, C-17, and KC-10 aircraft. This level of traffic density creates a potential for mid-air collisions, and a demand for greater vigilance by all pilots transiting in the vicinity of the RAF Lakenheath/RAF Mildenhall Combined Military Aerodrome Traffic Zone (CMATZ).

To aid in seeing and avoiding military traffic in the RAF Lakenheath/RAF Mildenhall area, information on locally based aircraft, training routes, traffic patterns, and arrival/departure routes is attached. Listed airspeeds are in knots indicated airspeed (KIAS), which is roughly equivalent to true airspeed at low altitude.

Other aviators seeing you is just as important as you seeing others. Therefore, we strongly encourage all traffic transiting the RAF Lakenheath/RAF Mildenhall area to use traffic advisory services provided by Lakenheath Radar Approach Control on frequency 128.9 or 242.05. This service can help both military and civilian pilots to see and avoid each other. **Due to the speeds involved, many military aircraft routinely conduct practice approaches under radar services outside the boundaries of the CMATZ.**

In the interest of improved flying safety the 48FW and 100ARW Flying Safety Offices are available to speak to any assembly of pilots on the subjects contained in this pamphlet. The Flying Safety Office telephone numbers are (01638) 525659 at RAF Lakenheath, and (01638) 544719 at RAF Mildenhall. The RAF Lakenheath Radar Approach Control services RAF Lakenheath as well as RAF Mildenhall; the telephone number is (01638) 523942. If you have any questions regarding this pamphlet, please do not hesitate to call.

PLEASE CALL LAKENHEATH APPROACH CONTROL ON

128.9 / 242.05

Within 20 Miles of the CMATZ

RAF Lakenheath/RAF Mildenhall Combined Military Aerodrome Traffic Zone (CMATZ) and Aerodrome Traffic Zones (ATZs)

The extensive air traffic activity in the RAF Lakenheath/RAF Mildenhall area brings into clear focus the potential for mid-air collisions. While the final responsibility for avoiding such mishaps rests with the pilot, a number of services are available which can help lighten the pilot's burden in this regard. RAF Lakenheath Radar Approach Control (RAPCON) has the ability to provide a Basic Service, Traffic Service and Deconfliction Service to any aircraft transiting the CMATZ.

RAF Lakenheath RAPCON is responsible for the airspace within the CMATZ. Military aircraft transiting this zone must contact Lakenheath Approach before entering the CMATZ. Civilian aircraft, although not required, are strongly encouraged to contact Lakenheath Approach before entering the CMATZ. The CMATZ, by definition, is the airspace within five nautical miles of the mid-point of the longest runway, from the surface to 3000 ft above the aerodrome level. The airspace includes "stubs" extending 10nm from the end of each runway, and a width of 4nm (2nm either side of extended centerline) from 1000 ft to 3000 ft. The airspace includes a non-standard extension 5nm to the south of the Mildenhall runways (Ref: UKLF Handbook/MILDI 13-201 4.1.2). In general, the CMATZ shall include the area of approximately 15 miles surrounding the RAF Lakenheath and RAF Mildenhall airports. Pilots requesting traffic advisories and flight following are encouraged to contact Lakenheath Approach on VHF frequency 128.9/UHF frequency 242.05 within 20nm of the CMATZ.

Additionally, the RAF Lakenheath and RAF Mildenhall Aerodrome Traffic Zones (ATZs) fall within the confines of the CMATZ. The dimensions of an ATZ are as follows: a 2.5 nautical mile radius centered on the mid-point of the longest runway of the airfield, extending from the surface to 2000 feet above the aerodrome level. All pilots need to be aware of the requirement to receive prior approval from Air Traffic Control prior to entering an ATZ.

If your route of flight will take you near the RAF Lakenheath/RAF Mildenhall area, maintain a constant visual scan for conflicting traffic. **Although our military aircraft are receiving radar service, many of the smaller civil aircraft which are not transponder equipped may not be picked up on radar.** Also, almost all RAF Lakenheath aircraft operate on UHF only and do not hear civilian pilots (operating on VHF) making radio calls. Therefore, it is essential that all pilots employ the "see and avoid" concept. Remember---heads up, eyes out and fly safely.

UNITED KINGDOM LOW FLYING SYSTEM (UKLFS)

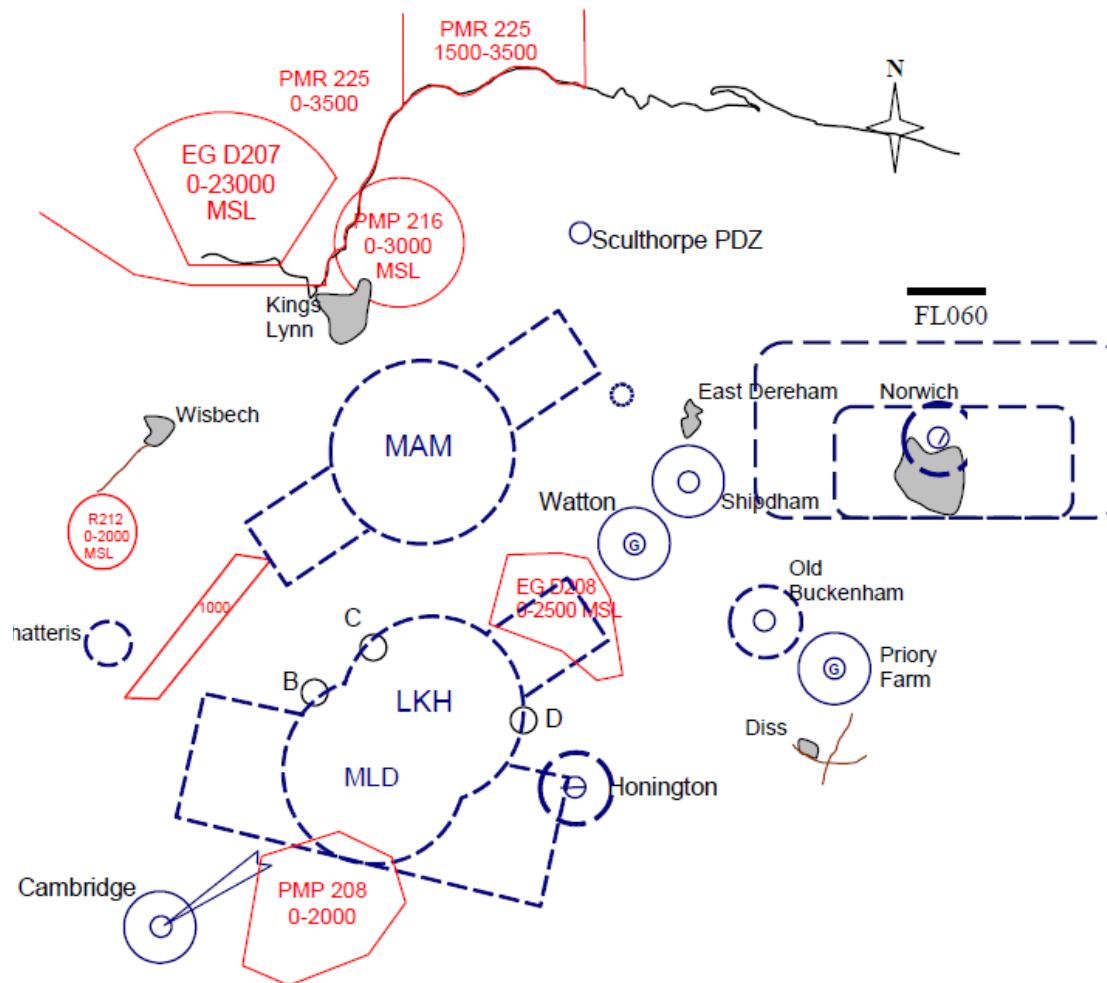
The UK Low Flying System is designed to facilitate low-altitude military training in the United Kingdom. The 352d Special Operations Group (SOG) and 56/57 Rescue Squadrons (RQS) conduct extensive training in the low flying system and in the area of East Anglia, especially the airspace surrounding RAF Mildenhall/RAF Lakenheath. These organizations conduct numerous operations utilizing the UKLFS, including area drop zones, landing zones, infiltration/exfiltration, Combat Search and Rescue (CSAR), helicopter air-refueling, assault zone reconnaissance and assessment, combat medical care, and the direction of Close Air Support (CAS) assets.

Many operations are carried out exclusively at night between the surface and 2000 feet AGL, at airspeeds ranging from 90 to 280 KIAS. Although night-vision goggles are an integral part of unit operations, they cannot be relied upon for visual de-confliction.

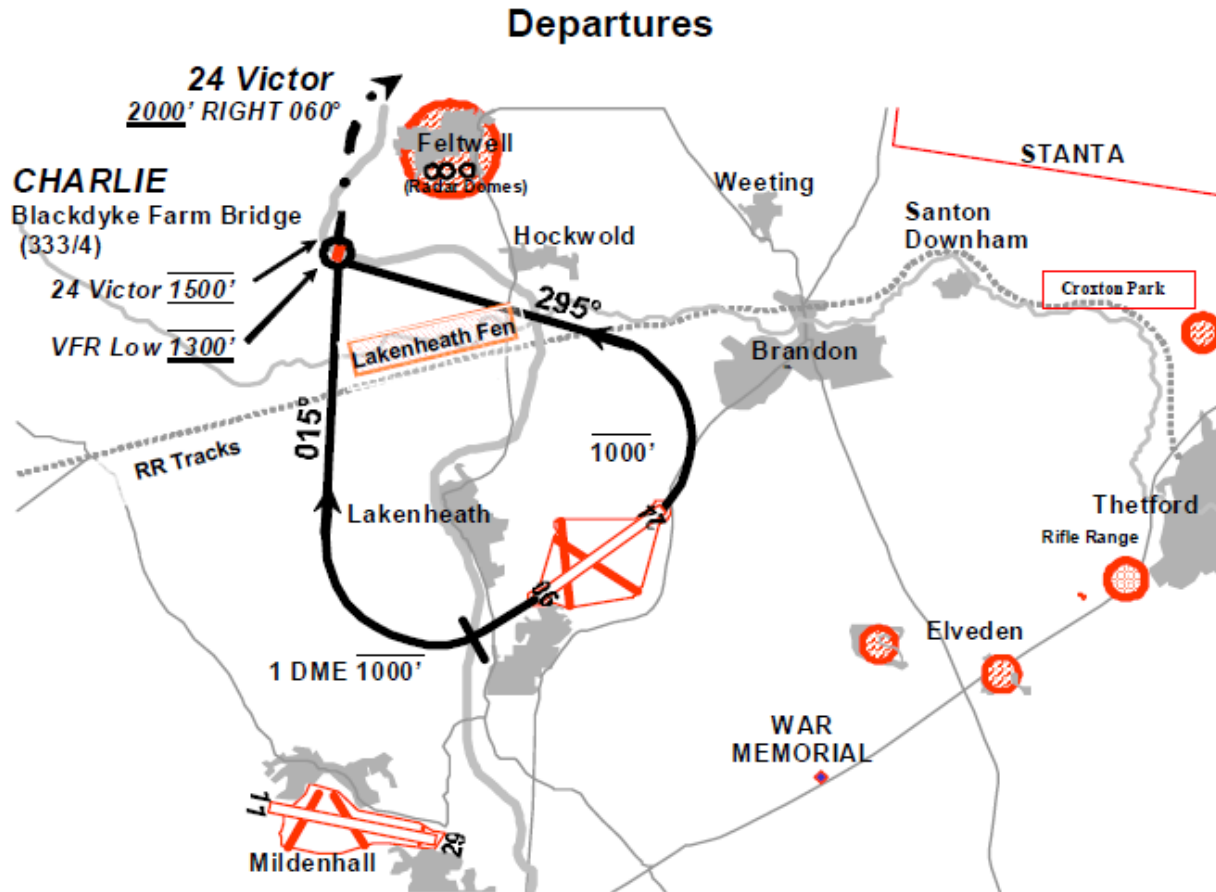
See the following map or consult the UK Low-Fly Handbook for information regarding the system's operational constraints and limitations. Any additional information can be obtained from the 352d SOG Safety Office at (01638) 544408 or 48 Fighter Wing Flight Safety Office at (01638) 525659 / (07833) 156196 .

Note: US military pilots are required to understand and use the UK Low-Fly Handbook as a flight planning tool; it provides valuable information on glider operations, restrictions, and other hazards associated with low flying in the UK.

RAF LAKENHEATH/MILDENHALL COMBINED MATZ/ AERODROME TRAFFIC ZONES



RAF LAKENHEATH VISUAL DEPARTURES



48 FW aircrew will be notified of Fen Restricted Pattern via 48 FW Safety Read File or the SOF

24 VICTOR (48 FW A/C requesting VFR Departure to IFR pick-up: Min WX is 2500'/8 km)

RWY 24 ONLY: Climb VMC on track 240°. Cross LKH 1 DME at or below 1000' MSL, turn right 015° to PT Charlie cross PT Charlie at 1500' MSL (**2500' MSL Fen Restricted Pattern, min weather 3000'/8km**). Cross Feltwell above 2000' MSL. Turn right 060° to intercept LKH 026°R. Cross 13 DME at or below FL190. Depart VMC or as instructed.

NOTE: If proceeding on an IFR flight plan, maintain VMC until able to pickup Deconfliction Service past PT Charlie. Avoid direct over flight of satellite tracking facility at RAF Feltwell.

VFR LOW (VFR dept to enter low fly 5/6, Min WX: 1800'/8 km, squawk: 7001):

RWY 24: Climb on track 240°. Cross 1 DME at or below 1000' MSL, turn right 015° direct PT Charlie, climb to 1300' MSL (**2500' MSL Fen Restricted Pattern, min weather 3000'/8KM**). Descend into low fly past PT Charlie

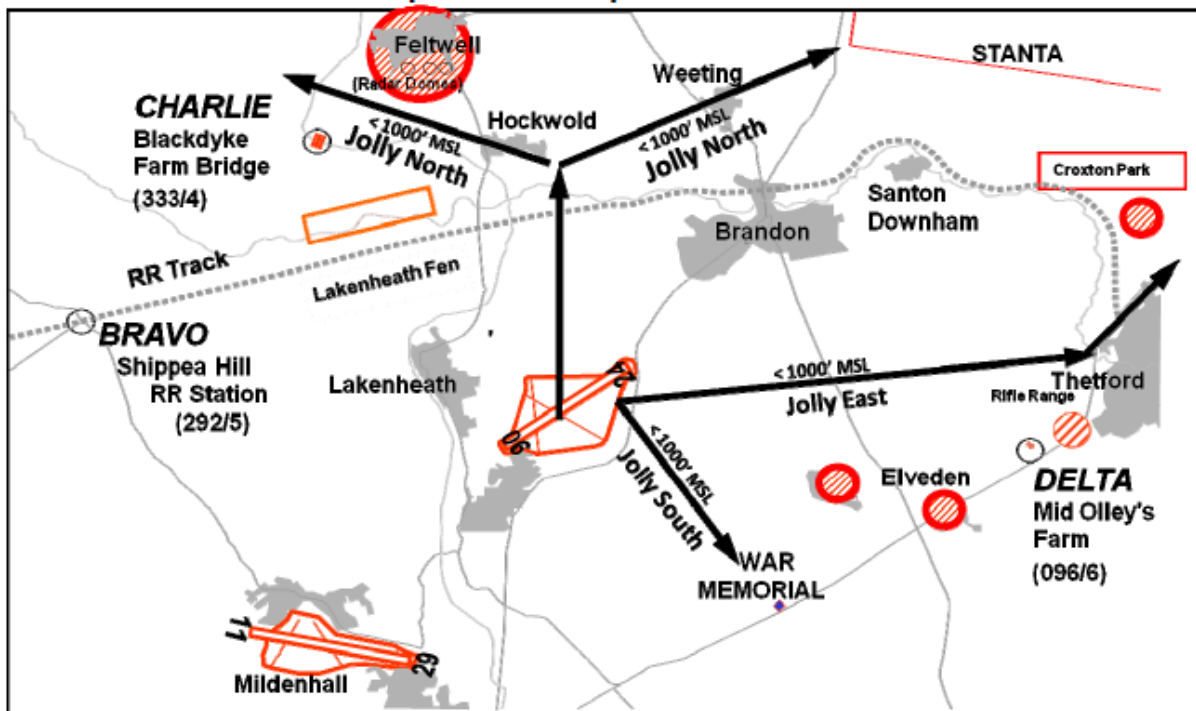
RWY 06: Turn left 295° direct PT Charlie NLT departure end of RWY to avoid Brandon. Cross the departure end of RWY at or below 1000 ft, then climb to 1300' MSL. Descend into low fly past PT Charlie. Avoid Marham MATZ.

AVOID BRANDON/SANTON DOWNHAM BY 0.5NM AND 5000' UNLESS ESTABLISHED ON FINAL DURING AN INSTRUMENT APPROACH TO RWY 24. AVOID LOCAL TOWNS OR VILLAGES BELOW 3000' WHEN OPERATING VFR. AVOID CROXTON PARK BY 1NM AND 3000'.

Helicopter VFR Procedure

Departure:

Helicopter VFR Departure Procedures



Departure from an uncontrolled area (i.e., taxiways, ramps, and parking areas) is at the pilot's own risk.

Jolly North Departure Depart direct to point Jolly North (N 52° 27.785, E 000° 33.544), climb and maintain at or below 1,000' MSL until reaching point Jolly North, unless directed otherwise by ATC. Report point Jolly North and continue on course, either east or west as required. For flight following (under Basic Service), squawk 0462 and contact Lakenheath departure on 250.3 (Local Channel 4). See figure.

Jolly East Departure Depart direct to point Jolly East, climb and maintain at or below 1,000' MSL until reaching point Jolly East, unless directed otherwise by ATC. Report point Jolly East and continue on course. For flight following (Basic Service), squawk 0462 and contact Lakenheath departure on 250.3 (Local Channel 4). NOTE: Approval from the TWR constitutes authorization to cross the RWY from north to southeast direct to point Jolly East. See figure.

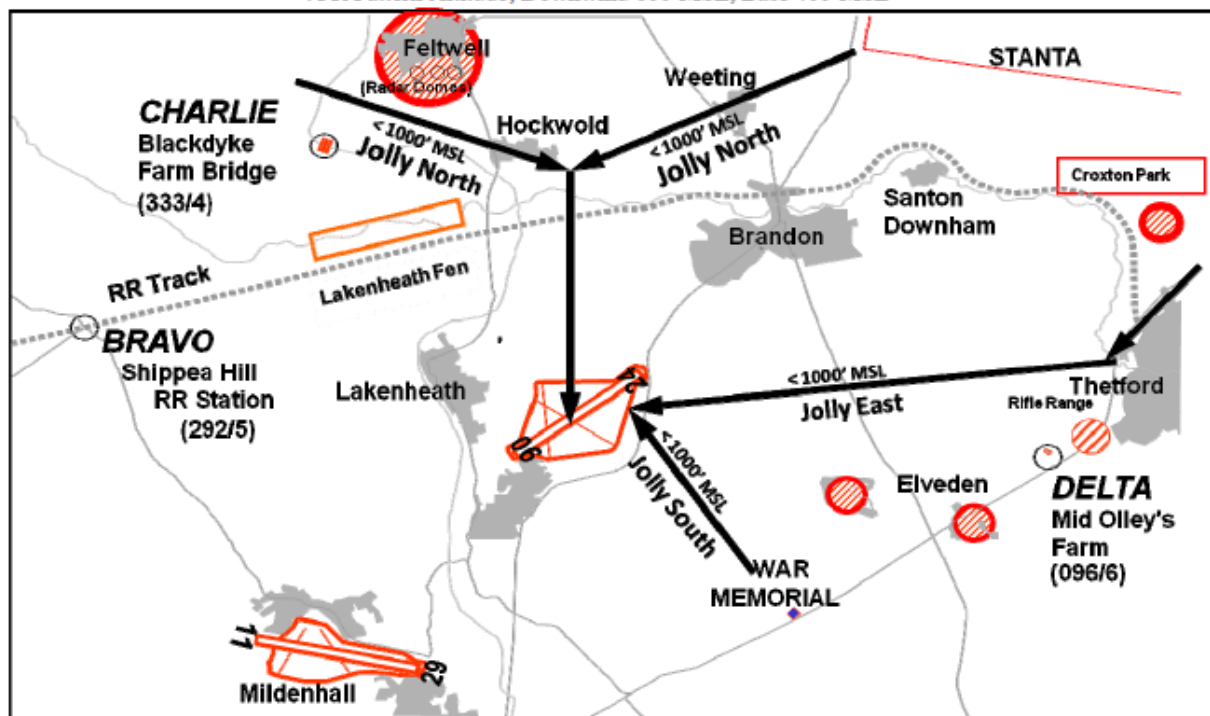
Jolly South Departure Depart direct to point Jolly South, climb and maintain at or below 1,000' MSL until reaching point Jolly South, unless directed otherwise by ATC. Report point Jolly South and continue on course. For flight following (Basic Service), squawk 0462 and contact Lakenheath departure on 250.3 (Local Channel 4). NOTE: Approval from the TWR constitutes authorization to cross the RWY from north to south direct to point Jolly South. See figure.

NOTE: When multiple helicopters are operating separately, expect to maintain 0 to 300' AGL on departure until cleared off by tower or traffic is visually identified. Helicopters may request SVFR when ceiling and visibility is below 700'/4800m. Tower patterns may be flown when the pattern is closed with ATC approval and if weather meets helicopter minimums.

Arrival:

Helicopter Pattern / VFR Arrival Procedures

VFR Pattern Altitude; Downwind 600' MSL, Base 400' MSL



Do not enter the CMATZ without ATC authorization.

Jolly North Arrival

Proceed inbound to Jolly North point, maintain at or below 1000' MSL, unless directed otherwise by ATC; contact TWR on 338.925 (Local Channel 3) prior to Jolly North point, request Jolly North recovery and state intentions--"(aircraft ID), REQUEST JOLLY NORTH RECOVERY, (intentions)." Subject to wind conditions, a southern approach to the requested landing area may be required. **NOTE:** Anytime the RWY environment will be entered/crossed, authorization from TWR is required. See figure.

Jolly East Arrival

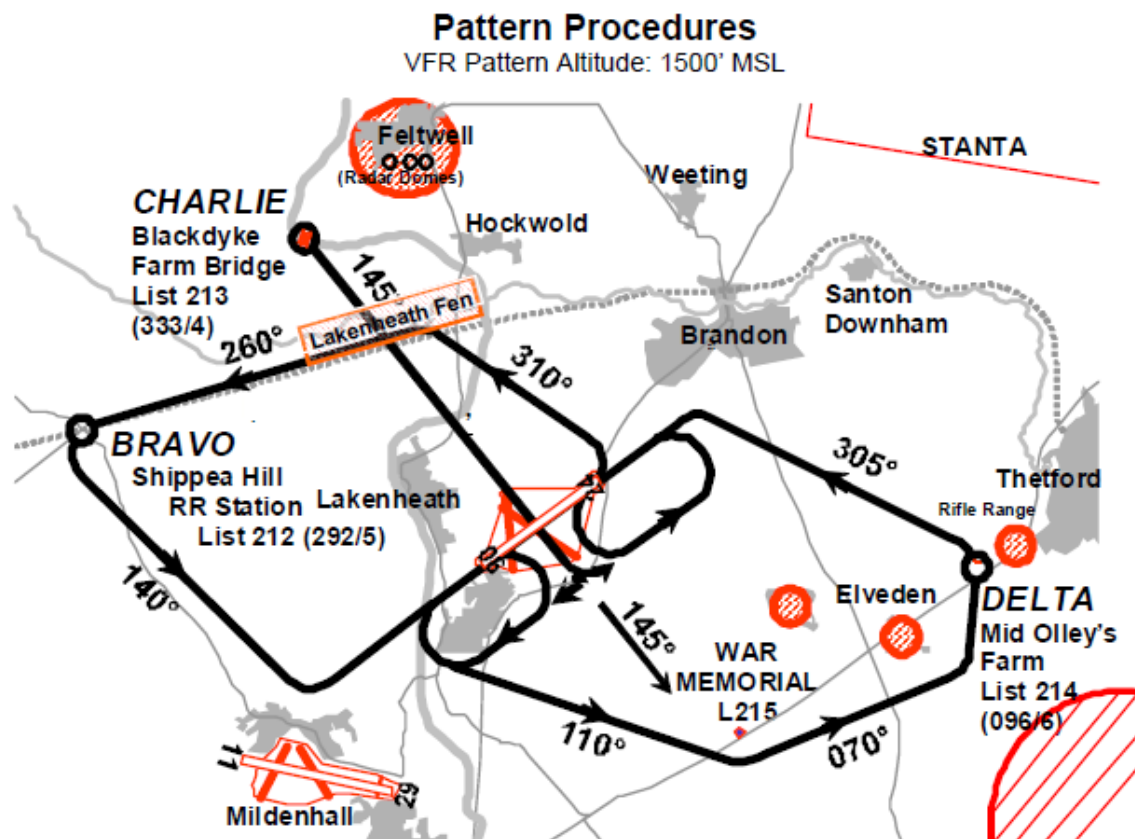
Proceed inbound to Jolly East point, maintain at or below 1000' MSL, unless otherwise directed by ATC; contact TWR on 338.925 (Local Channel 3) prior to Jolly East point, request Jolly East recovery and state intentions--"(aircraft ID), REQUEST JOLLY EAST RECOVERY, (intentions)." If approved, proceed direct to a point one mile south of mid-field and await further instructions. See figure.

Jolly South Arrival

Proceed inbound to Jolly South point, maintain at or below 1000' MSL, unless otherwise directed by ATC; contact TWR on 338.925 (Local Channel 3) prior to Delta, request Delta recovery and state intentions--"(aircraft ID), REQUEST JOLLY SOUTH RECOVERY, (intentions)." If approved, proceed direct to a point one mile south of mid-field and await further instructions. See figure.

NOTE: When multiple helicopters are operating separately, expect to maintain 500 to 800 feet AGL on arrival until cleared off by tower or traffic is visually identified. Helicopters may request SVFR when ceiling and visibility is below 700'/4800m. Tower patterns may be flown when the pattern is closed with ATC approval and if weather meets helicopter minimums.

RAF LAKENHEATH VISUAL PATTERNS



48FW aircrew will be notified of Fen Restricted Pattern (FRP) via 48 FW SRF or the SOF

RWY 06: Recover via PT BRAVO or CHARLIE. Report PT BRAVO and cross at or above 2000' MSL, proceed direct 3nm INITIAL and descend to pattern altitude. Avoid Mildenhall.

RWY 24: Recover via PT DELTA, DIRECT INITIAL, or PT CHARLIE.

DELTA: Request DELTA to INITIAL with RAPCON. Report PT DELTA and cross at or above 2000' MSL, proceed direct 3nm INITIAL and descend to pattern altitude.

INITIAL: Report 3nm INITIAL and descend to pattern altitude. Do not overfly Brandon.

CHARLIE TO DOWNWIND ENTRY: (single-ship, 2-ship, or 2+2 only, spread) Report PT CHARLIE at 2000' MSL (3000' MSL FRP) with tower. If downwind entry is approved, maintain altitude and begin descent to 1500' MSL in turn to inside downwind. If denied, maintain altitude and breakout to PT DELTA at 2000' MSL.

VFR STRAIGHT-IN PROCEDURES: Request VFR straight-in at VFR entry Pt. If cleared by tower, descend to 1000' MSL. Report a 3 NM final with intentions.

HIGH TAC INITIAL (RWY 24): 4 ship (2 + 2) authorized. Wingmen offset 1.5nm north. FL050 –FL080. Report "field in sight" with RAPCON, expect transfer to TWR NLT 8nm.

RE-ENTRY ALTITUDES: After low approach, remain at or below 1000' until clear of overhead pattern.

"Re-Entry" at PT BRAVO/DELTA: 1500' / "Break-Out" to PT BRAVO/DELTA: 2000' (2500' MSL FRP for re-entry at PT BRAVO)

NOTES: Standard pattern airspeed: 300 KCAS.

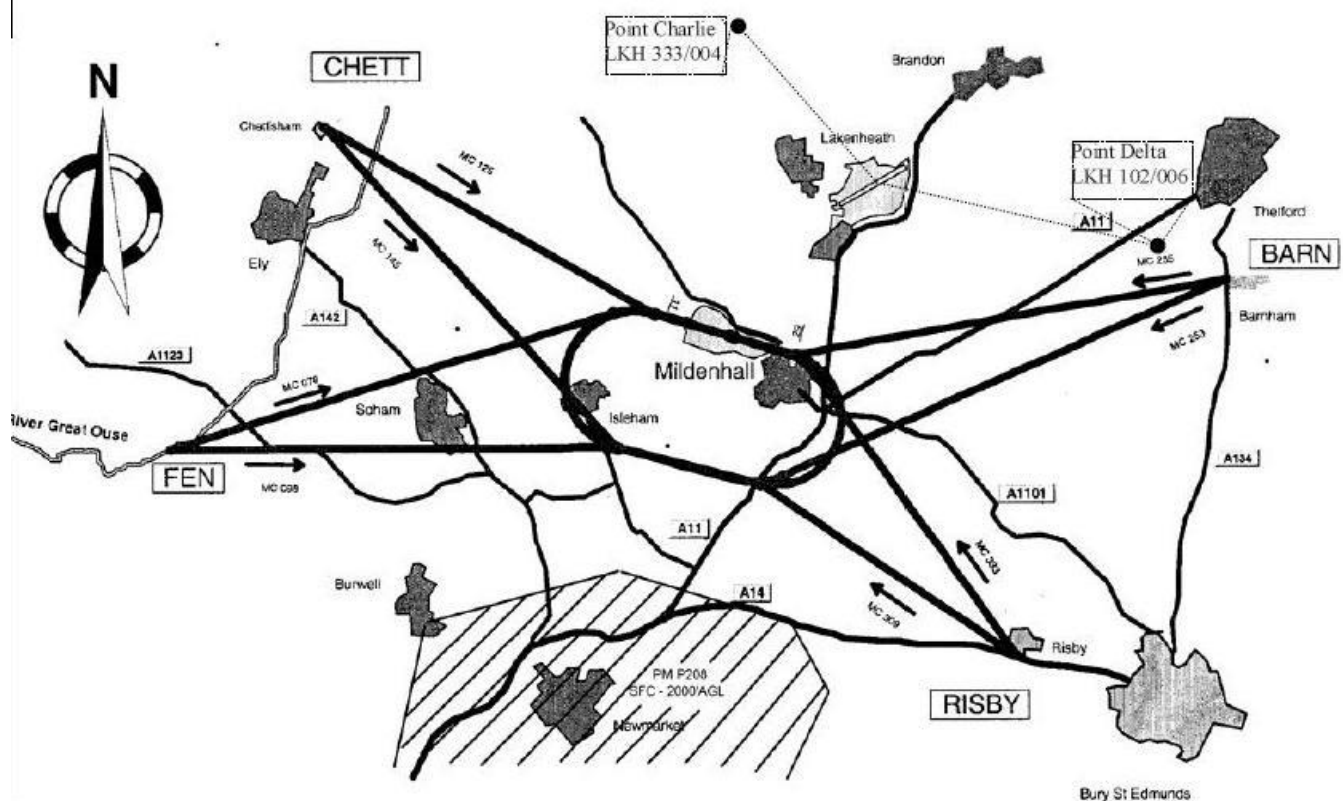
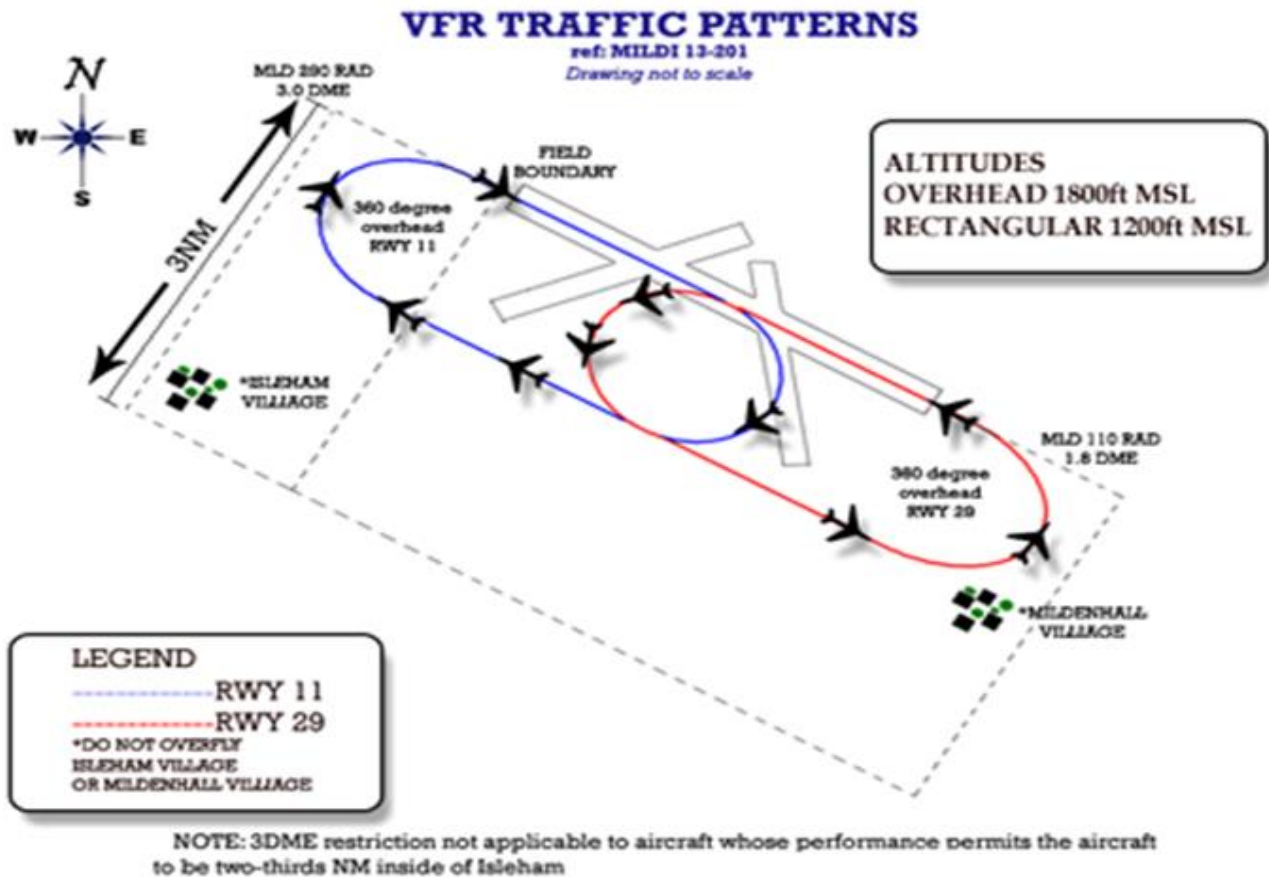
VFR Pattern Squawk: 0461 (all aircraft)

Min weather: High Tac Initial: 500' above requested altitude / 5 km
Charlie to Downwind: 2500'/8 km (3500'/8 km FRP)
Overhead: 2000'/5 km
Straight-in: 1500'/5 km

Runways 24 & 29



RAF MILDENHALL VISUAL PATTERNS

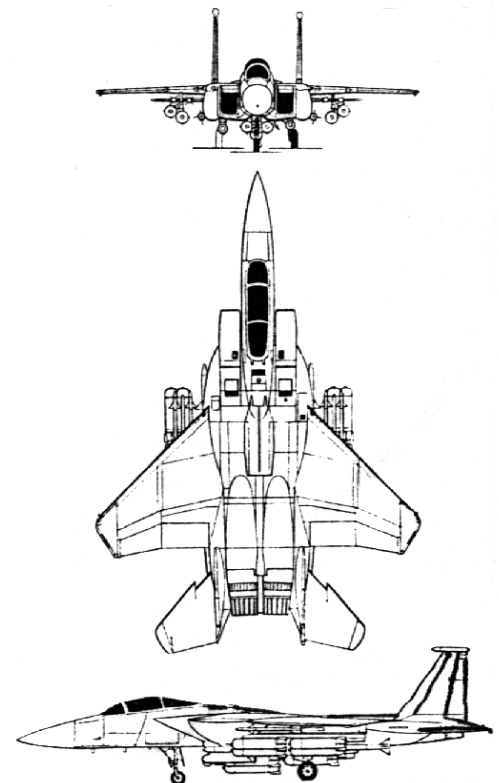


UNITED STATES AIR FORCE AIRCRAFT

The following aircraft are permanently stationed in the UK at RAF Lakenheath and RAF Mildenhall:

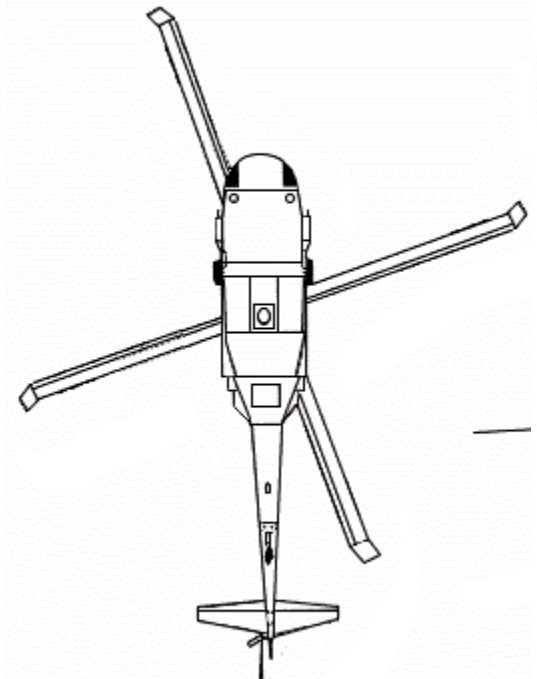
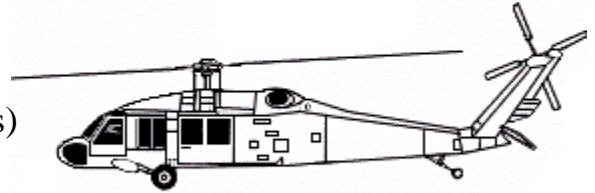
McDONNELL DOUGLAS F-15E/F-15C

- **MISSION:** Multipurpose Fighter
- **CREW:** 2 (F-15E) /1 (F-15C)
- **WEAPONS LOAD:** 24,500 lbs.
- **WING SPAN:** 42 feet 10 inches
- **LENGTH:** 63 feet 9 inches
- **ENGINES:** Two Pratt and Whitney turbofans with afterburners. 30,000 lbs. of thrust per engine
- **CEILING:** Above 60,000 feet
- **RANGE:** 2,400 nautical miles with external tanks
- **SPEEDS:** Initial Approach-300 KIAS
Pre-landing speed: 200-250 KIAS
Final approach speed: 130-140 KIAS
Touchdown speed: 120-135 KIAS



HH-60G PAVE HAWK

- **MISSION:** combat search and rescue
- **CREW:** Two pilots, one flight engineer and one gunner
- **ENGINES:** Two General Electric T700-GE-700 or T700-GE-701C
- **THRUST:** 1,560-1,940 horsepower, each engine
- **LENGTH:** 64 feet, 8 inches (17.1 meters)
- **HEIGHT:** 16 feet, 8 inches (4.4 meters)
- **ROTOR DIAMETER:** 53 ft, 7 in (14.1 meters)
- **SPEED:** 184 mph (294.4 kph)
- **MAXIMUM TAKEOFF WEIGHT:** 22,000 pounds (9,900 kilograms)
- **RANGE:** 445 statute miles; 504 nautical miles (unlimited with air refueling)
- **ARMAMENT:** Two 7.62mm or .50 caliber machineguns



BOEING KC-135R: Military version of the Boeing 707

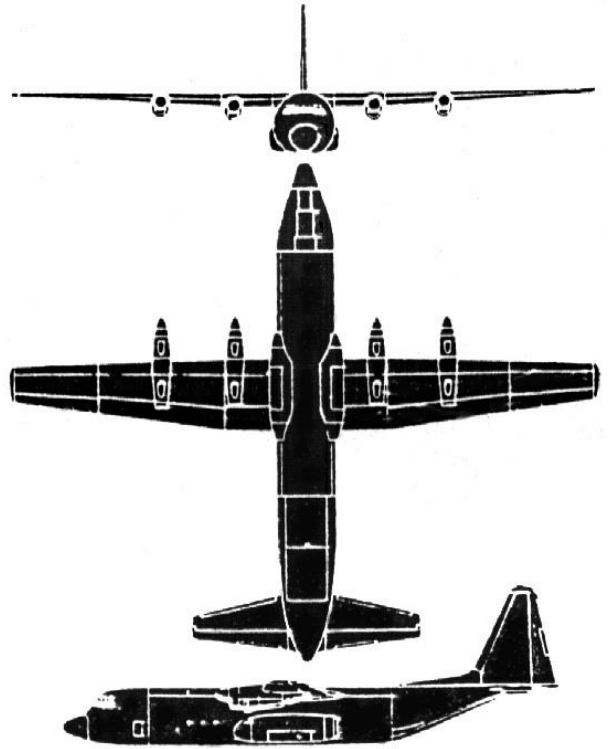
- **MISSION:** Aerial refueling of US and NATO aircraft
- **CREW:** 4 or 5
- **MAX GROSS WEIGHT:** 322,500 lbs.
- **WING SPAN:** 130 feet 10 inches
- **LENGTH:** 136 feet 3 inches
- **ENGINES:** Four CFM56- International F108-CF-100 turbofans
- **THRUST:** 22,224 pounds per engine
- **LOAD:** 50,000 lbs. of cargo/200,000 pounds of fuel
- **SPEEDS:** Enroute descent: 285 KIAS
Pre-landing: 190-250 KIAS
Final approach: 130-170 KIAS



CAUTION WAKE TURBULENCE!

LOCKHEED C-130 HERCULES

- MC-130E (Combat Talon II)
 - MISSION: Airlift, Infil/Exfil, Airdrop
 - CREW: 7
- MC-130P/N (Combat Shadow)
 - MISSION: Airlift, Infil/Exfil, Airdrop, Air-refueling
 - CREW: 8
- MAX GROSS WEIGHT: 175,000 lbs.
- WING SPAN: 133 feet
- LENGTH: 100 feet
- ENGINES: Allison T56-A-15
- SPEEDS: Approach: 100-150 KIAS
Departure: 180 KIAS



BELL BOEING CV-22 OSPREY

Mission: long-range infiltration, exfiltration and resupply

Thrust: More than 6,200 shaft horsepower per engine

Wingspan: 84 feet, 7 inches (25.8 meters)

Length: 57 feet, 4 inches (17.4 meters)

Height: 22 feet, 1 inch (6.73 meters)

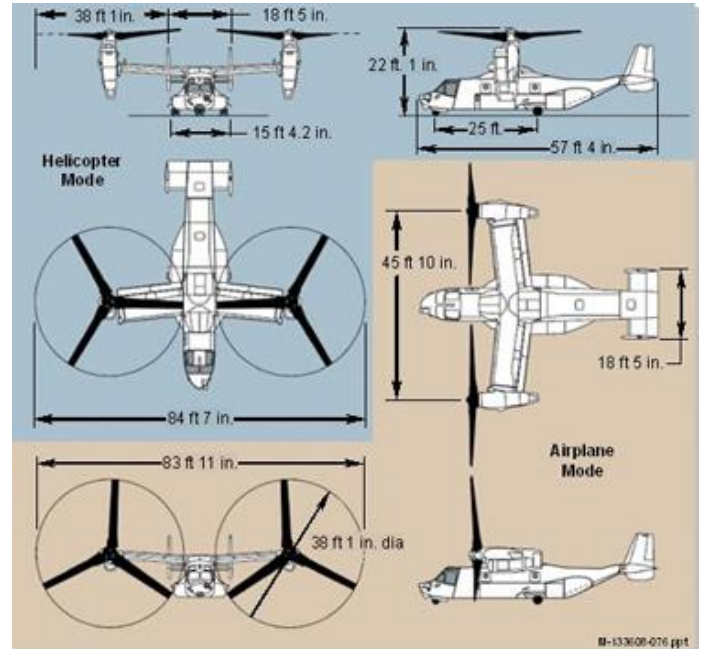
Rotary Diameter: 38 feet (11.6 meters)

Speed: 277 miles per hour (241 knots, cruising)

Ceiling: 25,000 feet (7,620 meters)

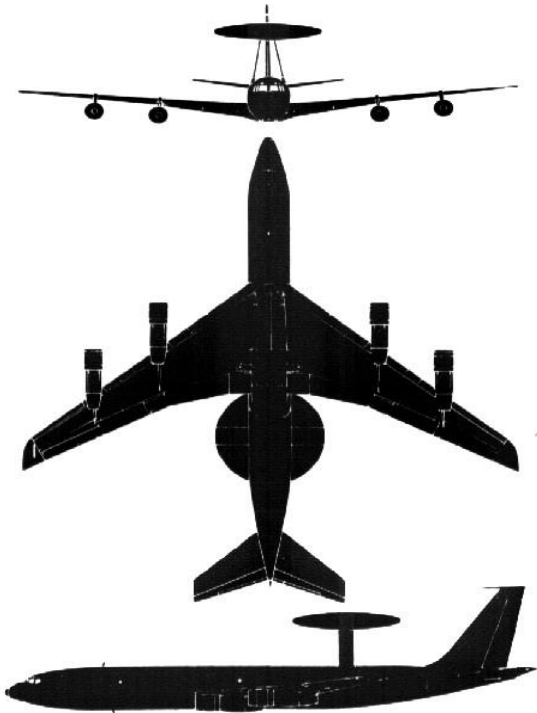
Maximum Vertical Takeoff Weight: 52,870 pounds (23,982 kilograms)

Maximum Rolling Takeoff Weight: 60,500 pounds (27,443 kilograms)



OTHER US AIR FORCE AIRCRAFT THAT MAY TRANSIT RAFL and RAFL

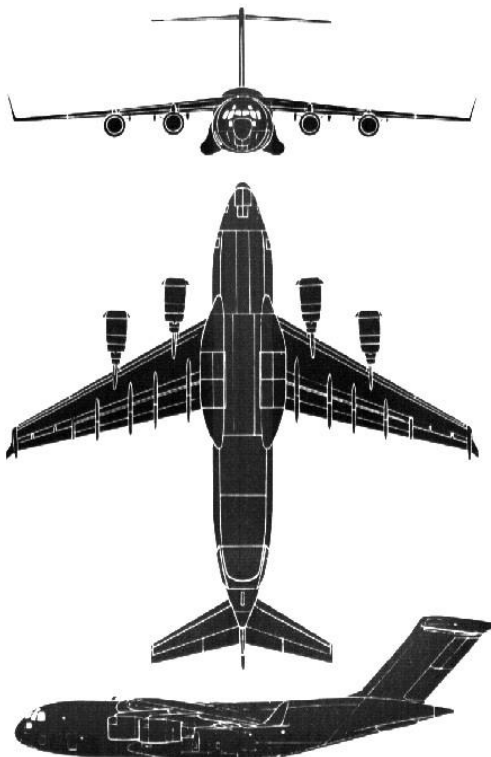
BOEING E-3 SENTRY



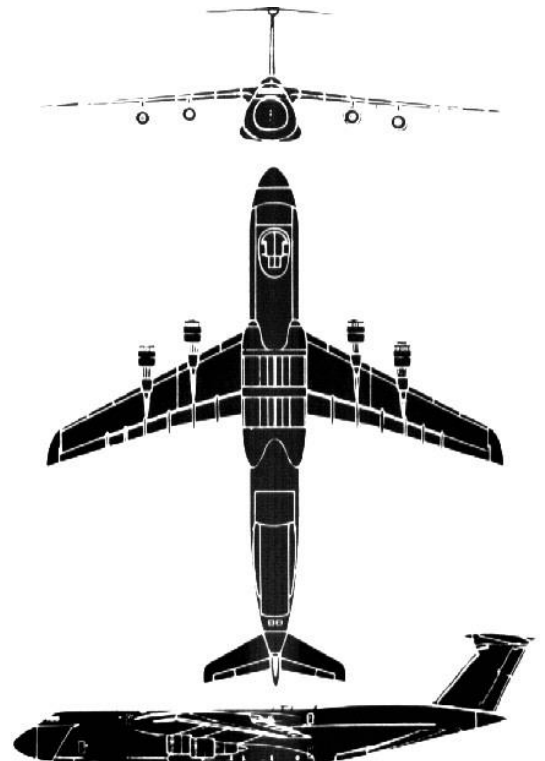
MCDONNELL DOUGLAS KC-10 EXTENDER



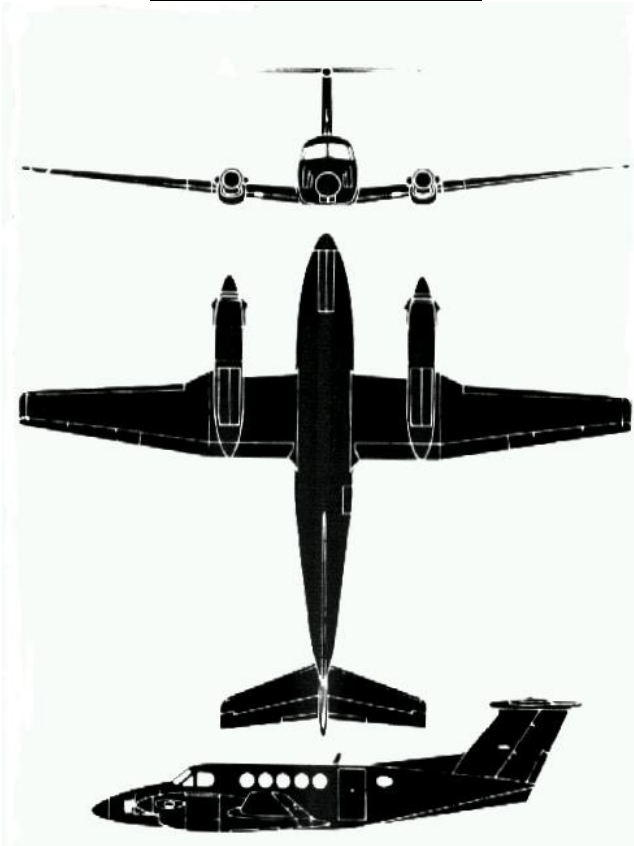
BOEING C-17A GLOBEMASTER



LOCKHEED C-5 GALAXY



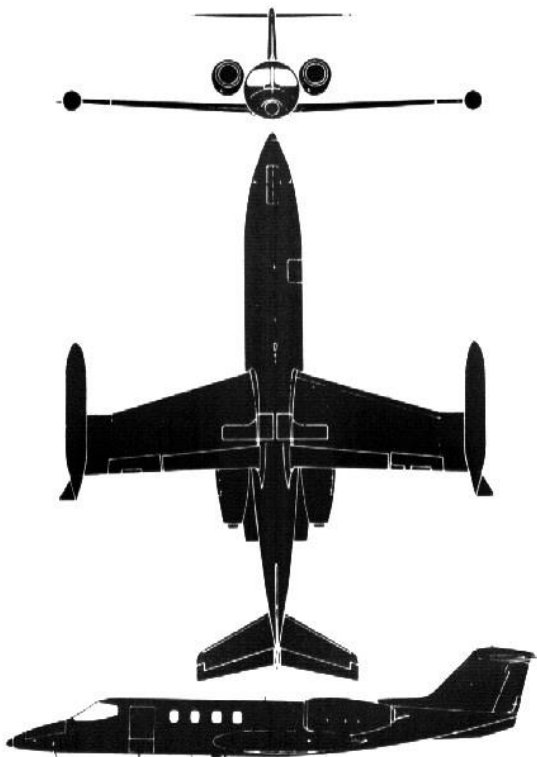
BEECHCRAFT BE-200



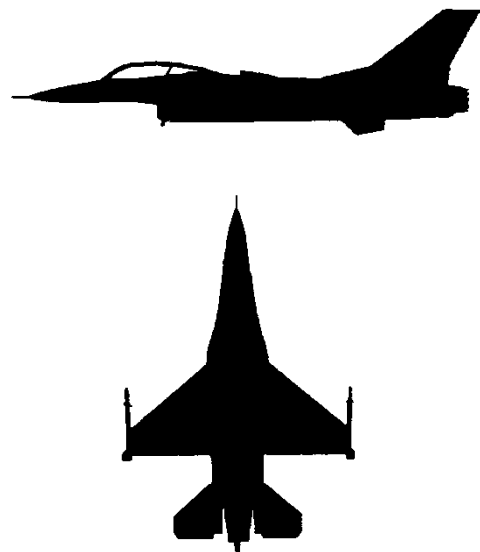
GULFSTREAM GLF-3



LEARJET LJ-35



F-16 FIGHTING FALCON



PILOT ROLE IN COLLISION AVOIDANCE

This section contains actions that you, the pilot, can take to assist in collision avoidance. Also included are visual scanning techniques and information on the limitations of the human eye.

Maintain Vigilance

1. Maintain a vigilant lookout regardless of the type aircraft being flown. Remember that most air misses occur during good VFR weather conditions and during the hours of daylight.
2. Prior to take-off, scan the approach areas for possible landing aircraft by maneuvering the aircraft to provide a clear view of such areas.
3. During climbs and descents in flight conditions, which permit visual detection of other traffic, execute gentle banks left and right at a frequency which permits continuous visual scanning of the airspace around you.
4. Execute appropriate clearing procedures before all turns, abnormal maneuvers, or aerobatics.
5. Be aware of the type of airspace in which you intend to operate, in order to comply with the flight rules applicable to that airspace.
6. Be knowledgeable of the specific flight rules governing operation of aircraft within the various airspace.
7. Be familiar with and exercise caution in areas where you may expect to find a high volume of traffic or special types of aircraft operation i.e., airport traffic patterns, special rules zones, restricted areas, training areas, military bases, etc.
8. Make maximum use of communications equipment and radar services. Know the air traffic facilities providing traffic advisory service and the areas in which they provide these services.
9. Request and use traffic advisories when available to avoid other traffic.
10. Compensate for the blind spots due to aircraft design and flight attitude by moving the head and maneuvering the aircraft.

WHAT CAN I DO ???

This is a non-comprehensive list of actions you can accomplish to promote MACA.

- **Ensure your windscreen is clean.**
- **Have your charts, approach plates, etc. well organized prior to flight.**
- **Do not assume an IFR clearance guarantees separation at all times.**
- **If you're issued or sight conflicting traffic---do not fixate on it, scan other areas, too.**
- **Avoid congested and/or training areas as much as possible.**
- **Clear for other aircraft by using the radio.**
- **Use passengers to assist in clearing for other aircraft.**
- **On descents and letdowns, complete checklists as soon as possible, prior to descending to crowded lower altitudes.**
- **Intersperse checklist items with deliberate outside scans.**
- **Scan, scan, and scan. The next time you fly, consciously note how much time you spend outside the cockpit.**

We all play a role in mid-air collision avoidance...

**Fly Smart,
FLY SAFE!!!**