If you only have time to read one page...

1. Visit our website at www.seeandaviod.org

2. Use your transponder – 1200 and Mode C will help ATC and military aircraft find you, even when you are not talking to anybody.

3. Talk to somebody. Use ATC flight following to the extent possible. The controller can call out other traffic, both military and general aviation, for you.

4. Avoid active military operating areas (MOAs). If you must fly through an active MOA, talk to the controlling agency first. Although this may negatively impact military training, at least we will not run into each other.

5. Fly above 3,000' AGL when crossing low level routes

6. Realize many military aircraft use UHF radio frequencies. We may not hear your radio calls and you will most likely not hear ours.

7. Most fighter aircraft do not have TCAS. However, they still may be able to use their radar or interrogate your transponder to facilitate deconfliction.

Information current as of May 2010.
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Introduction

Fellow Pilots,

Over the past years, civilian and military participation in mid-air collision avoidance (MACA) seminars has fostered mutual understanding and respect, and helped to reduce aviation risks. The exchange of information and techniques at MACA seminars has been most enlightening and has resulted in a better understanding of the very different worlds we operate in. With this knowledge, there have been improvements in the way we both do business. Education is our best defense against the potential for a mid-air collision in an ever increasingly dense airspace system. We at Seymour Johnson Air Force Base would like to thank you for your efforts.

To those of you new to this area, or new to flying in general, this pamphlet has been prepared for you. The purpose of this pamphlet is to inform you (as one of our airspace partners) of the Seymour Johnson flying area, and to help you recognize and avoid potential mid-air collision hazards. Experienced fliers will find this pamphlet to be a handy quick reference for points of contact, and a reminder of the high-density training area located nearby.

Seymour Johnson AFB (SJAFB) is in Goldsboro, NC which is located about 45nm Southeast of Raleigh, NC. Victor Airway 213 crosses above the eastern corner of the SJAFB Class-D airspace at 2,000’ - 10,000’ MSL, and Victor Airway 54-157 crosses to the South at 2,000’ – 10,000’ MSL. Mt. Olive, Goldsboro-Wayne, Cox-Grantham, and Kinston airports are all located adjacent to the SJAFB traffic pattern. The SJAFB ECHO Military Operating Airspace (MOA) extends from overhead the base to about 30nm West, from 7,000’ MSL to FL 230 (ref p.19).

We request that you contact SJAFB approach control (VHF 123.7 or 119.7) if you will be operating within 30nm of SJAFB or if you will be requiring radar service to any adjoining
airports. To assist avoidance everywhere else, we request that you use your transponder at all times (squawking 1200 if operating VFR) as this can help us to find you with our on-board radar. If you will be operating in or near a published low-level route, please contact Flight Service to determine if that particular low-level route is active. F-15Es will generally monitor the UHF Flight Service frequency so we will not hear you on VHF; however, we should hear any Flight Service radio calls to you.

We hope that your flight through the SJAFB area is enjoyable and safe. If you desire more information, please feel free to call or write to us at the following address

Seymour Johnson AFB Flight Safety Office
4FW/SEF
1980 Jabara Ave, Suite 200
SJAFB, NC 27531-2524
(919) 722-4227
E-mail: 4fw.sef@seymourjohnson.af.mil
Remember, we want to see and avoid as much as you do

How to Avoid a Mid-Air Collision

When thinking about avoiding a mid-air collision, here are a few things to consider.

FACTS
1. Most aircraft involved in collisions and near-misses had not filed a flight plan and occur in VFR conditions.

2. Pilots of all experience levels are involved in accidents. A pilot with 2,000 hours can be involved in an accident, but pilots with less than 100 hours are more likely to have a mid-air collision because they direct their attention inside the cockpit more.

3. Many accidents occur because some pilots disregard right-of-way rules or because they lack knowledge of these rules. Complacency and lack of awareness are also major contributors.
Vision and Mid-Air Collision Avoidance

1. The most advanced piece of mid-air collision avoidance equipment in the cockpit is the human eye. Since the number one cause of mid-air collisions is the failure to “see and avoid,” efficient use of visual techniques and knowledge of the eye’s limitations are crucial in helping to avoid collisions. The following items are a partial listing of the things that influence your ability to see an object:

   a. The size and shape of the object.
   b. The distance from the object.
   c. The motion and contrast of the object.
   d. How much the object reflects light.

2. Another visual limitation that few pilots are aware of is the time it takes for the eye to adjust and focus on an object. Focusing is an automatic reaction, but to change focus from a nearby object (like the instrument panel) to an aircraft a mile away can take two or more seconds. A pilot with perfect vision is able to see and identify an approaching aircraft up to four miles away. Anything that lengthens or delays reaction time (complacency, fatigue, or inattention) may extend the time to “see and avoid” beyond a safe limit. For example, it usually takes 0.1 seconds for an image to be transmitted to the brain, another 1.0 seconds to process the information, 5 seconds to determine if a collision is going to occur, up to 4 seconds to choose an evasion course, and 0.4 seconds to move the controls. Therefore, 10.5 seconds may be needed to avoid a collision, and this may not be enough time when your closing velocity is 600 knots or better (like it would be with an F-15E).

3. Visual techniques to help avoid collisions vary but they all stress an efficient visual scan. In developing your proper scan remember this; when your head is in motion, your vision is
blurred to some extent and the brain will not be able to recognize converging flight paths. Therefore, employing a constantly moving visual scan pattern is virtually useless.

4. One efficient scan technique is to divide your field of view (FOV) into small 10-20 degree sectors. Examine each sector individually using a system you like (i.e. right-to-left, hi and low). This technique allows you to detect motion in a single block of airspace, and it only takes a few seconds because a moving object is relatively easy to see. However, a stationary aircraft is much harder to detect and that is the one that is on a collision course. Therefore, if you detect another aircraft, moving or not, take immediate action to ensure separation. This technique is not easy! It is not natural to scan in this manner. So, take the time to practice and perfect it.

6. Beware of optical illusions. At a distance of one mile, another aircraft may appear to be above you. However, as it flies closer, it may appear to descend through your altitude, when, in fact, it has maintained a constant altitude.
Practical Methods of Collision Avoidance

- **Always fly defensively.** Never assume other aircraft are aware of your position.

- **Never insist upon your “right-of-way.”** That may be the last thing you do.

- **Beware of blind spots.** Each aircraft has them, find yours and compensate. Be extremely cautious if you must climb or descend into a blind spot.

- **See and be seen.** If you have a transponder, use it!!! Squawk 1200 with Altitude when VFR. This will help ATC, aircraft with TCAS, and F-15Es find and avoid you. Use all aircraft lights, even during the day.

- **Be heard as well as seen.** It doesn’t cost anything to use the radio, and it just might save your life. Use flight following services when able.

- **Never relax your vigilance, even if in radar contact.**

- **Have charts, maps, pencils, etc. readily available.** This keeps your head out of the cockpit.

- **Use the services available to you.** Tower, ATC, FSS, UNICOM, etc., all these agencies are for your use.
The F-15E Strike Eagle

**General information:** The F-15E is the U.S. Air Force’s premier dual role fighter. It was designed to be a day-night, all weather, deep-strike interdiction fighter-bomber. The F-15E can carry many types of free-fall and precision guided bombs. It can also carry many types of air-to-air missiles. There are four squadrons of F-15Es at Seymour Johnson, and they present a significant mid-air collision threat because most of their training missions are flown below 3,000’ AGL, with low level routes flown down to 500’ AGL, and up to 540 KNOTS.

**Departure and Arrival:** The F-15E will normally fly 350 KNOTS during climbs and level-offs, and its rate of climb will average about 6000 FPM. VFR arrival speeds may be 300 to 350 KNOTS, and the IFR pattern will be flown at 250 KNOTS. Final approach speeds vary, but will be around 170 KNOTS.

**WARNING:** Because of the dark gray camouflage color, relatively small frontal size and high speed, the F-15E is very difficult to see! Because of its size, weight, and thrust, the F-15E generates a significant amount of wake turbulence. Additionally, be advised that we generally don’t fly alone. Most missions are comprised of at least two to four aircraft. So if you see one, chances are there is at least one more somewhere within 1-2 miles of the one you see!
**The KC-135 Stratotanker**

**General information:** The KC-135 is one of the Air Force’s oldest, but most reliable workhorses. Its primary mission is to support the in-flight refueling needs of the Armed Forces and NATO. With the ability to in-flight refuel, the Air Force has a significant capability to extend its Global Power mission. The KC-135’s based at Seymour Johnson belong to the 916th Air Refueling Wing. The 916 ARW conducts training, operational and contingencies missions. The KC-135 is a large aircraft making it easier for you to see, but has limited visibility for the crew, making it difficult for them to see you! Also, the larger size can make properly judging distances and relative speed difficult. Use good judgment when visually separating from these aircraft. The primary mission of the KC-135 is conducted at medium altitude; however this large aircraft will be practicing tactical departure/arrival procedures in the local area (described below). Additionally, the KC-135 is designated a “heavy” aircraft and as such, can present a wake turbulence problem for most aircraft.

**Departure and Arrival:** The KC-135s conduct approach and landing training at Seymour Johnson, Wilmington and Kinston Airports. They typically fly their rectangular patterns between 1200 feet MSL and 3000 feet MSL. Final approach speeds vary between 160-200 knots. If you are operating IFR in the Seymour local area, approach control will provide separation. If you are operating VFR remember you may see him, but he may not see you. Additionally, compared to the F-15E, the KC-135 has limited maneuverability at pattern speeds.

**Tactical Departure/Arrival:** The KC-135 conducts tactical departure/arrival maneuvers at SJAFB that have vertical climb rates in excess of 6,000’/min and descent rates in excess of 8,000’/min. Furthermore, visibility for the KC-135 crew is extremely limited during these maneuvers. If VFR, ensure you are clearing high and low!

**VFR Overhead:** The KC-135 also conducts VFR overheads in the Seymour Johnson airspace. They fly the same altitudes and ground track as the F-15Es, but only fly at 250 knots. They will typically not fly VFR overheads with F-15Es in the overhead pattern at the same time. Occasionally, they may be asked to do so by tower to help with spacing for departures or for timing.
Seymour Johnson AFB Airspace

Generally, military aircraft operating in the vicinity of SJAFB will be doing one of three things: Arriving, departing or flying practice approaches. A bit farther out are the high-speed, low level training corridors. These corridors are depicted on your VFR sectionals as brown-colored lines. Seymour’s airspace extends about 30 NM around the field and is extremely busy. Additionally, this same airspace is populated with transient military and civilian aircraft. If you are operating within 30 NM of SJAFB, give us a call. We will be happy to provide the type of radar service you require, from VFR flight following to an IFR clearance. Utilize frequencies 123.7 if north of GSB, and 119.7 if south of GSB.

Departures

Most departures from SJAFB are via radar vectors. Normally, departing aircraft will maintain runway heading (081/261) until reaching 2,500’ MSL. After reaching 2,500’ MSL, the aircraft will turn on course to one of the four departure fixes - GSB 360/020, 180/020, 120/020, 235/025. For aircraft departing the local area, departure control will send the aircraft to the Washington center frequency. This usually occurs when the departing aircraft reach 10,000’ MSL (the vertical limit of our airspace) or as they approach one of the fixes mentioned above. F-15E aircraft may elect to depart VFR and remain on departure control’s frequency for VFR services.

Arrivals

Inbound military aircraft use several methods to approach SJAFB. They may elect to use Washington Center or a hand-off to approach control, or they may arrive VFR. If returning IFR, the aircraft will start their descent anywhere from 50 to 100 miles from the field. These returning aircraft will be descending through 10,000’ MSL about 20 to 30 NM out. For VFR arriving traffic, expect these aircraft to be returning to SJAFB at VFR hemispheric altitudes, and at speeds between 300 and 350 KNOTS.
Traffic Patterns

SJAFB has two basic traffic patterns, the radar pattern, and the VFR pattern. The radar pattern is usually flown to the north of the field about 10 to 15 NM, and at 3,000’ MSL. The downwind portion of the pattern can overfly both Goldsboro-Wayne (GWW), and Mt. Olive (W40) airports. Airspeed in this pattern is normally 250 KNOTS. As the aircraft approaches base leg at 10-15 NM from the runway, they are given clearance to descend to 1,900’ MSL. On final approach, the aircraft descend to the final approach altitudes 1,200’-1,600’ MSL.

There are two types of VFR patterns flown here. They are the 360-degree overhead pattern, and the conventional rectangular pattern. F-15E and KC-135 may fly either pattern. Airspeeds while flying the VFR patterns vary, but may be as high as 350 KNOTS. The altitude for the 360-degree overhead pattern is 1,800’ MSL on downwind and 1,800’ MSL on the initial approach to the runway. The altitude for the F-15E conventional rectangular pattern is 2500’ MSL.

Local Area Conflicts

Kinston airport’s Class-D airspace is within SJAFB airspace. Victor airway 213 crosses the final approach corridor to SJAFB. Aircraft on the approach to Seymour will be descending through the MEA for V-213. Victor airway 45 is located to the north of SJAFB, and is adjacent to the radar pattern. The MEA for V-45 is 2,000’ MSL. Arrivals flying the High Altitude Instrument Approach Procedure (IAP) to Seymour will be descending through the following airways: V-54-157, V-213, V-1, V-472, V-70, and V-45. In addition, aircraft on this IAP will be overflying the Kinston Class-D airspace.

Traffic Advisories

VFR service is what SJAFB approach/departure control can provide you. It’s easy, and it doesn’t require you to operate under “radar control.” This service will keep you advised of IFR and known VFR traffic in your area. However, “see-and-avoid” is still everyone’s responsibility since many times VFR aircraft that are not in radio contact may not be seen on the controller’s
radar. Because of this limitation, we highly encourage the use of VFR service by all aircraft. When using VFR services, SJAFB will monitor your altitude, position and route of flight. This information can only be used to help keep you clear of other known aircraft. It is not radar control, and you can still fly where you like, changing altitude and direction of flight as you wish. At most, approach/departure control will recommend vectors around traffic in your area.

To receive this service, establish radio contact with SJAFB approach/departure control on 119.7, 123.7 or 127.3. Wait for a reply since at times controllers may be busy with other IFR aircraft on UHF frequencies. Once you receive a reply, give the controller your call sign, position (in relation to SJAFB or a navaid), altitude and destination. At times, because of heavy IFR traffic, VFR services may not be available, and the controller will tell you this. If this happens, we suggest you continue to monitor the radio to get an idea about where the other traffic is and if SJAFB approach/ departure control is identifying you as traffic to someone else.

**APPROACH / DEPARTURE FREQUENCIES**

- 123.7 TO THE NORTH
- 119.7 TO THE SOUTH
- 127.3 NEAR KINSTON
LOCAL AIRSPACE

GSB NORTH AIRSPACE
SFC - 10,000

GSB SOUTH AIRSPACE
SFC - 10,000

GSB

ISO

PINKHILL

NKT AIRSPACE
SFC - 10,000

ZDC AIRSPACE
SFC - UP

RDU AIRSPACE
SFC - 12,000

FAY AIRSPACE
SFC - 10,000

ILM AIRSPACE
SFC - 10,000

MRH

FAY

GSB NORTH AIRSPACE
SFC - 10,000

GSB SOUTH AIRSPACE
SFC - 10,000

GSB

ISO

PINKHILL

FAY AIRSPACE
SFC - 10,000

ILM AIRSPACE
SFC - 10,000

MRH

FAY

ARIVAL / DEPARTURE CORRIDORS

GSB NORTH AIRSPACE
SFC - 10,000

GSB SOUTH AIRSPACE
SFC - 10,000

GSB

ISO

PINKHILL

FAY AIRSPACE
SFC - 10,000

ILM AIRSPACE
SFC - 10,000

MRH

FAY
General Airfield Information

LOCATION:  N 3520.36  W 07757.64
Goldsboro, NC

ELEVATION:  109’

RUNWAY:  08/26 (11,760’ X 300’)

LIGHTING:
1) Rotating Beacon (Military Flash: Green-Double White)
2) High Intensity Runway Lights
3) Sequenced Flashing lights
4) Precision Approach Path Indicator (PAPI)
5) High Intensity Approach Lights (ALSF-1)

AIR TRAFFIC CONTROL FACILITIES AND SERVICES:

1. Control Tower:
   a) Call sign: “Seymour Tower”
   b) Frequencies: 126.25, 370.875

2. Radar Control
   a) Call sign: “Seymour Approach/Departure”
   b) Frequencies:
      i) North Sector - 123.7, 290.9
      ii) South Sector - 119.7, 273.6
      iii) Kinston Area - 127.3

3. ILS: Runway 08/26 (109.3, 109.9)

4. TACAN: Channel 112

5. Radar vectors available on request
Low-Level Routes

The U.S. military has a continuous need for low-altitude, high-speed tactical training. This training takes place within the boundaries of FAA approved low-level training routes (LLTRs). Flights conducted on the LLTRs are usually from 500’ AGL to 1,500’ AGL, although aircraft may conduct operations up to 10,500’ AGL and at speeds of up to 540 Knots. These LLTRs are depicted, with the route number, on your VFR sectionals as a brown line that appears to wander all over with no apparent destination. **On average, these routes extend five miles or more either side of the brown line.**

There are two types of MTRs (military training route) that Seymour’s aircraft commonly use: VR routes and IR routes. VR routes are conducted under special VFR rules which requires a 3000’ ceiling and 5 miles visibility. VR routes with four digit identifiers (i.e. VR-1074) are routes that extend up to 1,500’ AGL. VR routes with three digit identifiers (i.e. VR-073) can extend to 3,000’ AGL or higher.

While in the MTRs, military aircraft are often involved in aggressive, tactical maneuvering. Consequently, the need for vigilance while operating on or near one of these LLTRs cannot be stressed enough. For the military flier, it would be embarrassing in the least, and quite deadly in a conflict, to have someone sneak up on them. Therefore, military aircraft operating in these LLTRs are doing all they can to detect, avoid and modify their flight path to avoid you.
You can help ensure deconfliction by:

- Using your transponder. The F-15E is capable of interrogating transponders.
- Contact FSS to find out if a route is active, and if so, let them know when and where you will be near the Low Level route.
- Plan on crossing active routes above 3,000’ AGL. This will make it easier for us to find you on radar and will help with altitude deconfliction.

THERE ARE SEVERAL MILITARY TRAINING ROUTES THROUGHOUT THE LOCAL FLYING AREA. PLEASE BE EXTRA VIGILANT AND SQUAWK VFR WHEN FLYING NEAR THESE!!!
Military Operating Areas (MOAs)

These are areas used by military aircraft to conduct various types of training. The types of training conducted often include radical altitude and heading changes, and makes “See and Avoid” very difficult. Although you are not prohibited by regulation from penetrating this type of airspace, when VFR, use extreme caution!!! If possible, contact the controlling agency to see if the airspace is active.

Seymour Johnson Echo MOA
Restricted Areas / Ranges

This type of airspace normally contains activities that make normal “See and Avoid” operations nearly impossible. Additionally, the activities contained within Restricted Areas may constitute a hazard to non-participating aircraft. Air-to-Ground weapons delivery is one such activity.

This type of airspace MUST be avoided under all but emergency conditions.

DARE COUNTY BOMBING RANGE: R-5314
Additional Resources

SeeAndAvoid.org aims to “Avoid midair collisions through proper flight planning and flight safety”. The website allows you to search for reported mid-air collisions and Near Midair Collisions (NMACs) in your operating area and has much of the same airspace functionality as the FAA SUA website.

The below screen capture from seeandavoid.org shows active MOAs in red. (Note the purple Special Use Airspace (SUA) may or may not be active – call your local FSS or an ATC controller for the latest status updates.) The yellow dots are reported NMACs.
We want your feedback!

Please tell us how you feel about this document. We welcome any comments that can help us to provide you a better product, and ultimately keep us from meeting “face to face!”

Did you feel this product was helpful?  

Do you feel you know more about military training operations than before?  

Do you feel you can more effectively separate your flight from military flights with this information?  

What information did you find most useful?  

What did you find least useful?  

What was not provided that you feel should have been?  

Additional comments:

Please write, call, or email with questions or comments:

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SJAFB, NC 27531-2524  
(919) 722-4227  
E-Mail: 4fw.sef@seymourjohnson.af.mil