

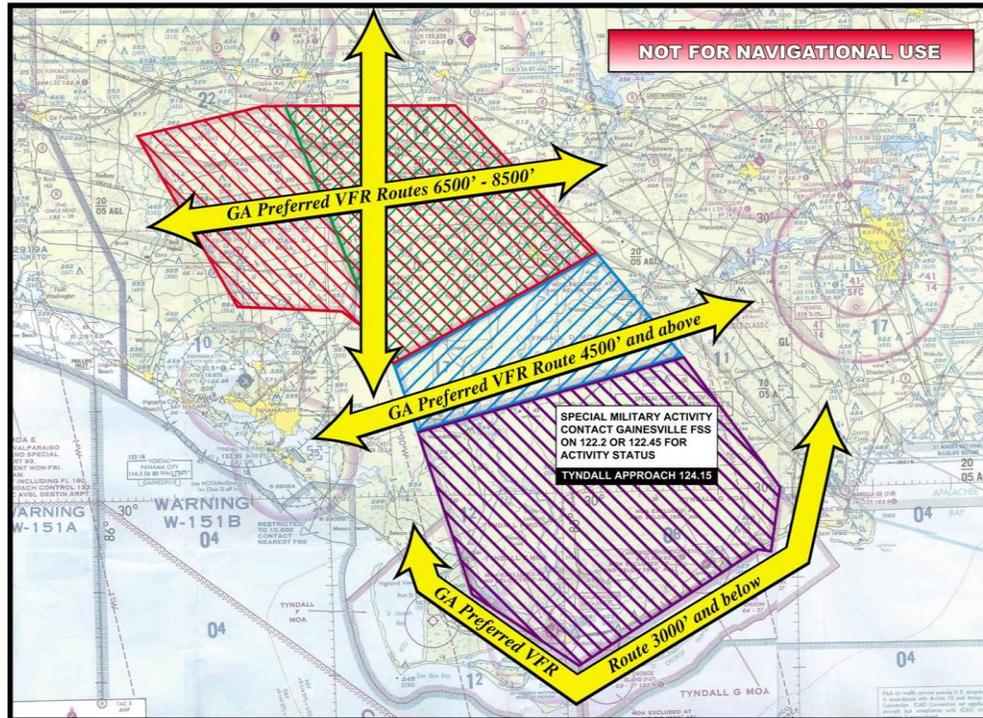


Tyndall Air Force Base  
325th Fighter Wing



## Mid Air Collision Avoidance

# Mid-Air Collision Avoidance



This chart not intended for navigation

To further reduce the potential for a mid air collision VFR aircraft should squawk 1200 and report their position to Tyndall Approach Control on 124.15

Any questions or suggestions for improving this poster contact 325th Fighter Wing/Safety at 283-4966

Closure Rate - Distance - Speed - Time

SPEED →	600 MPH		360 MPH	
	DISTANCE - SECONDS			
10 Miles	60	100	✈	
6 Miles	36	60	✈	
5 Miles	30	50	✈	
4 Miles	24	40	✈	
3 Miles	18	30	✈	
2 Miles	12	20	✈	
1 Mile	06	10	✈	
1/2 Mile	03	05	✈	
0 Mile	0	0	✈	

In this area; Relax!  
Why die all tensed up!???

325<sup>th</sup> Fighter Wing Tyndall AFB, FL



January 2011

**LEGEND**

- 500' - FL230 M-F
- 500' - 4000' M-F
- 500' - 6000' M-F
- 9000 - FL230 M-F

GA Preferred VFR Routes

## Preface

This booklet was published under the direction of the 325th Fighter Wing Flight Safety Staff, Tyndall AFB, FL. The intent of this booklet is to aid civil aviators in understanding the 325 FW mission, its aircraft and airspace in an attempt to lessen the likelihood of a mid-air collision. This booklet contains information that can and will change as time progresses. If you have any questions regarding the contents of this booklet please call the 325 FW Flight Safety Staff. We are willing to help you in any way!

We solicit your comments concerning airspace matters or the quality of our air traffic control services. Please address any comments to the following agencies:



# 325<sup>th</sup> Fighter Wing

Tyndall AFB, FL



**“Provide world-class training to  
GUARANTEE AIR DOMINANCE for  
America and support  
Team Tyndall!”**

**For Questions Regarding this Publication, Please Call  
the 325<sup>th</sup> Fighter Wing Safety Office at (850) 283-4966**

or

[www.tyndall.af.mil](http://www.tyndall.af.mil)

For more information on how to make sure that you are flying safely in and around military aircraft - go to:

[WWW.SEEANDAVOID.ORG](http://WWW.SEEANDAVOID.ORG)

**Airspace Management**

Phone: (850) 283-4148  
Fax: (850) 283-0759  
Address: 325 OSS/OSOA  
1141 Florida Ave., Suite 26B  
Tyndall AFB, FL . 32403-5213

**Flight Safety**

Phone: (850) 283-4966  
Fax: (850) 283-9021  
Address: 325 FW/SEF  
501 Illinois Ave., Rm. 148  
Tyndall AFB, FL. 32403

**Airfield Operations Flight**

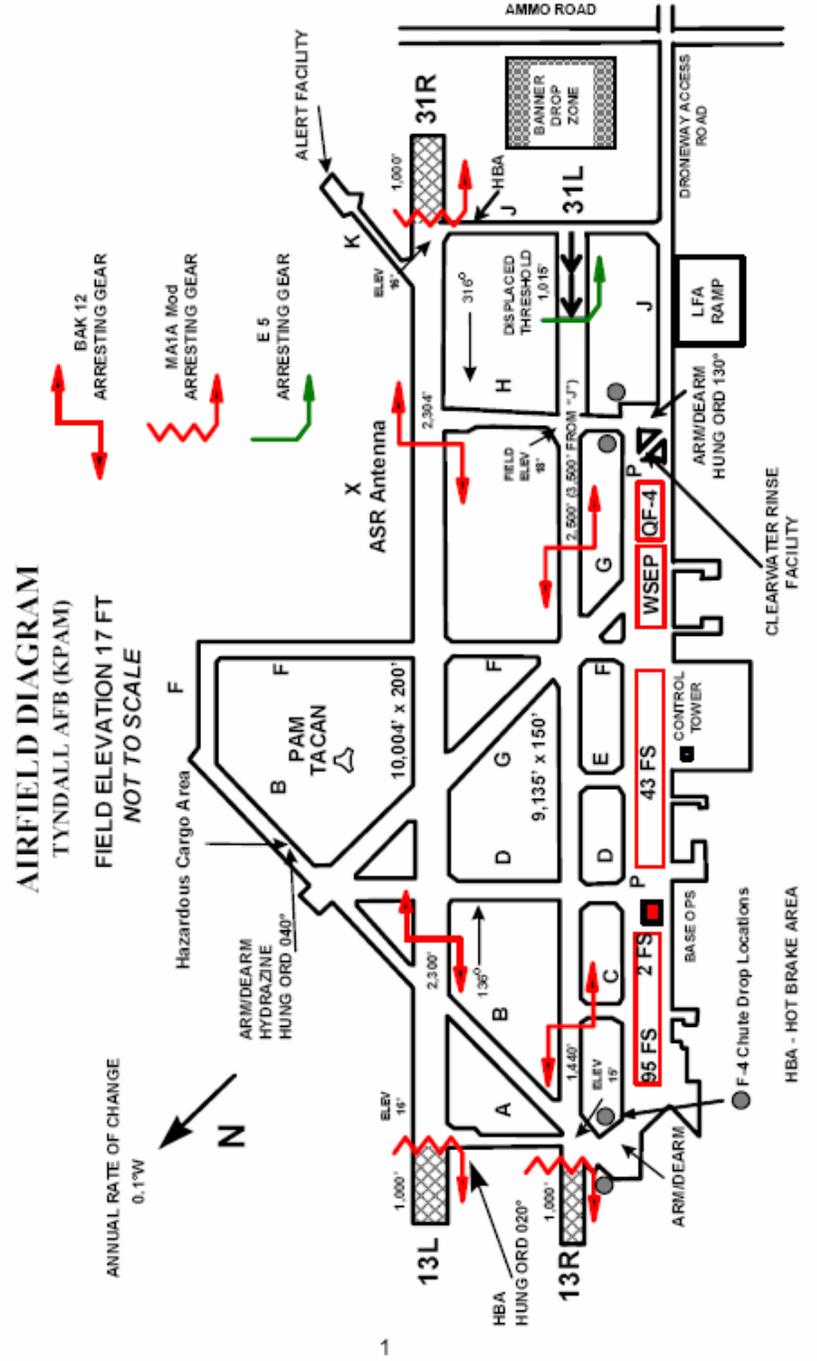
Phone: (850) 283-3235  
Fax: (850) 283-2225  
Address: 325 OSS/OSA  
1141 Florida Ave., Suite 12  
Tyndall AFB, FL. 32403-5213

It is our goal, through cooperation and teamwork, to make Northwest Florida a safe place to fly.

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# Tyndall Airfield Diagram



# AREA FREQUENCIES

	<u>VHF</u>	<u>UHF</u>
<b><i>TYNDALL APPROACH</i></b>		
North of Tyndall Below 5,000'	120.825	379.3
North of Tyndall Above 5,000'	125.2	392.1
South of Tyndall	124.15	317.45
<b><i>TYNDALL TOWER</i></b>	133.95	263.15
<b><i>PANAMA CITY TOWER</i></b>	118.95	269.0
Unicom	118.95	
ATIS	119.97	
<b><i>APALACHICOLA AIRFIELD</i></b>		
Unicom	122.8	
SOS	119.92	
<b><i>PANAMA CITY BEACH ADVISORY</i></b>	122.75	
<b><i>EGLIN APPROACH</i></b>		
VFR	132.1	
<b><i>CAIRNS APPROACH</i></b>	133.75	
<b><i>TALLAHASSEE APPROACH</i></b>	135.8	

# Subscale Drone



**Tyndall utilizes a ground launched, land and water recoverable subscale aerial target for live missile training. It is 20 feet in length and has a wingspan of 12 feet. It travels at speeds from 250 knots up to .95 mach and operates at altitudes from 50 to 50,000 feet. But can normally be found between 15,000 and 25,000 at around 300 knots. These drones deploy frequently within restricted area 2905A.**

# F-16 Fighting Falcon



**The F-16 Fighting Falcon is the Air Force's primary multi-role fighter, performing a variety of missions from air to air combat, to close air support for ground forces and suppression of enemy air defenses. Numerous F-16s units deploy to Tyndall in support of the weapons evaluation program and may be seen daily around the Tyndall terminal area and special use airspace.**

# *SEE AND AVOID*

A bit of caution is required when flying in Northwest Florida. You are sharing the airspace with three major USAF bases (Hurlburt, Eglin, and Tyndall Air Force Bases) and the Pensacola Naval Flying Training Center. All the military installations in the Florida Panhandle are conducting some form of flight training. A close examination of the enclosed charts will reveal the location of Tyndall's Military Operations Areas (MOAs), Restricted Areas (R), and other Special Use Airspace (SUA) used for day-to-day flight. **These charts should be used for familiarization only. Check current aeronautical publications for SUA information.**

At Tyndall AFB, we are mainly concerned with the increasingly congested airspace over Bay and Gulf Counties. The Tyndall Air Traffic Control (ATC) facility is considered one of the busiest and most complex facilities in the USAF. The potential for a mid-air collision in the Panama City/Tyndall area is high.

Tyndall AFB conducts pilot training in the supersonic F-22 Raptor. Additionally, pilots throughout the Air Force come to Tyndall to undergo air-to-air weapons firing exercises over the Gulf of Mexico flying a wide variety of fighter aircraft. Unmanned subscale and full sized (QF-4) drones provide target aircraft for live fire missions.

Heavy jet fighter traffic in the Tyndall airspace area of operation can be expected SUNRISE TO SUNSET, MONDAY through FRIDAY (excluding federal holidays). During these periods VFR aircraft are highly encouraged to contact Tyndall Radar Approach Control (RAPCON) for traffic advisories.

VFR aircraft are advised to use EXTREME CAUTION when transiting the Tyndall airport traffic area along the coastline. There are numerous light civil aircraft operating in this area at or below 1,000'. They include: banner-tow, fish spotter, and sight seeing aircraft over Crooked and Shell Islands. All aircraft transiting this area within 5 miles of Tyndall AFB at or below 2,600' **MUST** contact Tyndall Tower on 133.95.

# ***VFR ADVISORY SERVICE***

Due to easy accessibility to over-water combat ranges, Tyndall AFB hosts a wide variety of high performance jet aircraft. These aircraft operate from the surface to 60,000 feet, at speeds exceeding Mach 1. Tyndall AFB is also a popular refueling stop for numerous other military aircraft. Add to this the multitude of civil aircraft, Air Taxis, and Airliners and you'll understand the importance for the use of VFR advisory service.

**PILOTS OF VFR AIRCRAFT ARE HIGHLY ENCOURAGED TO INITIATE RADIO CONTACT WITH TYNDALL APPROACH CONTROL AS SOON AS POSSIBLE WHEN ENTERING TYNDALL AFB APPROACH CONTROL OR SPECIAL USE AIRSPACE.** If you are already in contact with another radar facility, they will assign you the appropriate frequency for the Tyndall Approach sector you will be entering.

## ***HOW VFR ADVISORY SERVICE WORKS***

On initial contact with Approach Control, the pilot should provide the controller with the following information:

1. Position, the geographical location (i.e., 10 miles southeast of Blountstown), or radial and DME (PFN 070 for 28)
2. Altitude.
3. Type aircraft/equipment
4. Destination and intentions

Once radar contact is established, pilots may navigate on their own, or if circumstances dictate he may be assigned a suggested vector heading to avoid potentially hazardous airspace. Although traffic information will normally be provided, standard radar separation is not provided.

Pilots of departing VFR aircraft are encouraged to request radar traffic advisories by notifying the controller of their request on initial contact and providing the proposed direction of flight.

# **QF-4 Drone**



**The QF-4 Drone is the primary full-scale target aircraft for the weapons systems evaluation program. Both manned and unmanned, this aircraft operates primarily over the Gulf of Mexico. The QF-4 also operates in a traffic pattern at a drone runway southeast of Tyndall.**

## E-9A Dash 8



**The E-9 twin turbo prop aircraft is used in the weapons evaluation program primarily as a surveillance platform to ensure the Gulf Coast waters are clear of civilian boaters and aircraft during live missile launches and other hazardous military activities. The E-9 aircraft will be seen daily in the Tyndall terminal area and special use airspace.**

## ***SPECIAL USE AIRSPACE AND TRAINING AREAS***

***Tyndall Aero Club practice area:*** Pilots can expect numerous light aircraft operating in these areas practicing basic flight maneuvers, i.e., stalls, spins, lazy eight's, turns about a point, etc. These aircraft are not always in the best position to practice "see and avoid". Tyndall area controllers will assist you in avoiding airspace where VFR operations might prove hazardous.

***MOAs:*** Tyndall MOAs are located North and East of Panama City. High speed jet fighters flown by inexperienced student pilots frequently utilize these areas for training. Civilian pilots are highly encouraged to avoid these areas vertically or horizontally when they are active. Contact Tyndall RAPCON to determine the status of these areas. If you choose to fly in an active MOA, **EXERCISE EXTREME CAUTION** as light aircraft are very difficult for high speed fighters to see early enough to avoid. Squawk mode 3C, keep an aggressive visual lookout and contact Tyndall RAPCON for VFR radar advisories to assist you in safely flying in active Tyndall MOAs.

***RESTRICTED AREAS:*** There are two restricted areas near the Panama City/Tyndall area. R-2914 A&B is located west of Panama City and R-2905A & B located southeast of Tyndall AFB. R-2914 is used by Eglin AFB for various missions, many involving ground-to-ground missiles and artillery. R-2905 is used by Tyndall AFB for launch and recovery of manned and unmanned drone aircraft and missile systems. VFR pilots are not permitted to enter these areas when they are active without permission of the using agency. Calling the appropriate RAPCON sector for advisories will provide the status of these areas.

## ***SPECIAL USE AIRSPACE AND TRAINING AREAS (Cont.)***

**WARNING AREAS:** The Gulf of Mexico contains SUA designated as Warning Areas. These areas are used for a wide variety of military missions such as aerial refueling, combat maneuvers, and live missile and gun firing. The Warning Areas are under the control of a Military Radar Unit. Again, due to the possibility of hazardous operations in or near these areas, extreme caution must be exercised.

**GULF OF MEXICO Air Defense Identification Zone:** The Gulf of Mexico ADIZ is located 15 to 20 miles off the coast of Florida (closer to Cape San Blas). Pilots operating in this airspace must adhere to the procedures contained in FAR 99.13.

**UNMANNED DRONE OPERATIONS:** Tyndall operations include unmanned drone aircraft ranging from subscale jet drones (about the size of a Cessna 150) to full-sized QF-4 fighter aircraft converted to fly without a pilot. These drones takeoff from an area 3.5NM southeast of Tyndall and fly southbound over the water through R-2905 into warning area airspace. Launch and recovery of drones is announced on Tyndall Tower frequencies 133.95 and 384.4. Mobile Control Station (MCS) patterns are also conducted at the drone runway. This involves remote control of QF-4 drones operating at fairly high pattern airspeeds at or below 500' over East Bay, and at or below 1,000' in the vicinity of Sandy Creek Air Park. If you are under radar control, the controller will advise you of the activity.



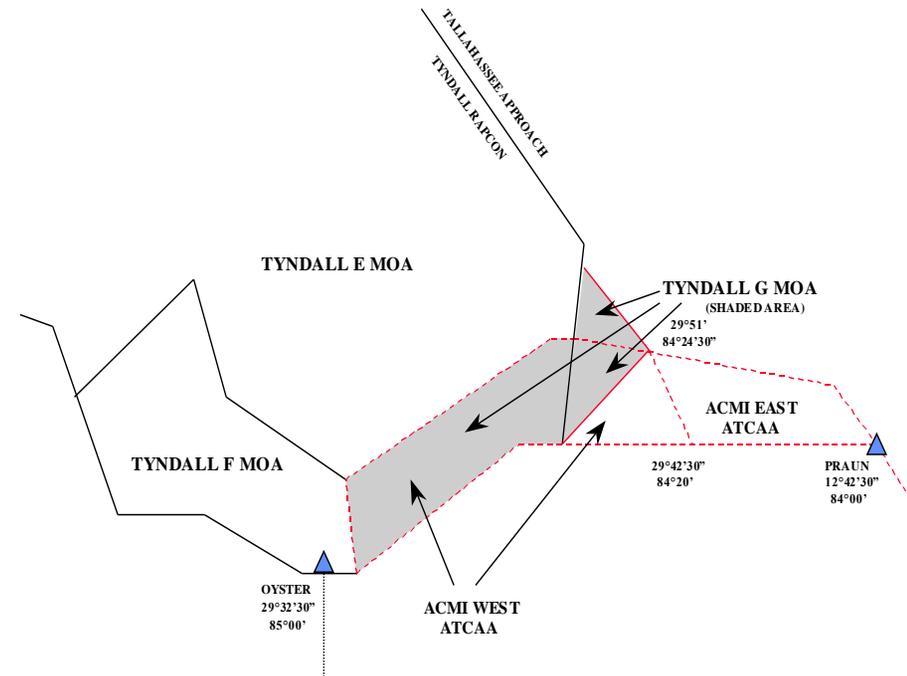
**The MU-2 operates out of Tyndall on a daily basis. It provides a training platform for the air-to-air intercept mission of the F-15. Additionally, it is used to train air weapons controllers in the radar intercept training program. The MU-2 can be seen operating in all special use airspace surrounding Tyndall.**

# F-22 Raptor



The F-22 Raptor is the Air Force's newest air dominance fighter aircraft. Combining stealth, supercruise, and unmatched maneuverability, the F-22 is capable of flying and fighting against the most advanced integrated radar networks and dense surface-to-air missile environments in the world – now and in the future. Tyndall is the world's only F-22 training base.

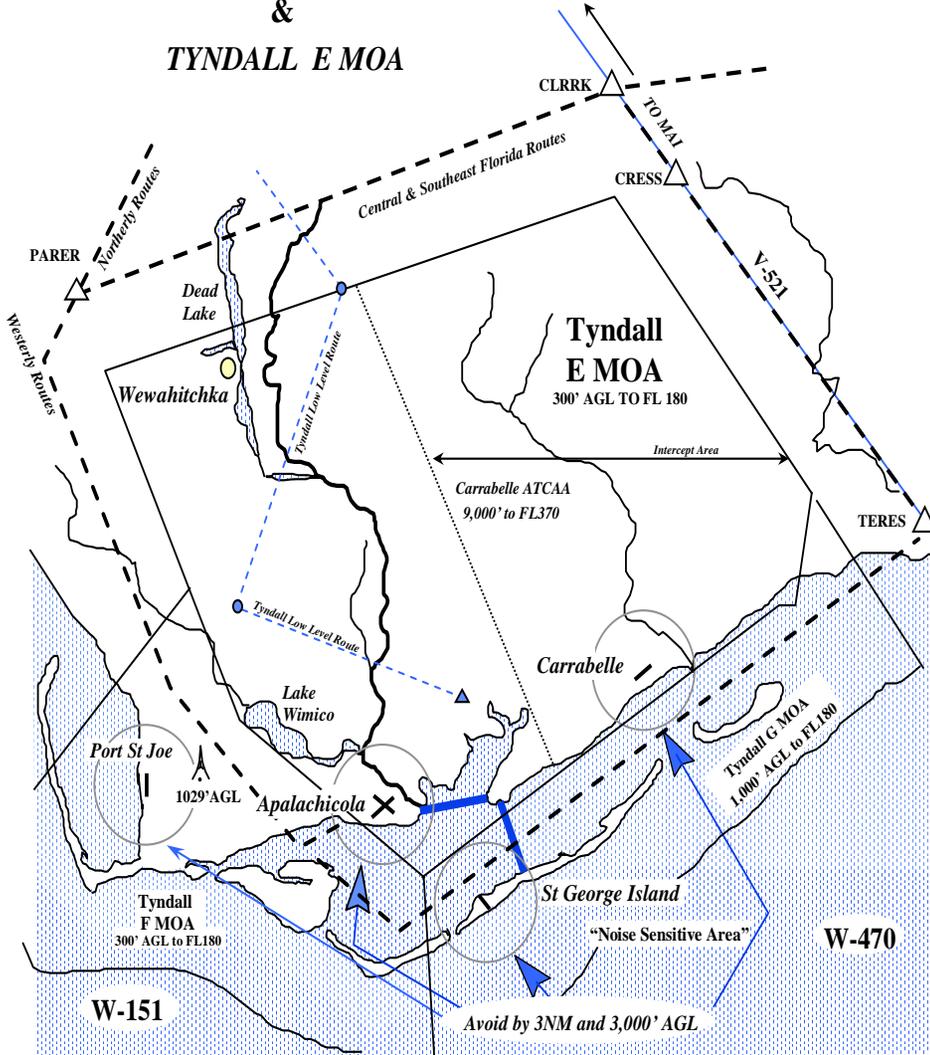
**AIR COMBAT MANUEVERING INSTRUMENTATION (ACMI) EXTENSION ATCAA ASSIGNED AIRSPACE (ATCAA):** The ACMI extension ATCAA is used along with Tyndall G MOA to expand the W-470 training airspace for practice air intercept activity. This uncharted airspace is located east of Tyndall G MOA and north of the W-470 boundary with altitudes 5,000 to FL600. Check NOTAMs for activation times.



ACMI WEST ATCAA - 5,000' MSL to FL600 *except* above FL180 to FL600 over the Tyndall G MOA

ACMI EAST ATCAA - 5,000' MSL to FL600

**Apalachicola Municipal Airport (AAF)  
&  
TYNDALL E MOA**



For IFR Departure /Approach clearance When E MOA is active see Oyster Brief, page 13.  
IFR Arrival procedures.....

1. from the East/Southeast, over TERES, expect vectors southeast of the coastline at 4,000'
2. from the East/Northeast, over CLRRK, routing over PARER then southeasbound until just west of AAF
3. from the West, over PARER and radar vectors southeast bound until just west of AAF

# TYNDALL'S AIRCRAFT

The following pages depict aircraft most commonly seen operating from Tyndall and flying around the local area. Almost every aircraft in the military can be seen at Tyndall at one time or another.

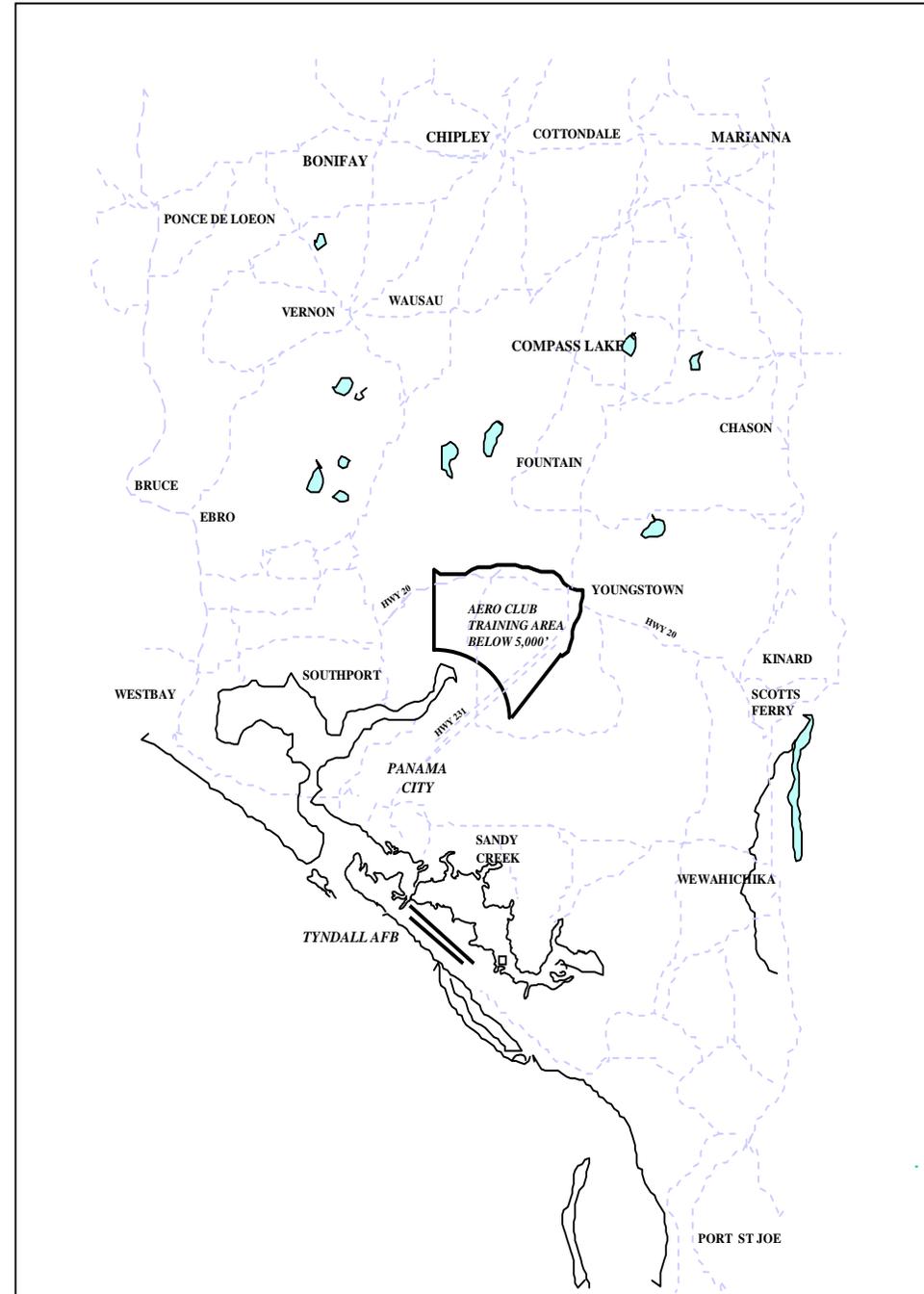
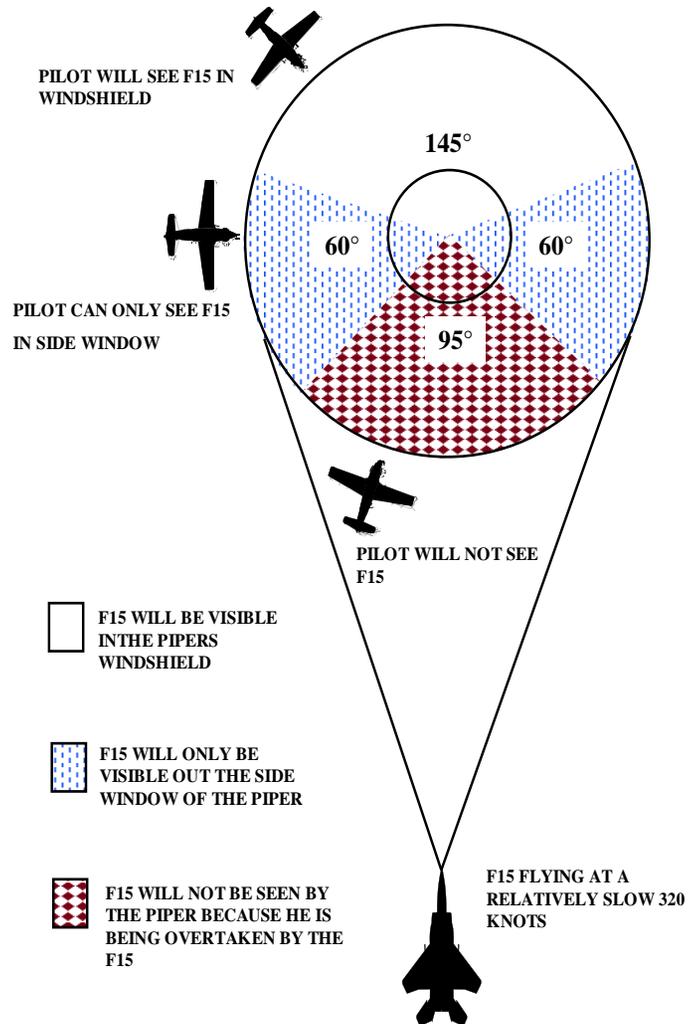
## F-15 Eagle



The F-15 Eagle is the Air Force's premier air-to-air fighter aircraft with 104 aerial victories and no combat losses. With supersonic speeds and multiple weapon capabilities, this aircraft is used around the world in support of various combat operations, including homeland defense.

# GEOMETRY OF A COLLISION COURSE

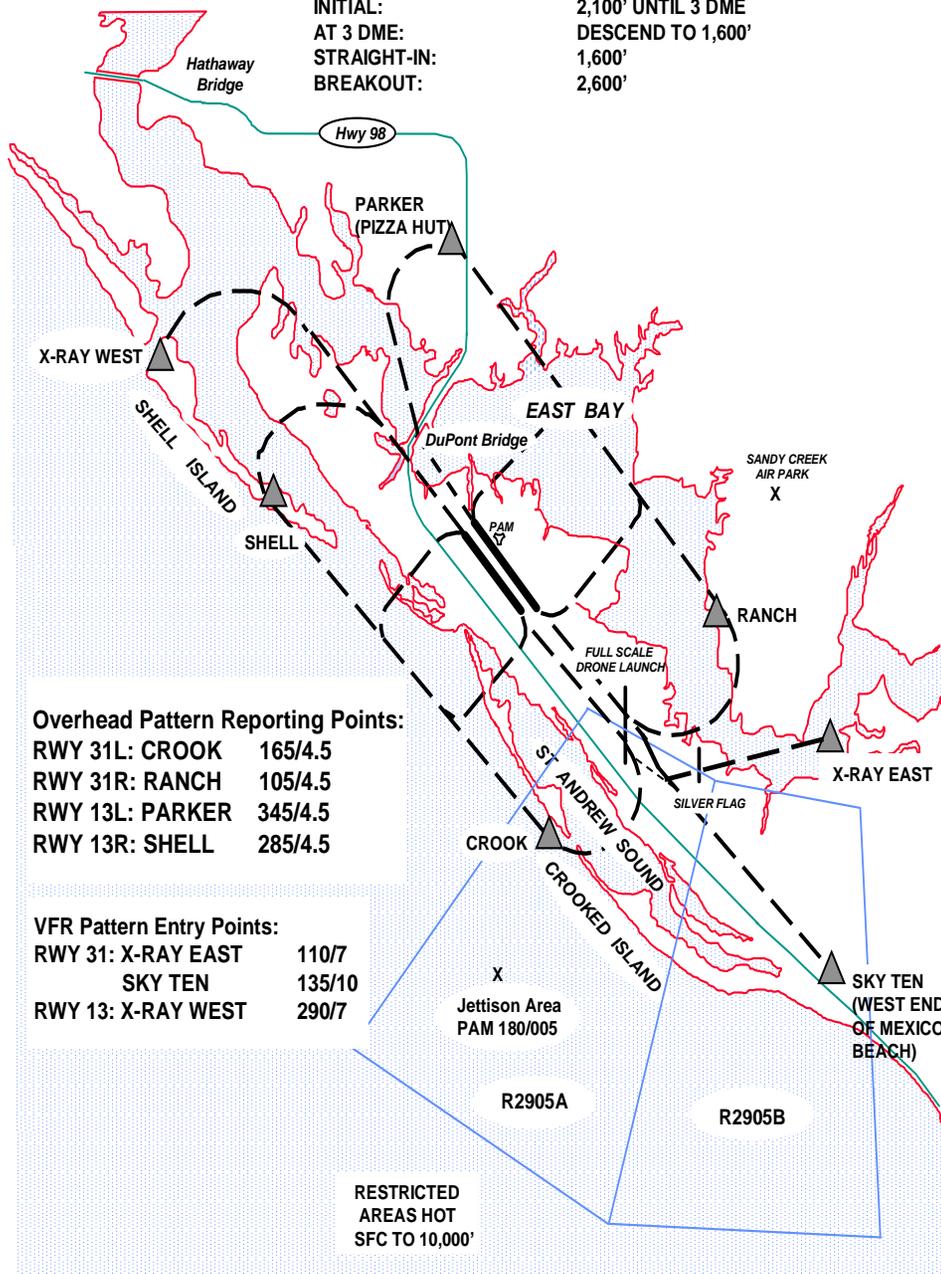
CIRCLE REPRESENTS 360 DEGREES OF POSSIBLE COLLISION COURSE BETWEEN A PIPER FLYING AT 80 KNOTS AND A F15 FLYING AT 320 KNOTS



# VFR TRAFFIC PATTERN RWY 13/31

## PATTERN ALTITUDES (Jet)

INITIAL: 2,100' UNTIL 3 DME  
 AT 3 DME: DESCEND TO 1,600'  
 STRAIGHT-IN: 1,600'  
 BREAKOUT: 2,600'



### Overhead Pattern Reporting Points:

RWY 31L: CROOK 165/4.5  
 RWY 31R: RANCH 105/4.5  
 RWY 13L: PARKER 345/4.5  
 RWY 13R: SHELL 285/4.5

### VFR Pattern Entry Points:

RWY 31: X-RAY EAST 110/7  
 SKY TEN 135/10  
 RWY 13: X-RAY WEST 290/7

# Closure Rate

DISTANCE - SPEED - TIME

SPEED →	600	360	
	MPH	MPH	
DISTANCE	SECONDS		
10 Miles	60	100	
6 Miles	36	60	
5 Miles	30	50	
4 Miles	24	40	
3 Miles	18	30	
2 Miles	12	20	
1 Mile	06	10	
1/2 Mile	03	05	
0 Mile	0	0	

# REACTION TIME/CLOSURE SPEED CHART

**1 Reaction Time:** The time to perceive and recognize an aircraft, become aware of a collision potential, and decide appropriate action, may vary from as little as 2 or 3 seconds to 10 seconds or more, depending on the human, type of aircraft, and geometry of the closing situation. On top of this time, aircraft reaction time must be added. Also remember that any evasive action contemplated should include maintaining visual contact with other aircraft, if practical.

**2 Closure Speed:** The next two charts show the effect of closure speed. Size is that of F-22 & F-15 aircraft. Times and distances shown are based on "head on" closure speeds. Assuming, 12 seconds to perceive another aircraft and then avoid it, the chart shows that recognition of a collision course at less than 3 miles will normally result in a collision.

**3** These charts have been revised from FAA VFR Pilot Exam-O-Gram No. 29.

## REACTION CHART

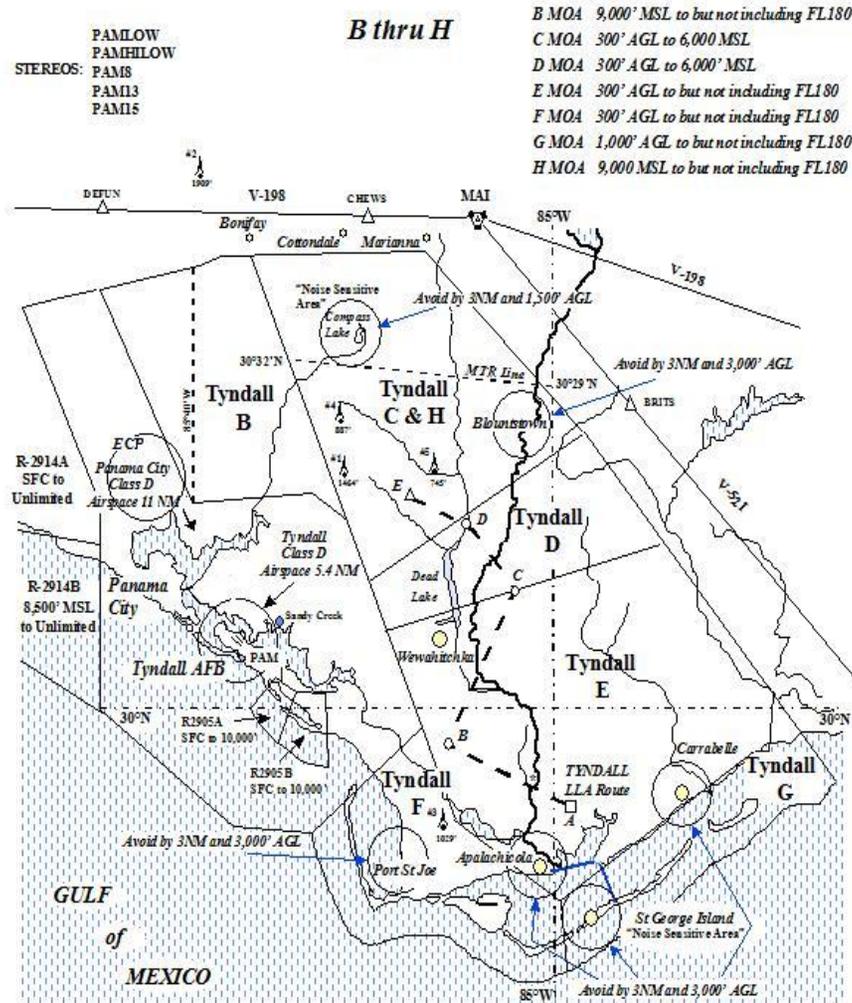
### Critical Seconds

Move away from the F-22 illustration about 3 feet. The F-22 silhouette represents the aircraft as it would appear from the distance indicated on that page. The time required to cover these distances is given in seconds for the combined speeds of 360 and 600 mph.

The shaded blocks in the lower left corner of the page mark the danger area, based on the reaction times on the lower right of this page.

	see object	0.1
	recognize aircraft	1.0
	became aware of a collision course	5.0
	decision to turn left or right	4.0
	muscular reaction	0.4
	aircraft lag time	2.0
<b>TOTAL</b>	<b>12.5</b>	

## TYNDALL MOAs



**COMPASS LAKE**  
B & H MOAs = 9,000' MSL to but not including FL180  
COMPASS LAKE AT CAA FL180 to FL230

**TYNDALL LOWLEVEL AREA (LLA)**  
C & D MOAs = 500' AGL to 4,000' MSL  
E MOA = 500' AGL to 8,000' MSL

**CARRABELLE**  
E MOA = 9,000' MSL to but no including FL180  
CARRABELLE AT CAA FL180 to FL370

**Tyndall Low Level**  
A N2950.6 W8457.0  
B N2954.6 W8512.5  
C N3010.2 W8504.0  
D N3017.2 W8508.6  
E N3019.8 W8514.5

- Flight below 1,000' AGL must remain in NM north of Apalachicola
- \* NOV thru MAY avoid juncture of Brothers/Apalachicola Rivers below 1,000'
- F MOA not included in LLA
- Avoid Public-Use Airports by a radius of 3NM or 3,000'
- Tower (Heights AGL) 1. 1464' 2. 1909' 3. 1029' 4. 887' 5. 745'

## *The Oyster Brief*

1. Because of its proximity to special use airspace, arriving or departing Apalachicola Airport (AAF) under Instrument Flight Rules (IFR) can be risky. Monday through Friday, during daylight hours, Warning Area 470 (W-470), Tyndall E Military Operations Area (MOA), and portions of Tyndall G MOA are active. Routing for IFR aircraft is extremely limited.

2. Fixes used by air traffic control for arrival and departure routings are charted on the IFR LOW ALTITUDE - U.S. (L-18) chart.

### 3. **ARRIVALS:**

3.1. IFR aircraft arriving from the east of AAF can expect radar vectors from Tyndall AFB Radar Approach Control (RAPCON) via TERES or CLRRK. Normally, IFR aircraft will be routed via CLRRK-PARER-AAF, or TERES-radar vectors to AAF, if the Tyndall E MOA is active. ATC routing will bring you to a point west of AAF (approx. 5-7 miles). Upon reporting the airport in sight, you will be cleared for a visual approach and be required to remain within five miles of the airport, at or below 2000 feet. Cancel your IFR flight plan with Tyndall RAPCON or Gainesville (GNV) Automated Flight Service Station (AFSS) upon arrival.

3.2. VFR arrivals can receive traffic advisories and MOA status from Tyndall RAPCON on 124.15.

## *The Oyster Brief (Cont.)*

### **DEPARTURES:**

4.1. If feasible, aircraft should depart AAF VFR and request an IFR clearance with Tyndall RAPCON on VHF frequency 124.15. Clearances may be withheld if the Tyndall E MOA is active. To expedite IFR handling, depart VFR to the west, as it is the shortest way out of the MOA.

4.2. When an IFR departure is necessary, request a clearance through GNV AFSS via telephone. Expect a clearance void time. Initial clearance will be a vector to the southwest and an altitude of 2000 feet.

4.3. After exiting special use airspace (SUA), northbound clearances will include radar vectors around active MOAs. Eastbound departures will receive vectors over St. George Island at 4,000 feet until clear of the E MOA, then a climb on course.

**NOTE:** If the SUA around AAF is not active, IFR arrivals and departures will receive the most direct routing possible from Tyndall RAPCON.