

Mid-Air Collision Avoidance



325th Fighter Wing Tyndall AFB, FL



March 2024

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Preface

Intent: 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.

If you have any questions regarding the contents of this booklet please call the 325 FW Flight Safety Staff (850-283-3210). 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:

Airfield Management

Phone: (850) 283-4244/4245

Flight Safety

Phone: (850) 283-3210

Cell: (850) 774-6962

Airfield Operations Flight

Phone (850) 283-8788



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

AIRPORT DIAGRAM

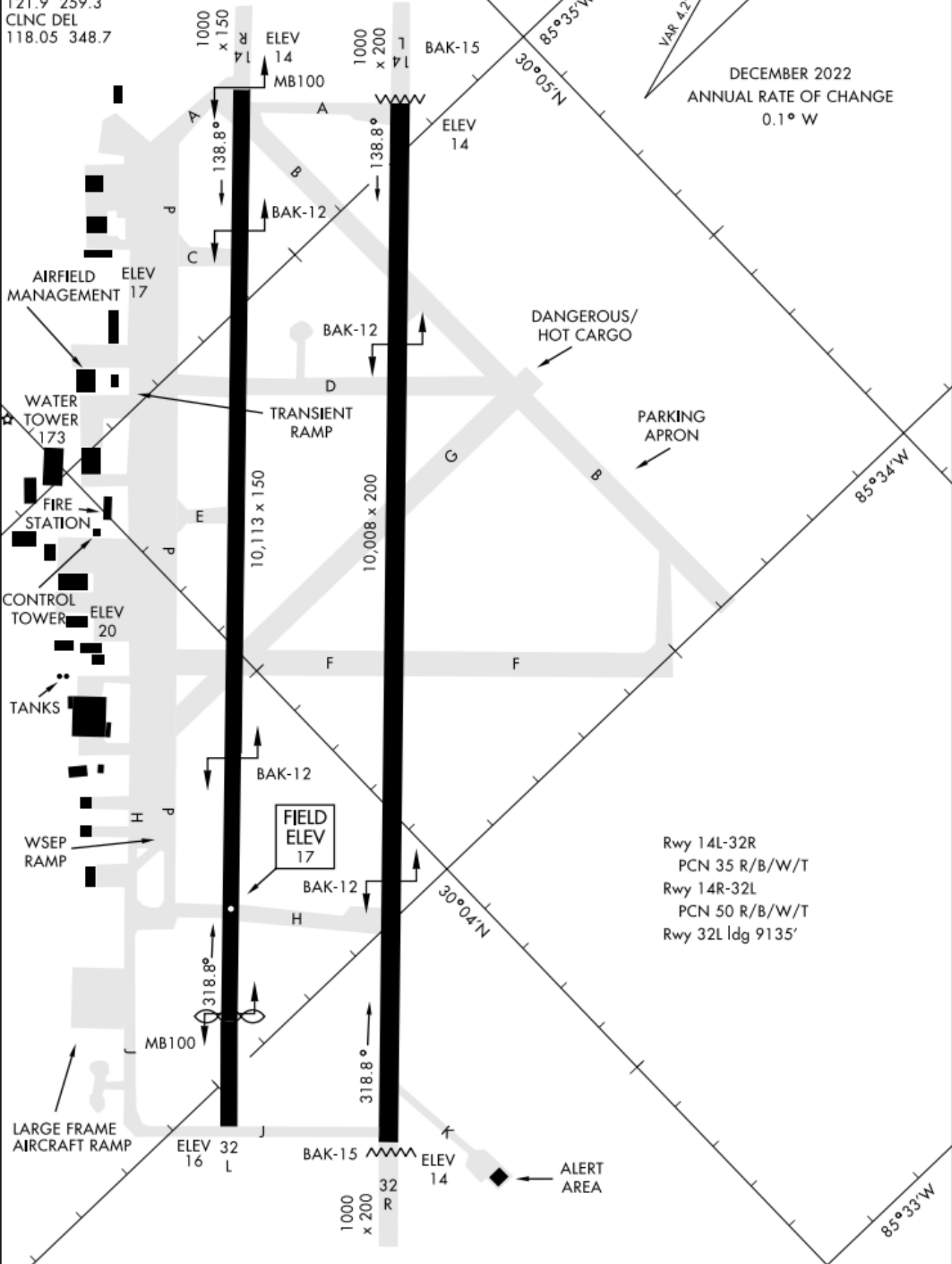
AL-312 [USAF]

TYNDALL AFB (KPAM)

PANAMA CITY, FLORIDA

ATIS ★
 254.4
 TYNDALL TOWER
 133.95 263.15
 GND CON
 121.9 259.3
 CLNC DEL
 118.05 348.7

DECEMBER 2022
 ANNUAL RATE OF CHANGE
 0.1° W



Rwy 14L-32R
 PCN 35 R/B/W/T
 Rwy 14R-32L
 PCN 50 R/B/W/T
 Rwy 32L ldg 9135'

SE-3, 15 JUN 2023 to 13 JUL 2023

SE-3, 15 JUN 2023 to 13 JUL 2023

AIRPORT DIAGRAM

PANAMA CITY, FLORIDA
TYNDALL AFB (KPAM)

AREA FREQUENCIES

<i>TYNDALL APPROACH</i>	<u>VHF</u>	<u>UHF</u>
North of Tyndall Below 5,000'	120.825	379.3
North of Tyndall Above 5,000'	125.2	392.1
South of Tyndall Below 5,000'	124.15	338.35
South of Tyndall Above 5,000'	119.77	317.45
<i>TYNDALL TOWER</i>	133.95	263.15
<i>PANAMA CITY TOWER</i>	118.95	269.0
Unicom	118.95	
ATIS	119.97	
<i>APALACHICOLA AIRFIELD</i>		
Unicom	122.8	
SOS	119.95	
<i>PANAMA CITY BEACH ADVISORY</i>	122.75	
<i>EGLIN APPROACH (VFR)</i>	132.1	
<i>CAIRNS APPROACH</i>	133.75	
<i>TALLAHASSEE APPROACH</i>	135.8	

SEE AND AVOID

There are three major USAF bases (Hurlburt, Eglin, and Tyndall Air Force Bases) and the Pensacola Naval Flying Training Center, all conducting some form of flight training. As the enclosed charts show the location of Tyndall's Military Operations Areas (MOAs), Restricted Areas (R), and other Special Use Airspace (SUA) used for flight. **These charts should be used for familiarization only. Check current aeronautical publications for SUA information.**

Tyndall assigned aircraft conduct training in the F-35A Lightning II, however the USAF conducts air-to-air weapons firing exercises and large-scale air combat training over the Gulf of Mexico flying a wide variety of fighter aircraft. During flying operations, MONDAY through FRIDAY (excluding federal holidays), you can expect heavy jet fighter traffic in the Tyndall airspace area of operation. 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 areas 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

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:

1. Position, the geographical location (i.e., 10 miles southeast of Southport), or radial and DME (ECP 070 for 16/34)
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, 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.

SPECIAL USE AIRSPACE AND TRAINING AREAS

MOAs: Tyndall MOAs are located North and East of Panama City. 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. Even advanced sensors often fail to provide awareness of small light aircraft. 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 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.

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 operations in or near these areas, thus 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-16 fighter aircraft converted to fly without a pilot. These drones take off 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-16 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.

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Sandy Creek Airpark (75FL)

Procedures

All pilots should be aware that the departure end of runway 27 and approach end of runway 09 are within KPAM Class D airspace, and high-speed fighter jet aircraft pass over the airfield at 2000 feet MSL during VFR conditions and 1500 feet during IFR operations.



Sandy Creek Pilots departing and arriving shall:

- To the maximum extent, do not exceed 1000 feet when entering or exiting the traffic pattern to avoid conflicts with Tyndall aircraft on downwind.
- Communication with Tyndall Tower does not need to be established if remaining within 1 mile of 75FL and at or below 1000 feet MSL.
- RWY 27 departures/RWY 09 arrivals remaining within 1 mile of 75FL and at or below 1000 feet MSL can remain on 122.9MHz.
- Prior to any aircraft extending beyond 1 mile or climbing above 1000 feet MSL, while in KPAMs Class Delta all aircraft will contact Tyndall Tower on 133.95.

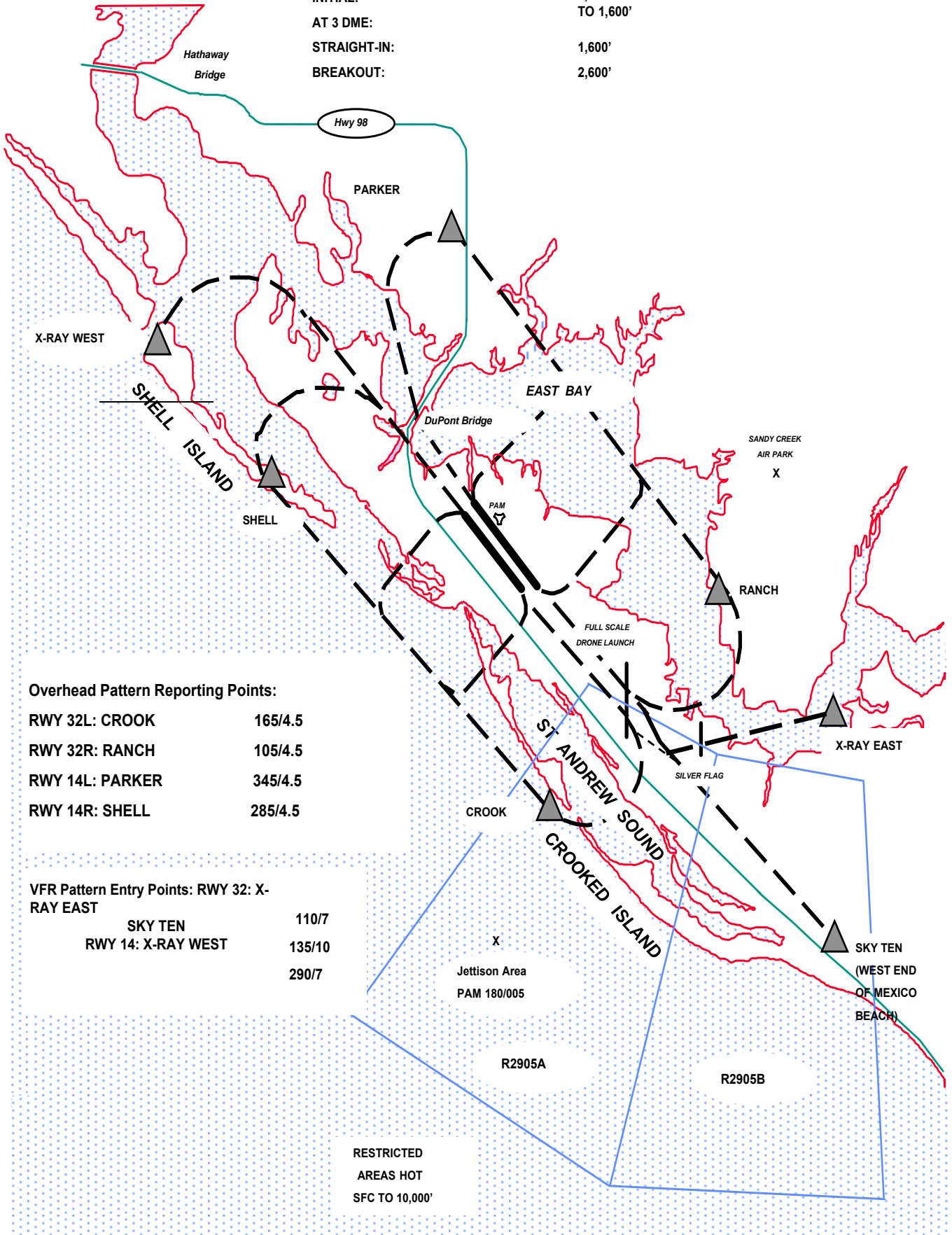
Tyndall Shall:

- Issue appropriate traffic, restrictions, and safety alerts to aircraft operating within the vicinity of 75FL.
- Provide the appropriate service to aircraft arriving or departing 75FL upon radio contact.
- Will contact aircraft operating outside of 1 mile and/or above 1000 feet MSL in the vicinity of 75FL on 122.9.

VFR TRAFFIC PATTERN RWY 14/32

PATTERN ALTITUDES (Jet)

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



Overhead Pattern Reporting Points:

RWY 32L: CROOK	165/4.5
RWY 32R: RANCH	105/4.5
RWY 14L: PARKER	345/4.5
RWY 14R: SHELL	285/4.5

VFR Pattern Entry Points: RWY 32: X-RAY EAST

SKY TEN	110/7
RWY 14: X-RAY WEST	135/10
	290/7

RESTRICTED
 AREAS HOT
 SFC TO 10,000'

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.

4. **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.

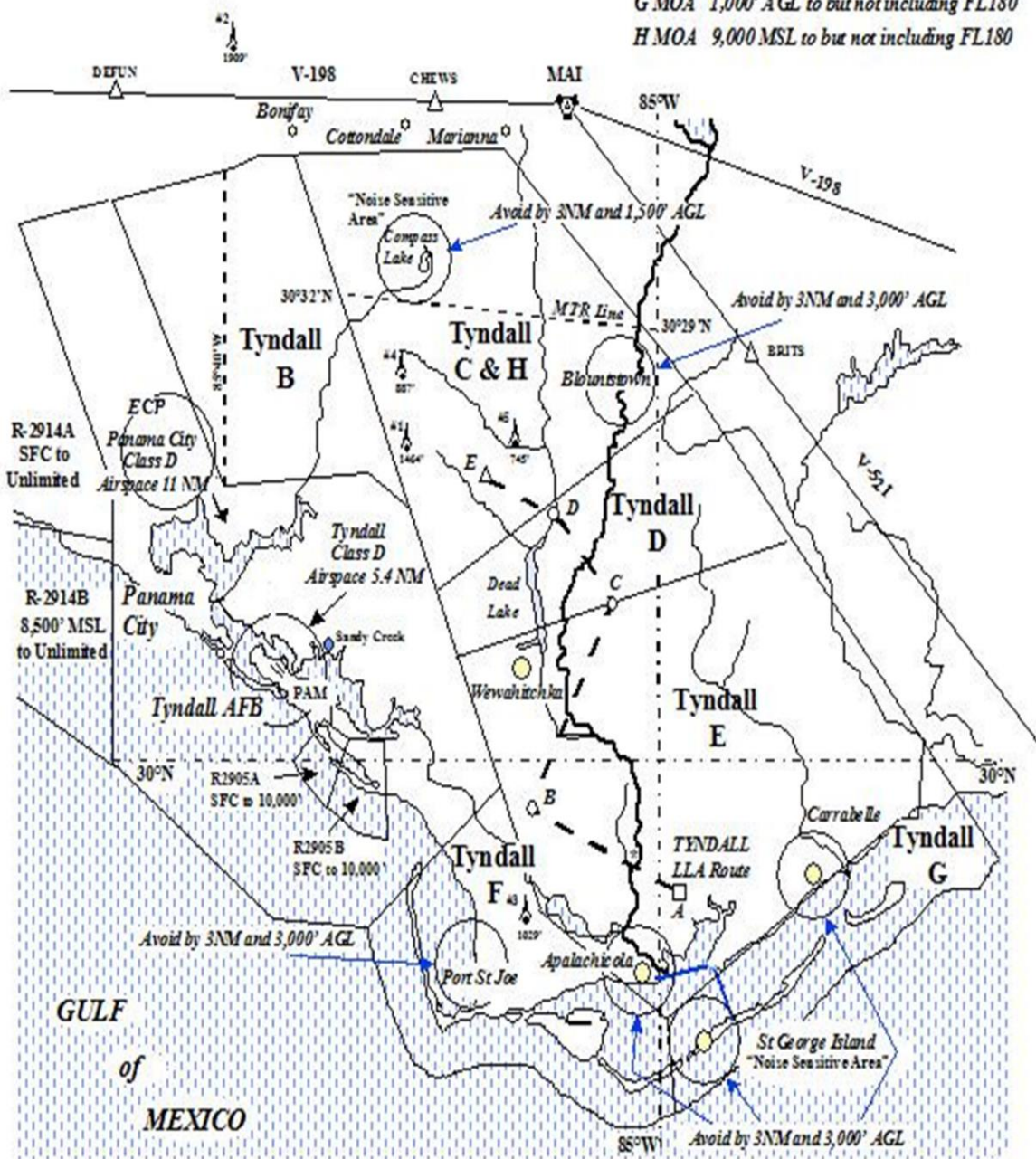
NOTE: If the SUA around AAF is not active, IFR arrivals and departures will receive the most direct routing possible from Tyndall RAPCON.

TYNDALL MOAs

B thru H

- B MOA 9,000' MSL to but not including FL180
- C MOA 300' AGL to 6,000' MSL
- D MOA 300' AGL to 6,000' MSL
- E MOA 300' AGL to but not including FL180
- F MOA 300' AGL to but not including FL180
- G MOA 1,000' AGL to but not including FL180
- H MOA 9,000' MSL to but not including FL180

PAMLOW
PAMHILOW
STEREOS: PAMS
PAM13
PAM15



COMPASSLAKE
B & H MOAs = 9,000' MSL
to but not including FL180
COMPASSLAKE ATCAA
FL180 to FL230

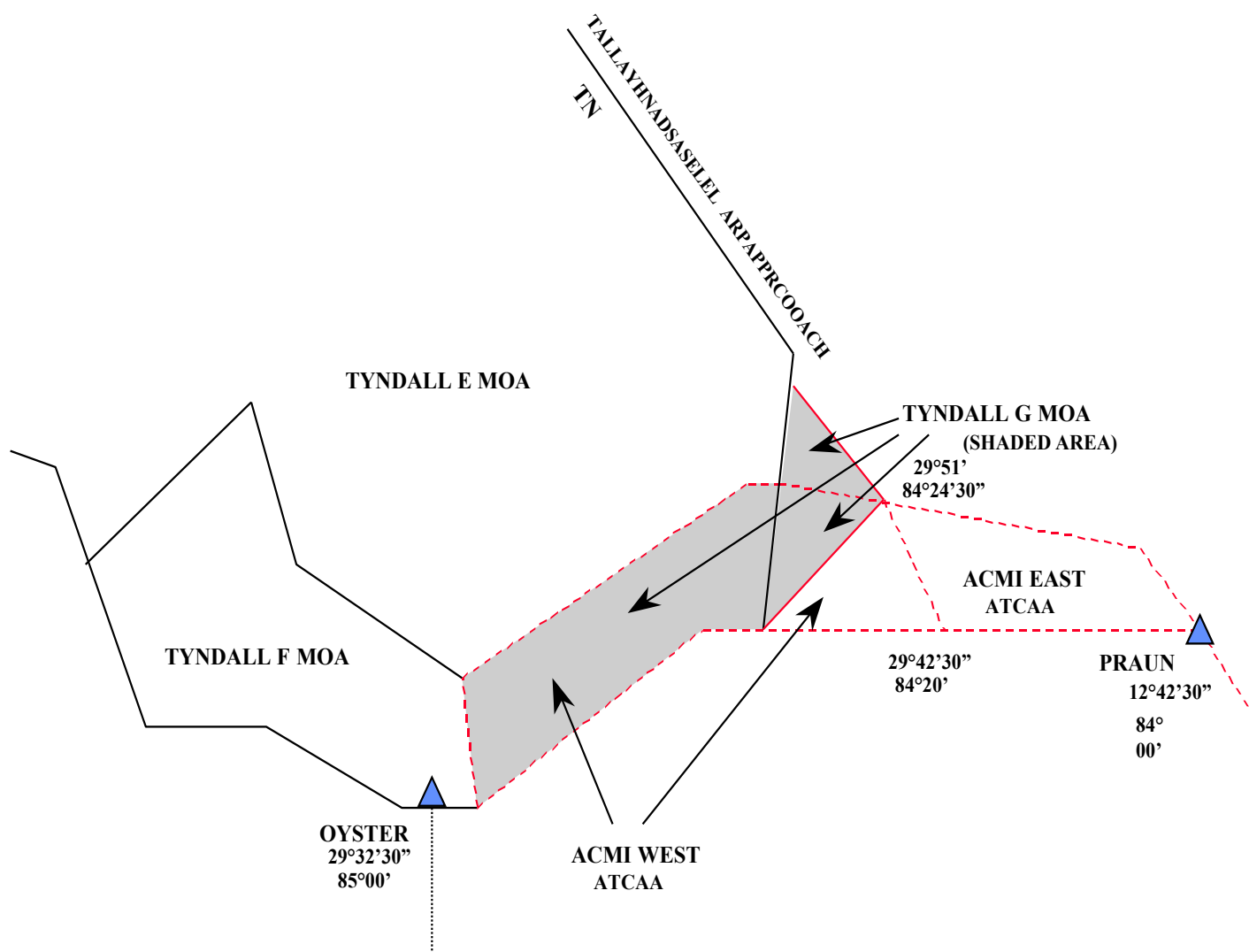
Tyndall Low Level
A N2950.6 W8457.0
B N2954.6 W8512.5
C N3010.2 W8504.0
D N3017.2 W8508.6
E N3019.8 W8514.5

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 not including FL180
CARRABELLE ATCAA FL180 to FL370

- Flight below 1,000' AGL must remain 5NM north of Apalachicola City
- * 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'

AIR COMBAT MANUEVERING INSTRUMENTATION (ACMI) EXTENSION ATC 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

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
TOTAL	12.5

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	💥

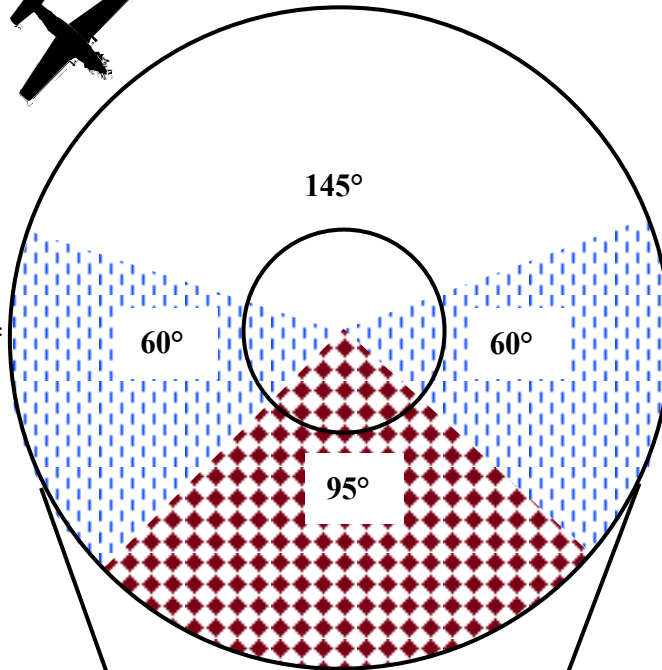
GEOMETRY OF A COLLISION COURSE

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

PILOT WILL SEE A/C IN WINDSHIELD




PILOT CAN ONLY SEE A/C IN SIDE WINDOW




PILOT WILL NOT SEE F22



 A/C WILL BE VISIBLE IN THE PIPER'S WINDSHIELD

 A/C WILL ONLY BE VISIBLE OUT THE SIDE WINDOW OF THE PIPER

 A/C WILL NOT BE SEEN BY THE PIPER BECAUSE HE IS BEING OVERTAKEN BY THE A/C

F22 FLYING AT A RELATIVELY SLOW 320 KNOTS

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****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-35 Lightning II



The Lockheed Martin F-35 Lightning II a single-seat, single-engine, fifth-generation multirole fighters. Developed to perform ground attack, Recon, & air defense missions.

E-9A Dash 8



The E-9 twin turbo prop aircraft is used as a surveillance platform. Ensuring the Gulf Coast waters are clear of boaters and aircraft during live missile test. The E-9 aircraft will be seen daily in the Tyndall terminal area and special use airspace.

F/A-18 Hornet



The McDonnell Douglas F/A-18 Hornet is a twin-engine supersonic, all-weather carrier-capable multirole combat jet, designed to dogfight and attack ground targets.

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.

F-15 Eagle



The F-15 Eagle is the Worlds Greatest Air Superiority Fighter, 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.

F-22 Raptor



The F-22 Raptor is the USAF's Legacy 5th Gen fighter. It Combines stealth, super cruise, & maneuverability, to achieve air dominance in the Aerial arena, Tyndall was the world's only F-22 training base.

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.

QF-16



The QF-16 Drone is the newest 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-16 also operates in a traffic pattern at a drone runway southeast of Tyndall.

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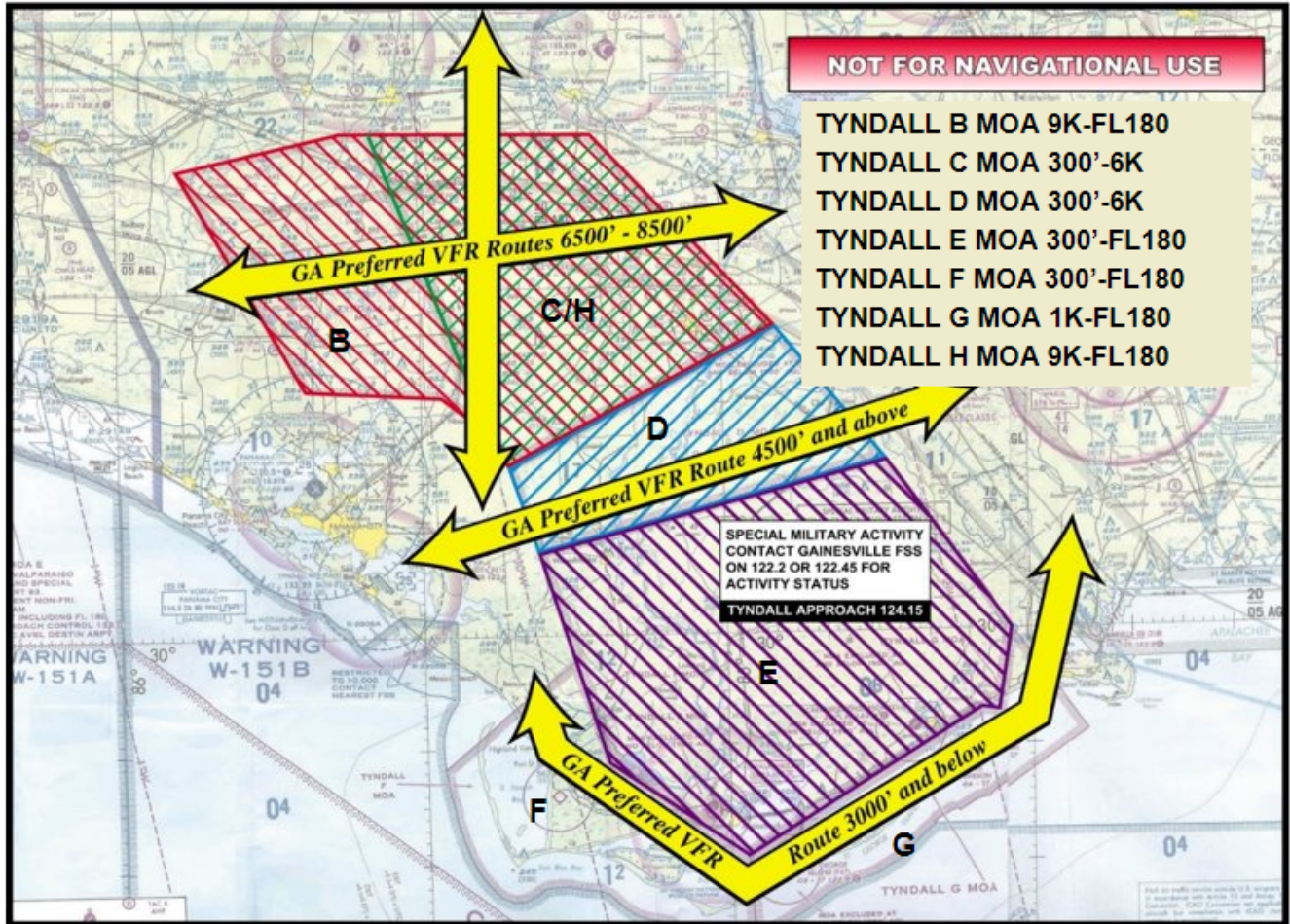


Tyndall Air Force Base

325th Fighter Wing



Mid Air Collision Avoidance

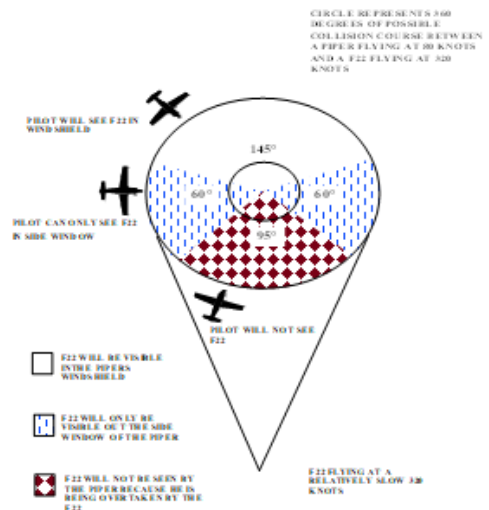


This chart not intended for navigation

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 283-3210

GEOMETRY OF A COLLISION COURSE



LEGEND	
	300' - FL230 M-F
	300' - 4K' M-F
	300' - 6K' M-F
	9K' - FL230 M-F
	GA Preferred VFR Routes

