MidAir Collision Avoidance (MACA) Program

Luke Air Force Base, Arizona

TRAINING THE WORLD'S BEST F-35 & F-16 FIGHTER PILOTS!

JANUARY 2016

Dear Fellow Aviators,

Midair collisions are an area of vital concern to everyone who flies an airplane. The actual number of midairs between Air Force aircraft and general aviation aircraft is relatively low; however, 80 percent of reported Air Force near misses occur with general aviation aircraft. Because of increasing general aviation traffic and heavy concentrations of military aircraft involved in training, we want to inform you about the flying activity at Luke Air Force Base.

The purpose of this pamphlet is to alert you to the many areas of high midair collision potential in the skies over Arizona and to discuss ways to make them safer. This pamphlet will describe available radar services, the types of military aircraft you may encounter, arrival and departure routes, military operating areas, and low level routes. It also provides information regarding midair collisions and ways we can all help avoid them.

The pilots and controllers assigned to Luke Air Force Base are committed to maintaining a valid and active midair collision avoidance program. We hope this pamphlet will serve to increase your understanding of Luke's flying activities so we may continue to safely share the skies. If you desire any additional information or a briefing from the Luke Air Force Base MACA team members concerning our operations, please contact the **Luke Flight Safety Office at (623) 856-6942**, **Airfield Operations Flight Commander at (623) 856-7341**, or **Airspace Management at (623) 856 - 5855**

Additional copies of this pamphlet can be obtained by calling the Luke Flight Safety Office.

Table of Contents

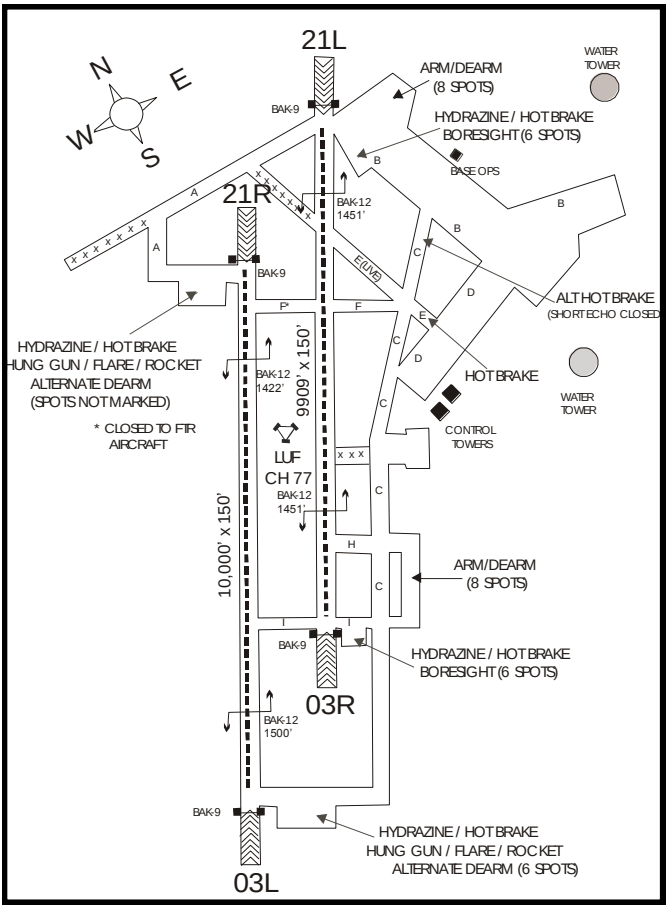
Luke AFB Location and Operation	1
F-16/F-35 Operating Information	2
Local Area Map	3
Military Training Routes	4
Special Air Traffic Rule (SATR)	5-6
Sells MOA / Military Ranges & Restricted areas	7-8
Restricted Airspace (R-2301E / R-2304 / R-2305)	9
Gladden / Bagdad	10
Outlaw / Jackal MOA	11
Alert Area A-231	12
RWY 03 Departures	13
RWY 21 Departures	14
RWY 03 Arrivals	15
RWY 21 Arrivals	16
RWY 03 Traffic Pattern	17
RWY 21 Traffic Pattern	18
Luke AFB and AUX-1 Radar Pattern	19
Gila Bend AFAF Traffic Pattern	20
Reaction Chart	21
Closure Rate	22
Geometry of a Collision	23
Collision Avoidance and YOU!	24

Luke AFB Location and Operation

Location:	19 miles West of Phoenix Sky Harbor
Airfield Identifier:	KLUF
Coordinates:	N 33 32.26 W 112 22.8
Elevation:	1090'
Frequencies:	Approach - 125.45/ 118.15
	Tower - 119.1

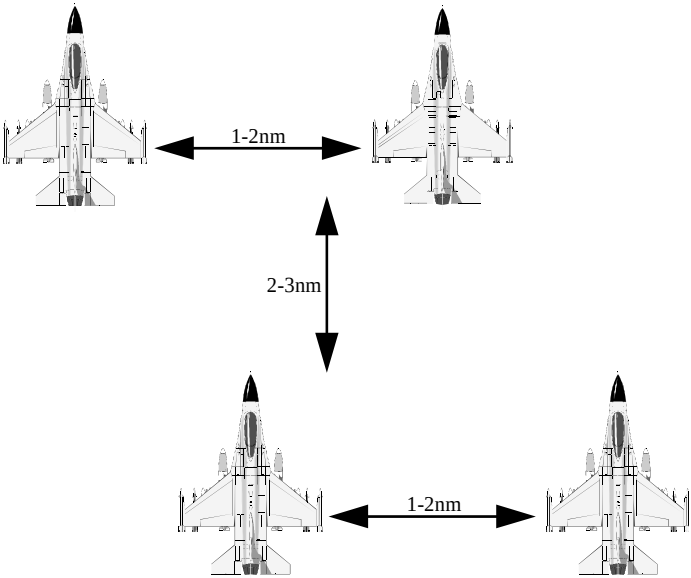
Luke AFB is closed to all civil traffic. Extensive, high speed student jet training in progress.

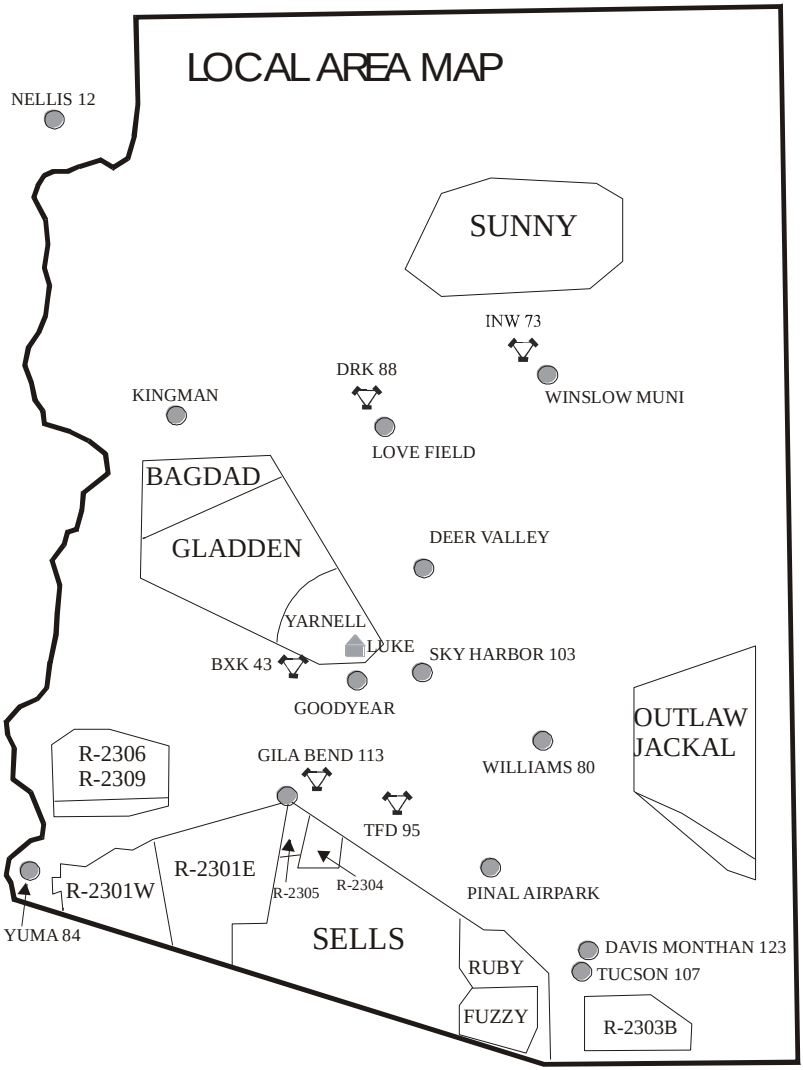
Contact Luke Approach for traffic



F-16/F-35 Operating Information

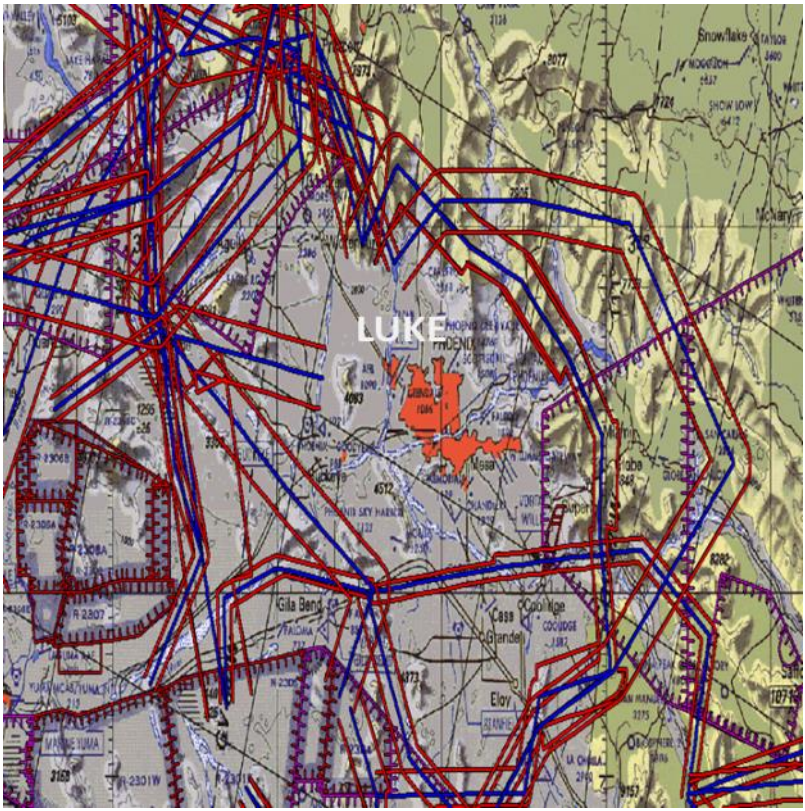
The F-16 and F-35 are multi-role fighters. Luke is the largest single F-16 base worldwide. It is one of 2 USAF F-35 training bases. There are over one hundred F-16s assigned to Luke and more F-35s are showing up monthly. All phases of F-16/F-35 training for USAF pilots and some foreign countries are conducted here. Most F-16s/F-35s travel in even numbers, either 2 or 4 together, except in the local pattern where they'll fly as singles. F-16s/F-35s routinely fly 350 kts on departure and 300 kts on recovery and in the traffic pattern. In the Military Operations Areas (MOAs), airspeeds range from 150 kts to supersonic. On Military Training Routes (MTRs), F-16s/ F-35s fly 500 kts at 500'-1000' AGL. While in the MOAs or on MTRs, F-16s/F-35s generally fly 1-2 nm line abreast with another pair line abreast 2-3 nm in trail. So, if you see one F-16/F-35, look for others… chances are good there will be another one close by.





IN ADDITION TO RESTRICTED AIRSPACE, THE GLADDEN/BAGDAD AND SELLS MOAs ARE THE MOST HIGHLY USED AREAS FOR LUKE F-16s/F-35s. OPERATIONS ARE CONDUCTED SUNRISE TO 2300(L), MON-FRI AND SOMETIMES SAT. OPERATIONS IN THE SUNNY MOA & ATCAA ARE CONDUCTED FROM 12,000 MSL—FL290. NUMEROUS MTRs TRANSIT IN AND AROUND LUKE AND THE PHOENIX AREA. FOR ADDITIONAL INFORMATION ON SPECIAL USE AIRSPACE PLEASE REFER TO SECTIONAL CHARTS, LOCAL NOTAMs, ETC.

Military Training Routes



MILITARY TRAINING ROUTES:

LOW ALTITUDE NAVIGATION AND TACTICAL TRAINING AT AIRSPEEDS IN EXCESS OF 400 KNOTS (NORMAL 450-550), BELOW 10,000 FT MSL

LUKE AIRCRAFT NORMALLY FLY THEM AT 500-1000' AGL

ACTIVE: 0600-2400 (L) / MON - FRI (OTHER TIMES AS SCHEDULED)

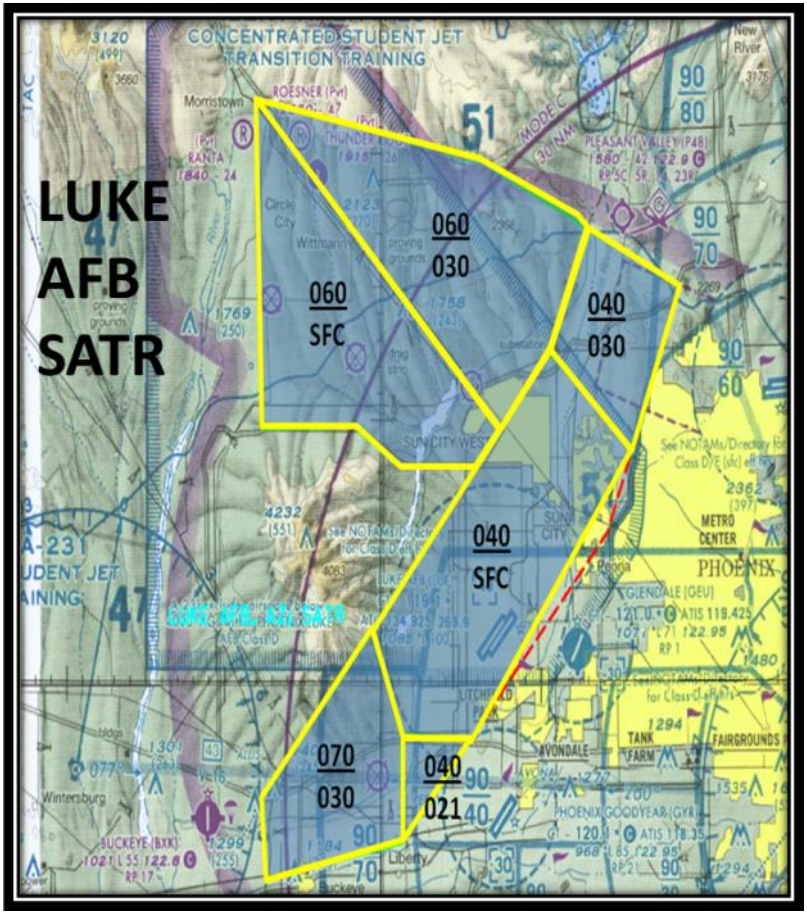
ROUTE CHARACTERISTICS:

WIDTHS: VARIES BETWEEN 5-20NM WIDE

FLOORS: 100-300' AGL

CONTACT FLIGHT SERVICE STATION (FSS) FOR MTR STATUS

SATR



SPECIAL AIR TRAFFIC RULE

APPLICABLE TO VFR AIRCRAFT IN VICINITY OF LUKE AFB

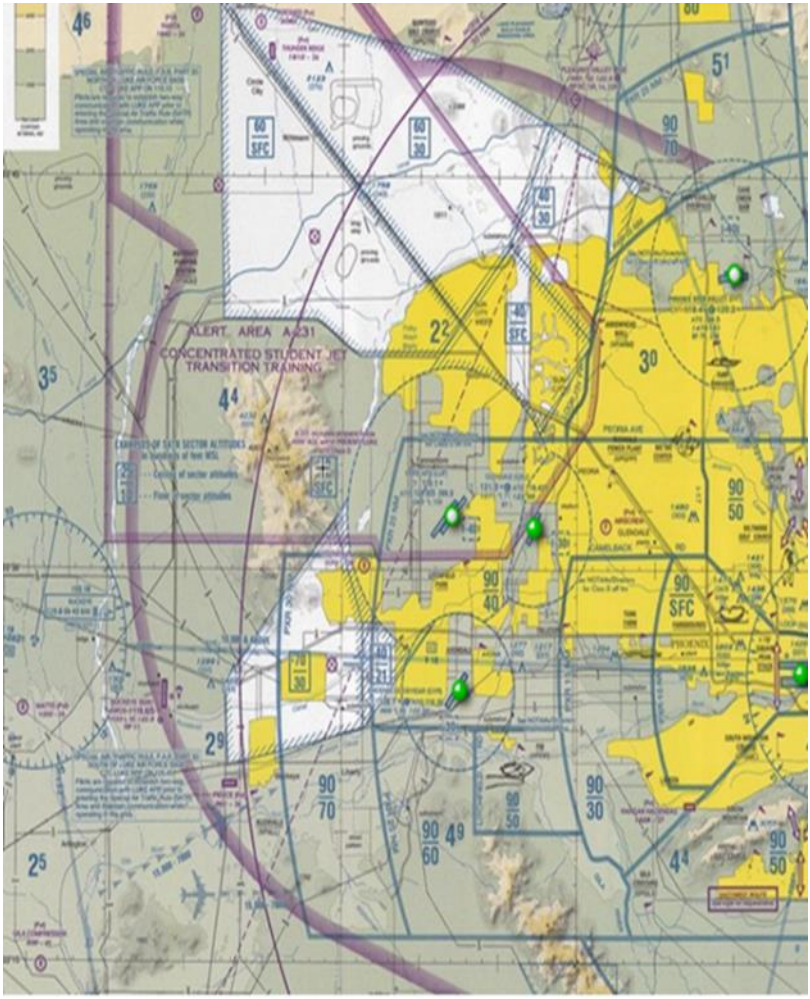
ACTIVE: DAYLIGHT HOURS / MON - FRI (SOMETIMES SAT)

ALTITUDES: AS DEPICTED

CONTACT LUKE APPROACH:

118.15 NORTH OF BXK / **125.45** SOUTH OF BXK / **120.5** VICINITY OF E25

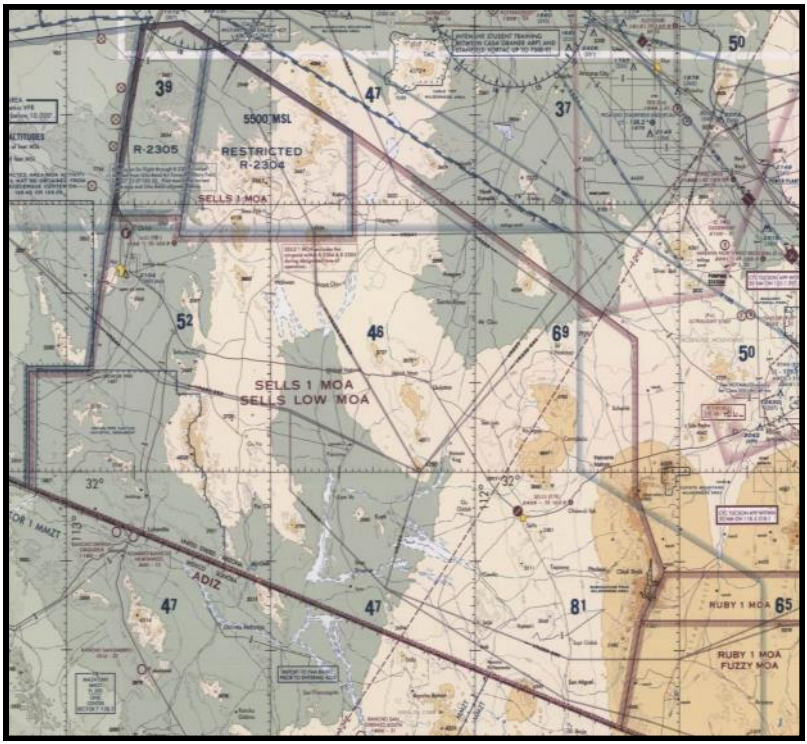
SATR



SPECIAL AIR TRAFFIC RULE

2-WAY COMMUNICATION REQUIRED PRIOR TO ENTERING AND WHILE WITHIN VERTICAL AND LATERAL BOUNDARIES

Sells MOA



SELLS MOA & ATCAA

ACTIVE: SUNRISE - 2300(L) MON - FRI (OTHER TIMES BY NOTAM)

ALTITUDES: 3000' AGL - FL510

(This airspace is also used by military aircraft from Tucson and Davis-Monthan AFB.)

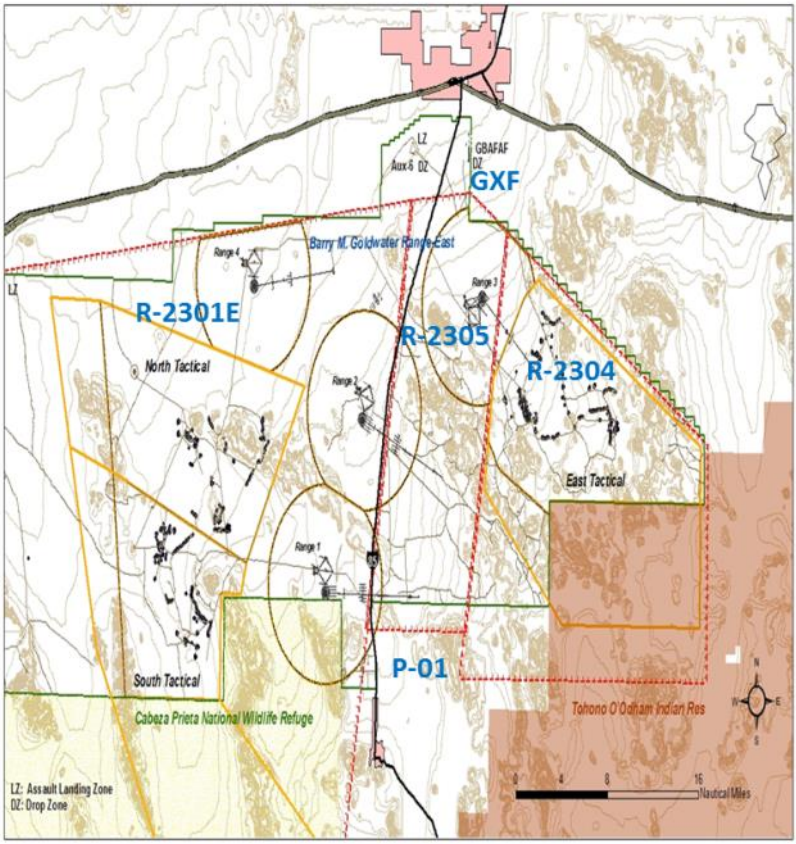
USE CAUTION WHEN TRANSITING SELLS MOA - NUMEROUS MILITARY TRAINING ROUTES (MTRs) TRANSIT THE AIRSPACE

MILITARY AIRCRAFT ON MTRs ROUTINELY OPERATE AT SPEEDS IN EXCESS OF 500KTS DOWN TO 500' AGL

DAVIS-MONTHAN LATN AREA HAS AIRCRAFT 100' AGL TO 300' AGL

CONTACT ABQ CTR AT 126.45 OR GILA BEND AF AUXILIARY FIELD AT 127.75 FOR ADVISORIES

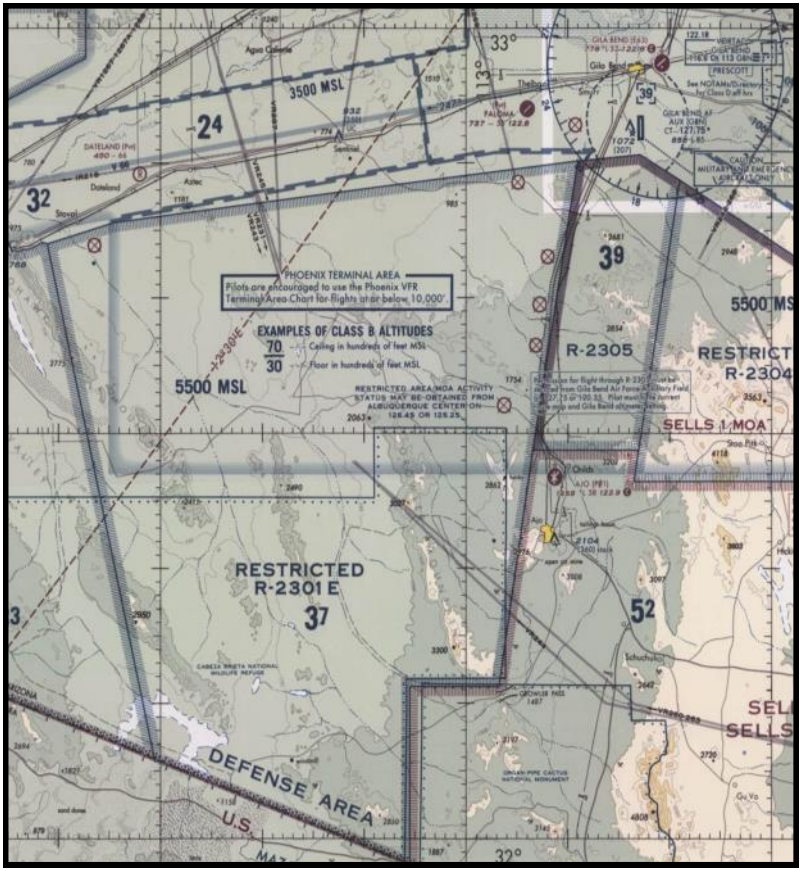
Military Ranges/Restricted Areas



NOTE: RESTRICTED AIRSPACE / RANGES MAY STILL BE ACTIVE IF GILA BEND TOWER AND / OR SNAKEYE IS CLOSED

CONTACT ABQ CTR AT 126.45 OR GILA BEND AF AUXILIARY FIELD AT 127.75 FOR ADVISORIES

Restricted Airspace Cont'd



MILITARY RANGES & RESTRICTED AREAS

R-2301E: SURFACE—FL800

R-2304-5: SURFACE TO FL240

ACTIVE: MON-SAT, 0600-2300L (OTHER TIMES BY NOTAM)

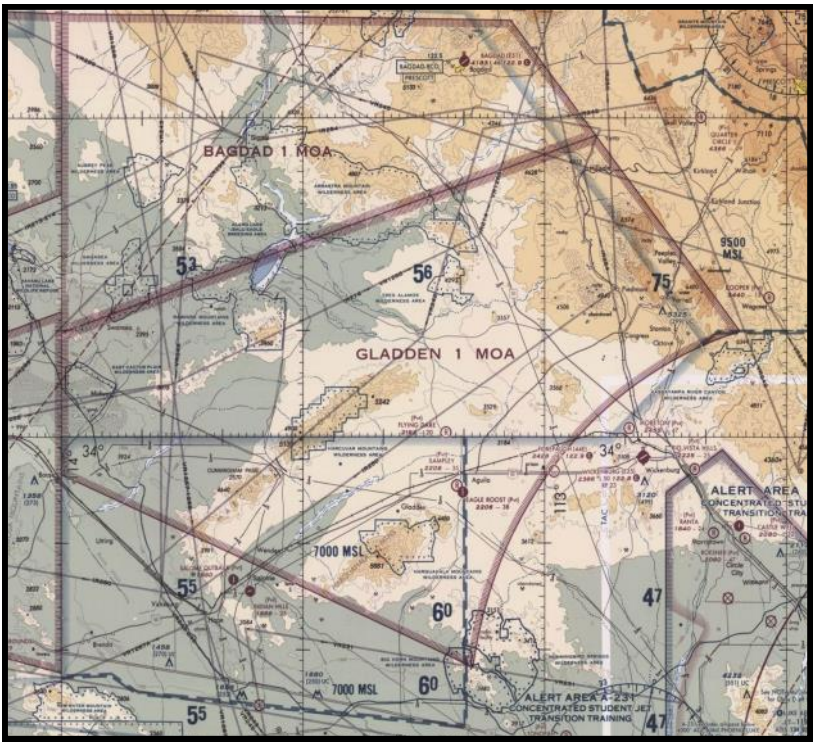
TO CHECK RANGE / RESTRICTED AREA STATUS:

ZAB: 126.45

LUKE APPROACH: 125.45

GXF TOWER: 127.75

Gladden/Bagdad MOA



GLADDEN MOA & ATCAA

ACTIVE: SUNRISE - 2300(L) MON - FRI (OTHER TIMES BY NOTAM)

ALTITUDES: 7000' MSL (5000' AGL) - FL330

BAGDAD MOA & ATCAA

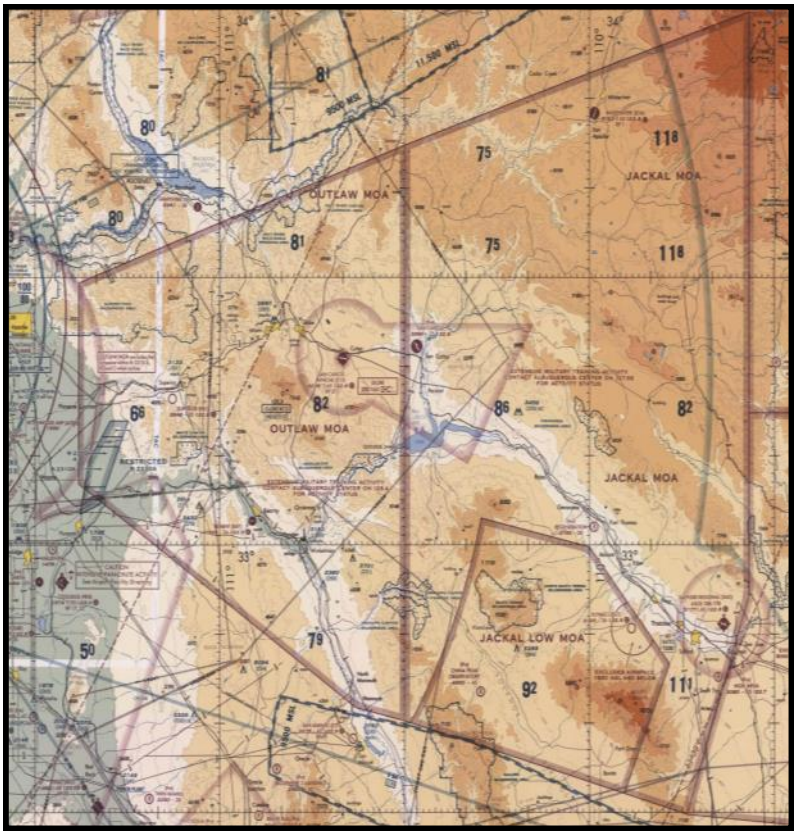
ACTIVE: SUNRISE - 2300(L) MON - FRI (OTHER TIMES BY NOTAM)

ALTITUDES: 7000' MSL (5000' AGL) - FL280

THESE ARE LUKE'S MOST HIGHLY USED MOAs. OPERATIONS ARE GENERALLY CONDUCTED ABOVE 10,000' MSL, BUT CERTAIN MISSION REQUIRE TRANSITIONS TO THE 7,000' AGL FLOOR. ALSO, WHEN ABQ CENTER "CAPS" THE TOP OF THE AIRSPACE OR WHEN WEATHER IS A FACTOR, MISSIONS WILL BE CONDUCTED LOWER.

PLEASE CONTACT ABQ CTR FOR ADVISORIES IF TRANSITIONING MOA AT (128.45)

Outlaw / Jackal MOA



OUTLAW MOA & ATCAA

ACTIVE: SUNRISE - 2300(L) MON - FRI (OTHER TIMES BY NOTAM)

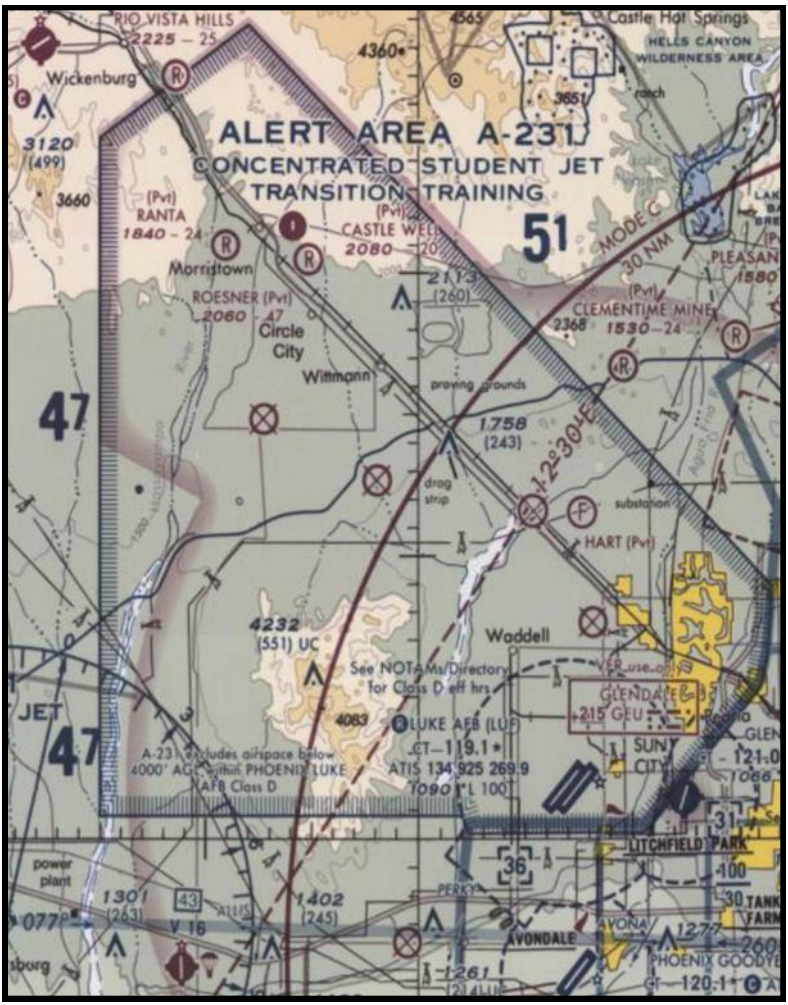
ALTITUDES: 8000' MSL (3000' AGL) - FL510 (NORMALLY CAPPED AT FL290)

JACKAL MOA & ATCAA

ACTIVE: SUNRISE - 2300(L) MON - FRI (OTHER TIMES BY NOTAM)

ALTITUDES: 11000' MSL (3000' AGL) - FL510 (NORMALLY CAPPED AT FL300)

Alert Area A-231



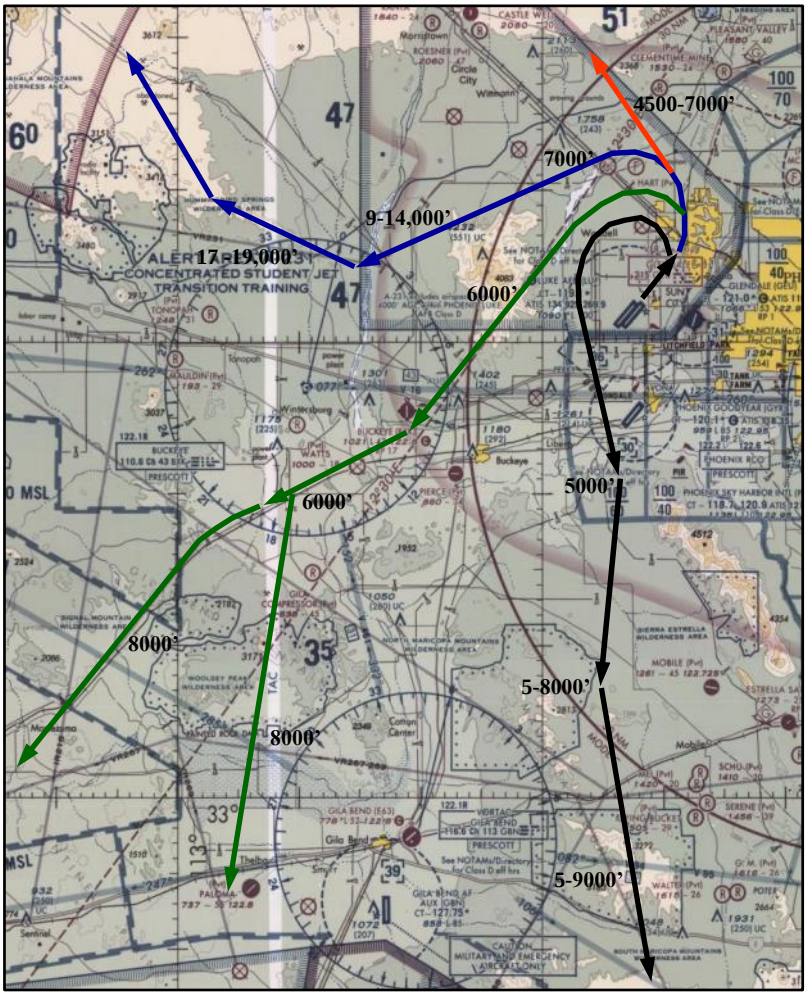
ALERT AREA A-231

ACTIVE: CONTINUOUS

EXERCISE EXTREME CAUTION FOR HIGH SPEED JET TRAFFIC IN A-231

CONTACT LUKE APPROACH ON 118.15 OR 125.45 FOR ADVISORIES

Rwy 03 Departures



BLACK - VFR SOUTH & BUSCO DEPARTURES GROUND TRACKS

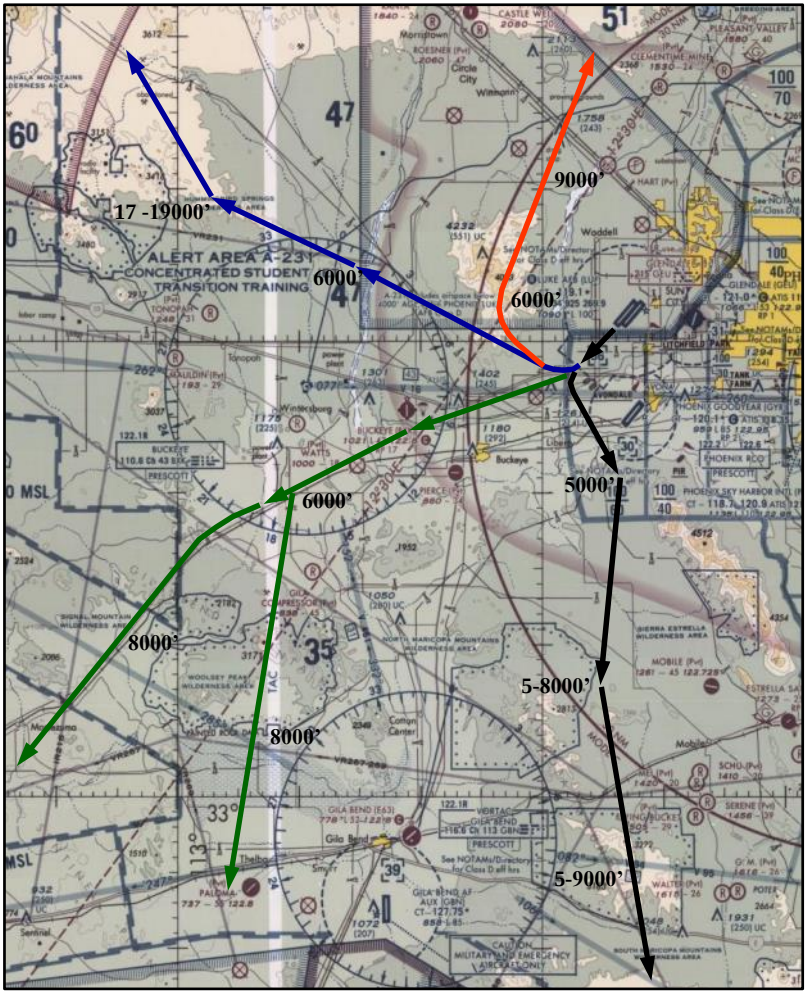
BLUE - TIRON-GLADDEN DEPARTURE

RED - VFR NORTH & LAKE DEPARTURES

GREEN - NORDY departure to NOLLS and ARSON

CONTACT LUKE APPROACH ON 118.15 OR 125.45 FOR ADVISORIES

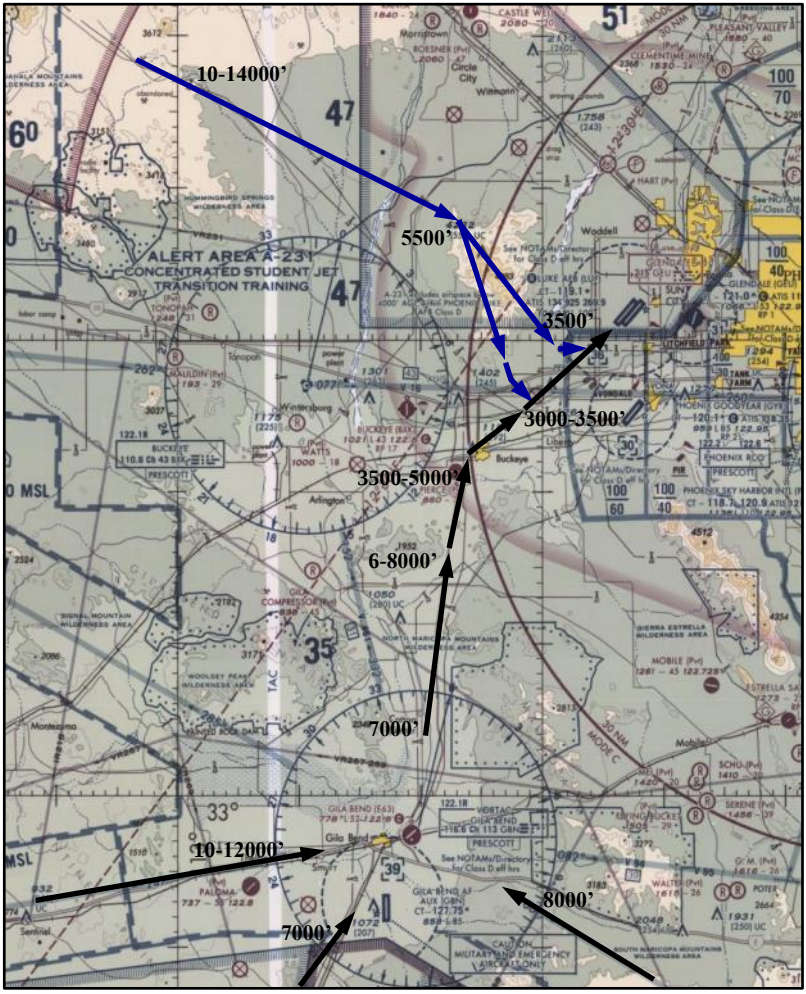
Rwy 21 Departures



THE HIGHEST POTENTIAL CONFLICT AREAS CONTINUE TO BE ON LUKE'S SOUTHERN DEPARTURES (SOUTH OF GOODYEAR AIRPORT) AND NORTHERN DEPARTURE IN THE VICINITY OF LAKE PLEASANT. PRACTICE DISCIPLINED SEARCH PATTERNS AND IT IS RECOMMENDED YOU CONTACT LUKE APPROACH FOR TRAFFIC ADVISORIES.

CONTACT LUKE APPROACH ON 118.15 OR 125.45 FOR ADVISORIES

RWY 03 Arrivals



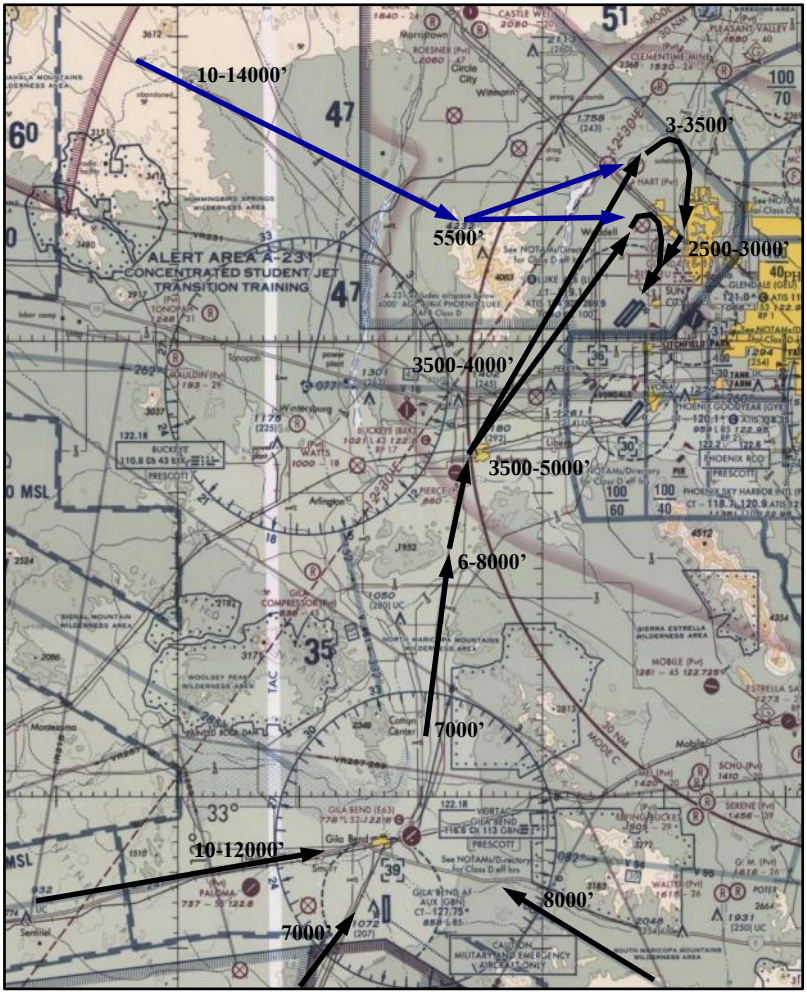
BLACK - GROUNDTRACK OF THE VALLEY RECOVERY

BLUE - GROUNDTRACK OF THE TANKZ RECOVERY

ARRIVALS FROM THE SOUTH FUNNEL TO GBN VORTAC ENROUTE TO LUKE

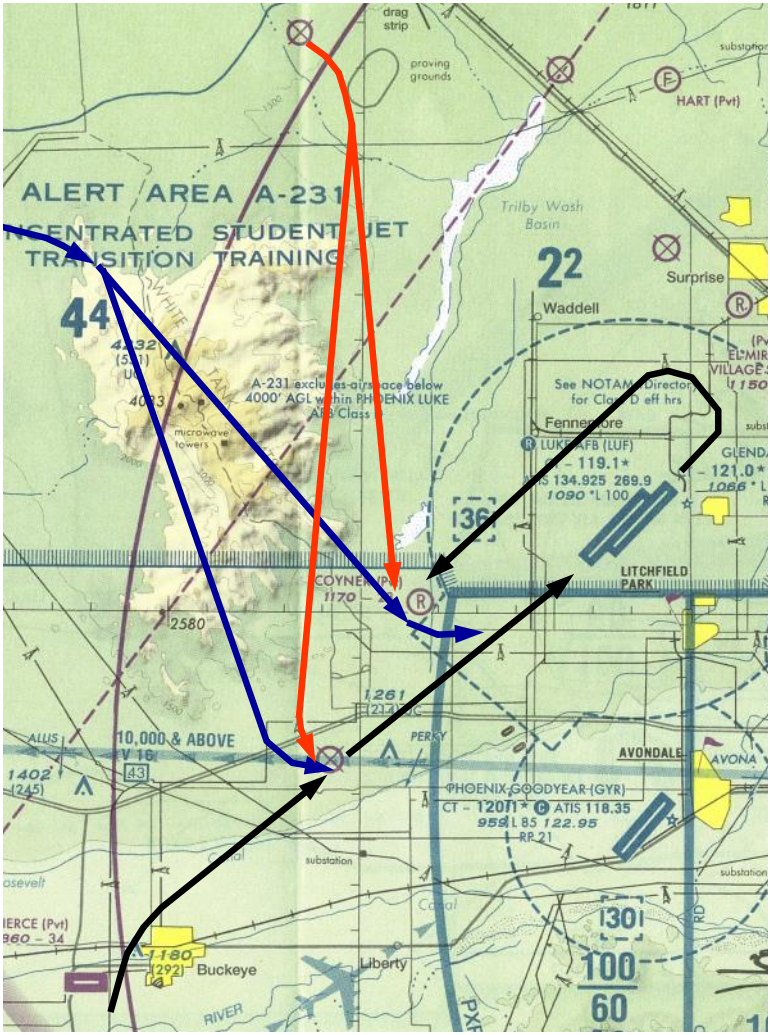
ARRIVALS FROM THE NORTH ENTER THE LUKE TRAFFIC PATTERN FROM NORTHWEST OF THE WHITE TANKS

RWY 21 Arrivals



HIGHEST CONFLICT AREAS: NEAR **BUCKEYE, AUX 1** (LUKE'S INSTRUMENT PRACTICE AIRFIELD), AND IN THE **VICINITY OF LUKE'S PATTERN ENTRY POINTS** (THE SUBSTATION NW OF SUN CITY, THE ABANDONED AIRFIELD AT THE SW CORNER OF BELL AND LITCHFIELD RD, AND THE ABANDONED CATERPILLAR TRACTOR PROVING GROUNDS JUST SW OF THE BASE). PLEASE EXERCISE CAUTION AND REQUEST FLIGHT FOLLOWING IF ABLE.

RWY 03 Traffic Pattern



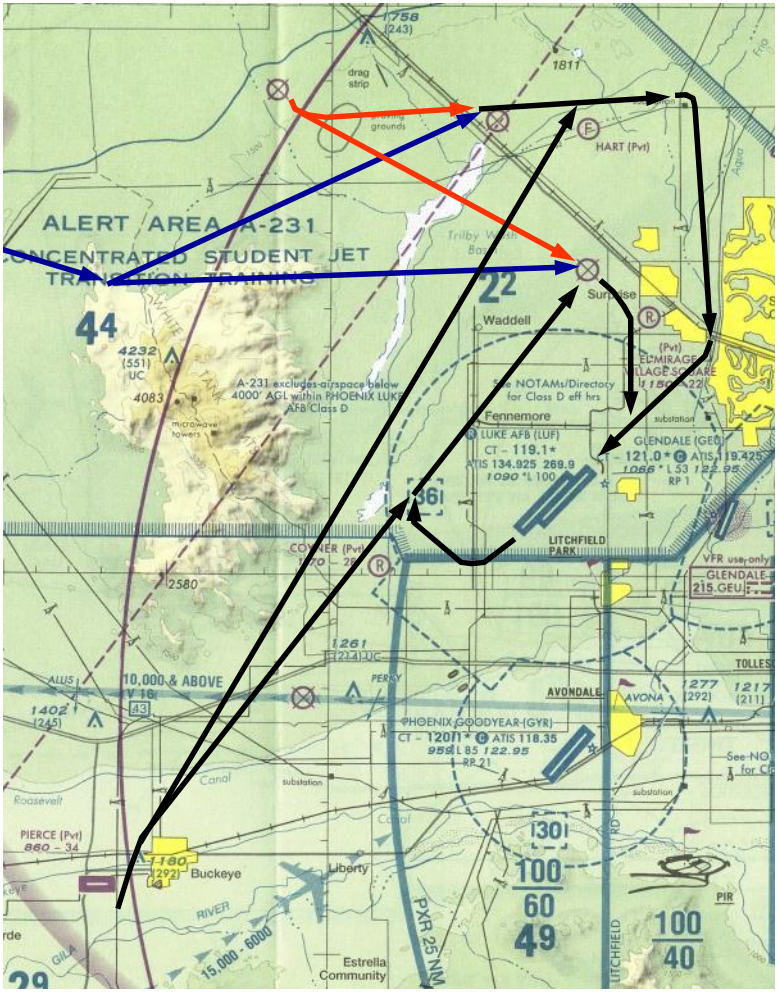
BLACK - PATTERN ENTRY FROM SOUTH (I.e. VALLEY RECOVERY)

BLUE - PATTERN ENTRY FROM TANKZ RECOVERY

RED - PATTERN ENTRY FROM AUX 1 (INSTM PRACTICE AIRFIELD)

USE CAUTION IN THE VICINITY OF BUCKEYE AND THE WHITE TANKS

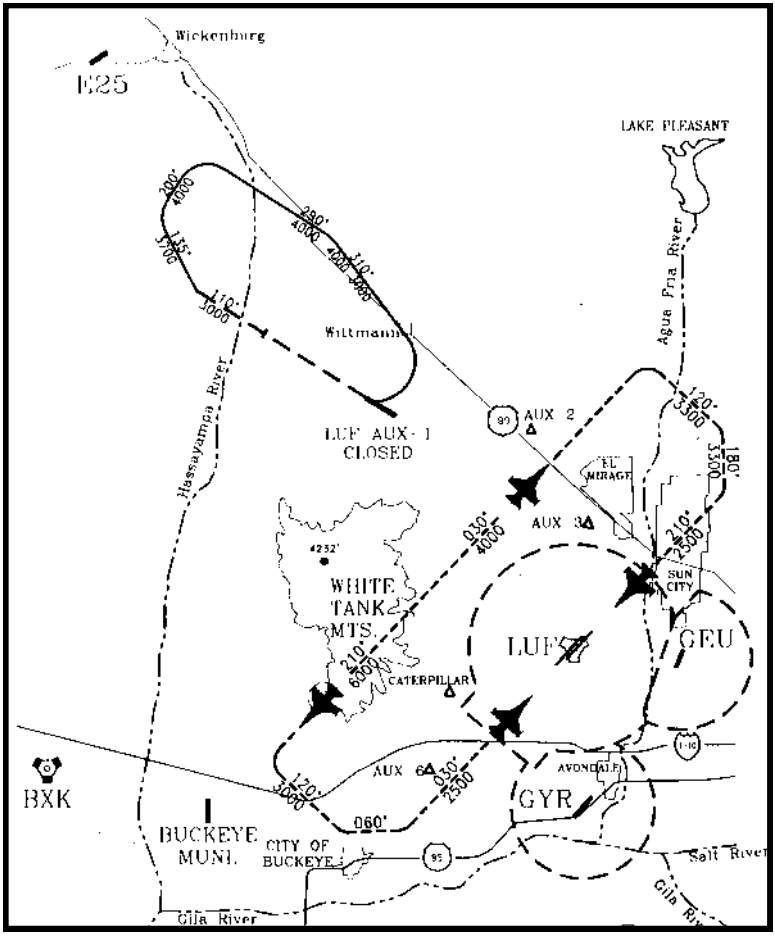
RWY 21 Traffic Pattern



EXERCISE EXTREME CAUTION WHEN FLYING IN THE VICINITY OF THE SUBSTATION (NW OF SUN CITY) THE DESERTED CATERPILLAR TRACTOR GROUNDS (SW OF LUKE), AND THE ABANDONED AIRFIELDS (NORTH & SOUTH OF LUKE). THESE AREAS ARE USED AS REPORTING AND ENTRY POINTS INTO LUKE'S TRAFFIC PATTERN FOR BASE ASSIGNED F-16's.

CONTACT LUKE APPROACH ON 118.15 OR 125.45 FOR ADVISORIES

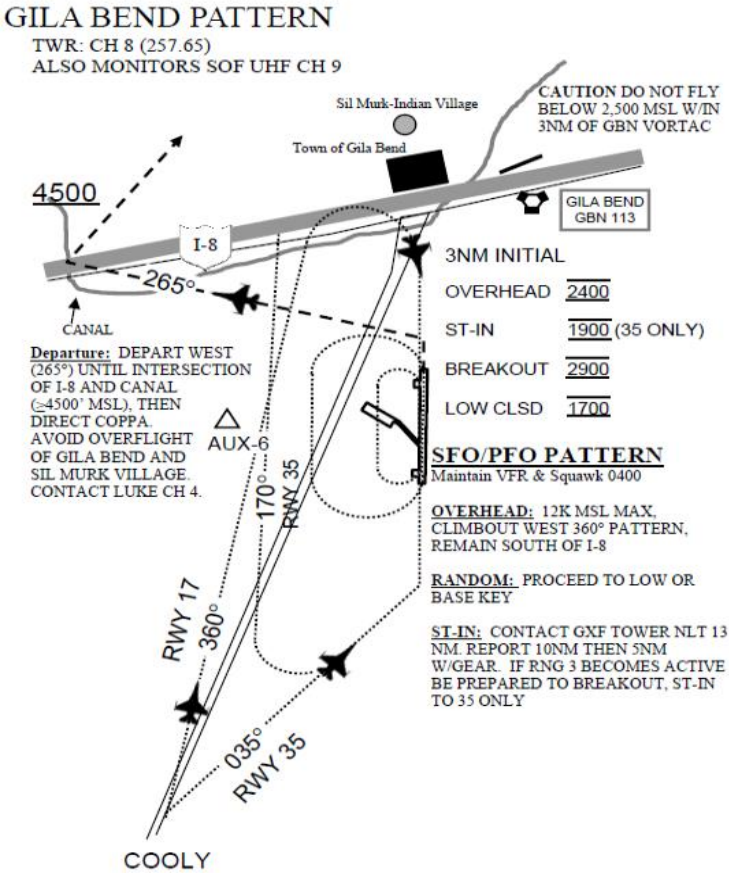
Luke AFB and AUX-1 Radar Pattern



WHILE ON RADAR VECTORS FOR INSTRUMENT TRAINING, THE GREATEST POTENTIAL CONFLICT WITH CIVIL TRAFFIC IS IN THE VICINITY OF ARROWHEAD HOUSING AREA AND INSIDE 10NM FINAL. PLEASE **SQUAWK, TALK,** AND **LOOK** FOR OTHER AIRCRAFT IN THIS BUSY AIRSPACE.

IF TRANSITING THE AIRSPACE DEPICTED ABOVE, IT IS RECOMMENDED YOU CONTACT LUKE APPROACH 118.15 OR 125.45 FOR TRAFFIC ADVISORIES

Gila Bend AFAF Traffic Pattern



THE PROCEDURES ABOVE ARE USED BY LUKE ASSIGNED F-16s AND F-35s. GILA BEND AFAF IS UTILIZED FOR PRACTICE TOUCH-AND-GO LANDINGS, SIMULATED FLAMEOUT PATTERNS (SFO), PRECAUTIONARY FLAMEOUT PATTERNS (PFO FOR F-35s) AND AS AN EMERGENCY DIVERT FIELD. OF NOTE, F-16/F-35 TRAFFIC SHOULD REMAIN SOUTH OF INTERSTATE 8. UPON RECOVERY, F-16s/F-35s SHOULD CLIMB ABOVE 4000' MSL BEFORE TURNING NORTH TOWARD LUKE AFB. BE ADVISED THAT DAVIS MONTHAN AND YUMA MILITARY AIRCRAFT ALSO UTILIZE THESE PROCEDURES.

Reaction Chart

Critical Seconds

Move away from the F-16 illustration about 3 feet. The F-16 silhoute 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 <u>combined</u> speeds of 360 and 600 mph.

The blocks on the lower left corner of the previous 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

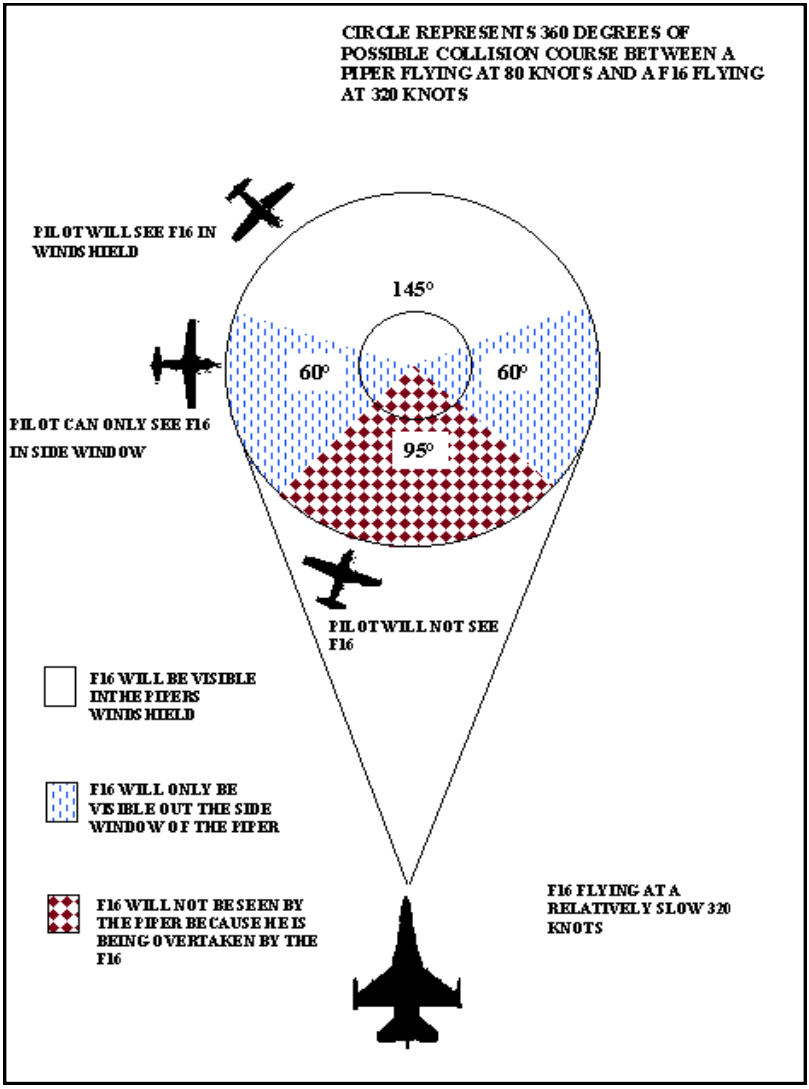
Closure Rate

DISTANCE - SPEED - TIME

SPEED →	600 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!!??

Geometry of a Collision



Collision Avoidance and YOU

Ever landed and gotten out of your plane with your hands sweaty and body shaking because someone nearly took your wing off? If so, you're not alone. As aviation activity increases throughout the US, the possibility of having a near midair or actual collision increases. The FAA has instituted policies to alleviate the midair collision potential, but the ultimate responsibility lies with YOU! Below are several rules to live by… in order to make flying safer for all.

1. ***PLAN AHEAD*** - Thoroughly plan and review your intended route of flight before walking to your aircraft. If possible, plan to avoid alert areas, MTRs, and MOAs. Check NOTAMs and identify potential conflict areas. The following website depicts military airspace near you: (**www.SeeAndAvoid.org**)
2. ***SEE AND AVOID*** - Scan the airspace ahead of your flight path and to the side using a disciplined scan pattern. Also, periodically check behind you since the majority of midairs occur when one aircraft overtakes another.
3. ***CLEAR*** - Before executing a climb, turn, descent, or any other maneuver, ensure the area is clear!
4. ***COMMUNICATE*** - When flying into or out of uncontrolled airports, broadcast your position and intentions. Request and use all available RADAR services whenever possible. Finally, don't relax your visual scan even in a RADAR environment.
5. ***SQUAWK*** - If your aircraft is transponder equipped, turn it on and reply on both Mode 3/A and C.
6. ***BE SEEN*** - In order to enhance the see and avoid concept, you are encouraged to turn on your anti-collision lights and/or other appropriate lights whenever the engine is running. You're further encouraged to turn on your landing light (within POH recommendations) when operating below 10,000' MSL, day or night, but especially within 10 miles of an airport or in areas of reduced visibility.

PROFILE OF A MIDAIR

A three year study of midair collisions involving civilian aircraft by the NTSB determined the following:

1. The occupants of most midairs were on a pleasure flight with no filed flight plan.
2. Nearly all midair collisions occurred in VFR conditions during weekend daylight hours.
3. The majority of midairs were the result of a faster aircraft overtaking a slower aircraft.
4. NO ONE is immune. Experience levels ranged from initial solo to the 15,000 hour veteran.

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