

# Fresno Area Mid-Air Collision Avoidance Program (MACA)

California Air National Guard  
144<sup>th</sup> Fighter Wing, Fresno, CA

As of March 2013

# Mid-Air Collision Avoidance

This briefing contains material that can change at any time and is strictly for informational purposes only.

Please direct question, comments or requests to:

144th Fighter Wing Flight Safety  
5323 E. McKinley Ave.  
Fresno, CA 93727-2199  
(559) 454-5177 or 5175

Website Link:

<http://www.144fw.ang.af.mil/> then click on “Flight Safety”



# MACA Introduction

The goal of the Fresno Area MACA program is to promote the safest flying environment possible by educating the public about Fresno based military aircraft and their mission. Together we can enjoy the airspace over California safely.

## **Sharing the Skies Safely over California:**

### **The 144<sup>th</sup> Fighter Wing, California Air National Guard:**

Our mission at Fresno (KFAT) is to provide Air Sovereignty over U.S. airspace, and to train for combat operations in the F-16 ; and the 144FW will soon convert to the F-15.

### **The Strike Fighter Wing, Pacific, Lemoore:**

The Lemoore Naval Air Station based F-18s share the same primary training areas as the 144<sup>th</sup> Fighter Wing. NAS Lemoore (KNLC) is located approximately 30 miles south of the Fresno Air Terminal (KFAT).

### **The 3<sup>rd</sup> Marine Aircraft Wing, San Diego:**

The Marine Corps Reserve F-18s from Miramar MCAS routinely visit Fresno on the weekends. These F-18s normally fly the same departure and recovery patterns flown by the Fresno based 144<sup>th</sup> FW F-16s.



# Aircraft Types

Here is a picture of the most common fighter type aircraft to this area: F-15, F-16, F-18

This picture was taken near Klamath Falls, OR and includes two Fresno ANG based F-16s, two Klamath Falls ANG based F-15s, one Lemoore NAS based F-18, and a Spokane ANG based KC-135 tanker.



# Collision Avoidance Tips

## Plan Ahead

- Be aware of the type airspace in which you plan to operate. Are you planning your route through or near a MOA? The R2508 Complex is normally congested with fighter traffic daily from 0800 to 1800 Monday through Friday. Occasionally the complex is busy with fighter activity in the evening and late night hours as well. We fly at altitudes ranging from 500' AGL to FL 500 at speeds exceeding 500 knots within the R2508 Military Training Complex.
- Check the aeronautical charts, Aeronautical Information Manual (AIM), and NOTAMS for your route of flight.

## Use air traffic control advisories

- If you plan to fly near a MOA, contact Oakland or Los Angeles Center for advisories. If near FAT, contact Fresno approach for advisories.
- If the MOA's are active – The safest action course of action is to go around the MOA.



# Special Use Airspace

**Special Use Airspace the 144<sup>th</sup> Fighter Wing utilizes routinely include:**

- Restricted Area 2508 (R2508) Complex
  - To include all the imbedded Military Operating Areas (MOAs) lying beneath the confines of the restricted airspace
    - This includes the Saline, Panamint, Owens, Bishop, Isabella, and Shoshone MOAs
- Warning Areas 283, 285, 532 (W283, W285, W532)
- Additional Military Operating Areas used by the 144<sup>th</sup> Fighter Wing; but less frequently than those listed above:
  - Hunter Liggett MOA
  - Foothill MOA
  - Lemoore MOA



# Special Use Airspace

## R2508 Military Training Complex

Depending on the type of training mission, the numbers of aircraft operating within the complex may vary from a single fighter to greater than 20 or 30 at the same time.

The R2508 Complex consists of Military Operating Areas (MOAs), Military Training Routes (MTRs), Restricted airspace, and Air Refueling Tracks (AARs).

While VFR aircraft can legally transit MOAs and MTRs, it should be done with extreme caution since military jets operating in these areas will not be looking for you, will be maneuvering aggressively (“dog fighting”) and could be generating extremely high closure rates on your aircraft.

An FAA facility or Flight Service Station (FSS), as well as Joshua Approach, Oakland Center and Los Angeles Center can provide you with information regarding the activity on these routes and airspace. Frequencies and altitudes for these areas are found on low altitude IFR charts as well as your Sectional Chart.



# Six Fresno ANG Based F-16s over Owens Lake in the R2508 Complex



# Special Use Airspace Warning Areas

There are numerous Warning Areas along the entire California coast, however the Fresno Air National Guard primarily uses W532, W283, and W285. These areas cover the offshore areas between Santa Barbara and the Bay Area.

Again, while VFR aircraft can legally transit Warning Areas, it should be done with extreme caution! The fighter activity within the Warning Areas commonly include supersonic speeds at all altitudes.

Oakland Center or Los Angeles Center can provide you with information regarding the activity within these Warning Areas.



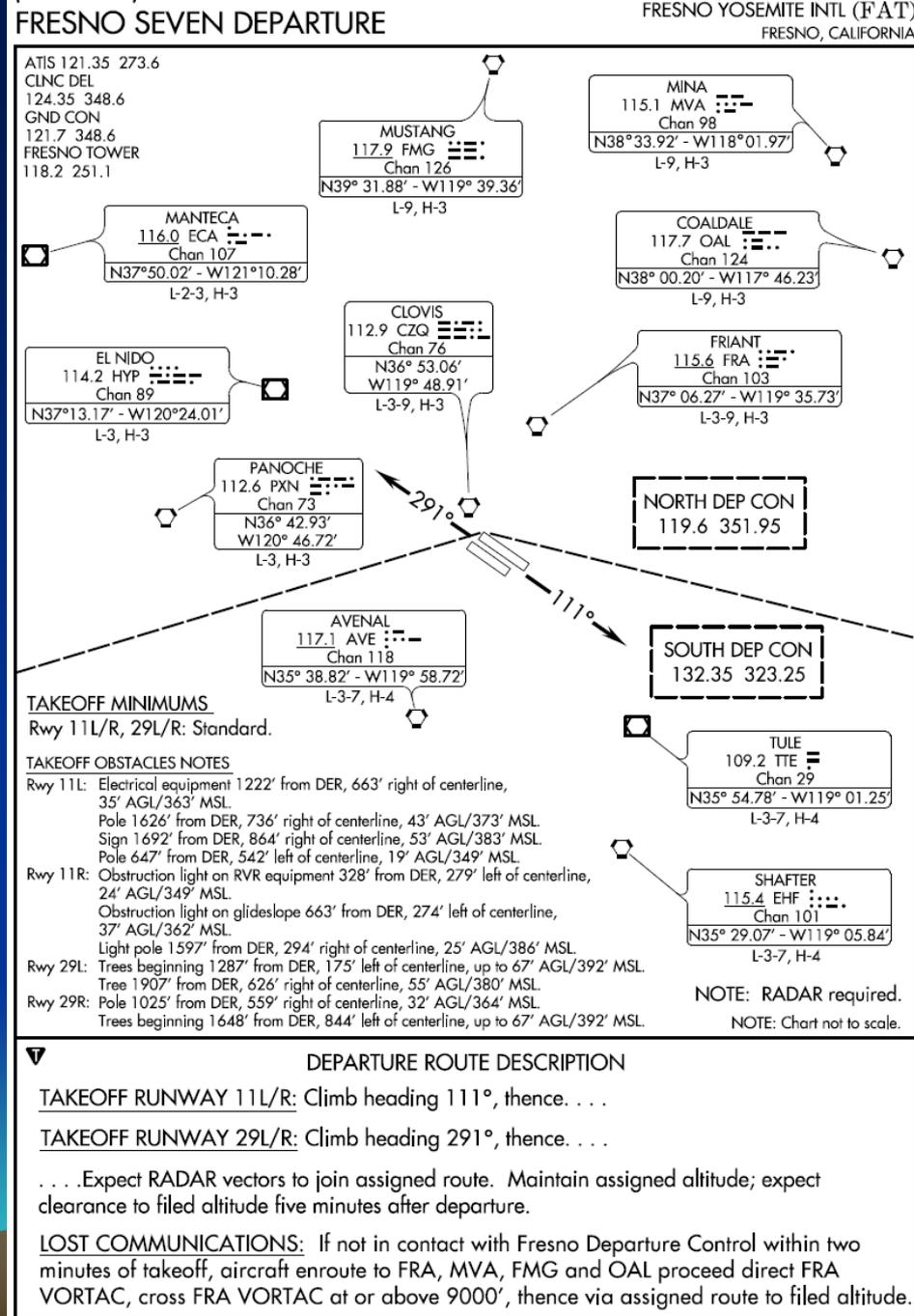
# Fresno ANG based F-16s over the Ocean in W283



# Fresno Fighter Departure Paths

The fighters depart on an IFR clearance using the Fresno Standard Instrument Departure. Usually just past the San Joaquin River is when Fresno Departure provides a vector on course.

The following slides provide more detail

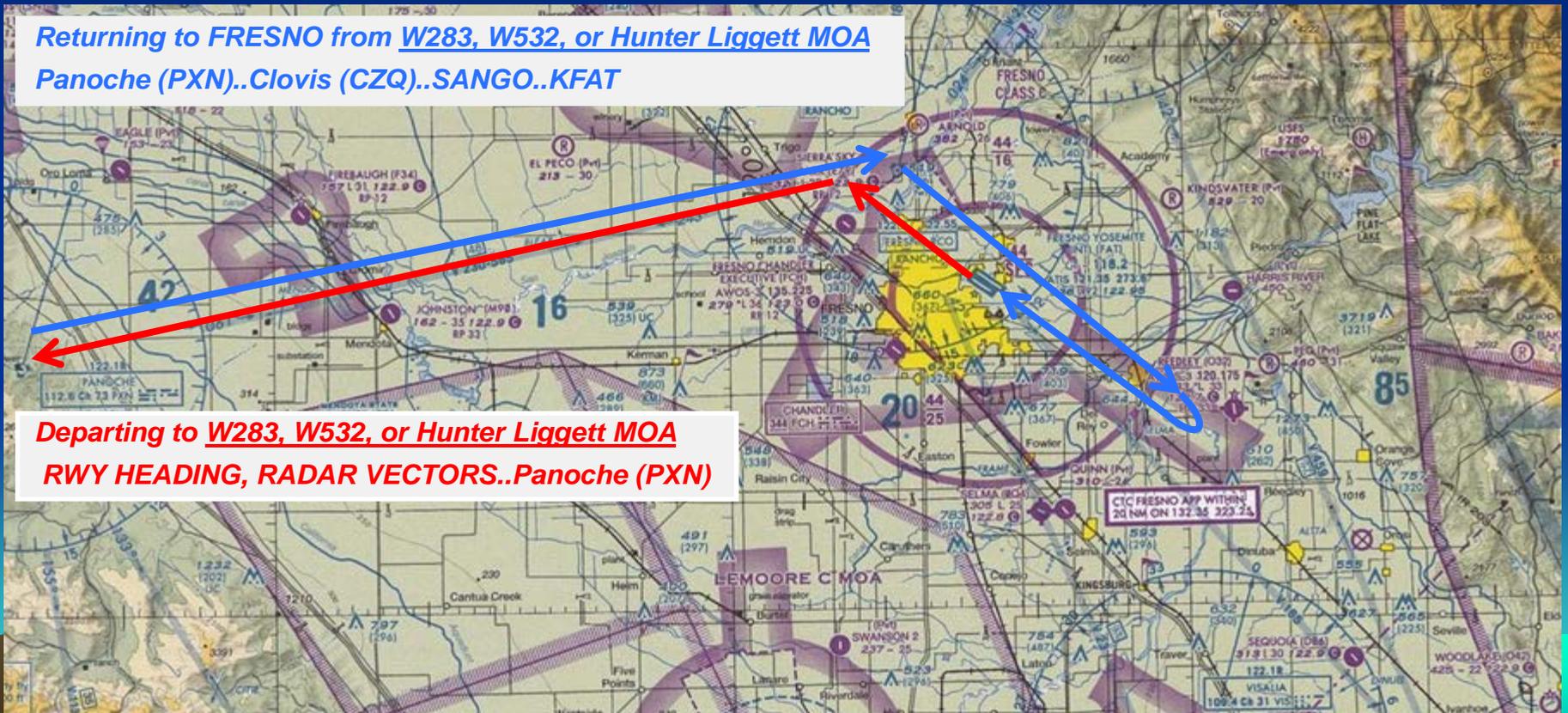


# Fresno Fighter Departure / Return Paths: West

The fighters depart on an IFR clearance using the Fresno Standard Instrument Departure. When departing Runway 29, it's usually just past the San Joaquin River when Fresno Departure provides a vector on course. When departing runway 11, Fresno Departure usually directs a right turn to the northwest a few miles past the departure end of the runway.

Returning to **FRESNO** from W283, W532, or Hunter Liggett MOA  
Panoche (PXN)..Clovis (CZQ)..SANGO..KFAT

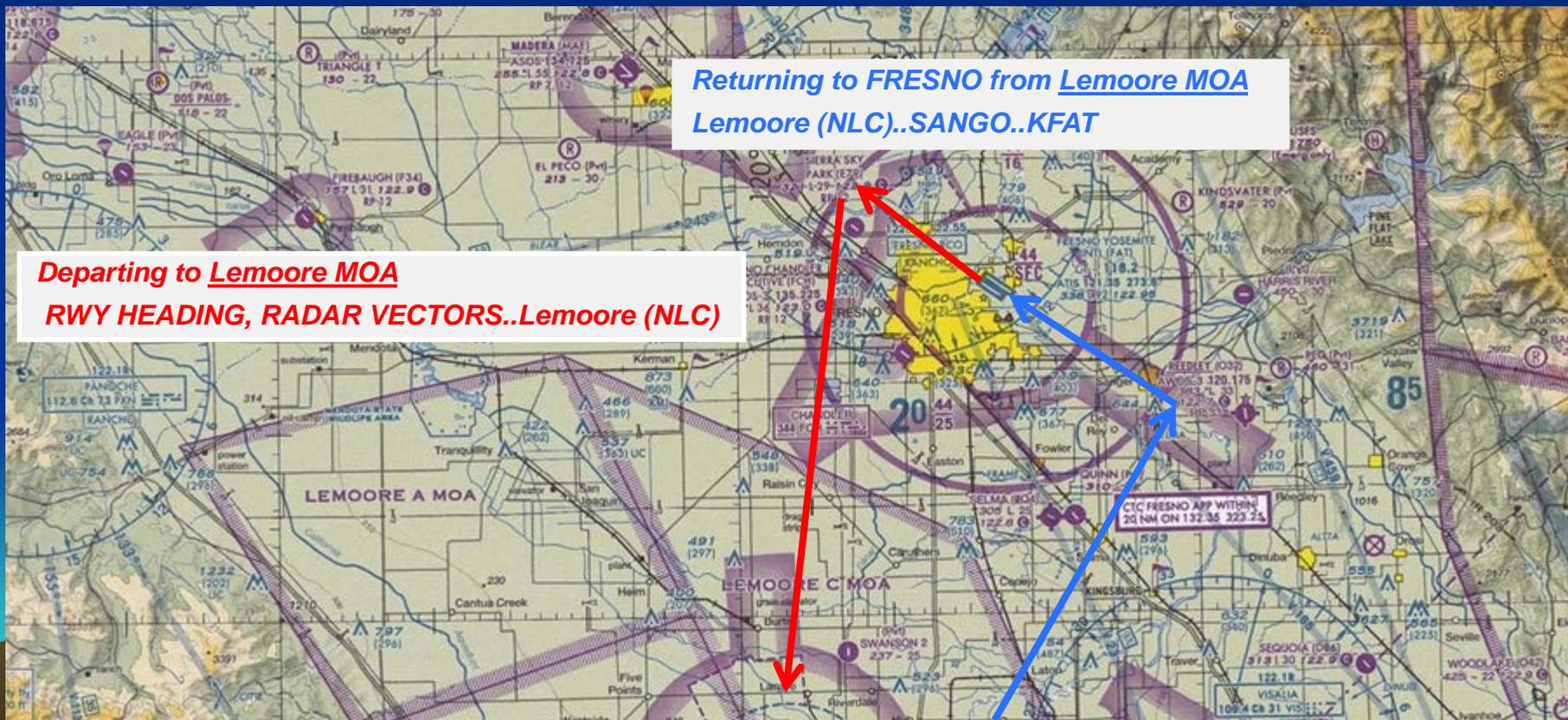
Departing to W283, W532, or Hunter Liggett MOA  
RWY HEADING, RADAR VECTORS..Panoche (PXN)



# Fresno Fighter Departure / Return Paths: South

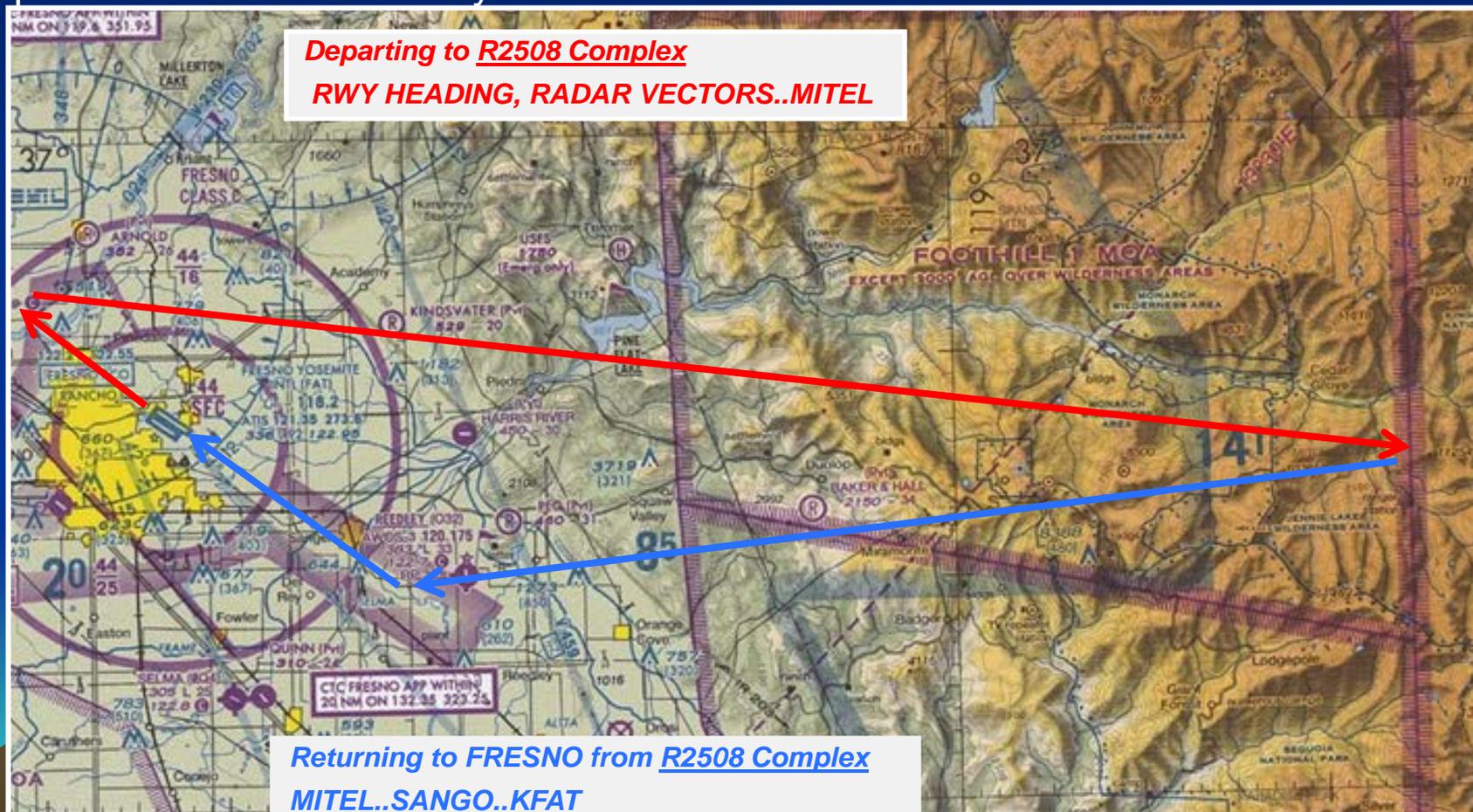
The fighters depart on an IFR clearance using the Fresno Standard Instrument Departure.

When using the Lemoore MOA, fighters generally are cleared direct to Lemoore soon after takeoff.



# Fresno Fighter Departure / Return Paths: East

When departing Runway 29, it's usually just past the San Joaquin River when Fresno Departure provides a vector on course. When departing runway 11, Fresno Departure usually directs a left turn to the east a few miles past the departure end of the runway



## Fresno Fighter Traffic Pattern

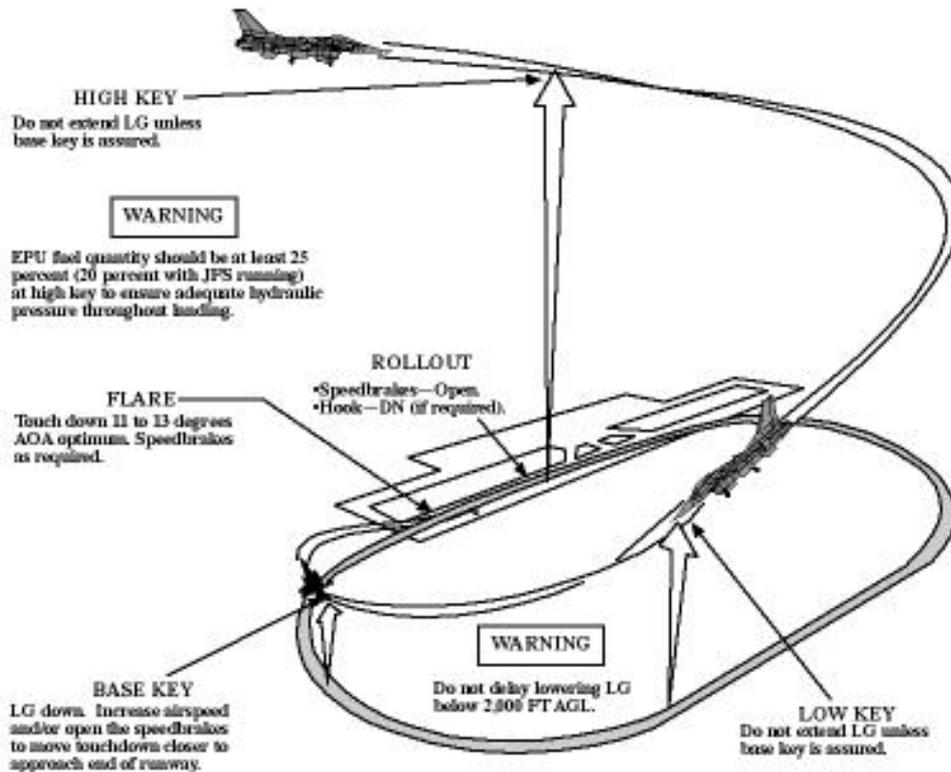
**RADAR PATTERN**  
2,000' MSL – 4,000' MSL

**OVERHEAD PATTERN**  
2,300' MSL

The “overhead” is where the Fighters approach the runway at 2,300 MSL about 5 miles from the approach end, then while over the runway, they “break” to the north and fly a 360 degree oval “race track” traffic pattern vs. the standard rectangular civilian traffic pattern.

The “radar” pattern is what we call it when we’re being vectored by Fresno Approach for multiple instrument approaches.

## Overhead Flame-Out Pattern



## Fresno F16 SFO Pattern

The *Overhead* SFO or “simulated flameout pattern” looks the same as the Overhead Pattern from a God’s eye view, but the pattern commences between 7,000 and 10,000 AGL.

The *Straight-In* SFO is simply a straight-in that commences at about 10 miles from the approach end of the runway between 7000 – 10000 AGL.

These patterns normally terminate with a low approach, a closed pull-up to the Overhead Downwind position (2300 MSL), then proceeding normally to a full stop landing.

UNCLASSIFIED

# Formations

The formations we fly that allow you to easily spot us, are either what we call “fingertip” or “route” formation. “Fingertip” formation is where there are just three feet of lateral separation between the wingtips of adjacent F-16s. “Route” formation is where the wingmen can loosen up the formation to 500 feet of lateral separation between aircraft.

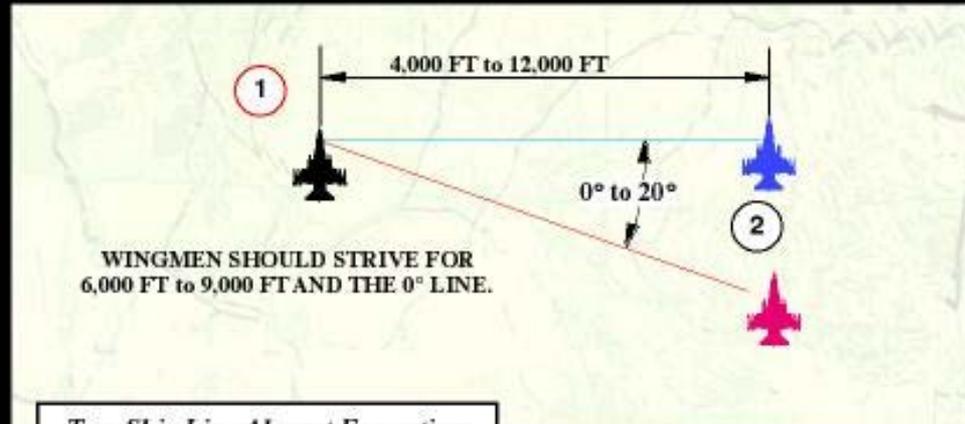
However, there are formations (tactical formations) that make it difficult for you to easily spot us. These are what we normally fly when we’re outside of about five miles of the airfield. These are the formations we fly when training for combat.

The following slides show you these “tactical formations”.

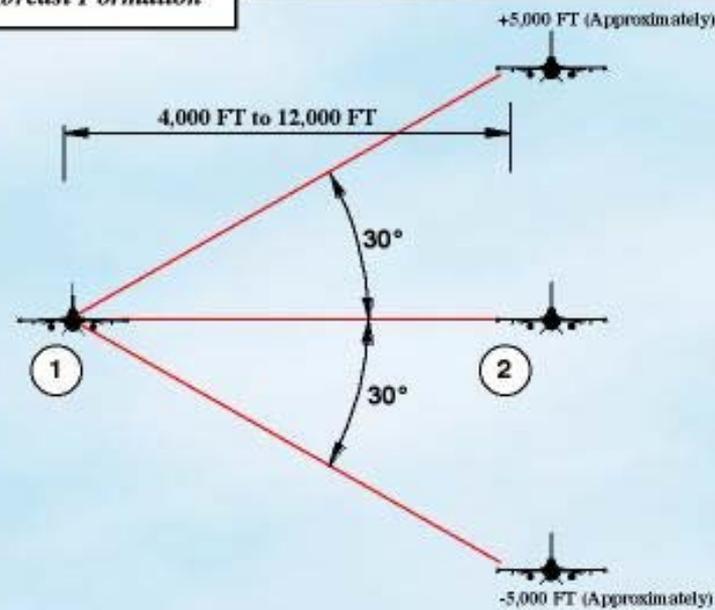
**The bottom line is, if you see one, keep your head on a swivel because there’s probably a few more nearby!**



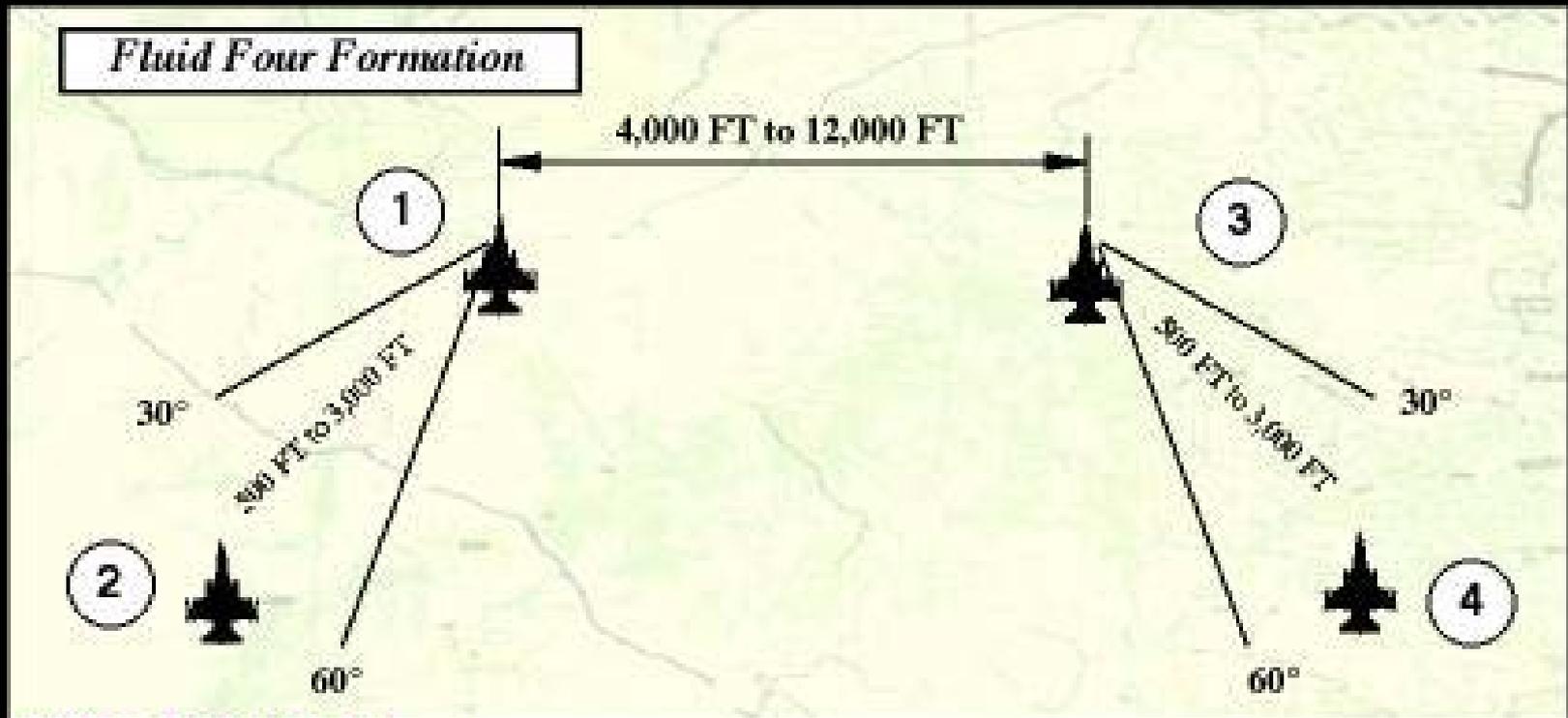
# Tactical Formation



*Two-Ship Line Abreast Formation*



# Fluid Four



UNCLASSIFIED

# Air Force Fighter Lingo

- Initial:** A position between 3 to 5 miles on the extended centerline of the approach end of the active runway at traffic pattern altitude (2300' MSL for Fresno)
- Break:** Position at which we start our 180 degree turn over the runway to Downwind
- Downwind:** Same as civilian term.
- Perch:** Point at which we start our descending constant 180 degree turn from downwind to final (we don't square the corners as in a civilian traffic pattern).
- Closed:** Term for pulling up after a low approach to the downwind position.
- SFO:** Simulated Flameout Pattern
- High Key:** Same as a normal Break point, but up between 7000 – 10,000 AGL.
- Low Key:** A downwind position between 3000 – 5000 AGL.
- Base Key:** A perch position above 2000 AGL

# Valuable Resources

The R2508 Complex has a terrific web site at:

<http://www.edwards.af.mil/r-2508.asp>

Other informative sites include:

Edwards AFB Flight Safety: <http://www.edwards.af.mil/library/flightsafety/>

Travis AFB MACA: <http://www.travis.af.mil/library/maca.asp>

See and Avoid: <http://seeandavoid.org/>

Interagency Airspace Coordination: <http://www.airspacecoordination.org/>

NORAD: <http://www.norad.mil/>

