

U. S. AIR FORCE FLIGHT TEST CENTER

EDWARDS AFB, CA

Testing the Future Today



Toward the Unexplored

→ This slide show is a portion of the traveling Midair Collision Avoidance seminar given by the Edwards AFB Flight Safety Office

→ If you have a group of 30 or more pilots that would like to have the safety seminar at your location, please contact us at 661-277-2623 and schedule your date. We visit most of the Southern California and southern Nevada area

What we'll talk about tonight

- Edwards AFB Mission
- Other Missions Near Edwards AFB
- Special Use Airspace (R-2508)
- The Threat to Civilian Aviation
- Flying in R-2508



Air Force Flight Test Center

Edwards AFB, CA



AFFTC Mission:

**Provide Aerospace Research, Development, Test, Evaluation,
& Support for the United States and Our Allies**

Current Testing

YAL-1A
Airborne Laser



Current Testing

F-35 Lighting II



Current Testing

F-22 Raptor



Current Testing

Global Hawk



Current Testing

Turbine Engine Alternative Fuels



Special Use Airspace (S.U.A.)

- **Restricted Area**
- **Military Operating Area**
- **Controlled Firing Area**
- **Prohibited Area**
- **Alert Area**
- **Warning Area**



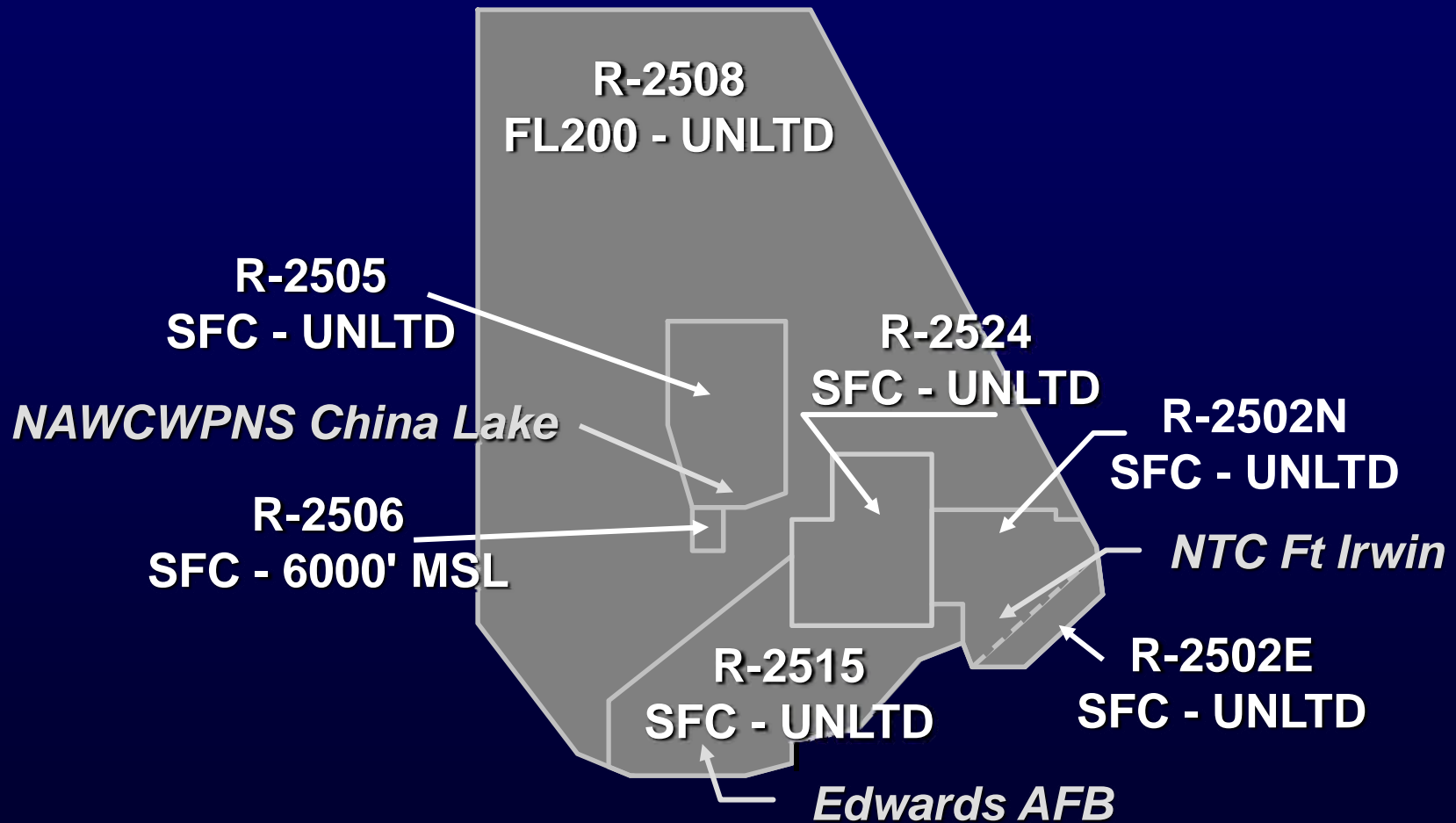
B-2

Restricted Areas



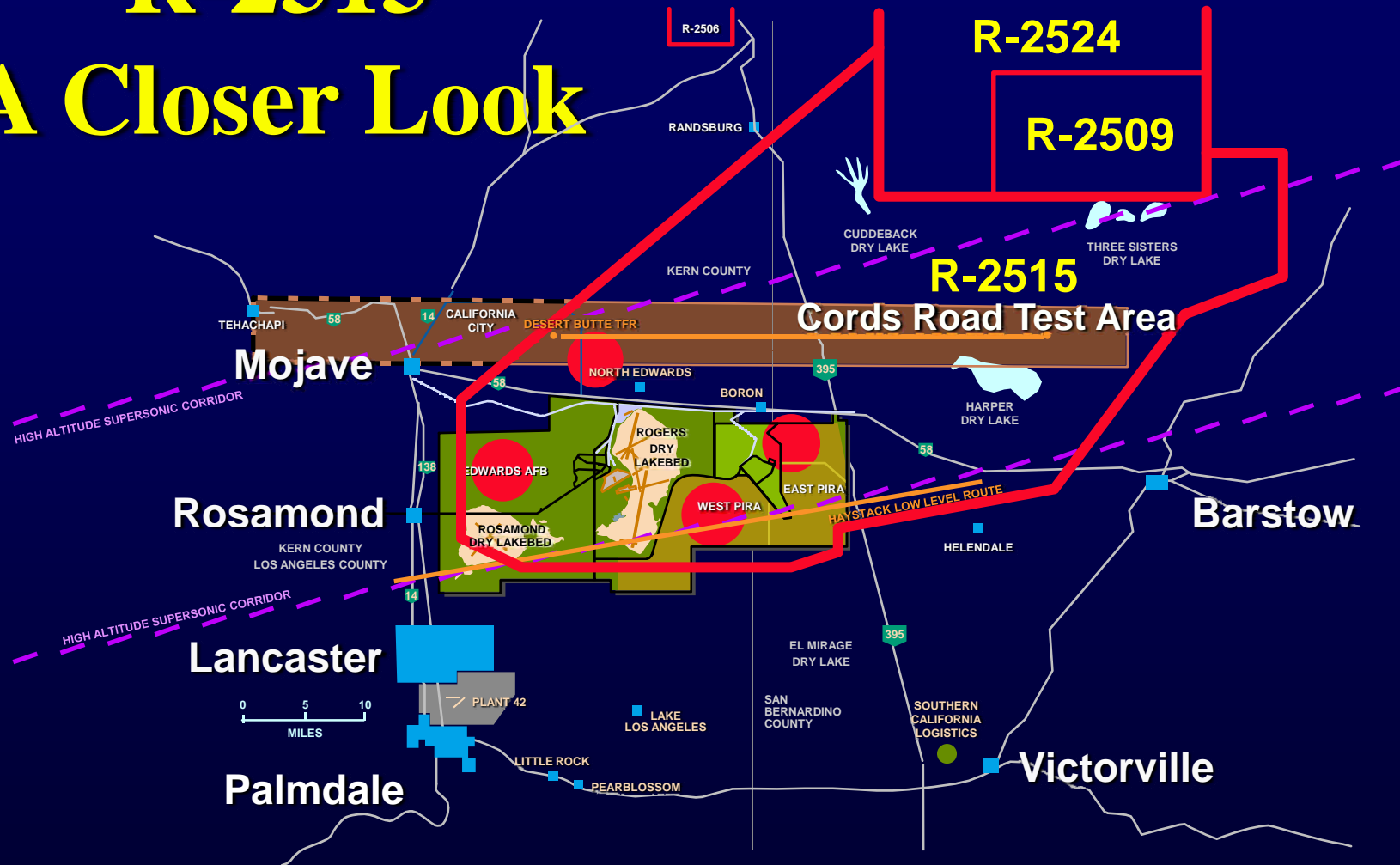
Denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles. (AIM)

R-2508 Complex



R-2515

A Closer Look

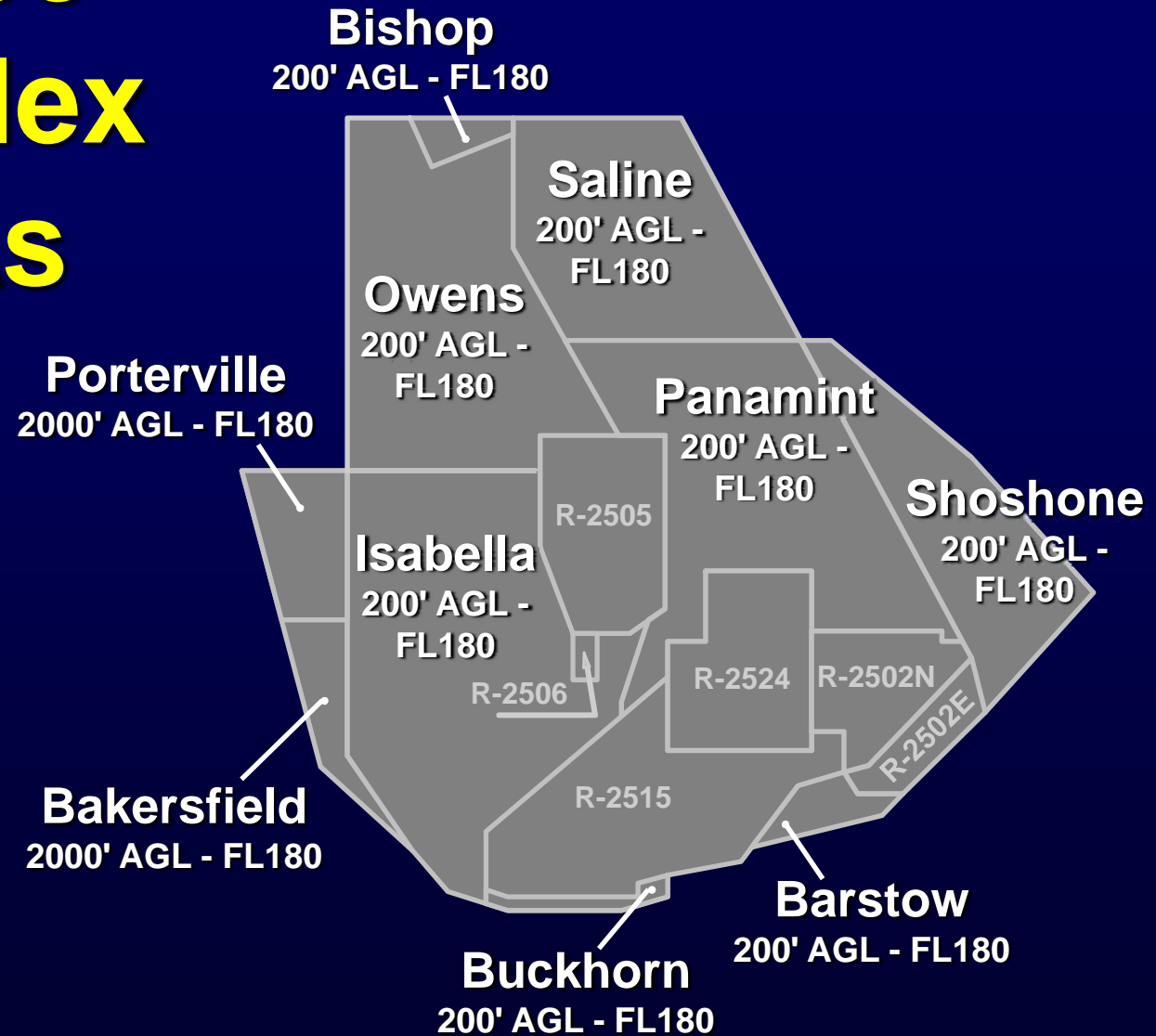


Military Operating Areas (MOAs)



Airspace established outside class A airspace to separate or segregate certain non-hazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. (*Far 1.1*)

R-2508 Complex MOAs

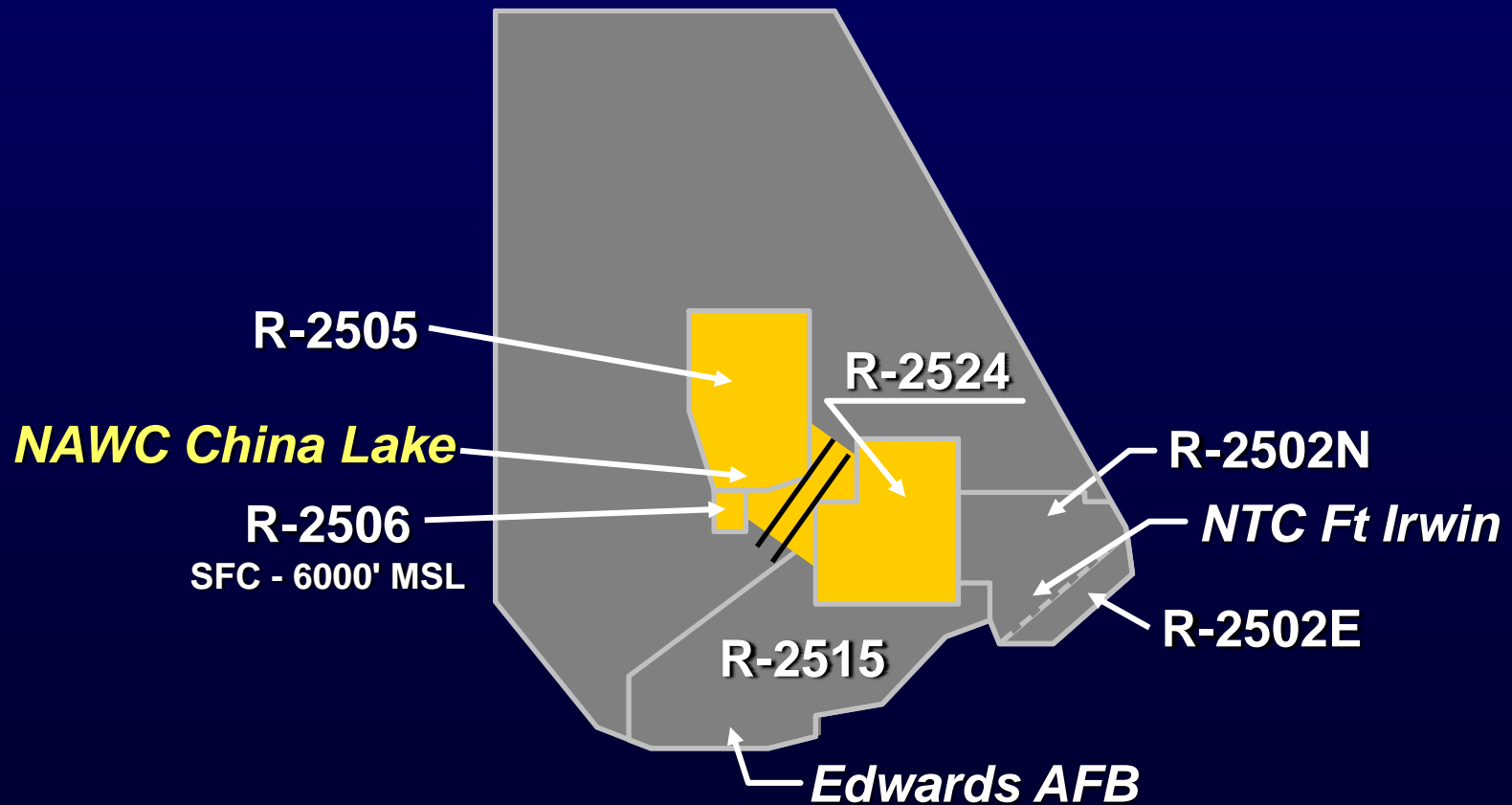


Controlled Firing Area

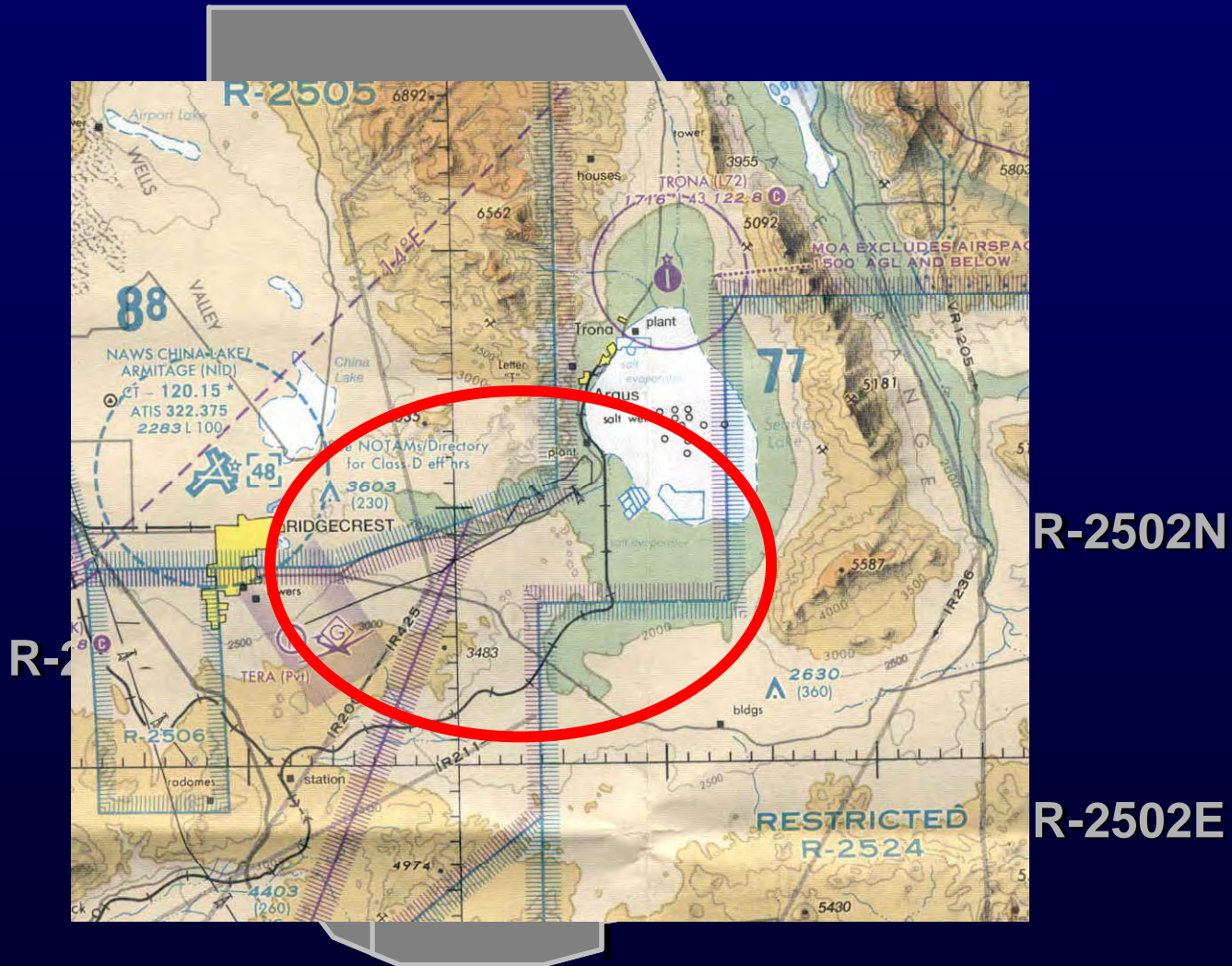


Established to contain activities, which if not conducted in a controlled environment, would be hazardous to nonparticipating aircraft. (*Far 1.1*)

Trona Corridor Controlled Firing Area



Navigating the Trona Gap



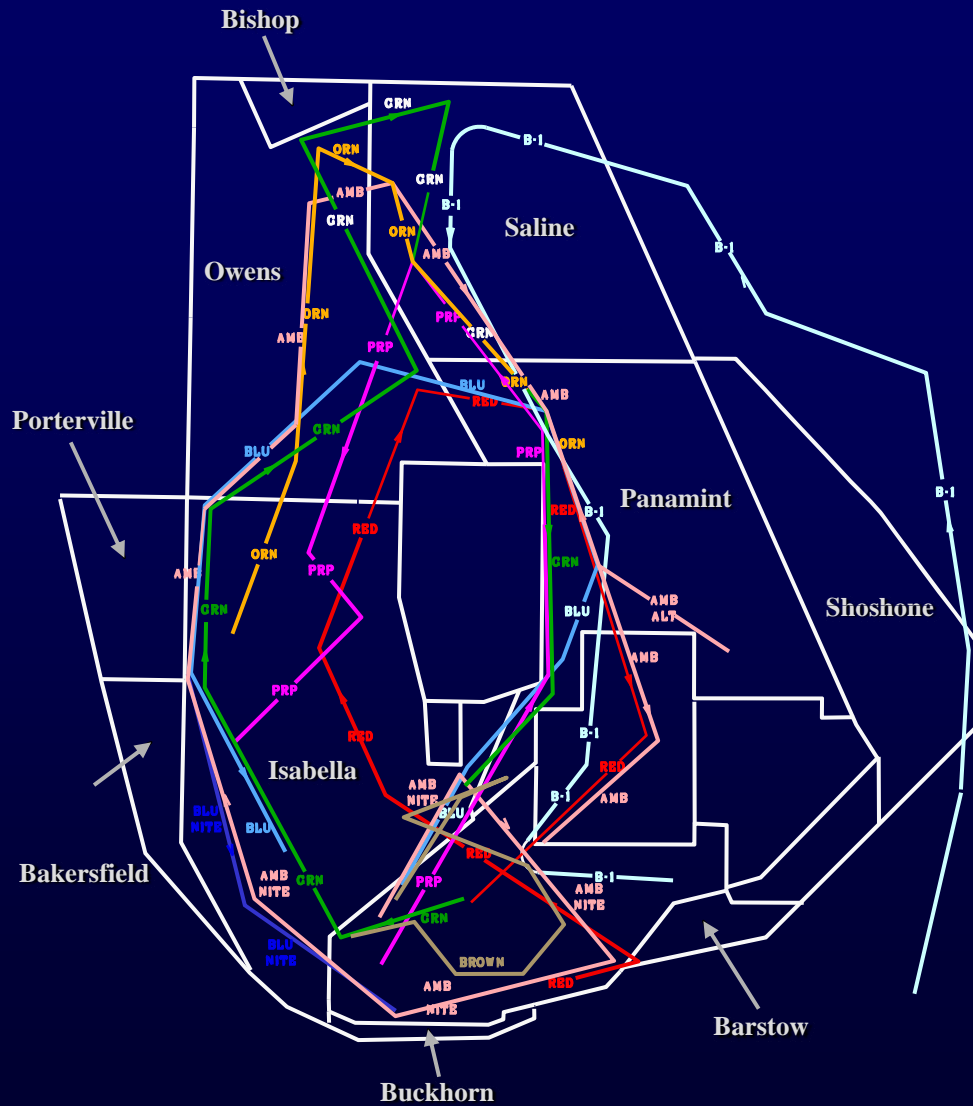


The Threat: R-2508 Users

- Edwards AFB Users: USAF Test Pilot School, 8 Flight Test Squadrons, NASA Dryden, US Marines, Aero Club
- Other Users: US Navy, US Army, Air National Guard, National Test Pilot School, Commercial Test and You!

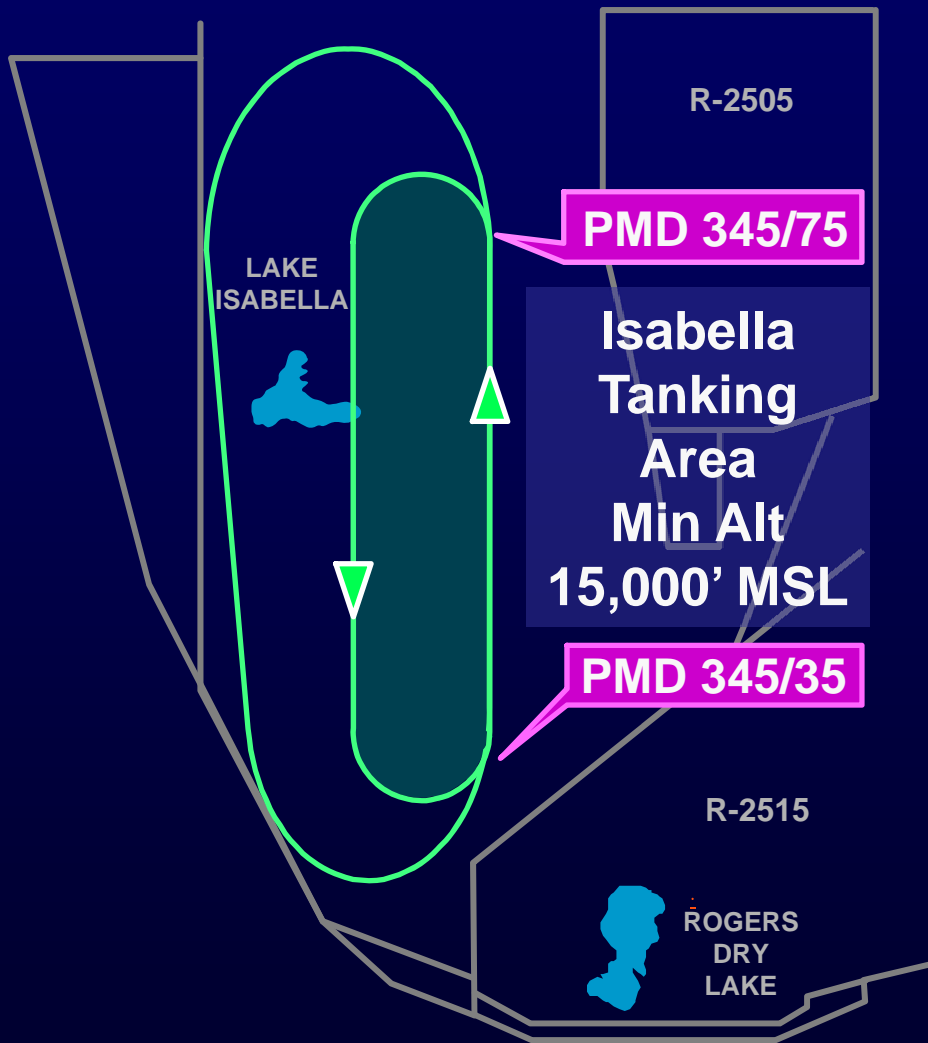


R-2508 Low Level Routes

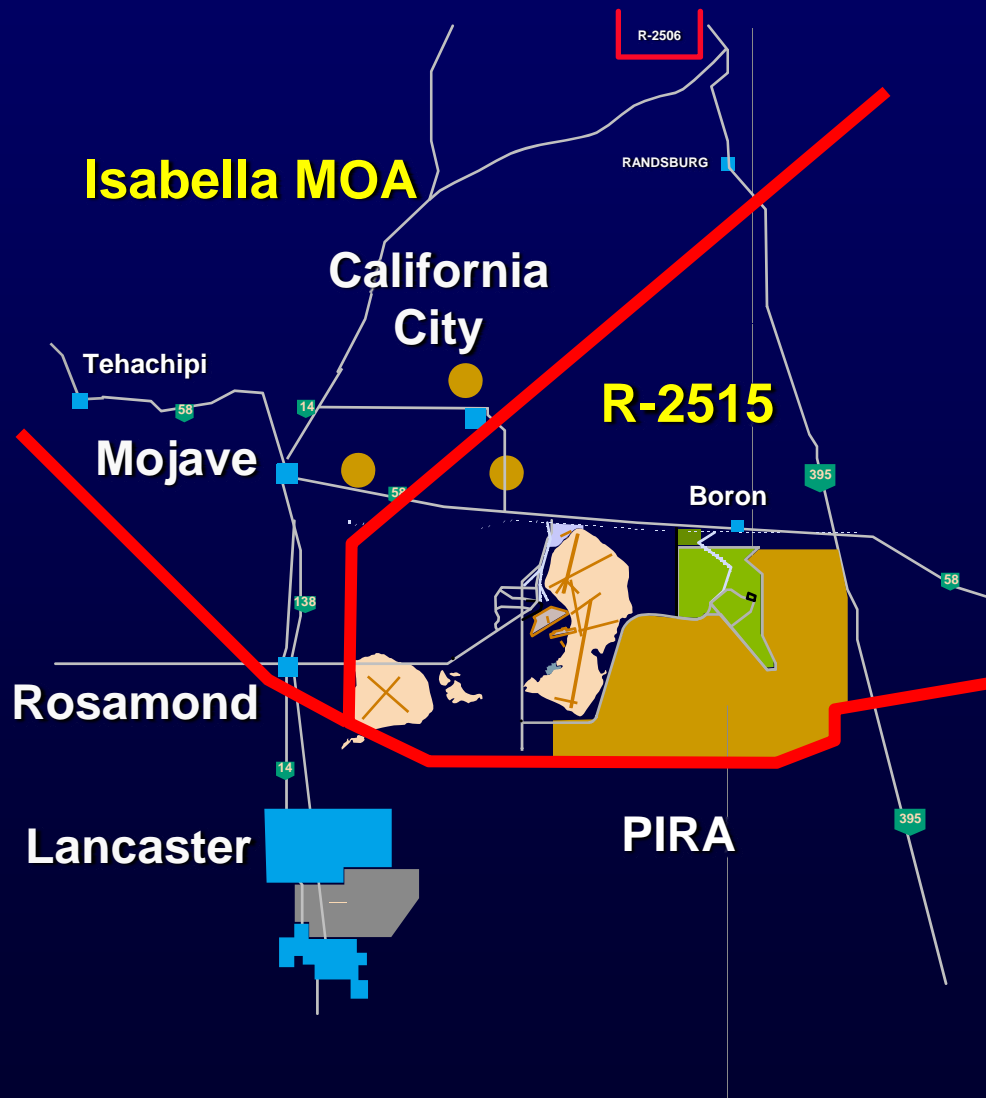


T-38

Aerial Refueling



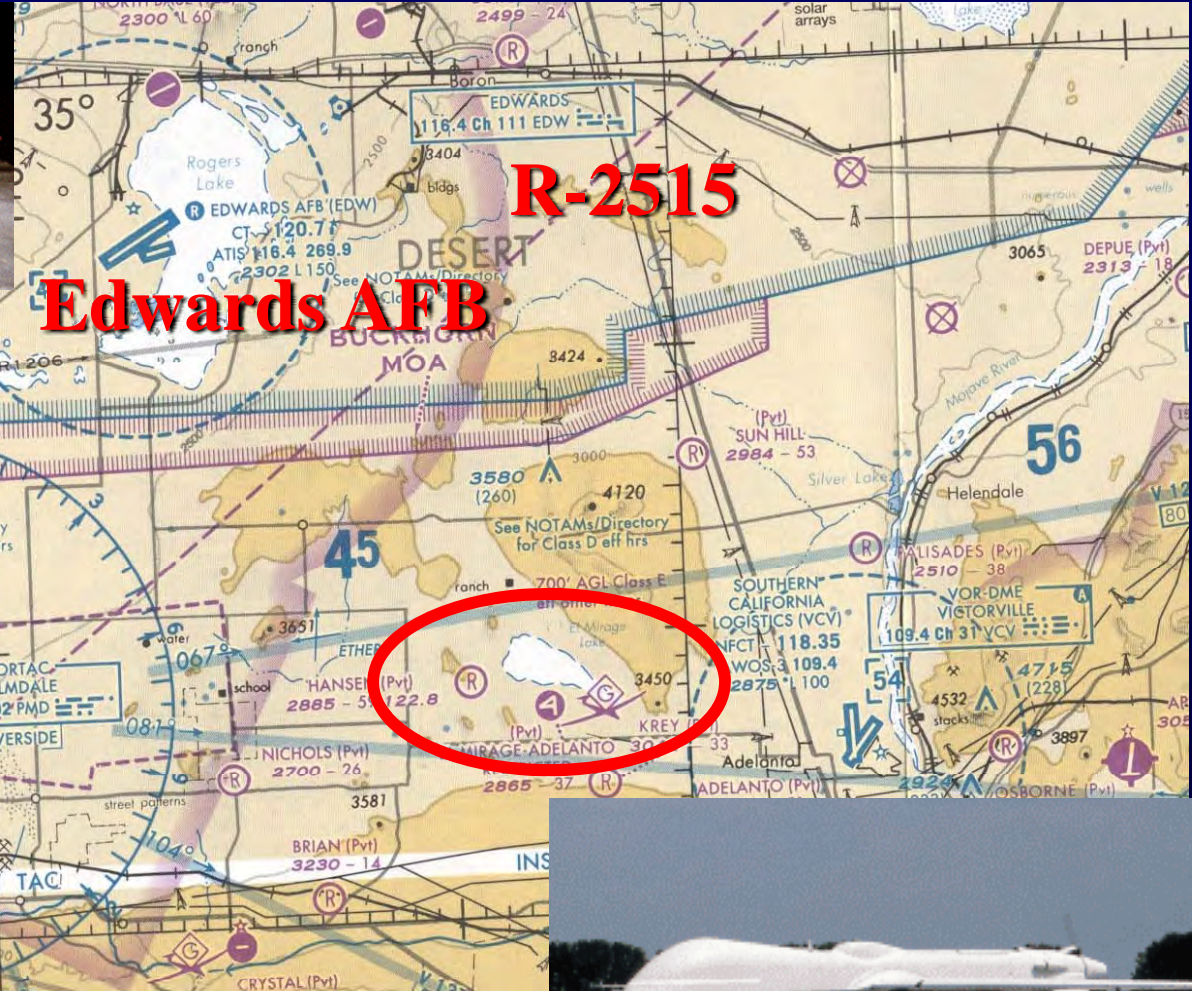
Weapons Delivery / Airdrop



UAVs



Global Hawk



R-2515

Edwards AFB

Lancaster

Palmdale

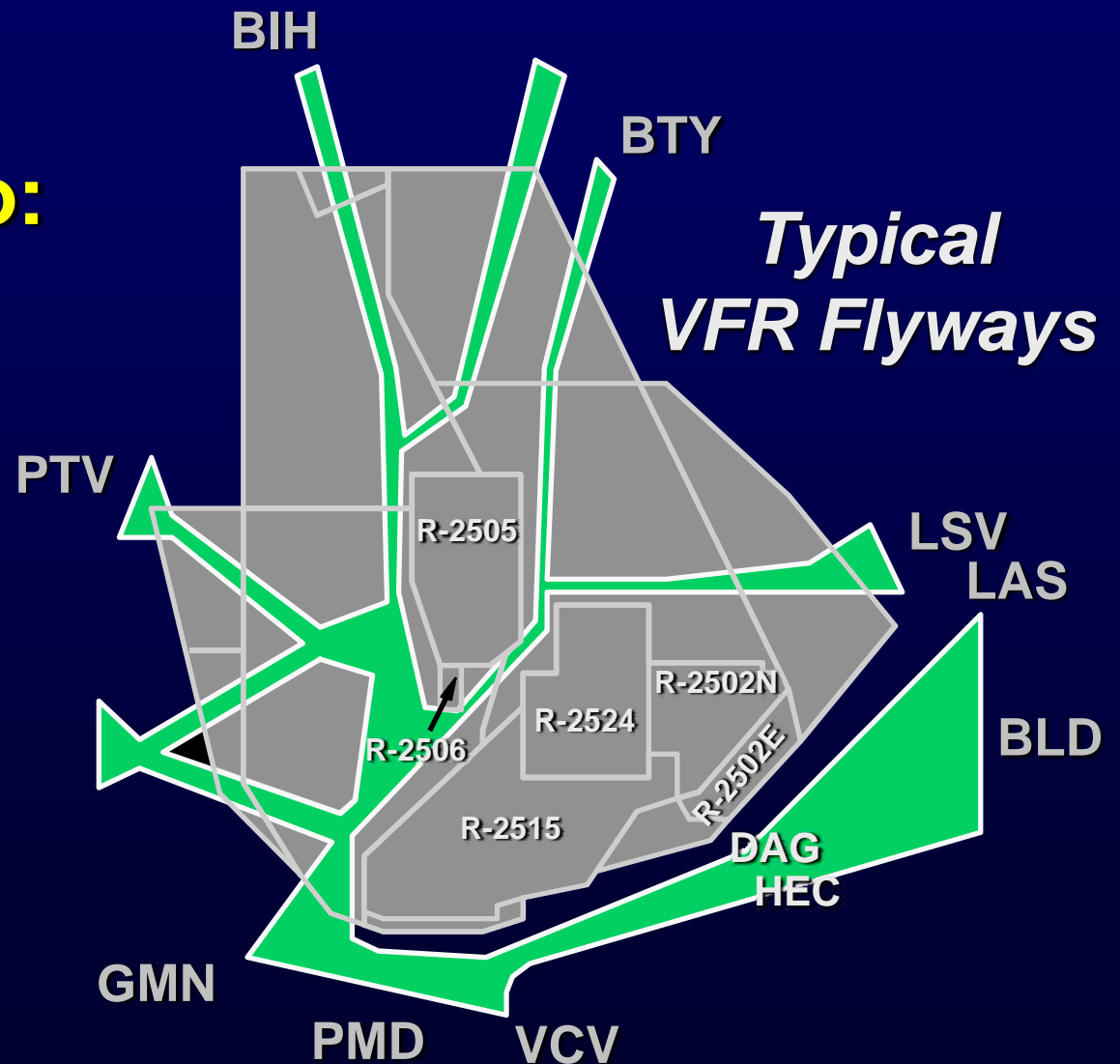


Predator

R-2508 Complex

What Can You Do:

- File / Fly a Flight Plan
- Talk to ATC / Joshua App
- Use Transponder
- Use Exterior Lights
- Know the Airspace Rules



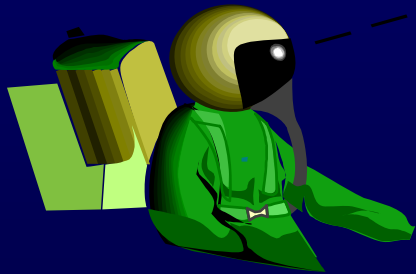
Particular R-2508 Hazards

- **ATC Radar Limitations**
 - Scan time
 - High speed vertical maneuvering
- **Rugged Terrain**
 - Weak radio reception in some areas
 - No radar warning of collision hazards
- **Gliders & Skydivers w/o transponders**
 - Cal City, Tehachapi, El Mirage, & Owens Lake

Profile of a Midair Collision

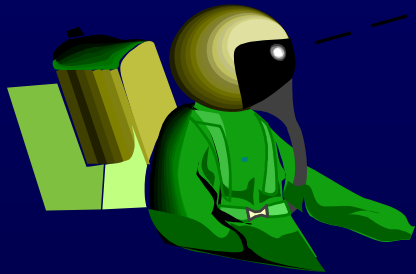
- Most aircraft involved are engaged in recreational flying
- Most mid-air collisions occur during VFR conditions
- Majority are the result of faster aircraft overtaking and hitting slower aircraft
- No pilot is immune (solo-20,000+hrs.)

PERCEPTION/REACTION TIME



- Latent Reaction Time.....0.6 sec
 - Stimulate retinal receptors 0.2 sec
 - Set up & move eye 0.2 sec
 - Foveal perception 0.2 sec
- Recognition (0.65 - 1.5 sec).....1.0 sec
- Decision time (1 - 3 sec).....2.0 sec
- Total reaction time.....3.6 sec

PERCEPTION/REACTION TIME



- **Latent Reaction Time.....0.6 sec**
 - Stimulate retinal receptors 0.2 sec
 - Set up & move eye 0.2 sec
 - Foveal perception 0.2 sec
- **Recognition (0.65 - 1.5 sec).....1.0 sec**
- **Decision time (1 - 3 sec).....2.0 sec**
- **Total reaction time.....3.6 sec**
- **Movement time.....1.0 sec**
 - Motor impulse 0.3 sec
 - Gross movement 0.7 sec
- **Total Time.....~4.6 sec**

Proper Scanning

- Remember, when your cranium is in motion, vision is blurred and the brain cannot ID properly
- Divide FOV into blocks 10-15 degrees wide
- Examine each block individually
- Remember to search above and below the horizon

Your Role In Collision Avoidance

- Plan Ahead
- See and Avoid
- Clear
- Communicate
- Squawk
- Be Seen
- Understand your limitations as a human processor
- ABOVE ALL – AVOID COMPLACENCY

Tips for Success...



- Be Visible and Predictable
- Contact ATC within 25 miles of R-2508
- CLEAR Visually and on the Radio

**Remember...Our *MOAs Are Largely*
SEE & AVOID**

Visit the AFFTC on the Web

www.edwards.af.mil

Click on “Flight Safety” in the lower right column

To visit Edwards AFB

Prescreened groups of 10-15: 661-277-3510



To visit NASA Dryden Flight Research

10:15 AM & 1:15 PM, M-F by appt: 661-276-3446

Dryden Web Site: <http://www.dfrc.nasa.gov>