

**BY ORDER OF THE COMMANDER  
EDWARDS AIR FORCE BASE**

**EDWARDS AIR FORCE BASE  
INSTRUCTION 13-100**



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***Nuclear, Space, Missile, Command and Control***

***FLYING AND AIRFIELD OPERATIONS***

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This Instruction implements AFPD 11-2, *Aircrew Operations*, AFI 13-204 V3, *Airfield Operations Procedures and Programs*, and AFI 32-1043, *Managing, Operating, and Maintaining Aircraft Arresting Systems*. This instruction supersedes AFFTCI 11-1. This instruction applies to all units associated with flying operations at Edwards AFB. This publication does not apply to Air Force Reserve Command (AFRC), Air National Guard (ANG), or the Civil Air Patrol (CAP) unless operating at Edwards AFB. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through the appropriate functional's chain of command. This publication may be supplemented at any level, but all direct Supplements must be routed to the OPR of this publication for coordination prior to certification and approval. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

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**SUMMARY OF CHANGES**

This interim changes revises EDWARDSAFBI 13-100 by (1) delegating the responsibility to chair the AOB to the 412th OG, (2) removes 412 SFS, 412 MXS, and FAA AFREP as required members of the AOB, (2) removes all Inyokern Transition references, (3) removes all references to MMLS, (4) adds T-38 last chance check information, (5) ) adds that non-standard marking exists on runway 22L/4R, (6) adds that no approach lights exist at Edwards (7) adds that the Tower will use light signals to communicate with vehicles in the event of radio failure, (8) deleted engine start procedures, (9) adds taxing restrictions for aircraft going into Ramp 2 and 3, (10) corrects verbiage about Small Arms Range procedures, (11) Corrects Isabella AR area from PMD 345/75 to PMD 345/70, (12) Corrects Isabella AR frequency to 354.4., (13) adds C-12 austere operations, (14) corrects radios located in alternate tower, (15) adds weather minimums for VFR traffic patterns, (16) clarifies that aircrews will initiate the turn to downwind upon receipt of tower approval unless otherwise instructed, (17) adds unpublished obstructions to Harpers, Desert Butte, and Rough One TFRs, (18) deletes that Airfield Management maintain ECHUM in the Flight Planning Room, (19) corrects the format of the UAS Mitigation Matrix, (20) corrects callsign list and frequencies for squadrons, (21) adds to contact 412 OSS/OSLT for updated DZs coordinates and (22) adds that T-38s with noseboom modifications annotate such on the SPORT Brief. A margin bar ( ) indicates newly revised material

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## Chapter 1

### INTRODUCTION

**1.1. Policy.** This instruction sets policies and prescribes standard operating procedures for aircrew and other support element responsibilities assigned to or sponsored by Edwards Air Force Base (EAFB). This instruction takes precedence over conflicting local directives.

1.1.1. Tenant units and Edwards AFB based organizations may augment these procedures, but must not provide guidance that is less restrictive.

1.1.2. Before flying in the R-2508 Complex and/or within R-2515, pilots will receive the applicable airspace briefing and annual refresher thereafter. Users flying only within R-2508 require only the R-2508 Complex briefing; those flying within R-2515 require both the R-2508 Complex and R-2515 airspace brief. It is the responsibility of local units to ensure pilots flying within their organization have received the initial and annual airspace briefing. The Central Coordinating Facility (CCF), or their designated representative, is responsible for providing R-2508 complex briefing. The R-2515 Airspace Manager, or designated representative, is responsible for providing the R-2515 airspace briefing. The annual briefing cycle will be provided at the unit request every First Monday Training Day from January through May or as requested. If at the end of the annual briefing cycle, pilots have not received their annual briefing, they will not be authorized to fly within R-2508 and/or R-2515.

1.1.2.1. Tanker crews on Temporary Duty (TDY) to Edwards for air refueling support will receive a local area brief prior to conducting refueling operations within R-2508. This briefing can be performed face-to-face or telephonically with visual aide support (e.g. power point charts, the R-2508 User's Handbook, etc). Although not a substitute for the briefing, the R-2508 User's Handbook may be downloaded at: <http://www.edwards.af.mil/r-2508.asp>.

**1.2. Waivers to Airfield Operations.** Coordinate all deviations or waiver requests for this instruction through the Office of Primary Responsibility (OPR). The 412th Operations Group Commander (OG/CC) is the final approval authority.

**1.3. Waivers to Airfield/Airspace Criteria.** Deviations and waivers must be approved by the Installation CC and Headquarters (HQ) Air Force Material Command (AFMC). 412 OSS/OSA will coordinate, prepare and process airfield and airspace criteria documents as required for the following purposes:

1.3.1. Waivers pertaining to airfield criteria processed through 412th Test Wing (TW) Civil Engineering.

1.3.2. Waivers pertaining to Special Use Airspace (SUA) or airspace for special use.

1.3.3. Airspace proposals directed by environmental requirements as a result of changes in the number or types of aircraft or hours of utilization for existing airspace.

1.3.4. Aeronautical objections to construction activities within the Edwards airspace.

**1.4. Aircraft and Crew Security.** All personnel authorized access to the Edwards AFB flight line and/or assigned to a flight line activity (e.g. maintenance, operations, engineering) are responsible for safeguarding aircraft against theft, damage, and compromise of classified materials. Flight line personnel should be alert for and challenge unidentified personnel. Aircrews are responsible for ensuring Test Wing aircraft are safeguarded at off station locations.

1.4.1. Federal Aviation Administration Order (FAAO) 7610.4, *Special Operations*, establishes responsibilities and procedures for personnel to cope with acts of unlawful aircraft seizure and mission interference both on the ground and in flight.

1.4.2. Appendix 19 to Annex C to EAFB PLAN 31, *Anti-Hijacking and Unauthorized Movement of Aircraft*, applies to all units involved with aircraft movement. 412 TW/XP is the office of primary responsibility for this document.

**1.5. Inadvertent Tracking of Sight-Sensitive and Low Observable (LO) Assets.** It is strictly forbidden to train tracking sensors (e.g. radar, infrared, electro-optical, personal cameras, sound recording devices, etc.) on any LO or sight-sensitive asset within the R-2508 Complex. The single exception to this rule is to promote safety of flight. If a safety incident occurs, data recording may continue to assist the Mishap Investigation Board. Recording of data will immediately terminate upon termination of the safety incident. Contact Security Forces for Security Procedures For Inadvertent Tracking And Sensor Acquisition Of Low Observable And Sight Sensitive Programs, provides agency reporting responsibilities in the event of inadvertent or unauthorized tracking incidents.

**1.6. Airfield Operations Board (AOB).** The AOB is a forum for discussing, updating and tracking various activities in support of the 412 TW flying mission. The AOB will meet at least once per quarter. IAW with AFI 13-204v3, 4.2.1, the 412 TW/CV has delegated the responsibility to chair the AOB to the 412 OG. AOB membership consists of the personnel listed in Table 1.1. Annual required agenda items in accordance with (IAW) AFI 13-204 V3, *Airfield Operating Procedures and Programs* are listed in Table 1.2.

**Table 1.1. AOB Membership**

412 TW/CV (Chairperson)	412 OG/CC	412 MSG/CC
412 OSS/CC	412 OG/OGV	412 OSS/OSAM
412 OSS/OSAT	412 OSS/OSM	412 OSS/OSOA
412 OSS/OSW	412 TW/SEF	TW Flying Unit Reps
FAA TRACON	NASA-DFRC Rep	Civil Engineering
Aero Club Manager	Command Post	

**Table 1.2. Annual Review Items**

Air Force (AF) and Major Command (MAJCOM) Special Interest Items (SIIs)	Jan
Results of annual self-inspection	Jan
Local Operating Procedures (LOP) Review	Feb
Status of Annual Airfield Wavier Package IAW Unified Facilities Criteria (UFC) 3-260-01	Apr
Aircraft Parking Plan	Aug
Terminal Instrument Procedure (TERPS)	Sep
Airspace (terminal, en route, and special use airspace)	Sep
Annual Airfield Certification/Safety Inspection	Oct

**1.7. Recommended Changes.** Submit recommended changes to the 412 OSS/OSA.

## Chapter 2

### FLIGHT PLANNING/COMPLEX CLEARANCE

**2.1. Flight Plan Filing.** Crews departing the R-2508 complex must have a flight plan on file with Airfield Management Operations (AMOPS). Exception: 412 TW aircraft conducting operations at Palmdale, Victorville and/or Fox Field and civil aircraft (e.g., scheduled air carrier, general aviation, etc.) are exempt from this requirement (IAW AFI 13-204 V3, *Airfield Operating Procedures and Programs*). File Instrument Flight Rules (IFR) flight plans at least 1 hour prior to Estimated Time of Departure (ETD). File Visual Flight Rules (VFR) flight plans 30 minutes prior to ETD. All international flight plans must be filed at least 2 hours prior to ETD. Crews remaining within the complex will obtain a complex clearance (i.e. Pancho 3, Pancho 3 Barstow, or Sage 2)

2.1.1. Local units including all 412 TW flying organizations, Dryden Flight Research Center (NASA) and the Aero Club will comply with the following procedures when filing flight plans with AMOPS.

2.1.1.1. Use Department of Defense (DD) Form (Fm) 175, *Military Flight Plan*, DD Fm 1801, *International Flight Plan* or other authorized form IAW AFI 11-202 V3, *General Flight Rules*, and Flight Information Publication (FLIP) General Planning (GP). Civil aircraft and the Aero Club are authorized to use Federal Aviation Administration (FAA) Fm 7233-1, *Flight Plan*, to file flight plans.

2.1.1.2. Original flight plans will not be accepted via radio or telephone IAW AFI 13-204 V3, *Airfield Operating Procedures and Programs*.

2.1.1.3. All flight plans filed at EAFB must include “participant” or “non-participant” as the first item in the remarks section of the flight plan. See *Area Planning 1* (AP1) for more information.

2.1.1.4. The aircrew/squadron representative will notify AMOPS of flight plan changes due to weather, ground abort, maintenance cancellations, etc., as soon as possible.

2.1.2. Flight plans may be faxed to AMOPS by organizations assigned to the 412 TW or base tenant units. The Aircraft Commander (AC) is responsible for confirming receipt/legibility with AMOPS. Failure to confirm receipt will result in departure delays. AMOPS will not file faxed flight plans without receiving a phone call to confirm receipt and legibility. Units faxing flight plans must maintain the original flight plan on file IAW Air Force Records Disposition Schedule (RDS), Table 13-07, Rule 3.00 and AFI 13-204 V3, *Airfield Operating Procedures and Programs*. Flight plans will remain on file for 12 months, which exceeds the disposition schedule within RDS.

2.1.3. During airfield closures and non-operating hours, Aero Club will schedule flights on the Aero Club schedule and file flight plans with FSS, via phone or Direct User Access Terminal System (DUATS). Aero Club members should open/close flight plans with the appropriate FSS whenever the airfield is closed.

**2.2. Scheduling Use of Restricted Airspace and Military Operating Area(s) (MOA)(s).** 412 TW scheduling procedures provide guidance for the scheduling of 412 TW controlled SUA during and after normal hours.

2.2.1. The R-2508 CCF provides over-flight altitudes for the restricted areas internal to R-2508 to High Desert Combined Control Facility (callsign JOSHUA) and the AFTC Military Radar Unit (MRU) (callsign SPORT) on a daily basis. Obtain clearance for over-flight through JOSHUA or SPORT.

2.2.2. Outside normal duty hours, Project Managers/Crews shall contact the CCF (866 805-2851) for revisions to airspace requirements, cancellation or slips. The FAA requires 2 hours advance notification to activate a Military Operations Area(s) (MOA) and 15 minutes to activate restricted area(s) when the airspace has been released for joint use.

**2.3. Participating/Non-Participating Aircraft.** All crews must understand and become familiar with the R-2508 Complex procedures. Due to the uniqueness of the Complex, the using agencies have specific operating procedures for coordinating planning and ensuring operations comply with established procedures and restrictions. Unless otherwise coordinated, all users shall comply with the following procedures:

2.3.1. “Participating aircraft” are aircraft under the command of, or sponsored by, the Navy, AF or Army members of the R-2508 Joint Policy and Planning Board (JPPB) and civilian aircraft under Letter of Agreement (LOA) with the R-2508 Complex Control Board (CCB) for flight above FL180 within the shared use areas or the AFTC for flight within R-2515.

2.3.2. “Non-participating aircraft” are defined as aircraft that cannot comply with the terms of the R-2508 Complex procedures. These aircraft shall be provided IFR services as specified in FAA Order JO 7110.65, *Air Traffic Control*, and FAA Order 7610.4, *Special Operations*.

**2.4. R-2508/R-2515 Complex Clearance Procedures and Flight Planning.** Flight within the R-2508 Complex requires a work area clearance. EAFB and AF Plant 42 based aircraft will be issued a Pancho 3, a Pancho 3 Barstow, or Sage 2 clearance. Both clearances are VFR “See-and-Avoid” and do not constitute exclusive use of the airspace. An exception to this policy may be approved by the CCB for the shared use areas or the 412 OG/CC for R-2515.

2.4.1. A Pancho 3 clearance includes:

2.4.1.1. Isabella and Panamint, FL 500 and below.

2.4.1.2. Owens and Saline, FL290 and below.

2.4.2. A Pancho 3 Barstow clearance includes:

2.4.2.1. All the airspace included in the Pancho 3 clearance.

2.4.2.2. Barstow West, FL500 and below.

2.4.2.3. Barstow East, FL230 and below.

2.4.3. A Sage 2 clearance is identical to a Pancho 3 clearance except that it does not include the Barstow MOAs or ATCAAs and is restricted to Flight Level (FL) 290 and below.

2.4.3.1. The Operations Number issued by the 412th Operations Support Squadron’s (412 OSS) Resource Operations Center (ROC) authorizes crews to depart from, re-enter and operate within R-2515 when the airspace has been scheduled for military use.

2.4.4. Missions requiring areas not included in the Pancho 3 clearance shall schedule these areas and associated altitudes through the Resource Operations Center (ROC) and request

real-time use, to include altitudes, on initial contact with JOSHUA or SPORT. Crews will not enter airspace not included in the Pancho 3, or Sage 2 (as applicable) clearance without specific authorization by either JOSHUA or SPORT. Request clearance 15 minutes prior. FAA Centers have a Military Operations Specialist (MOS) who can assist with the mission planning. Mission planners should contact the MOS early in the planning process for assistance.

2.4.5. 412 TW aircrews will use the R-2515 SPORT Pre-brief sheet to provide detailed profile information to combined Supervisor of Flying (SOF)/Airboss and SPORT. This sheet is available on the Center Operations Online (COOL) homepage in the left side column of "Pilot Step Info Links" under the name "R-2515 SPORT Prebrief." Complete this sheet with any data relevant to your mission and fax it to SPORT at 661-277-8863 as early as possible. Printed copies will be kept available at the unit operations desk. The SPORT watch supervisor will create a deconfliction plan and coordinate it with the SOF/Airboss prior to the first takeoff and as required during the rest of the day. The SOF/Airboss is the approval authority for the deconfliction plan and will monitor the airspace situation, as able, and contact the SPORT watch supervisor with concerns. **NOTE:** All crews flying T-38 aircraft with the noseboom modification will make the following annotation on the Sport Brief: "\*\*\*\*T-38C YAPS Noseboom Modified aircraft – True altitude is higher than indicated, reported altitude may be in error by 1,200' at high subsonic speeds"

2.4.5.1. Prior to takeoff, local aircrews will contact SPORT to confirm airspace utilization and profile. If the flight will be working on an assigned mission frequency in R-2515, aircrew may conduct pre-takeoff coordination on mission frequency. If the flight will not be operating on a dedicated mission frequency, but instead will be monitoring 343.7/132.75 in the airspace, aircrew will use 354.0/139.775 to conduct pre-takeoff coordination. SPORT controllers will communicate the deconfliction plan to the aircrew during the pre-takeoff airspace brief.

2.4.5.2. The combination of the pre-brief sheet and pre-takeoff coordination will be used by the Airboss and SPORT to proactively deconflict R-2515 with a goal of simplifying operations for aircrew, minimizing traffic calls/conflicts, and improving safety. SPORT and the Airboss will continue to modify the R-2515 deconfliction plan in real time throughout missions, while trying to minimize inputs and mission impact for participating crews. Aircrew are encouraged to advise the Air Boss's representative at SPORT directly on 354.0/139.775 when the overall deconfliction plan is not working or their mission requirements change, in which case an alternative plan will be developed. Air Boss/SPORT direction to aircrew is advisory and dialogue is encouraged to optimize the overall plan to meet mission needs unless/until the words, "The Airboss directs..." are used, in this case, compliance is mandatory. Airboss direction will be reserved for safety of flight issues.

2.4.5.3. When returning to R-2515 from other airspace with an intent to delay in R-2515, aircrews are encouraged to contact the Airboss prior to R-2515 entry to facilitate airspace planning and ensure traffic deconfliction. Air Boss is readily available to give "picture" calls and suggest areas to work to maximize safety and mission effectiveness at all times on 354.0/139.775.

2.4.6. Helicopters departing Edwards are limited to Restricted Area R-2515 at and below 6,000' MSL. Additional airspace requirements require scheduling through the ROC. Notify tower on initial contact to coordinate an appropriate clearance.

2.4.7. Obtain clearance for airspace for special use (e.g. Alpha Corridor, Precision Impact Range Area [PIRA], Spin Areas, Supersonic Corridors, etc.) from SPORT either before or after takeoff.

2.4.8. Although the crew has the primary responsibility to remain within the vertical and lateral confines of the airspace specified in the clearance, expect positive control instructions from JOSHUA or SPORT to assist in remaining within the airspace boundaries. Crews are responsible for complying with these instructions. For flight restrictions within the Complex see Chapter 11, Restrictions.

2.4.9. Crews shall advise JOSHUA or SPORT prior to exiting the Complex. The Complex clearance is canceled when the aircraft exits the Complex.

**2.5. IFR Departure Procedures.** The following procedures will be used when departing the R-2508 complex under IFR.

2.5.1. Aircrew can verify their IFR clearance is in the National Airspace System with ground control before taxi/takeoff.

2.5.2. If SPORT is open and VMC conditions prevail, crews will depart with a local complex clearance (e.g. Pancho 3, Sage 2). They will be directed to remain VFR in the complex at or below their intended IFR departure altitude. Expect a frequency change to JOSHUA control for the IFR clearance while VFR within the complex.

2.5.3. If SPORT is closed or if the airfield is IMC (a VFR departure is not possible), crews will obtain IFR departure clearance from ground control.

2.5.4. Regardless of SPORT's status, crews planning to depart IFR at or above 14,000 feet MSL via EDW, PMD, DAG, DAGGS, HEC or ROSIE will receive their IFR clearance from ground control. In this case, crews will be entering LA Center airspace directly.

2.5.5. Ingress/Egress Fixes.

2.5.5.1. Thirteen ingress/egress fixes are established around the perimeter of R-2508 (Fig 2.1.). Crews delaying within the shared use areas of R-2508 or R-2515 on a Complex clearance prior to departing IFR shall file through one of these fixes as the second point in their flight plan (e.g. R-2508..SWOOP..EHF).

2.5.5.2. Only six fixes (MITEL, KIOTE, SWOOP, ROSIE, DAGGS and FAANG) are recognized as FAA published entry/exit fixes. If filing through other than these FAA recognized fixes, use the published coordinates as the second element in the flight plan (e.g. EDW...N34.51.22W116.47.20...LAS)

2.5.5.3. Crews not delaying within R-2508/R-2515 may file Navigational Aid (NAVAID) direct (e.g., EDW..DAG).

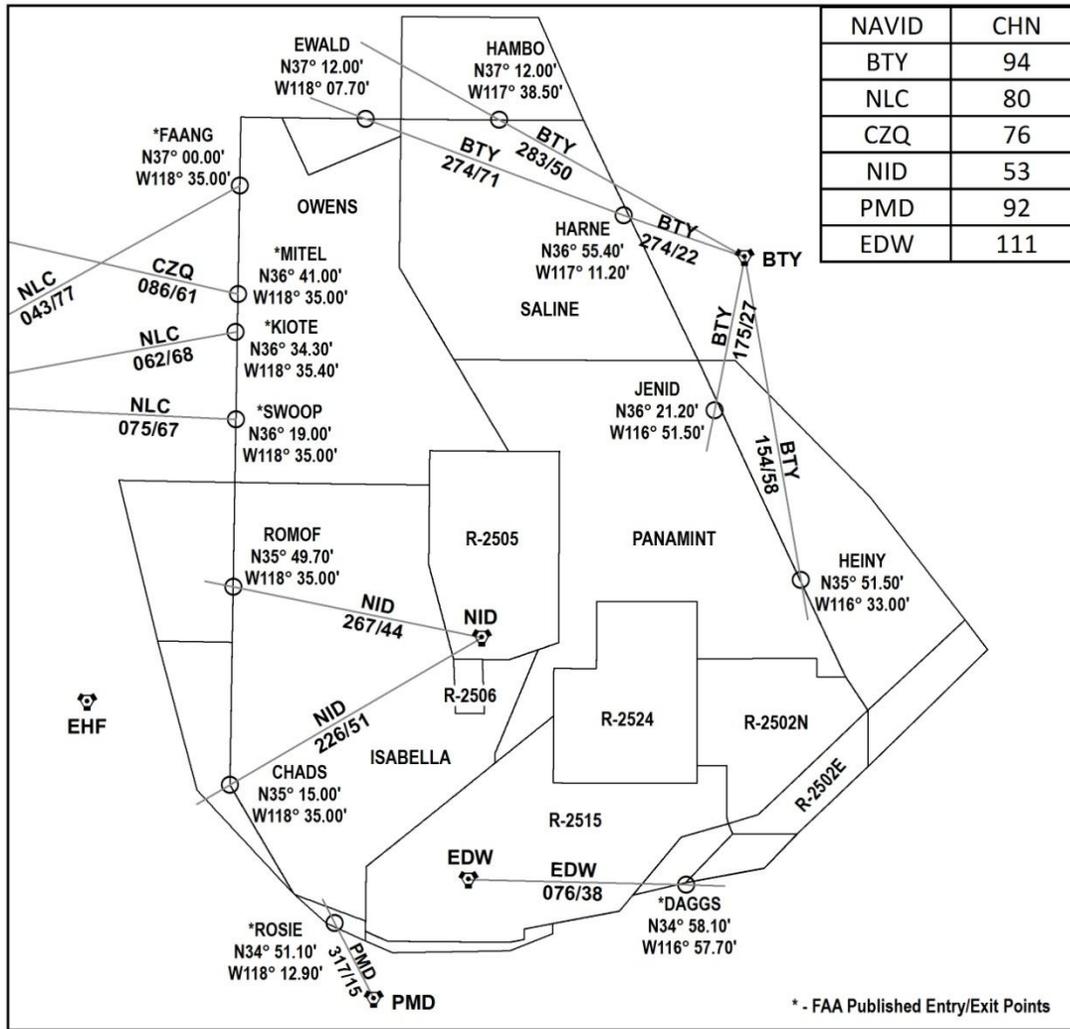
2.5.5.4. . Crews delaying within R-2508 on a Pancho 3/Sage 2 clearance and whose destination is other than Edwards should contact Pilot to Dispatcher (372.2) to activate the flight plan.

**2.6. IFR Clearances for Cloud Breaks.**

2.6.1. When SPORT has control of R-2515, crews that need to penetrate IMC will remain in VMC and coordinate with SPORT for a transfer of control to JOSHUA. Expect delays as SPORT coordinates for release of airspace to JOSHUA. After transfer of control to JOSHUA an IFR clearance will be issued. Crews shall cancel when able to resume flight in VMC. If JOSHUA has control of R-2515, request an IFR clearance directly.

2.6.2. Outside or R-2515 but within R-2508 crews will contact JOSHUA on the appropriate frequency for IFR clearances while seeking VMC.

**Figure 2.1. R-2508 Ingress/Egress Fixes**



**2.7. Clearance Forms.** Reference is AFI 11-401, *Aviation Management*.

2.7.1. For local flights taking off and landing at the same local airfield, signing out in Center Operations Online (COOL) satisfies the requirements for filing a flight plan.

2.7.2. Use DD Form 175 for:

2.7.2.1. Flights not utilizing COOL, flights not taking off and landing at the same local area airfield or flights departing the local area VFR or IFR.

2.7.2.2. Local IFR flights when the Complex airspace is released to the FAA for joint use. Verify with the ROC (7-3940) or CCF (7-2508) to determine if the airspace will be active for military use or if released to the FAA for joint use.

2.7.2.3. Requesting the High Altitude Supersonic Corridor (HSSC) outside of R-2508.

2.7.3. Use DD Form 1801, DoD International Flight Plan, for international flights in accordance with FLIP/GP, Chapter 4.

## Chapter 3

### AIRFIELD SERVICES

#### 3.1. Airfield Operations Facility Hours.

3.1.1. AMOPS and the Air Traffic Control (ATC) Tower's published hours of operation are Monday through Friday, 0600L to 2200L (Coordinated Universal Time UTC-8 (-7DT)). Other hours of operations are by NOTAM.

3.1.2. JOSHUA's hours of operation are daily 24 hours, seven days a week. SPORT provides Command & Control (C2) services for R-2515 during the hours published on Center Scheduling Enterprise (CSE). Paragraph 6.2 defines SPORT C2 services. **NOTE:** *SPORT hours of operation may be adjusted to accommodate mission requirements.*

3.1.3. Base Weather hours of operation are daily 0600L to 2200L and 0600L to 1800L on Saturday and 1000L to 1600L on Sundays, closed on federal holidays. **NOTE:** *Requests for airfield operations (AMOPS, Tower) and Weather services outside published facility hours of operation must be submitted 72 hours in advance IAW EAFB scheduling procedures.*

3.1.4. Transient Alert (TA) services are available weekdays from 0700L to 2200L, weekends from 0700L to 1900L. 24 hour notice is required for services on holidays. Fleet service is limited but available.

**3.2. Edwards AFB Uncontrolled Airfield Operations.** Uncontrolled Airfield Operations refer to operations at North base, South base, any lakebed runway or Edwards AFB main base while the control tower is closed. When the control tower is closed, aircraft operations, with the exception of Aero Club operations, and emergency UAS operations require AFMC/A3 approval. The 412 OG/CC will be notified of any unplanned emergency UAS landings.

**3.3. Use of Night Vision Devices (NVDs) by Air Traffic Control Tower and Airfield Management Personnel.** Edwards's control tower and airfield management personnel are not authorized use of NVDs.

**3.4. Prior Permission Required (PPR)/Civilian Aircraft Operations.** Edwards AFB is located within Restricted Area R-2515 (within the R-2508 Complex) which is used extensively by the 412 TW, tenant testing organizations, other DoD agencies/installations and commercial aviation organizations for flight research and development. As a result, all non base-assigned flights with exception to aircraft which have declared an emergency (medical, low fuel, weather diverts, etc.), must have prior permission before landing at Edwards. Transient aircrews are strongly discouraged from flying into/out of Edwards AFB unless such flights are mission essential.

3.4.1. IAW AFI 13-204 V3, *Airfield Operating Procedures and Programs*, AMOPS has the responsibility to ensure requirements are met prior to issuing a PPR number to requesting agencies. The following guidelines shall be accomplished prior to PPR issuance:

3.4.1.1. An airspace briefing defining "participant" and "non-participant" operating procedures is required. Failure to obtain this briefing could result in delays entering R-2515 and adversely affect flight safety. PPR procedures are published in the Department of Defense (DoD) FLIP, IFR Supplement.

3.4.1.2. PPRs are not issued more than 5 days prior to arrival dependent upon approved missions (Distinguished Visitors, Air Evacuation missions, passenger delivery, cargo/part deliveries, aircraft servicing, civil aircraft with a government contract with appropriate civil landing permits). PPR requests must be made at least 24 hours in advance.

3.4.1.2.1. For civil aircraft operations, AMOPS staff must issue and record a Civilian Aircraft Landing Permit (CALP) number IAW AFI 10-1001, *Civil Landing Permits and Airfield Management (AM) Operating Instruction (OI) 13-01, Airfield Management Operations Instruction*.

**3.5. Automated Terminal Information Service (ATIS).** The ATIS is operational 0600L to 1800L, Monday through Friday. AFTC mission requirements will dictate ATIS operation outside these hours. ATIS broadcasts are available on UHF 269.9.

**3.6. Notice to Airmen (NOTAM) Services.** AMOPS is the NOTAM issuing facility while Tower is the monitoring facility. Edwards AFB NOTAMs may be viewed online at <https://www.notams.jcs.mil/>. NOTAM action concerning Edwards's facilities shall be IAW AFI 11-208, Department of Defense Notice to Airmen (NOTAM) system and Air Traffic Control and Landing Systems (ATCALs)/NAVAIDS Coordination for Maintenance Support Operations Letter on file with 412 OSS/OSOA.

**3.7. FLIP Administration.** AMOPS is the account holder responsible for maintaining current FLIPs in the Flight Planning Room, building (Bldg) 1202. To request changes to information published in the FLIPs, contact Airfield Management, (661) 277-3808 (DSN 527).

**3.8. NAVAIDS.** NAVAIDS available are the VHF Omni-directional Range/Tactical Air Navigational (VORTAC) and an Instrument Landing System (ILS) consisting of a Localizer (LOC) and Glideslope (GS) available on Rwy 22L only. Maintenance support procedures for the EDW VORTAC and ILS, to include generator power are published in an ATCALs/NAVAIDS Coordination for Maintenance Support operations letter on file with 412 OSS/OSOA.

**3.9. Civil Use of ATCALs.** Civil use of military Air Traffic Control and Landing Systems (ATCALs) at Edwards AFB are not allowed and are not included into the NAS for use.

**3.10. Bird Aircraft Strike Hazard (BASH) Program.** Bird Watch conditions are published in EAFBI 91-202. The purpose of EAFBI 91-202 is to provide guidelines and procedures to aid in risk management and to significantly reduce the BASH at Edwards.

**3.11. Availability/Restrictions for Surveillance (ASR) Approaches and Precision Approach Radar (PAR) Approaches/Monitoring.** ASR and PAR services are not available at Edwards.

**3.12. Air/Medical Evacuation Notification and Response/Distinguished Visitor Notification Procedures.** When requested, tower will provide AMOPS notification for a medical evacuation flight or an aircraft carrying a distinguished visitor when the aircraft is 15 nautical miles from the runway.

3.12.1. AMOPS will, upon receipt of the flight message or inbound notification for medical evacuation aircraft, notify the Fire Department, Command Post, TA and Tower.

3.12.2. When notified of a distinguished visitor, AMOPS will contact the Protocol Office and provide information IAW AMOPS Distinguished Visitor Quick Reaction Checklist.

**3.13. Weather Dissemination and Coordination Procedures/Hazardous/Severe Weather Notification Procedures/Lighting Response.** Edwards is a Basic Weather Watch station. Tower certified limited weather observers will, time and workload permitting, advise the duty observer of items identified in Table 3.1. and those identified in the Weather Support Plan for Edwards AFB.

**Table 3.1. Tower Weather Reporting**

Observed differences between current weather and the official observation.
Significant increases or decreases in prevailing visibility.
Formations of fog, thunderstorms, funnel clouds or tornadoes.
Lightning/hail observed; first sound of thunder or the beginning/ending of precipitation.
Any obstruction to vision observed but not reported.

## Chapter 4

## AIRFIELD ENVIRONMENT

**4.1. Runways and Taxiways.** The Edwards complex landing areas consist of the following Runways (Rwy) and taxiways in Table 4.1. thru Table 4.3.

**Table 4.1. Hard Surface Landing Areas (Fig 4.1.)**

Runway Surface	Length	Width	Composition	Overrun Length/Width/Shoulders
<b>Main Base</b> *4R/22L	15,024'	300'	Concrete	22L-994'x300'/04R-1778'x300'/50' 4R Lakebed Extension: Requires prior coordination/approval. The concrete overrun of 04R is constructed to withstand the same loads as the main runway and is identical in all respects. The overrun is available for emergency use when additional runway length may be required.
4L/22R	12,000'	200'	Asphalt/Concrete	22R-1002'x200'/25' 4L-1000'x200'
STVOL Pad	140'	140'	Asphalt	Northeast intersection of Taxiway B and Runway 22L/04R
<b>North Base</b> 6/24	5,998'	150'	Asphalt/Concrete	6/24-200'x150'
<b>South Base</b> 6/24	8,000'	50'	Concrete	6-1103'x50' 24-200'x50'

**Table 4.2. Main/North/South Taxiway Information (Fig 4.1. and Fig 4.3.)**

<b>Taxiway</b>	<b>Width</b>	<b>Shoulder Width</b>	<b>Composition/Remarks</b>
<b>MAIN BASE</b>			
Alpha	100'	75' Asphalt	Concrete
Bravo	75'	50' Asphalt	Concrete
Charlie	100'	70' Asphalt	Concrete
Delta	100'	70' Asphalt	Concrete
Foxtrot (Taxilane)	100' Btwn taxiways A-B 150' Btwn taxiways B-C	50' Asphalt	Concrete
Echo	100'	50' Asphalt	Concrete
Golf	75'	50' Asphalt	Concrete
Hotel Towlane	60'	50' Asphalt	Concrete
<b>NORTH BASE</b>			
November 1	100'	10' Asphalt	Asphalt
<b>SOUTH BASE</b>			
Sierra 1	70'	No Shoulder	Concrete
Sierra 2 Permanently Closed	150'	No Shoulder	Concrete
Sierra 3	165'	No Shoulder	Concrete
Sierra 4	100'	No Shoulder	Concrete
Sierra 5	100'	No Shoulder	Concrete
Sierra 6 Permanently Closed	75'	25'	No shoulder east side
Sierra 7	150'	55' Asphalt	Concrete
Sierra 3 South One Permanently Closed	108'	No Shoulder	Concrete
Sierra 3 South Two Permanently Closed	50'	No Shoulder	Concrete

**Table 4.3. Distance Remaining for Intersection Departures**

<b>Runway</b>	<b>Taxiway</b>	<b>Distance Remaining</b>
<b>MAIN BASE</b>		
Rwy 4R	Bravo	7,500'
Rwy 22L	Bravo	7,450'
Rwy 4L	Alpha	10,850'
Rwy 4L	Bravo	6,100'
Rwy 4L	Charlie	Not Authorized
Rwy 22R	Alpha	Not Authorized
Rwy 22R	Bravo	5,800'
Rwy 22R	Charlie	11,400'
<b>NORTH BASE</b>		
North Base Rwy 6/24	N1	2,950'
<b>SOUTH BASE</b>		
South Base Rwy 6	S3	6,800'
South Base Rwy 24	S3	Not Authorized
South Base Rwy 24	S5	5,000'
South Base Rwy 24	S4	3,500'
South Base Rwy 6	S5	3,000'
South Base Rwy 6	S4	4,500'

Figure 4.1. Edwards Complex Landing Areas

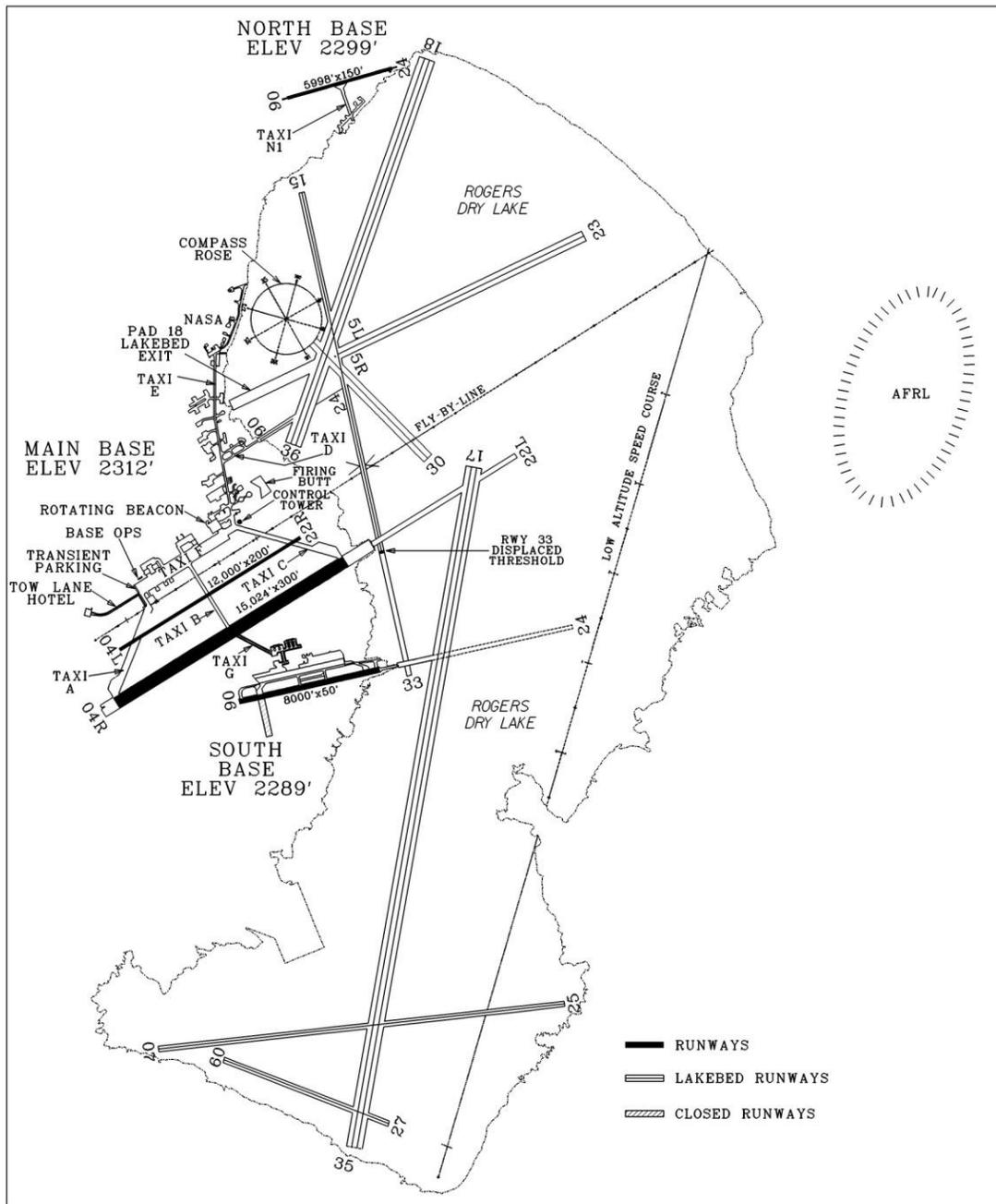


Table 4.4. Lakebed Runway Information (Fig 4.1. and Fig 4.2.)

ROGERS		ROSAMOND
5L/23R 14,999' x 300'	Compass Rose (not a landing surface) 2,000' Radius	2/20 21,119' x 300'
5R/23L 14,999' x 300'	6/24 7,050' x 300' NOTE 1	11/29 21,320' x 300'
7/25 23,100' x 300'	15/33 29,487' x 300'	
9/27 9,991' x 300'	NOTE 2: 21,987' Landing Distance Available	
17/35 39,097' x 900' Left/Right/Center		
18/36 23,086' x 900' Left/Right/Center		
12/30 9,235 x 600' Left/Right		
<p><b>NOTE 1:</b> Lakebed Rwy 6/24 (Taxiway Delta extension) is aligned 220 degrees but numbered 24 to avoid confusion with Rwy 4R/22L and its lakebed extension. Lakebed Rwy 24 is normally used as an entry/exit point to the lakebed via taxiway Delta. Propeller driven aircraft may use this runway for normal takeoff and landing. Fighter/trainer type aircraft should not use lakebed Rwy 6/24 for recovery unless it is the only option.</p>		
<p><b>NOTE 2:</b> Lakebed Rwy 33 landing threshold is displaced 7,500 ft and located adjacent to primary Rwy 22L underrun and has centerline markings.</p>		
<p><b>NOTE 3:</b> Tower may instruct vehicles to proceed directly to an area on the Lakebed Complex without stating specific approval to cross each Lakebed Runway. If tower issues no specific restrictions, vehicles are authorized to cross all Lakebed Runways along their route.</p>		

Figure 4.2. Rosamond Dry Lakebed

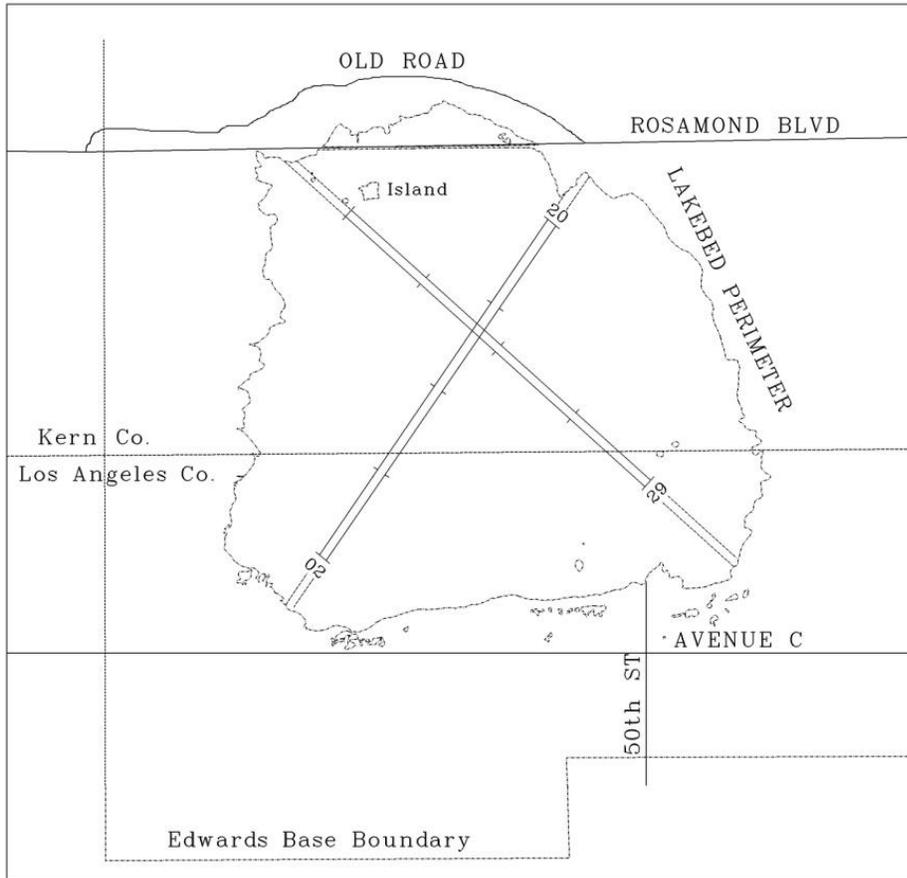
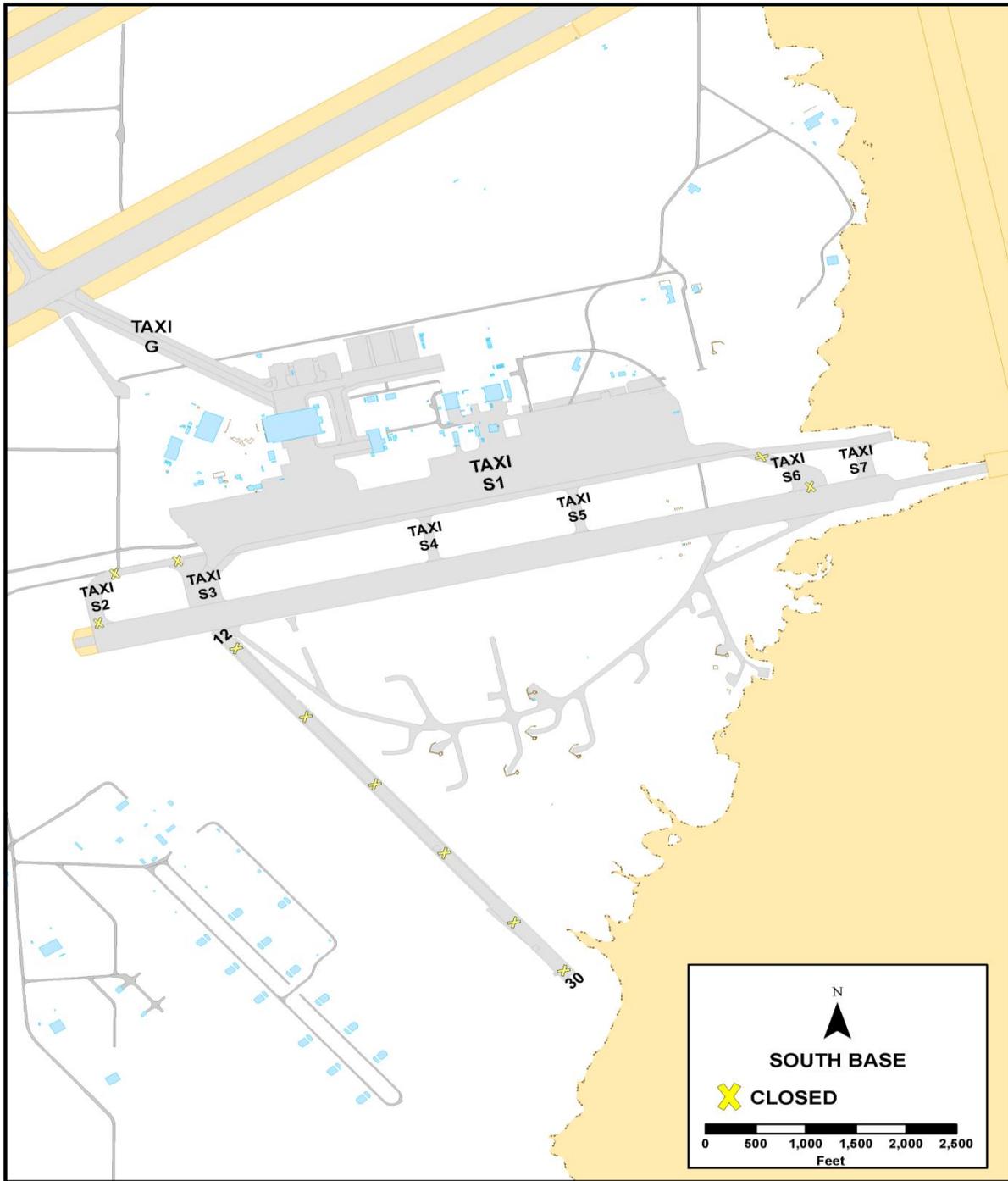


Figure 4.3. South Base Taxiways



**4.2. Runway Selection/Inspection/Closing Procedures.**

4.2.1. The ATC Tower Watch Supervisor/Senior Controller is the final authority for determining the active runway most nearly aligned with the wind.

4.2.2. When necessary to ensure safe flight operations, the Supervisor of Flying (SOF) will coordinate with the ATC Tower Watch Supervisor/Senior Controller for runway changes.

4.2.3. Main Base Rwy 22L is designated as the calm wind and primary instrument runway. It will remain the active runway unless the tailwind component exceeds 10 knots.

4.2.4. Main Base Rwy 22R/4L is available for the following operations:

4.2.4.1. UAS operations.

4.2.4.2. Aircraft taxi.

4.2.4.3. Aircraft recovery to a full stop when Runway 22L/4R is closed (or operations are suspended) and the aircraft commander requests a full stop.

4.2.4.4. U-2/ER-2 takeoffs and full-stop landings.

4.2.4.5. Units may request additional use of the Runway 22R/4L (inside runway) by submitting justification to the 412 OG/CC. Justification should include impacts to normal Runway 22L/4R (outside runway) operations (if not granted), scope of operations, timeframe, and whether the request is for short-term or long-term use. Special emphasis should be placed on flight safety; convenience is not considered appropriate justification. Units shall track the tangible/intangible benefits of actual inside runway use in order to justify permanent funding.

4.2.5. During a runway change, Tower shall:

4.2.5.1. Advise aircraft on ATC frequencies (except VHF 121.5/UHF 243.0) of impending runway change.

4.2.5.2. Notify AMOPS, SPORT, Fire Department, Barrier Maintenance, JOSHUA, MOC and Base Weather.

4.2.6. SPORT shall advise aircraft on common/mission frequencies of the impending runway change.

4.2.7. Procedures for Runway Suspension. When Tower personnel detect or are advised of an unsafe condition with respect to the runway, operations to/from the runway will be suspended. Tower will coordinate unsafe conditions with AMOPS, SPORT, JOSHUA and MOC.

4.2.7.1. Resuming Runway operations, AMOPS will perform a runway check prior to resuming operations and provide an estimate of the duration of the suspension or closure. AMOPS will normally position at the approach end of the affected runway to conduct a FOD Check, inspect pavement problems or check the tension on the BAK-12s and tie downs.

4.2.8. The following procedures will be used to open runways.

4.2.8.1. AMOPS will conduct a runway check on the primary runway prior to the first takeoff to ensure the runway is free from foreign object damage (FOD) and other hazards.

4.2.8.2. AMOPS provides runway oversight during non-operating hours and will provide a briefing to tower personnel prior to Tower assuming responsibility of the runways.

This briefing will include vehicles/personnel on the runway, runway maintenance or other significant operations affecting flying safety.

4.2.8.3. During 24-hour operations, Tower will maintain control of the runways with no required briefing.

4.2.8.4. Airfield Management performs a daily airfield inspection to include lakebed runways, Monday – Friday. On weekends, AMOPS will conduct an airfield inspection on Main Base and South Base. North Base and Lakebed runways are not inspected on weekends. By request only, Rosamond Lakebed is inspected prior to any proposed use to determine if it is suitable for landings and departures.

4.2.9. Procedures for Runway Closure. AMOPS has the authority to impose airfield restrictions (close/suspend and resume airfield, runway or taxiway operations). Airfield Management is the final approval authority for opening the runway after a suspension/closure. AMOPS will advise Tower and 412 TW/CP of changes in runway status.

4.2.9.1. The SOF may waive the requirement for a runway suspension/closure if required to recover an inflight emergency (IFE) or ground emergency. The SOF shall notify AMOPS when a “SOF Call” has been initiated. 412 OSS/OSOA personnel will document an entry in the ATC/AM Daily Record of Facility Operations, AF Form 3616, of each “SOF Call” determination.

**4.3. Airfield/Controlled Movement Area (CMA)/Visual and Radio Blind Spots.** Control of ground traffic in the CMA is defined in the Edwards Air Force Base Airfield Driving Instruction. Airfield Visual and Radio Blind Spots are located in Attachment 6.

4.3.1. All vehicles or personnel operating on or within 100’ of the aircraft movement area must have specific tower approval and maintain two-way radio communications with Tower.

4.3.2. Edwards Controlled Movement Area (CMA) includes Main Base Runway 4R/22L and 4L/22R, North Base Runway 6/24, South Base Runway 6/24, and all of Rogers (excluding the Flyby Tower) and Rosamond Dry Lakebed south of Rosamond Blvd.

4.3.3. In the event of vehicle/Tower radio failure:

4.3.3.1. Tower will use light gun signals to communicate with vehicles. If light gun signals fail, the Tower will flash the runway edge lights on and off to alert vehicle operators/pedestrians on the runway that there is a problem and/or emergency that requires them to immediately exit the runway.

4.3.3.2. All drivers/pedestrians must exit the runway immediately. After exiting the runway, immediately contact Tower or AMOPS with any pertinent information that might affect flight operations. If not able to communicate with Tower or AMOPS via radio, use other means of communication such as a cellular phone (when available). If radio contact cannot be re-established vehicles/pedestrians will hold position and await the arrival of AMOPS. Report incident to AMOPS immediately.

#### 4.4. Airfield Lighting System.

##### 4.4.1. Main Base:

4.4.1.1. Rwy 4R/22L is equipped with High Intensity Runway Lights (HIRLs) and has five adjustable settings controlled by the tower lighting panel. Rwy 22L (only) has Runway End Identifier Lights (REILs).

4.4.1.2. Taxiways Alpha, Bravo, Charlie, Echo, Foxtrot (Taxilane) and Golf have blue flush-mounted taxiway lights with three adjustable settings.

4.4.1.3. Precision Approach Path Indicator (PAPI) lights are located on the left side of the approach ends of Rwy 4R/22L and are controlled by the Tower.

4.4.1.4. Pilot controlled lighting is available during non-operating hours. Keying up three times on the Tower frequencies UHF 318.1 within five seconds turns on the PAPIs, HIRLs and taxiway lights. The HIRLs will be on the lowest setting. Keying up five times within five seconds sets the HIRLs on a medium setting while seven key-ups within five seconds sets the HIRLs to their highest setting.

4.4.1.5. Obstruction lights are affixed atop structures of more than 50' high.

4.4.1.6. A rotating beacon located atop building 1600 is operated between official sunset and sunrise when the airfield is open or when airfield weather conditions are reported as IFR.

4.4.1.7. Rwy 4L/22R has no light configuration and is restricted to operation between sunrise and sunset.

##### 4.4.2. North Base:

4.4.2.1. Rwy 6/24 is equipped with HIRLS and threshold lighting.

4.4.2.2. Rwy 6/24 is equipped with PAPI lights positioned on the left side of the runway.

4.4.2.3. Taxiway November-1 is equipped with single intensity taxiway lights and can be activated when the lights are activated.

4.4.2.4. The North Base lighting system is equipped with pilot-controlled capability on VHF 129.1. Keying up three times on VHF 129.1 within five seconds turns on the PAPIs, HIRLs and taxiway lights. The HIRLs will be on the lowest setting. Keying up five times within five seconds sets the HIRLs on a medium setting while seven key-ups within five seconds sets the HIRLs to their highest setting.

4.4.3. South Base Rwy 6/24 is not equipped with operable lighting and is restricted to daylight/VFR operations only.

**4.5. Permanently Closed/Unused Areas of the Airfield.** The only permanently closed areas are South Base Runway 12/30, Taxiways Sierra 2, and Sierra 6 (Fig 4.3.). Temporary closures are experienced during extended periods of construction, restricting access to aircraft operations. These areas are properly marked with either painted yellow Xs or low profile lit barriers.

**4.6. Aircraft Arresting System.** Barrier Arresting Kit (BAK) 12B cable locations are 1,559' from the approach end of Rwy 22L and 1,512' from the approach end of Rwy 4R. The barrier at the departure end of the operational runway will be in the raised position. Arresting gear

markers indicator lights are installed on each side of the runway adjacent to cable locations. Lights are parallel with the runway distance remaining markers and consist of large (39-inch diameter) yellow circles on black marker boards. Procedures for the arresting systems are:

4.6.1. Civil Engineering Power Production is responsible for the certification of the arresting systems Monday - Friday from 0600L-1600L. Power Production will perform an inspection of the barrier prior to any planned engagement. During either a runway change or a barrier engagement, the Tower is responsible for notifying AMOPS, Barrier Maintenance, Fire Department, MOCC, Weather, SPORT, and JOSHUA.

4.6.2. Outside normal duty hours, the Fire Department is responsible for rigging and de-rigging but does not have the authority to certify the cable. Civil Engineer Power Production will certify the cable. Certification of the cable is not necessary for emergency use.

4.6.3. The Rwy 22L departure end cable remains raised (operational) unless removal (non-operational) is required for an emergency or planned test event. The Rwy 22L approach end cable may be raised for an emergency (pilot request) or scheduled test event. The barrier is removed from the runway during extended closures.

4.6.4. At least 10 minutes prior to a runway change Tower will advise SPORT, JOSHUA and AMOPS of the requirement to change arresting cable configuration. Tower and SPORT will advise pilots of suspending runway operations to change the cable configuration. Each rigging and de-rigging takes approximately 15-20 minutes. Each consecutive engagement (same cable) will require 15-20 minutes for re-stringing and certification.

4.6.5. During either a Rwy 22L departure or a Rwy 4R approach end engagement, AMOPS will direct TA to provide a tug to remove the aircraft out of the cable and off the runway. For all other engagements, the owning organization will provide tug support due to the distance from TA. TA is responsible for removing all transient aircraft.

#### **4.7. Parking/Runway Restrictions.**

4.7.1. Main Base parking restrictions are limited to specific aircraft wingspans on each of the following ramps:

4.7.1.1. Sun Sheltered parking aprons are restricted to fighter type aircraft with wingspans less than 44.7'.

4.7.1.2. Parking Rows Alpha through Foxtrot are restricted to aircraft with wingspans less than 132' on the parking spots immediately adjacent to Foxtrot Taxiway.

4.7.1.3. Aircraft with a wingspan of 170' or more must coordinate parking instructions with airfield management.

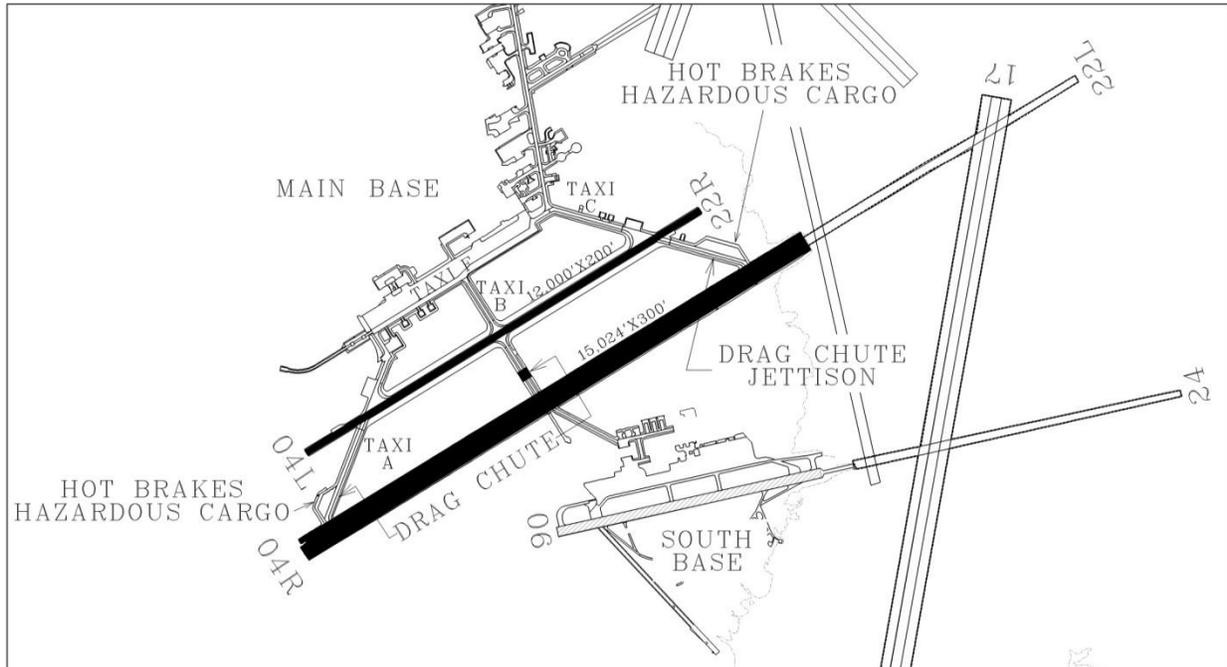
4.7.2. All operations requiring use of the North Base Runway require the approval of the 412 OG/CC. Test missions using North Base will schedule Crash/Fire/Rescue support IAW Edwards AFB Scheduling Procedures for Aircraft and Air/Ground Support.

4.7.3. South Base runway is designated as a Class A runway and is limited to daytime VFR operations for aircraft weighing 12,500 lbs or less.

**4.8. Drag Chute Jettison Areas (Fig 4. 4.).** Jettison drag chutes on taxiways Alpha, Bravo, Charlie, or Golf at a minimum of 300' away from the active runway. Release chute to not obstruct taxiway movement. If a drag chute is jettison onto the active runway or obstructs

taxiway Tower shall notify AMOPS. AMOPS will coordinate removal of the drag chute with MOCC and TA. AMOPS will conduct FOD check prior to resuming operations.

**Figure 4.4. Hot Brakes/ Drag Chute Jettison**



**4.9. Hot Pit Refueling Areas.** Pad 7 is the primary location for conducting hot pit refueling operations for 412 TW-assigned aircraft. Pad 29 and Rwy 4R arm/de-arm areas serve as alternate locations but require the 412 MXG/CC or designated representative approval prior to use.

**4.10. Dangerous/Hazardous Cargo (Fig 4. 4.).** The designated dangerous/hazardous cargo areas are Rwy 4R/22L End of Runway (EOR) arm/de-arm areas (see Chapter 15).

**4.11. Airfield Maintenance.** Routine airfield maintenance is conducted on the third Sunday of each month and the airfield is normally closed during this period. Activities may include: sweeper operations (runways, taxiways and parking aprons), lakebed repairs, vegetation control and miscellaneous maintenance coordinated between the 412 TW/CE and Airfield Management.

4.11.1. All construction on the airfield must be coordinated through Airfield Management. Construction must meet requirements published in the Unified Facilities Criteria, prior to initiating construction activity.

4.11.2. Airfield sweeper support is available on the airfield Monday through Friday, 0700L to 1600L. Contact AMOPS for sweeper requests outside hours indicated. Sweeper support personnel will monitor the Ramp Net radio when performing sweeping operations on the airfield.

**4.12. Runway Surface Condition (RSC)/Runway Condition Reading (RCR).**

4.12.1. Airfield Management is responsible for determining the RSC whenever weather conditions exist, which could affect aircraft braking action IAW AFI 13-204 V3, *Airfield*

*Operations Procedures and Programs*, (e.g. standing water, slush, ice or snow). Report the RSC to Weather and Tower. Tower will include this information on the ATIS. Runway Condition Readings are not conducted at Edwards.

4.12.2. Snow Removal Operations. N/A.

#### **4.13. DELETED**

4.13.1. DELTED

4.13.2. DELETED

4.13.3. DELETED

4.13.4. DELETED

**4.14. Aircraft Taxiing Procedures.** Pilots will obtain ATIS information before contacting Ground Control for taxi. When a taxi clearance is issued, pilots will read back runway assignment and maintain radio contact with Ground Control.

4.14.1. Heavy/large aircraft will contact Tower abeam “last chance” shack for takeoff sequencing instructions. Heavy/large aircraft will not block access to the runway by stopping beyond the exit from “last chance” until appropriately sequenced by Tower. T-38s not carrying munitions will not go through last chance checks.

4.14.2. Opposite direction taxi procedures:

4.14.2.1. Between sunrise and sunset, locally assigned aircraft with a wingspan of 45’ or less are authorized to conduct opposite direction taxi operations on all useable taxiways of 100’ or more in width (Bravo taxiway is less than 100’ in width).

4.14.2.2. Aircraft shall offset their wingtips 10’ either side of the centerline until passing oncoming taxiing aircraft.

4.14.2.3. Tower will issue the following instruction: “(Callsign), taxi right side of taxiway, use caution for (type) taxiing opposite direction”.

4.14.3. Taxi restrictions. Transient aircraft on Taxilane Foxtrot adjacent to sunshelters (between parking rows L-M) with a wingspan 170’ or greater require wing-walkers.

4.14.3.1. Aircraft with wingspans of 100 ft or less may taxi on the taxilane from Ramp 1 to Ramp 2. Aircraft with greater wingspans must be towed accompanied by wing walkers.

4.14.3.2. Aircraft with wingspans of 55 ft or less may taxi on the taxilane from Ramp 1 to Ramp 3. Aircraft with greater wingspans must be towed accompanied by wing walkers.

#### **4.15. Local Departure Procedures.**

4.15.1. Use Tower primary UHF frequency (Attachment 3) unless a test mission frequency is required for a particular flight test. The requirement for Tower to monitor on mission frequency (e.g. re-start missions) must be pre-coordinated.

4.15.2. Unless otherwise instructed by Tower:

4.15.2.1. During daytime VFR operations, all departing turboprop/turbojet aircraft will auto switch to departure frequency after crossing departure end of the runway.

4.15.2.2. During nighttime or IFR operations, Tower informs all departing turboprop/jet aircraft (except transport and cargo types) to change to departure control frequency before takeoff.

4.15.2.3. During day/nighttime VFR or IFR operations, Tower informs all departing civil aircraft and military transport and cargo types to change to departure control frequency approximately 1/2 mile beyond departure end of the runway.

**4.16. Aircraft Towing Procedures.** When towing an aircraft, use Ground Control UHF radio or Ramp Net Land Mobile Radios when communicating with Tower.

4.16.1. Before towing an aircraft on or across an established taxiway or runway, the tow supervisor will obtain clearance from the Tower. At no time will any aircraft be towed on or across runways or taxiways without advance approval from Tower. The primary means of communication will be the aircraft radio. An alternate method (when conditions restrict aircraft battery operation) is through an escort vehicle in direct contact with Tower. The radio equipped escort vehicle will accompany the aircraft throughout the towing operation.

4.16.2. Bravo taxiway is the primary taxiway for tows requiring runway crossings to/from South Base.

**4.17. Engine Test/Run-Up/Jet Blast Avoidance.** Aircraft engine run-up areas and maintenance policies/guidelines, as they relate to aircraft maintenance engine operations, are defined in the 412 MXG OI 21-218, *Aircraft Engine Maintenance Run*. Additional quiet hours may occur during ceremonies or to comply with noise abatement rules during specified times and as directed by the 412 OG/CC. Use caution for heavy jet blast when operating near or taxiing behind heavy jets.

**4.18. Noise Abatement/Flying Avoidance Areas.**

4.18.1. Do not overfly the 412 TW medical clinic and family housing. Executing a turn beyond 12 DME from the VORTAC will ensure avoidance of these areas.

4.18.2. Do not overfly the Small Arms Range Complex (SARC) below 7,000' MSL (Fig 4.5.) when active. Tower will advise aircrews when the SARC is active via the ATIS and Tower frequency. SARC procedures are located in the SARC Operations Letter.

4.18.3. The Engine Test Lab building (Bldg) 3804 and the Hush House (Bldg 1735) produce exhaust temperatures of 150° Fahrenheit and exhaust velocities of 95 mph at nozzle distance of 600'. Do not over fly either of these facilities below 1,000' Above Ground Level (AGL) within a 500-foot radius (Fig 4.6.).

Figure 4.5. Small Arms Firing Range

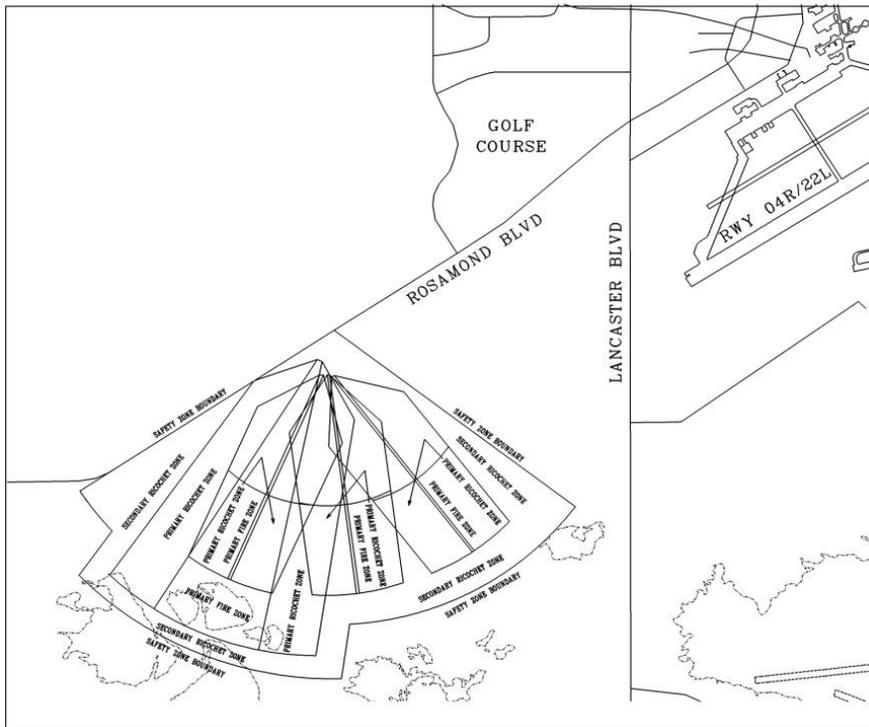
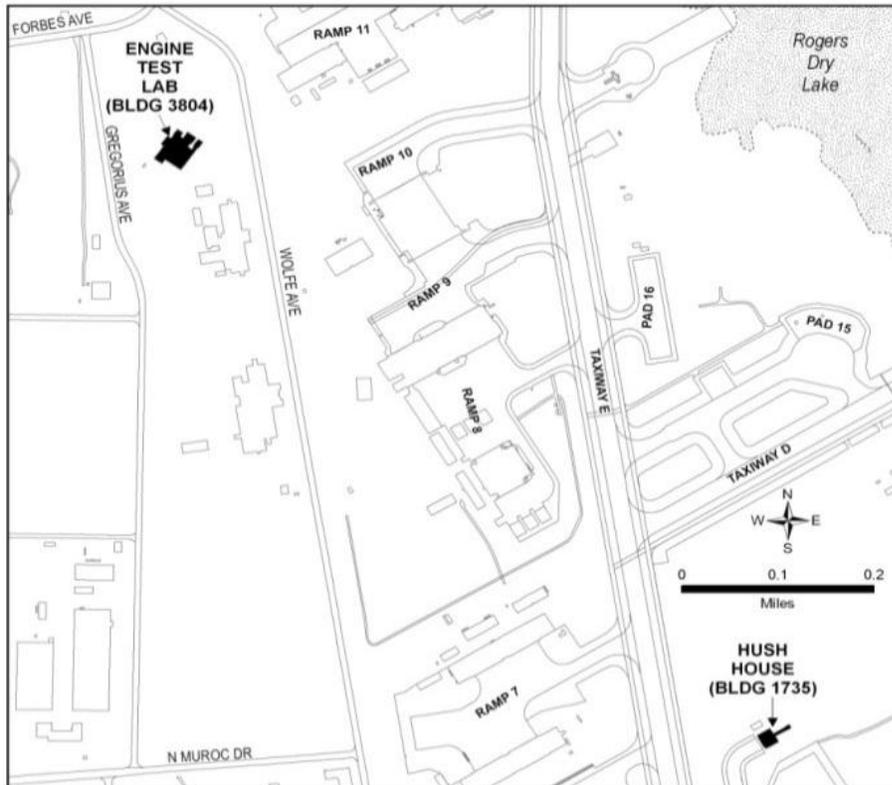


Figure 4.6. Engine Test Lab/ Hush House



**4.19. Unscheduled Aircraft Arrivals.** In the event of an unauthorized aircraft landing, the suspect aircraft must be isolated until cleared by Security Forces. An unscheduled aircraft is defined as any aircraft that has not acquired a Civil Aircraft Landing Permit or a Prior Permission Required (PPR) number and/or lands without an ATC clearance. Unscheduled aircraft landings include unscheduled aircraft that declared an in-flight emergency and were subsequently given permission to land. Tower will notify the command post of unscheduled aircraft arrivals; the command post will notify the 412 OG/CC.

**4.20. Wear of Hats on Airfield.** Due to extreme heat conditions, hats are authorized on the airfield. EXCEPTION: Hats will not be worn within 25' of an aircraft while engines are running.

**4.21. Flightline Customs and Courtesies.** Personnel working on the flightline will not salute or offer customs and courtesies during reveille or retreat ceremonies.

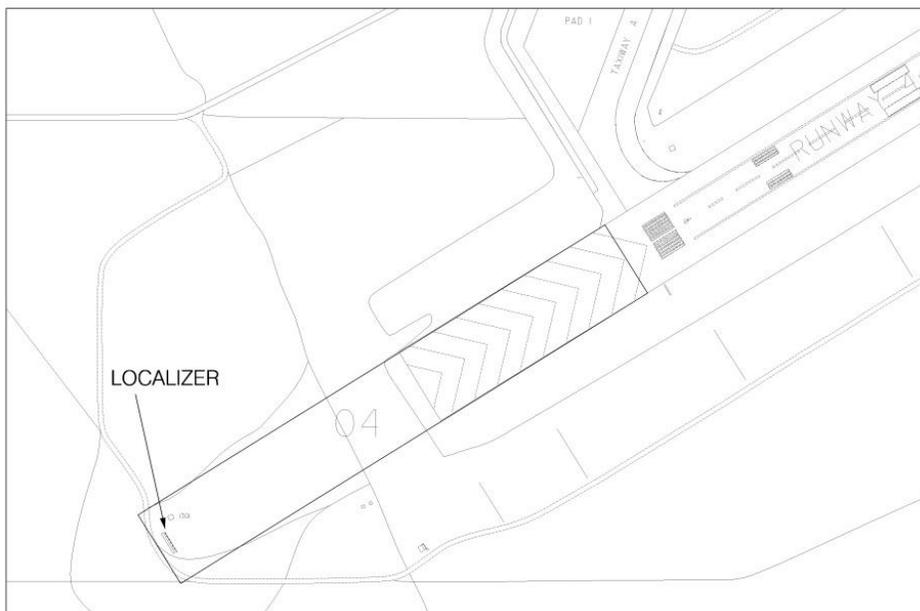
**4.22. Photography on Airfield.** Guidance for taking pictures on the flightline is published in Appendix 16 to Annex C to EAFB Plan 31, *Flight Line Photography*.

**4.23. Airfield Smoking.** Smoking is not permitted on any part of the airfield except in designated areas.

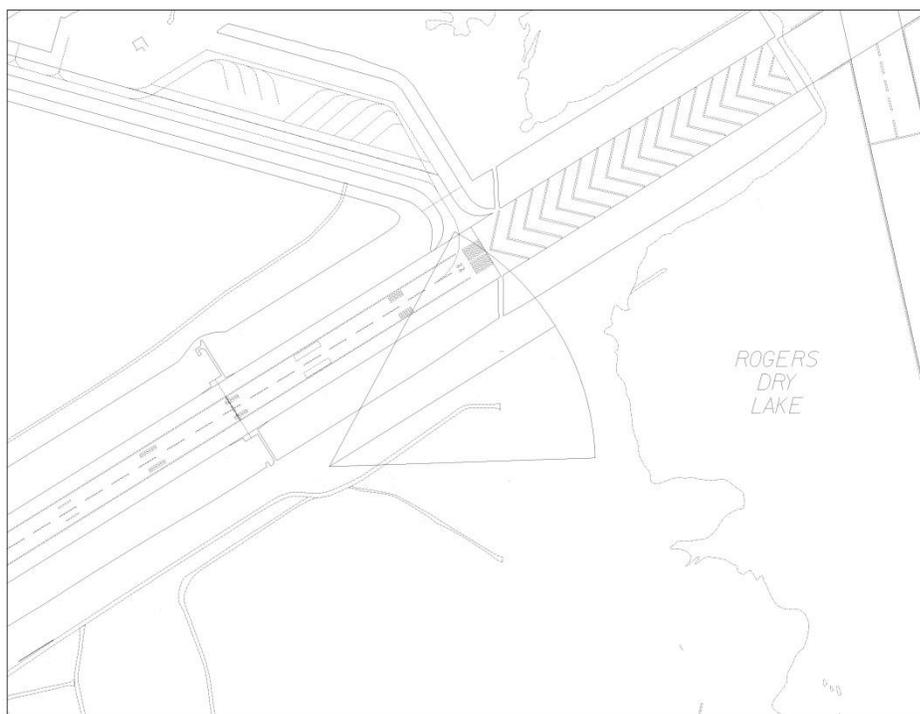
**4.24. Instrument Landing System (ILS) Critical Areas.**

4.24.1. The localizer (Fig 4.7.) critical area extends from the localizer antenna 2,000' toward the approach end of the runway and 150' on each side of the runway centerline. It includes a 50' extension behind the localizer antenna.

**Figure 4.7. Localizer**



4.24.2. The glide slope critical area (Fig 4.8.) is a fan-shaped area, which extends from the glideslope antenna 1,300' toward the approach end of the runway (or the end of the runway, whichever is greater). It covers an area 30 degrees each side of a line drawn through the glide slope antenna and parallel to the runway centerline.

**Figure 4.8. Glideslope Critical Area****4.25. Non-standard airfield systems and configurations.**

- 4.25.1. Non-standard markings on runway: A perpendicular white line is painted on the runway 5,000' from each threshold if Runway 22L/04R.
- 4.25.2. There are no approach lighting systems installed on the runways at Edwards AFB.

## Chapter 5

### ADJACENT AIRSPACE AND PROCEDURES

**5.1. Local Flying Area Fig 5. 1.** Fig 5.1. depicts the coordinates for the AFTC local flying area for flights originating from EAFB.

**5.2. R-2508 Complex.** The R-2508 Complex is composed of Restricted Areas (Fig 5.2.), Military Operating Areas (MOAs) (Fig 5.3.) and Air Traffic Control Assigned Airspace (ATCAA) (Fig 5.4.).

5.2.1. R-2508 extends from FL200 to an unlimited altitude. The internal restricted areas R-2502N, R-2502E, R-2505, R-2515 and R-2524 extend from the surface (SFC) to unlimited, while R-2506 is SFC to 6,000' mean sea level (MSL). All of these require prior approval from the using agency.

5.2.2. When R-2508 is released for joint use, the MOAs and ATCAAs upper limits are FL600. The Owens ATCAA overlies the Bishop MOA.

**Figure 5.1. Local Flying Area**

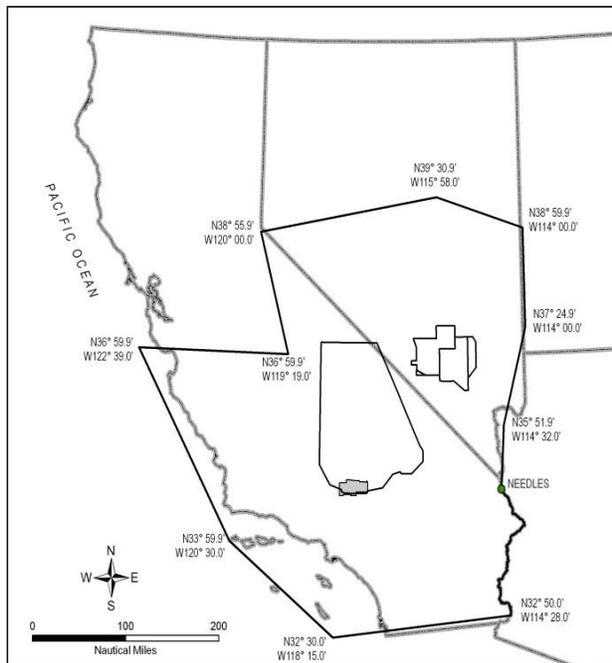
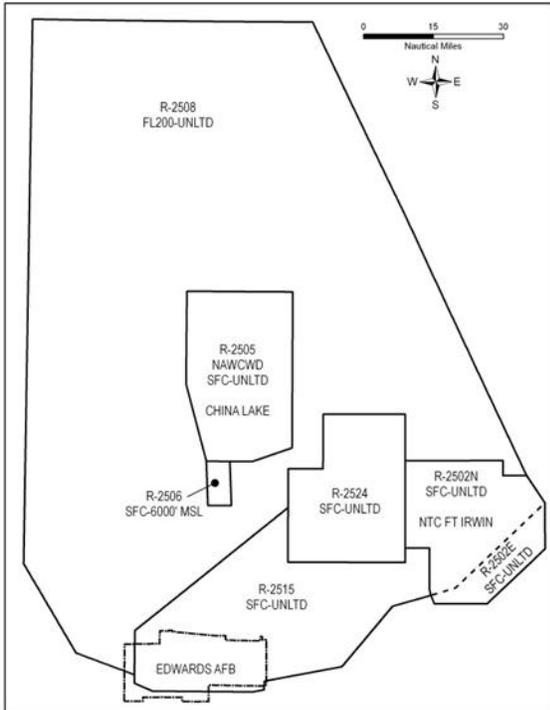


Figure 5.2. Restricted Areas Vertical Limits



5.2.3. The MOAs and ATCAAs, when combined with the restricted areas increase the usable Special Use Area (SUA). Attachment 5 lists the geographical coordinates, altimeter settings and flight restrictions for the MOAs associated with the R-2508 Complex.

5.2.4. The R-2508 Complex ATCAAs fill the airspace between the top of the MOAs (not including FL180) and the base of R-2508 (FL200). When R-2508 is inactive, the ATCAAs extend to FL600. ATCAAs overlie the peripheral MOAs providing additional airspace to FL600. Deep Springs is solely ATCAA from FL240 to FL600.

Figure 5.3. MOA Vertical Dimensions

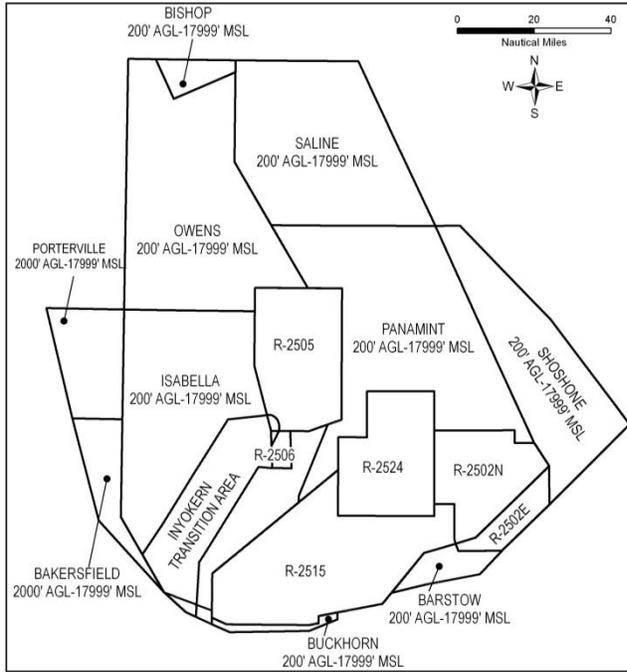
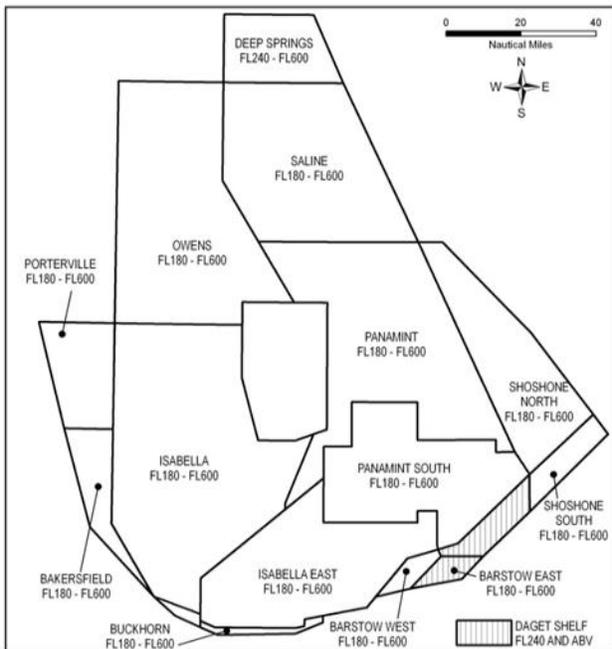


Figure 5.4. ATCCA Vertical Dimensions



5.2.5. R-2502E and the eastern half of the Barstow MOA are separated vertically at FL230. The area at or below FL230 is available for normal R-2508 operations. The area at or above FL240 is part of the Daggett Shelf. Altitude requirements must be scheduled and requires a

10-minute real-time notification to the FAA prior to use. Make real-time requests through either JOSHUA or SPORT.

5.2.6. The Isabella, Owens, Saline, Panamint, Barstow, Buckhorn and Shoshone MOAs have a minimum altitude limit of 200' AGL. Bakersfield and Porterville MOAs have a 2,000' AGL minimum altitude.

5.2.7. The Isabella, Owens, Saline, Panamint and Shoshone MOAs exclude the airspace SFC to 3,000' AGL over National Parks and some Wilderness Areas and do not include airspace below 1,500' AGL within 3 NM of any uncontrolled charted airport. Portions of these MOAs also overlie certain noise sensitive and natural recreational areas and, if possible, should be avoided.

5.2.7.1. Domeland and the John Muir Wilderness Areas and the Sequoia and Kings Canyon National Parks lie within and northwest of R-2508. Flight within these areas is restricted to no lower than 3,000' AGL and 3,000' laterally from canyon walls or mountains. To the maximum extent possible, plan missions to avoid these areas. Flight below FL180 over Sequoia/Kings Canyon National Park requires specific scheduling.

5.2.7.2. In the expanded area of the Domeland Wilderness Area, established after 1977, over-flight is authorized down to 200' AGL.

5.2.7.3. Death Valley National Park, formerly known as Death Valley National Monument, as established in 1977 and prior to designation as a National Park, is particularly sensitive and will be avoided except for mission essential over-flight. Over-flight is restricted to 3,000' AGL or higher within the 1977 boundaries. Over-flight is authorized down to 200' AGL in the 1994 expanded area of the National Park within the Panamint and Saline MOAs.

5.2.7.4. Owens and Saline are capped at FL290 and available for normal R-2508 operations. Altitudes above FL290 must be scheduled and require a real-time 10-minute advance notification with JOSHUA to coordinate with adjacent FAA centers.

5.2.7.5. Overflight of populated areas within and surrounding the R-2508 complex is restricted to 3,000' AGL or above. See paragraph 11.1, Overflight of Populated Areas, and Attachment 5, Geographical Coordinates for R-2508 Airspace Areas, for further over-flight restrictions.

**5.3. Airspace Operating Hours.** R-2508's core hours of operation are 0630L to 2230L Monday-Friday and 0800L to 1600L Saturday and Sunday. Core hours are defined as hours of operation that includes Air Traffic Advisories by JOSHUA while operating within R-2508 on a Complex clearance. Crews are requested to schedule within the core hours. Squadrons with requirements to operate outside these core hours must request air traffic support through the Central Coordinating Facility (CCF) at least 72 hours prior to the scheduled flight. The CCF will advise on the availability of air traffic support.

**5.4. Encountering IMC.** Procedures described in this paragraph only apply to the shared use areas of R-2508. **IMC missions are not authorized within the R-2508 Complex.** The only condition in which a participating aircraft will be issued an IFR clearance to continue operations is if the aircraft encounters weather conditions below the minimum for flight under VFR and is unable to proceed under VFR.

5.4.1. If unable to maintain VMC, request an IFR clearance. Upon reaching VMC cancel the IFR clearance and maintain VMC. JOSHUA will reissue the complex clearance.

5.4.2. The purpose of an IFR clearance is to position the aircraft in weather conditions, which permit VMC flight to exit the area or to return to base if unable to locate VMC. After re-encountering VMC, the aircrew is responsible for canceling IFR clearance.

**5.5. Altimeter Settings.** Altimeter settings for the R-2508 MOAs and internal Restricted Areas are:

5.5.1. Isabella, Bakersfield, Barstow and Buckhorn use the Edwards altimeter.

5.5.2. Owens, Saline, Panamint, Shoshone, Bishop and Porterville use China Lake altimeter.

5.5.3. Altimeter settings for the internal Restricted Areas will be issued by the respective controlling/using facility. During periods when services are not available, JOSHUA will issue either the Edwards or Palmdale altimeter setting for operations within R-2508.

**5.6. JOSHUA Advisory Services.** JOSHUA provides traffic advisories and boundary calls to the maximum extent possible to all aircraft operating within the R-2508 Complex on Work Area Frequencies (Table 5.1.).

**Table 5.1. JOSHUA Advisory Frequencies**

Owens	322.3	126.55
Saline	256.8	123.95
Panamint	291.6	120.25
Isabella	348.7	133.65
Palmdale	363.0	124.55

5.6.1. JOSHUA provides two types of monitoring services for aircraft utilizing specific mission frequencies. Due to site limitations, both of these services are on a first-come, first-serve basis workload permitting.

5.6.1.1. *Active monitoring* - JOSHUA is actively listening on mission frequency but will not simulcast. If boundary or traffic advisories are required, the controller must select the transmitter. If workload dictates, JOSHUA may simulcast traffic advisories to mission aircraft. Aircrews must request JOSHUA terminate simulcasting routine/non-mission related advisories. Due to the increased workload active monitoring creates, it should only be requested when operationally required.

5.6.1.2. *Inactive Monitoring* - JOSHUA tunes transceiver to mission frequency requested, but does NOT listen on frequency. Traffic and boundary calls will be made on mission frequency as needed. Direct pilot-to-controller communications requires the pilot to switch to an ATC frequency.

5.6.2. Inactively monitored aircraft must contact JOSHUA on the work area's ATC frequency for amended clearances, requests, Return to Base (RTB), etc. Neither JOSHUA nor SPORT monitor the low-level frequency (UHF 315.9).

5.6.3. JOSHUA may use the term "maneuvering" as part of the traffic call. The term "maneuvering" indicates traffic is changing direction and/or altitude so rapidly the controller

is unable to provide accurate position or altitude information (Example: "Traffic, F-16, northwest, ten miles, maneuvering").

5.6.4. Crews should advise controllers prior to executing maneuvers that require rapid direction and/or altitude changes (e.g., course reversal) so appropriate traffic advisories may be issued.

**5.7. Lights Out Operations.** Lights Out operations within the shared use areas of R-2508 requires units to establish a Letter of Procedure with the CCB; otherwise, these operations must be contained within the internal restricted areas (R-2515, R-2505, R-2524 etc). Units requiring Lights Out operations shall contact the scheduling agency for the planned operations. Aircraft position lights shall remain on while transiting to/from the scheduled restricted area and may be turned off when established within the internal restricted area (excludes R-2508). Crews shall advise the controlling/using agency when commencing/terminating Lights Out operations. A waiver to the Code of Federal Regulations, Part 91.209 (Aircraft Lights) is unnecessary if the aircraft is operating in a restricted area in compliance with the Using/Scheduling Agency's rules of operation.

**5.8. Aerial Refueling (AR) Area Avoidance.** All AR areas in the R-2508 Complex shall be considered HOT unless confirmed cold with JOSHUA or SPORT. Crews operating within the vicinity of R-2508 Complex refueling areas (Isabella, Coaldale, and Shoshone) should be vigilant for tanker formations. If notified that the track is active or if a tanker formation is observed (visually or by radar) avoid the tanker formation by a minimum of 2,000' vertically and 5 miles horizontally. This ensures separation in the event of an emergency breakaway maneuver and will minimize the chance of activating the tanker's Traffic Alert and Collision Avoidance System.

**5.9. Air Refueling Areas and Procedures (Fig 5. 5. and Attachment 4 items 186-191).** R-2508 AR areas are as follows with coordinates listed in Attachment 4:

5.9.1. Coaldale (OAL) AR area. OAL155/60 to OAL 155/90. Remain West (W) of the OAL 143 Radial (R), outbound on the OAL 155R with left turns. Minimum refueling altitude is 10,000' MSL.

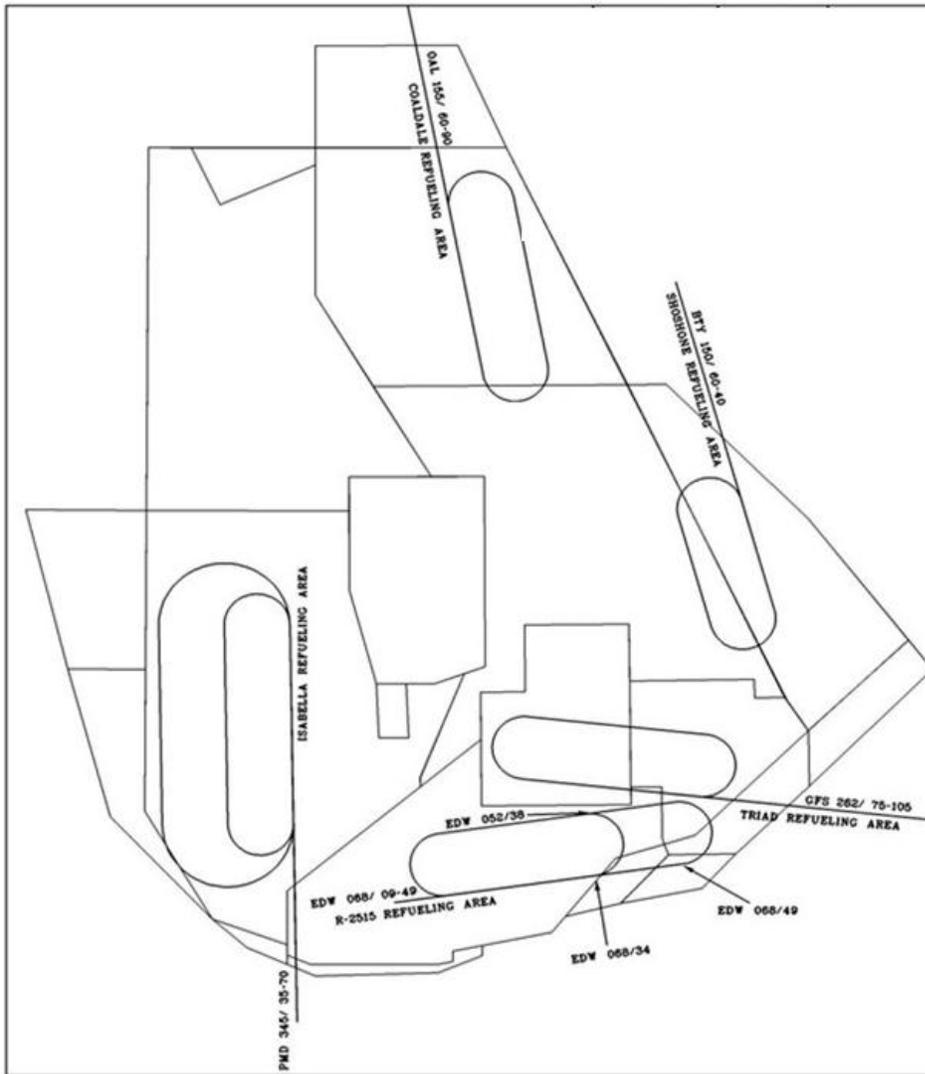
5.9.2. Shoshone AR area. Beatty (BTY) 150/40 to BTY 150/60 inbound on the BTY 150R with left turns.

5.9.2.1. Minimum refueling altitude is 12,000 MSL. Authorized frequency is UHF 272.175.

5.9.2.2. Schedule the Shoshone MOA and/or Shoshone ATCAA in addition to Panamint.

5.9.3. Isabella AR area. Palmdale (PMD) 345/35 to PMD 345/70. Minimum refueling altitude is 21,000' MSL. The Isabella AR is the AFTC's primary area and should be used to the maximum extent possible.

Figure 5.5. R-2508/R-2515 Refueling Areas



5.9.3.1. Suggested turn point to intercept the outbound refueling leg is the PMD 325/37.

5.9.3.2. If using a larger radius turn (less than 30 bank), schedule the Bakersfield and Porterville MOAs/ATCAAs in advance to avoid a potential spill out. Bakersfield and Porterville are not always available.

#### 5.9.4. 412TW Air Refueling (AR) Areas.

5.9.4.1. Triad AR. Goffs (GFS) 262/105 to GFS 262/75. Minimum refueling altitude is 16,000' MSL.

5.9.4.1.1. The Triad AR area, must be scheduled in advance to de-conflict R-2502N, R-2524 and Goldstone activities. Enter on the PMD 030R to intercept the GFS 262R, turn right tracking inbound on the 262R and turn left at the GFS 262/75 to parallel the track outbound. Suggested turn point to reestablish on the 262R is the GFS 268/106 (N3529.9' W11716.3').

5.9.4.1.2. Prior to use, coordinate with JOSHUA to ensure the refueling altitude is above the over-flight altitudes for R-2524 and R-2502N and above the minimum over-flight restriction for the Goldstone Complex of 15,000' MSL.

5.9.4.1.3. At altitudes below 25,000' MSL, GFS reception may be weak so plan to use visual references or Inertial Navigation System (INS)/Global Positioning System (GPS) waypoints.

5.9.4.2. R-2515 AR. Edwards (EDW) 068/09 to EDW 068/49.

5.9.4.2.1. Requires scheduling R-2502N, R-2502E and R-2524 to deconflict operations and 412 OG/CC approval.

5.9.4.2.2. From PMD, proceed to EDW outbound on the 068R to the 20 Distance Measuring Equipment (DME) fix and hold N, nonstandard left turns, outbound from the 20 to 30 DME fix. After join-up, conduct refueling in the 40NM racetrack pattern outbound on the 068R to the 49 DME fix, left 30 turn to parallel the outbound ground track.

5.9.4.2.3. The suggested turn point to intercept and proceed out on the 068R is the EDW 008/15 (N3513.4' W11736.3'). Do not deviate south (S) of the 068R as this places the aircraft outside the restricted airspace boundary.

5.9.4.3. R-2515 Modified AR. EDW068/09 to EDW 068/34. Remain W of R-2502N and R2502E and S of R-2524 (Remain S of EDW 052/38). The use of this track requires 412 OG/CC approval.

5.9.4.3.1. Use the modified AR when the refueling altitude is below the over-flight altitudes for R-2502N/E and R-2524.

5.9.4.3.2. Turn at EDW 068/34 remaining W of R-2502N/E and S of R-2524 (Remain S of EDW 052/38). Use this procedure when the over-flight altitude of R-2502N/E is above the refueling altitude unless Fort Irwin scheduling specifically authorizes refueling below the over-flight altitude.

5.9.5. AR Procedures.

5.9.5.1. General Rules. Each tanker will be assigned a primary boom frequency for AR. The AR frequencies available for use within R-2508 are 228.95, 249.525, 354.4, and 375.025. Each frequency will be assigned to a tanker by Test Ops scheduling and will be published in COOL. For dedicated AR test missions (AR FTT, JSF AR certs, etc.) or missions outside of R-2508 (i.e. Sea Test Range), the primary mission frequency will be used for AR. Additionally, dedicated AR test missions will not accept adhoc receivers. If users are unsure of which AR frequency the tanker is using, they can always query ATC. Tankers crews must include AR frequency on the SPORT Pre-brief sheet. Crews requiring the tanker to monitor the mission frequency will pre-brief the tanker crew and notify JOSHUA airborne of the frequency used. If a second tanker is present a second boom frequency will be used. Normally, tanker rendezvous will be conducted from below and departing aircraft will depart high.

5.9.5.2. Receivers maintain 1,000' vertical clearance from air refueling block altitude and remain outside five (5) NM from the tanker until the following is accomplished:

5.9.5.2.1. Contact has been established with the tanker on the AR frequency and a range and position with reference to the tanker has been provided.

5.9.5.2.2. Status of refueling operations to include number of aircraft on the tanker and other aircraft merging for AR operations has been established.

5.9.5.3. Once in contact with the tanker and when requested by the tanker crew, pass call sign, tail number and operations number (for mission symbol 04 or 05) or Job Order Number (for mission symbol 03, 06, 07 or 08) if required

5.9.5.4. Post AR but prior to departing the AAR formation, receivers must receive a clearance from ATC. Receiver aircrew will brief their post tanking departure procedures with the tanker crew in the mission pre-brief or, as a minimum, prior to departing the tanker.

5.9.5.5. The tanker receives traffic advisories on JOSHUA's or SPORT's frequency.

5.9.5.6. Random receiver refueling or dry hookups should not be accomplished on the test mission frequency. Other units may simultaneously use the Isabella refueling area at de-conflicted altitudes.

5.9.5.7. AR test missions will request additional maneuvering airspace when not remaining within the confines of the AR area (e.g., longer legs are required to meet test objectives).

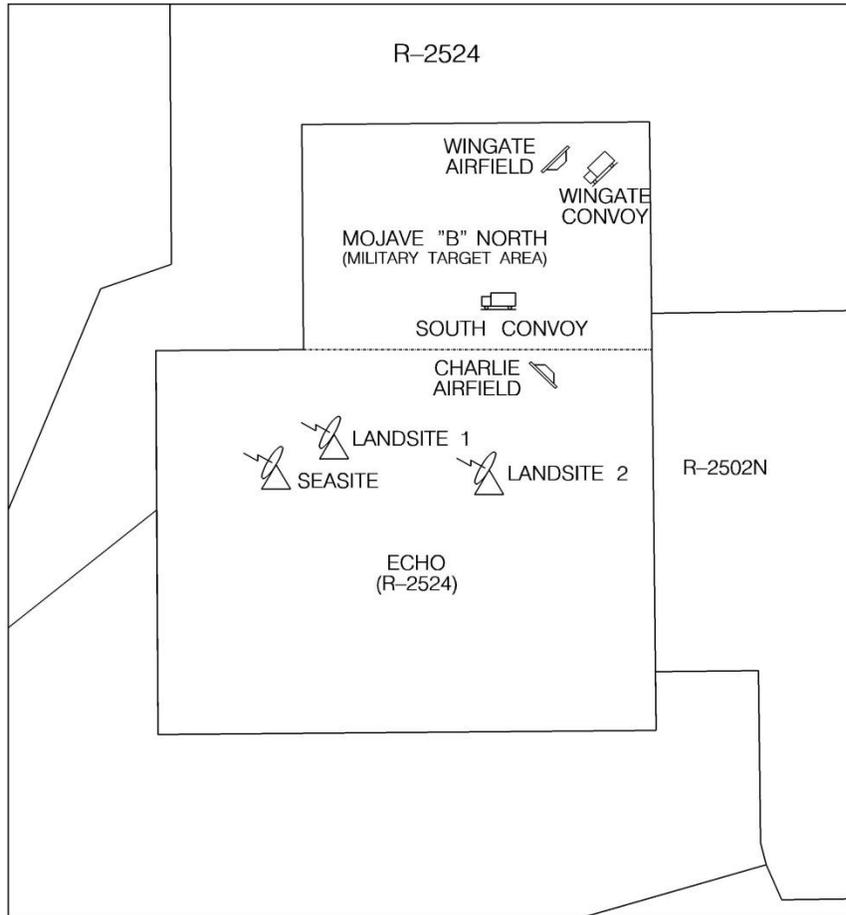
5.9.5.8. Use of the R-2515 or R-2515 Modified ARs requires 412 OG/CC approval. Contact JOSHUA (or SPORT for the R-2515 or R-2515 Modified track) for all tanker rendezvous and departures.

**5.10. Electronic Combat Range (ECR) R-2524 (Fig 5. 6., Attachment 4, Item 192).** R-2524 airspace may be scheduled for over-flight after-hours or for Friday-Sunday operations but will be released for joint-use when not scheduled during ECR working hours. Over-flight of R-2524 does not include the release of flares or ordnance within Superior Valley. Obtain specific approval for these operations during the scheduling process with the ROC and specify the type of airspace activity other than transit (Remotely Piloted Aircraft [UAS] support, refueling, etc.).

5.10.1. During normal hours, China Lake's MRU, (Call Sign: China Control), may approve real-time over-flights above 6,000' MSL on a non-interference basis. Real-time use of the airspace must be requested through SPORT who coordinates with China Control for final approval.

5.10.2. China Lake controls R-2524, which encompasses the ECR, Superior Valley and Mojave B2 North target area as shown in Fig 5.10. Forward airspace requests to the ROC IAW AFFTCI 11-15. China Lake allocates range periods and offers alternate times if requested times are not available. Designated impact ranges are non-instrumented and unmanned. R-2524 airspace is available on most Fridays and weekends. Weekend airspace requirements should be scheduled before noon on Thursday.

5.10.3. ECR/R-2524, commonly referred to as "Echo Range", is primarily used as an electronic countermeasures range.

**Figure 5.6. Electronic Combat Range**

5.10.4. Do not expend explosive ordnance within R-2524. Ordnance is limited to 20mm and 30mm inert rounds with tracers. Naval Air Warfare Center Weapons Division (NAWCWD) China Lake will consider other ordnance on a case-by-case basis.

**5.11. R-2524/Mojave B2 North Range Area (Fig 5. 7., Attachment 4 item 193).** Air-to-ground gunnery, rocket firing, external stores separation, and tank jettison are authorized. Plan firing or release operations to impact north of N3538.9', east of W11710.0', south of N35°47.7' and west of W116°55.4'. Currently approved profiles may be obtained from the Electronic Combat Range Test Management Office at DSN 437-9125. This area contains two convoy targets and a simulated airfield with aircraft targets for use with inert ordnance only. Use of Mojave B2 North must be scheduled and is approved on a space available basis.

5.11.1. After check-in, China Control (UHF 301.0) will transfer the flight to Echo Control (UHF 381.9) until mission completion. Checkout will be with China Control.

5.11.2. Aircraft are required to make a clearing pass at an altitude of 5000' AGL or below prior to firing or releasing on target. Report "target clear" to Echo Control or China Control.

5.11.3. Obtain clearance to expend inert ordnance on Mojave B2 North from Echo or China Control. An expended inert ordnance count shall be passed on completion of the mission.

5.11.4. Air-to-Ground Weapons Firing and Release:

5.11.4.1. Strafe at 30° or greater dive angles. Minimum pullout altitude is 1,500' AGL. The strafe angle restrictions are waived for reasons such as gas ingestion, vibration analysis, etc. However, the 1,500' AGL minimum pullout altitude is always mandatory.

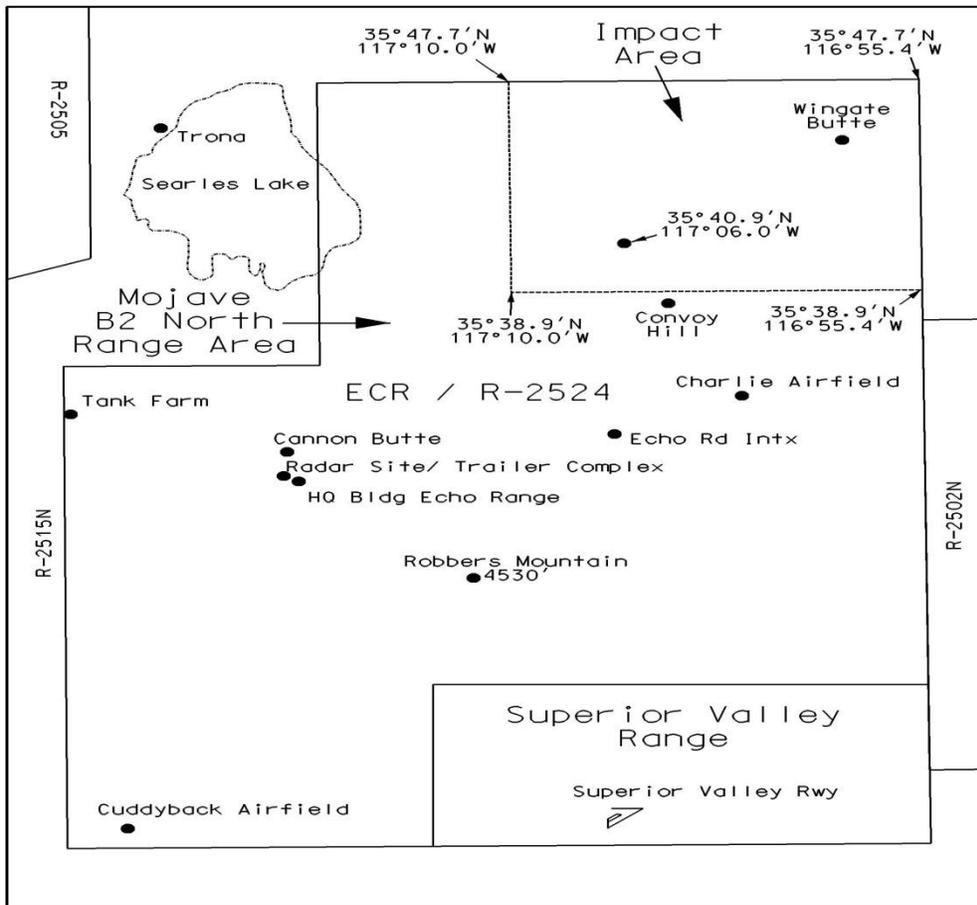
5.11.4.2. Low angle bomb releases, rockets or missiles are restricted to 300' AGL minimum pullout altitude. The minimum pullout altitude will not be below 1,500' AGL.

5.11.4.3. Specify in the test plan when a waiver from restrictions is required. The Test Safety Review will approve or disapprove the waiver request.

5.11.5. Aerial Gunnery Tow System (AGTS) Procedures.

5.11.5.1. Clearance to transit R-2524 is clearance to deploy the AGTS at pilot's discretion.

**Figure 5.7. Mojave B2 North Range Area**

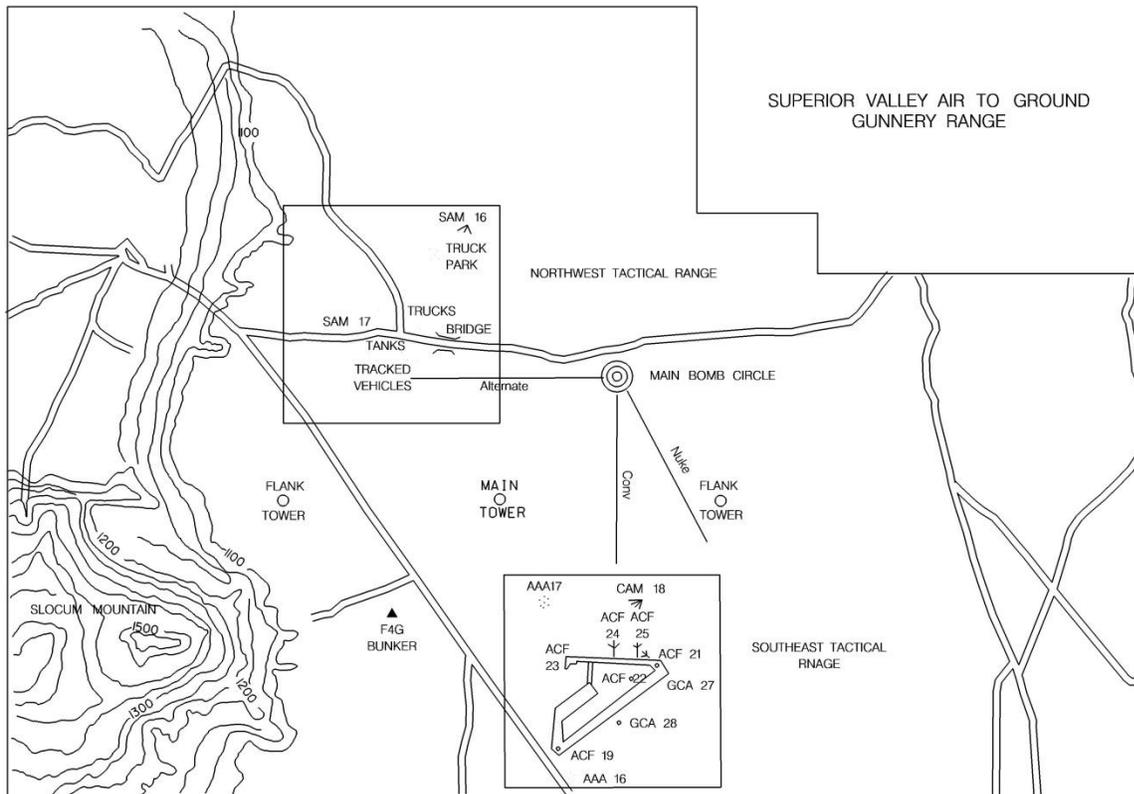


5.11.5.2. Aircraft will remain within the confines of Mojave B2 North Range Area on one of the pre-approved Air-to-Air profiles provided by the Electronic Combat Range Test Management Office.

5.11.5.3. Ordnance must fall within the confines of the Mojave B2 North Range Area. No ordnance will impact south of N3536'.

**5.12. Superior Valley Tactical Training Range (Fig 5. 8., Attachment 4 item 194).** This Class "A" range has over 60 diverse targets including surface-to-air missiles, anti-aircraft artillery and convoy targets. Targets are available for inert ordnance delivery only. The range consists of a Range Operations Center, main control tower, two flank towers, photovoltaic power production facility, helicopter pad, target storage facility and four main target areas which are the Northwest Target Complex, the conventional and Alternate Bombing Circles, the Southeast Airfield Target Complex and the Low Angle Strafe Pit.

**Figure 5.8. Superior Valley Tactical Training Range**



5.12.1. Schedule the range with the ROC.

5.12.2. Prior to entry, contact China Control (UHF 336.45). China Control will transfer aircraft to Superior Control until the aircraft is ready to checkout with China Control.

5.12.3. Enter Superior Valley from the south unless China Control approves deviation. Entry from the east (Goldstone) is prohibited.

5.12.4. Do not release ordnance without Range Control Officer (RCO) approval. Only use non-explosive training ordnance (e.g., small spotting charges). The RCO advises flight lead when 5 minutes remain on the range. Flight lead will call "Last Pass" on base for final pattern. Safe weapons prior to exiting the range.

5.12.5. Conventional and Tactical Patterns. Plan all conventional patterns to avoid over-flight of occupied structures on or off range.

5.12.5.1. Flight lead is authorized to expand any pattern to aid in training provided the RCO approves the deviation and all members of the flight are using similar delivery parameters.

5.12.5.2. Conventional weapons delivery (box or curvilinear patterns) will be a left pattern on a 075/345 heading +/- 20° final attack heading.

5.12.5.3. Pop-up deliveries on the main bomb circle are authorized from any direction. Adjust final attack heading to avoid overflying the main tower and adjacent buildings.

5.12.5.4. All deliveries on the southeast (SE) Tactical Range will limit final attack headings to 105/225 heading +/- 30.

5.12.5.5. The final attack heading for strafe is 345. Panels are numbered (#1, #2) from the tower side out with #1 panel closest to the tower.

5.12.5.6. Perform High Angle Strafe on the main bomb circle on headings of 345 heading +/-10 and on the northwest (NW) Tactical Range Opened on a limited capacity. (Call for restrictions: Defense Switching Network [DSN] 437-9434/9088; Commercial: 760-939-9434/9088).

5.12.6. After completion, contact the RCO with the number of expended ordnances. The RCO will pass the flight to China Control for transfer to SPORT or JOSHUA. For reentry into R-2515, confirm with China Control the status of Black Mountain Supersonic Corridor.

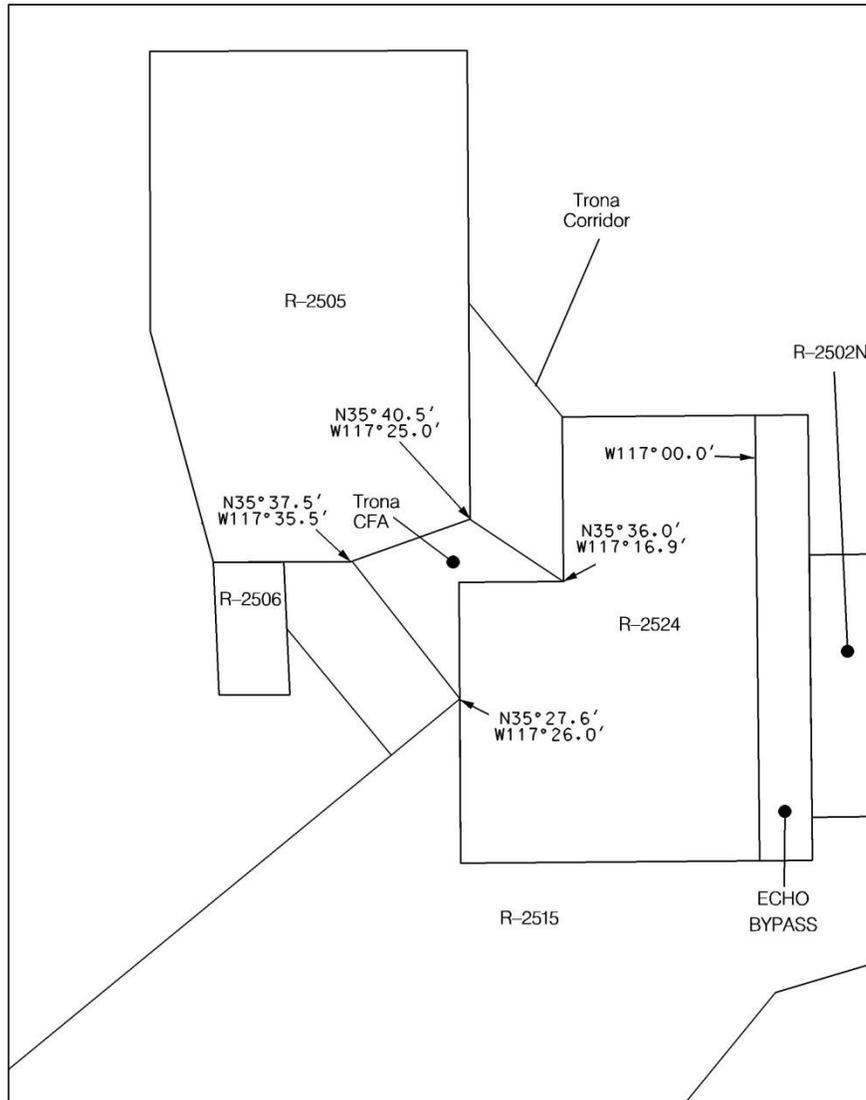
### **5.13. Trona Controlled Firing Area (CFA) (Fig 5. Fig 5-9**

5.13.1. Military aircraft may use the Echo Bypass to avoid the CFA. The Echo Bypass through the Superior Valley Tactical Training Range provides a corridor for aircraft transiting from R-2515 to the Echo Range and the Panamint MOA or vice versa. The corridor is approximately 4 NM wide and can be flown at both low and high altitudes at speeds below 0.9 mach. Aircraft flying low level in the bypass will not descend below 500' AGL within 2,000' of manned sites. Aircraft with hung or armed ordnance will not overfly manned sites. The width of the bypass extends from the eastern boundary of R-2524 (W11655.3') westward to W11700.0'. China Control controls flight through the Echo Bypass.

5.13.2. Use of the Echo Bypass when the CFA is not active must be scheduled through the ROC. Provide call sign, type and number of aircraft, duration of use, altitude, date and time.

5.13.3. Use caution during transit due to the proximity of the Goldstone Complex and for the possibility of concentrated helicopter activity along the western boundary of R-2502N.

Figure 5.9. Trona Controlled Firing Area



**5.14. Naval Air Warfare Center, China Lake.** China Lake facilities are not normally used for transition flying. However, practice instrument approaches are authorized when controlled by JOSHUA. A touch and go following an instrument approach is authorized followed by mandatory VFR climb-out. Obtain climb-out instructions from China Lake Tower or JOSHUA. China Lake airport is closed every other Friday (federal civilian paydays).

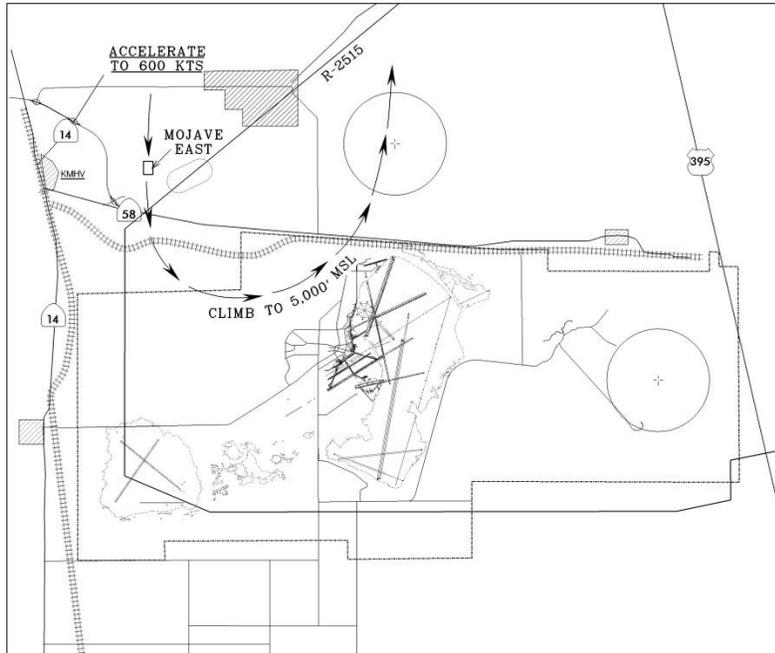
**5.15. Mojave Airport Test Ranges (Fig 5. 10., Attachment 4 items 196-197).** Several aerospace associated companies are located at Mojave Airport. Through a Letter of Agreement with AFTC and the R-2508's CCB, they fly test missions in the R-2508 Complex.

5.15.1. Mojave East Drop Zone (DZ) is located two and one half (2-1/2) miles east of Mojave Airport. The DZ center is at 3503.8000'N 11804.5000'W (EDW 270/18). It is used for high speed drops up to 600 Knots Indicated Air Speed (KIAS). Aircraft approach the DZ from the north, accelerating and sometimes descending from 15,000' MSL. After delivery,

they make a left turn into R-2515 airspace at initial drop altitude or a climbing turn back to pattern altitude.

5.15.2. An air-to-ground gunnery range south of California City named "VIPER RANGE" is within R-2515 with a center of N3503.9000' W11759.8000'. Aircraft approach the range either from the west with a right turn to the south or from the south with a left turn to the west. All operations on the range are scheduled through the ROC and the CCF. JOSHUA and SPORT advise pilots on their respective frequencies when the range goes hot.

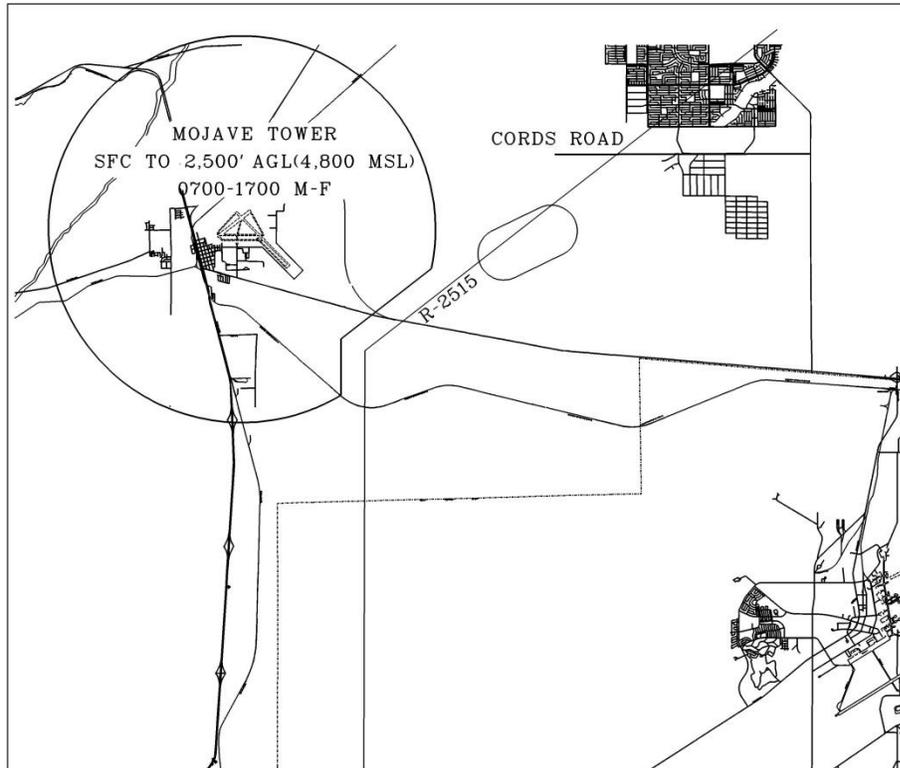
**Figure 5.10. Mojave East Viper**



**5.16. Mojave Airport (MHV) (Fig 5. 11).** The Class D airspace is automatically activated when the MHV Tower is open. Normal operating hours are 0700L-1700L, Monday through Friday.

5.16.1. The MHV Class D airspace (4,800' MSL) has a 4.3NM radius from the geographical center of the airport excluding R-2515 and the airspace within ½ mile of R-2515.

5.16.2. Avoid the MHV Class D or contact the Tower for transition. Affected missions include low altitude Cords Road missions, and aircraft exiting the Desert Butte Terrain Following Route (TFR). SPORT coordinates with MHV Tower for airspace transits when the aircraft is under SPORT control.

**Figure 5.11. Mojave Airport**

**5.17. Local Area Activities.** Expect to encounter parachute jumpers and glider/hang glider operations within the R-2508 Complex.

5.17.1. Expect glider activity in the vicinity of Tehachapi, El Mirage, Rosamond, Mojave, Crystal Aire and California City airports. Avoid these areas to the maximum extent possible. Use caution if over-flight is required and notify JOSHUA of observed glider traffic.

5.17.2. Hang glider activity is heaviest during June through August north of the northeast shoreline of Owens Lake, throughout the Owens Valley and along the Inyo Mountain Range north to Bishop.

5.17.3. Parachute jumping occurs at California City airport during daylight hours, especially on weekends and holidays. The DZ is one NM SW of the airport. Jumps occur from 17,500' MSL. When active, avoid the jump DZ.

**5.18. Types of Traffic to Expect in Various Areas.** Within R-2515, expect extensive flight activity at all altitudes on Cords Road along a track from Mojave to the Barstow MOA 5 to 10 miles north of Highway (Hwy) 58. Expect California Highway Patrol aircraft, helicopters, pipeline or power line patrol aircraft below 1,000' AGL along Hwy 58 and Hwy 395.

5.18.1. Isabella. Used extensively by AFTC and TPS and other users especially for ingress/egress routes to Superior Valley and R-2524 at all altitudes. Expect general aviation traffic below 18,000' MSL transiting north and south from Rosamond through Fremont (Koehn Lake) and Owens Valleys to Bishop and Trona. Tankers and receivers may be in the Isabella refueling area.

5.18.2. Owens and Saline. Naval Air Stations Lemoore and Fallon aircraft use these areas. Expect general aviation aircraft below 18,000' MSL. Commercial IFR traffic transits the airspace at or above FL310 on J-110.

5.18.3. Panamint and Shoshone. These are the primary training areas for aircraft using the Electronic Combat Range in R-2524 and aircraft from Nellis AFB. Expect general aviation traffic below 18,000' MSL.

5.18.4. Review the airway structure surrounding the R-2508 Complex to be aware of high-density traffic areas outside the Complex.

**5.19. Coordinates.** Coordinates within this document are World Geodetic System of 1984 (WGS 84) and listed as degrees decimal minutes (i.e., N35°04.08 W117°00.23).

## Chapter 6

### R-2515 PROCEDURES

**6.1. R-2515 Airspace and SPORT Procedures.** In accordance with provisions outlined in Federal Aviation Administration (FAA) Joint Order (JO) 7610.4, *Special Procedures*, Chapter 13, *Military Radar Unit Duties, Responsibilities, and Procedures*, SPORT is authorized to provide MRU Command and Control (C2) service to participating aircraft within airspace designated to SPORT, which includes R-2515, Barstow West, and Barstow East (FL230 and below). After coordinating with JOSHUA TRACON, SPORT may provide services anywhere within the R-2508 Complex. SPORT does not operate remote radios and may be unable to communicate effectively at extreme ranges or low altitudes. The entire R-2508 complex, to include R-2515, is a see-and-avoid airspace; visual lookout and mid-air collision avoidance is primarily the aircrew's responsibility. JOSHUA and SPORT will aid in deconfliction. Aircrews should advise controllers prior to executing maneuvers that require rapid changes of altitude or dynamic maneuvering (e.g. course reversal) so appropriate traffic advisories may be issued. SPORT does not expect highly dynamic maneuvering before an aircrew reach the contracted airspace. For example, when transiting Cords Road and the Black Mountain Super Sonic Area toward assigned Koehn/Cuddyback airspace, SPORT should be alerted prior to performing a G exercise.

**6.2. SPORT C2 Services.** Although C2 is not an air traffic control function, to support the AFTC mission in a dynamic Special Use Airspace (SUA) environment, SPORT MRU controllers shall provide the following C2 service functions using phraseology and techniques found in FAA Order JO 7110.65, *Air Traffic Control*.

6.2.1. SPORT C2 services include:

- 6.2.1.1. Radar Monitoring.
- 6.2.1.2. Radar Traffic Advisories.
- 6.2.1.3. Safety Alerts.
- 6.2.1.4. Boundary Calls.
- 6.2.1.5. Tactical Maneuvering Traffic Calls.
- 6.2.1.6. Radar Vectoring.
- 6.2.1.7. Issuing Flight Information.
- 6.2.1.8. Arrival Sequencing.
- 6.2.1.9. Deconflict Aircraft and/or Airspace.
- 6.2.1.10. Issue Altitudes and/or Headings.
- 6.2.1.11. Establish Aircraft on Approach.
- 6.2.1.12. Control of designated airspace for special use (e.g., Spin Areas, Cords Road etc.) within specified altitude strata, within specified airspace blocks or geographic areas.
- 6.2.1.13. Coordinating special operating requirements established by Safety Review Board (SRB) or other flight safety direction with SPORT for execution.

6.2.1.14. Controlling airborne access into the PIRA and Alpha Corridor. The above services shall be accomplished in designated SUA, which SPORT has responsibility to ensure the safe and efficient deconfliction of airspace and aircraft as specified in FAA JO 7610.4N. NOTE: The term(s) vector, deconflict, altitude, headings, etc., does not indicate the application of Air Traffic Control procedures IAW Federal Aviation Administration regulations. Those terms IAW the C2 charter, indicate the prescribed procedures SPORT is authorized to employ to assist participating aircraft from encroaching upon Special Use Airspace (SUA), aircraft on converging courses, participating aircraft on test missions, airspace deconfliction plans or any other action(s) deemed necessary by the Test Wing Commander to accomplish the mission.

6.2.2. Participating aircrews shall comply with all C2 instructions issued by SPORT. If unable to comply with SPORT C2 instructions, aircrews will immediately advise SPORT of their intentions.

### **6.3. Airspace Access Procedures After Take-Off.**

6.3.1. When practical on departure or RTB, avoid operations at altitudes less than 15,000' MSL until crossing west of a line from Mojave to Inyokern to minimize exposure to civilian aircraft along Hwy 14 toward Inyokern and Hwy 58 through Tehachapi or until established in R-2515.

**6.4. R-2515 and Isabella Work Area Special Planning.** R-2515 and the area within Isabella south of a line extending from California City to 1 mile N of Tehachapi is primarily for test and test support missions only. Other AFTC missions should avoid this area except to transit to/from the outlying work areas. This restriction may be relaxed if test/test support activity is low. The Aircraft Commander (AC) or designated individual must contact SPORT to coordinate a work area or block altitude assuring no interference with test missions.

6.4.1. Crews conducting missions within the Edwards Class D airspace (Tower Fly-by, airshow practice, lakebed operations, etc.) will brief the Tower supervisor prior to flight.

### **6.5. Altimeter Setting Within R-2515.**

6.5.1. Test aircraft may use 29.92 at all altitudes as required by test parameters within R-2515 in VMC. Otherwise, use the Edwards altimeter setting.

6.5.2. Refer to paragraph 5.5 or Attachment 5 for altimeter settings outside of R-2515.

### **6.6. Instrument Flight Rules (IFR) Procedures.**

6.6.1. When weather dictates, SPORT will coordinate with the 412 OG/CC to release a portion of R-2515 (e.g., Weather Area 2) to JOSHUA for IFR operations. This airspace will allow aircraft to climb or descend to reach VMC. Upon reaching VMC, crews shall cancel the IFR clearance, proceed VFR and will be issued a complex clearance from JOSHUA. Crews can expect a frequency change and transfer of control to SPORT.

6.6.2. Crews returning to Edwards that encounter IMC shall remain in VMC and request a transfer to JOSHUA for an IFR clearance. Expect delays as SPORT coordinates for release of airspace to JOSHUA. After transfer of control to JOSHUA, an IFR clearance will be issued. Crews shall report when able to resume flight in VMC.

6.6.2.1. If unable to locate VMC, the crew should advise JOSHUA and return to base for an instrument approach.

6.6.2.2. Upon reaching VMC the crew should cancel IFR and either proceed visually or continue the approach in VMC to landing. Contact Tower when instructed.

6.6.3. If unable to locate VMC, crews should advise JOSHUA and either exit the area or return to base.

**6.7. R-2515 Operations.** SPORT in conjunction with the Airboss will determine when R-2515 is becoming unsafe due to traffic saturation. The Airboss has the authority to direct aircraft to depart the restricted area based on priority.

6.7.1. Test missions and other missions requiring facilities within R-2515 have the priority to operate within the airspace (Exception: aircraft transition to/from the Tower pattern, work areas or properly scheduled transit flights).

6.7.2. Aircraft will be directed to depart R-2515 when the Airboss determines interference with a test mission is likely.

6.7.3. Aircrews requiring maneuvering airspace during night/weekend flying will coordinate a de-confliction plan with Wing Scheduling in accordance with Attachment 7.

6.7.4. Test or training missions with greater than 1v1 limited or unlimited maneuvering (ACM, Intercept, ACBT) will utilize airspace IAW Attachment 8. Test or training missions with more than 4 aircraft will utilize the airspace IAW Attachment 8 regardless of maneuver category. Test or training missions with up to 4 aircraft are excluded from these airspace requirements if the target maneuvers are scripted or restricted (as defined by AFI 11-214). The OG/CC is the waiver authority for this paragraph.

6.7.5. Scheduled civil aircraft are permitted to transit or operate within R-2515 IAW with the approved Letter of Agreement (LOA) or as coordinated with 412 OSS/OSOF (661-277-2515). Civil aircraft responding to an emergency situation (accident, gas leak, etc) are not required to schedule airspace.

**6.8. In-Flight Responsibilities.** Aircrews will remain clear of internal R-2508 Restricted Areas unless cleared by JOSHUA or the using agency. During radio call prior to takeoff, or in-flight, SPORT will advise aircrews of any active airspace for special use area (e.g., Alpha Corridor, PIRA etc.).

**6.9. Cords Road Test Area.** Cords Road is a true east/west oriented graded road running across R-2515 from just north of Mojave Airport to Coyote Lake. The Cords Road test area extends 3NM north and south of the road generally along N3505'. The road is a visual reference for test aircraft operating in R-2515.

**6.10. SPIN AREAS.** (Fig 6.1.) North/South/East/West and Lakebed Spin Areas are 5 NMs in diameter, and normally extend from 11,000' MSL to 45,000' MSL except for the Lakebed spin area which extends from 6,000 MSL to 45,000' MSL.

6.10.1. The Mercury Spin Area is defined as follows: The northern boundary is a west-east line that is 5.8 miles south of Cords roads (35 0' 2.000" N 117 37' 0.000" W, 35 0' 0.00" N/117 32' 37.469" W). The Eastern boundary follows Hwy 395 southbound and then westward through the southeast corner of the East Range, then south to follow the southern

edge of R-2515 (34 50' 39.174" N/117 30' 1.902" W, 34 50'20.000" N/117 32' 2.993" W, 34 48' 30.000" N/117 32' 3.000" W, 34 48' 0.000" N/117 35' 30.000" W, 34 48" 3.000" N/117 49" 54.000" W). The western boundary is a south-north line that follows Mercury Blvd to the point of beginning (34 54' 2.000" N/117 47' 47.000" W, 34 54' 34.000" N/117 47' 27.000" W). The area extends from 11,000 MSL to FL450.

6.10.2. Procedures:

6.10.2.1. SPORT exercises positive control over the Spin Areas and provides advisory service to aircraft operating within or maneuvering to the Spin Areas.

6.10.2.2. Do not schedule the North Spin for simultaneous operation with Cords Road. Use simultaneous operations procedures to resolve conflicts.

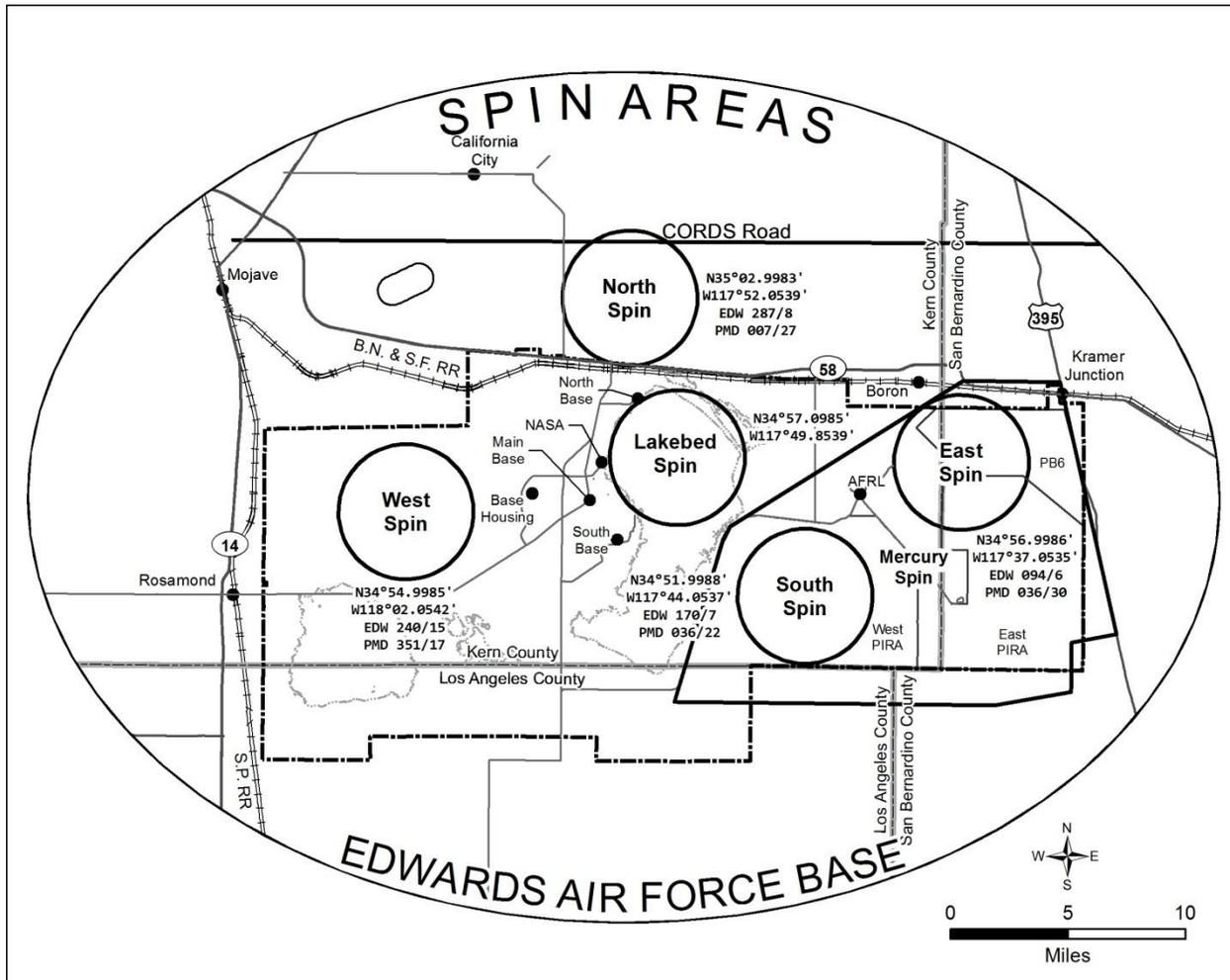
6.10.2.3. Aircraft will avoid active spin areas but may operate unrestricted below the lowest active altitude.

6.10.2.4. Tower and SPORT will announce the area "hot" on common frequencies. Depending on the base altitude, Shuttle, Low L/D or Simulated Flame-Out (SFO) approaches are not authorized.

6.10.2.5. The Mercury Spin Area shall not be used simultaneously with active East/South Spin areas.

6.10.2.6. Coordinate with SPORT for use of the Buckhorn MOA if additional maneuvering airspace is required

Figure 6.1. Spin Areas

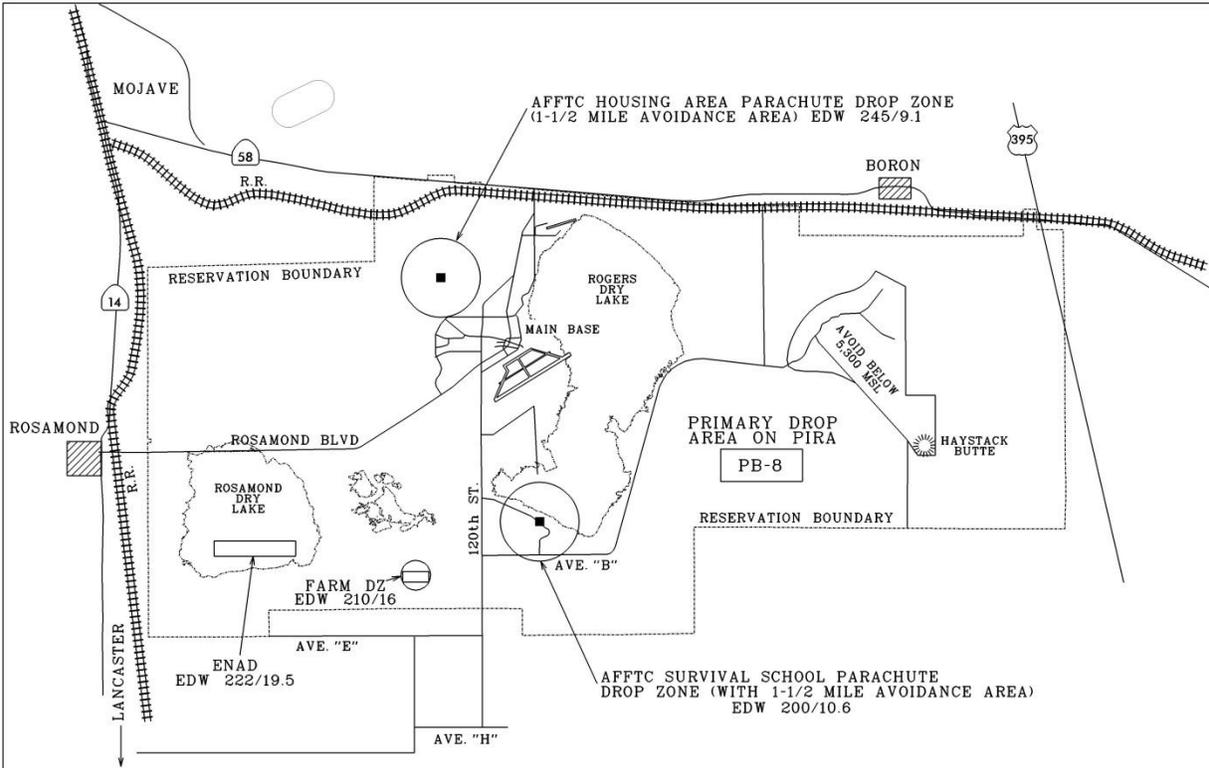


### 6.11. Drop Zones. (Fig 6.2., Attachment 4 items 198 to 201)

6.11.1. The Survival School DZ, authorized for personnel drops only, is a 600 square yard area with an avoidance radius of 1.5 miles from the DZ center, surface to 500' above the active altitude. This area extends east and west along the entire south lakeshore of Rogers Dry Lake. On the north, the DZ is bordered by the intersection of Lakebed Rwy 7/25 and 17/35 and on the south by Avenue (Ave) B, about 1/2 mile south of the sled track. **NOTE:** Although the Alpha Corridor is closed to all VFR traffic when the DZ is active, the PIRA and portions of the Alpha Corridor may be used by other controlled traffic concurrently with the DZ provided the 1-1/2 mile avoidance area is protected surface to 500' above the active altitude.

6.11.2. The Farm Circular DZ is an Air Mobility Command (AMC) certified DZ authorized for cargo and personnel drops. The Camacho DZ, a rectangular plowed area, is roughly centered and contained within the limits of the Farm Circular DZ. The DZ is located in the Buckhorn MOA west of Lancaster Blvd. SPORT provides radar monitoring and has final approval authority for concurrent operations between the Farm DZ and the Lancaster/Buckhorn routings.

Figure 6.2. Edwards Drop Zones



6.11.2.1. The Buckhorn MOA is scheduled and activated when in use. Schedule the Alpha Corridor for de-confliction purposes in Common Scheduling Enterprise (CSE).

6.11.2.2. Crews flying the Lancaster or Buckhorn routings must adhere to the published procedures.

6.11.3. The Housing DZ, authorized for personnel drops only, is located north of base housing approximately 3.5 miles south of Hwy 58 and includes an avoidance area radius of 1.5 miles from the DZ center or 500' above the drop altitude when active. Operations will not be scheduled above 13,000' MSL nor activated higher than 5,000' above the highest drop altitude.

6.11.3.1. Edwards Tower, SPORT and the DZ Controller coordinate each drop. A 3-minute (min) call precedes each drop (e.g., "3 minutes to drop"). Tower activates the DZ with SPORT and in turn, SPORT notifies affected aircraft of the DZ status.

6.11.3.2. The DZ is limited to non-static line drops only with all release points inside the 1-1/2 mile avoidance area. Joint operations require prior coordination.

6.11.4. The Enad DZ, a certified AMC DZ located on Rosamond Lakebed southwest (SW) of the approach end of Rwy 29, is authorized for cargo and personnel drops. Schedule the Alpha Corridor/Buckhorn for deconfliction. SPORT advises Tower when the DZ is active.

6.11.5. Simultaneous Operations (Farm, ENAD or Survival School DZ):

6.11.5.1. When a scheduled drop mission is in standby to another range mission, the mission jumpmaster may coordinate for simultaneous operations. Critically analyze the

proximity of the DZ to activity in West Range prior to agreeing to conduct simultaneous operations. If simultaneous operations at either DZ cannot be agreed upon, move the parachute mission to the Housing Area DZ.

6.11.5.2. The jump aircraft's crew will contact SPORT on mission frequency prior to departure and request clearance into the Alpha Corridor to conduct parachute operations. Advise SPORT of coordination with conflicting mission crew and agreement to conduct simultaneous operations when applicable.

6.11.5.3. The SPORT controller may hold the jump aircraft on the ground, at a specific altitude, delay a jump or cancel the mission as required for safety.

6.11.5.4. The jump aircraft must receive SPORT clearance before liftoff from the Survival School only. Prior to each liftoff, the crew briefs SPORT on the profile.

6.11.5.5. Make timing calls to the DZ Controller (3 mins, 2 mins and 1 min, etc.). At the 1 min mark, the crew must request clearance from the DZ Controller and SPORT to proceed with the jump.

6.11.5.6. At any time during the mission, the SPORT controller, crew, mission jumpmaster or the crew of the higher priority mission may call off the jump mission for safety reasons.

6.11.5.7. SPORT exercises control over airborne operations only and not over simultaneous ground operations at the FARM DZ. Clearance for simultaneous operations must come from a ground safety representative physically present at the drop site.

**6.12. UAS Corridor.** (Fig 6.3.) The UAS Corridor shall only be used to transit above Class D airspace between the Work Area and PIRA. Transit altitude will be 5,000 feet MSL and above.

**6.13. UAS Work Area.** (Fig 6.3.) This area extends from the surface to 10,000 feet MSL. Tower shall coordinate transfer control of the UAS Work Area to SPORT as required.

6.13.1. The UAS mission assumes all responsibility for flight activity within this airspace.

6.13.2. The UAS mission shall maintain 2-way radio communications with Tower/SPORT.

6.13.3. SPORT shall notify Tower of any boundary violations.

6.13.4. When active, Lakebed SPIN area along with IFR instrument approaches to EDW main base are not authorized.

6.13.5. The UAS Project Manager shall coordinate with North Base to de-conflict operations.

6.13.6. Tower will not approve lakebed operations on lakebed runways 12L/30R, 12R/30L, 15/33, 18/36, 06/24, tower fly-bys, North re-entries, and Hwy 58 arrival/departures until UAS aircraft are above 4,800 MSL. PMD corridor will not be activated prior to UAS aircraft leaving 9,000 MSL.

6.13.7. When active below 4,800 MSL, all aircraft in the tower pattern shall remain on or south of the Tower Fly-by Line.

**6.14. North UAS Extension Area.** (Fig 6.3.)

6.14.1. North UAS Extension Area vertical limits are Surface to 4,800 ft MSL when active.

6.14.2. When active, Tower will not approve Lakebed Operations on Lakebed Runways 12L/30R, 12R/30L, 15/33, 18/36 and 06/24; Tower Fly-bys; North Re-entries; or HWY 58 arrival/departures. Tower may allow these operations to continue once UAS aircraft are above 4,800 ft MSL in the UAS Work Area.

6.14.3. When active, all arriving aircraft in Class D airspace shall remain on or south of the Tower Fly-by Line.

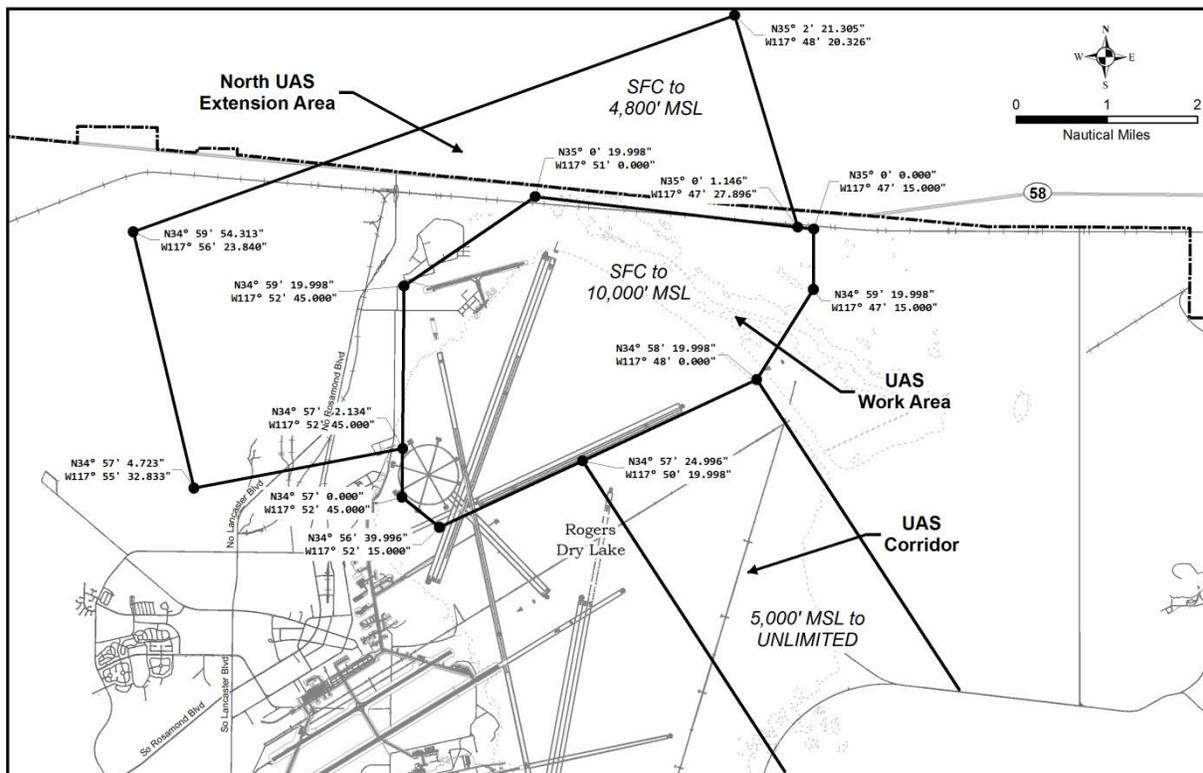
6.14.4. Tower will coordinate activation of the North UAS Extension Area with SPORT prior to take-off, landing, or when UAS aircraft are operating in the north pattern.

6.14.4.1. The UAS mission assumes all responsibility for flight activity within this airspace.

6.14.5. The UAS mission shall maintain 2-way radio communications with Tower.

6.14.6. SPORT shall notify Tower of any boundary violations.

**Figure 6.3. UAS Work Area and Corridor/North UAS Extension Area**



### 6.15. Main Base and South Base UAS Operations.

6.15.1. The mission controller shall request takeoff and landing clearance from Tower on ATC frequencies.

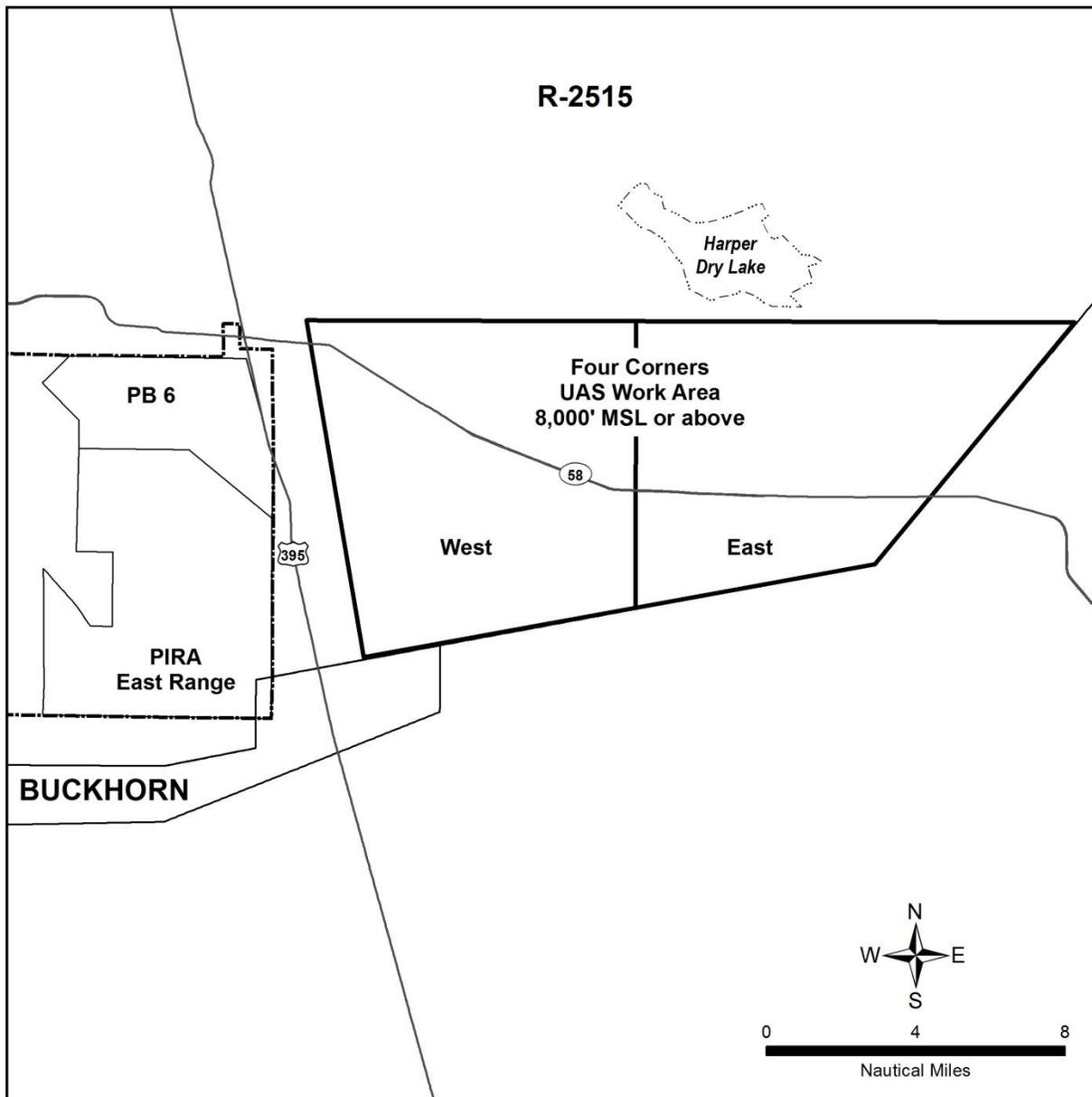
6.15.2. Departures should use Main Base Rwy 4L/R or South Base Rwy 6 to the maximum extent possible.

6.15.3. Arrivals should use Main Base Rwy 22L/R or South Base Rwy 24 to the maximum extent possible.

6.15.4. The SPORT controller shall notify Tower at least 15 minutes prior to the planned UAS arrival.

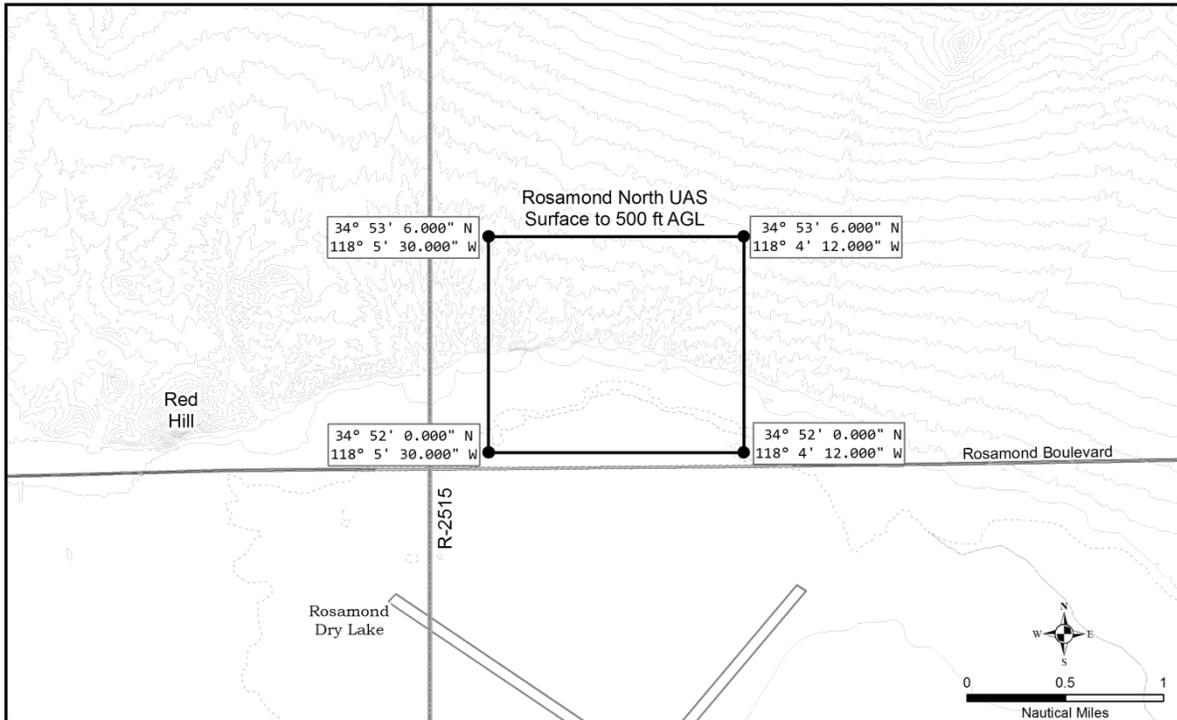
**6.16. Four Corners UAS Work Area.** (Fig 6.4., Attachment 4 item 222) Located east of Kramer Junction (intersection of State Hwys 58 and 395) this area allows for a UAS to operate within a defined area and altitude block segregated from manned aircraft. SPORT will advise crews when this area is active and at what altitudes. If the UAS is operating in level flight for an extended period of time, SPORT may release altitudes 2,000' above and below the UAS to allow manned aircraft to transit the lateral confines of the Four Corners Work Area. SPORT will ensure the UAS operator is aware of any altitude deviations from this restriction. Four Corners Work Area is divided east and west (North/South line that splits the Four Corners Work Area: 35 00' 00"N/ 117 19' 42"W to 34 52' 18"/117 19' 45") and may be divided by altitude, based on mission requirements.

Figure 6.4. Four Corners UAS Area



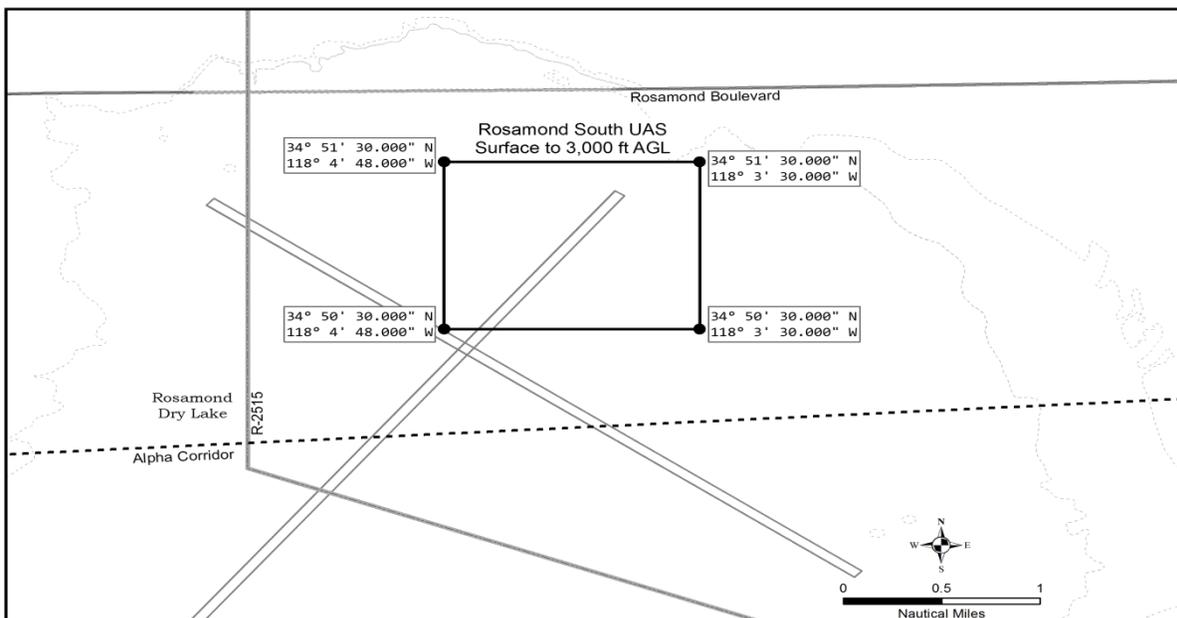
**6.17. Rosamond North UAS Area.** (Fig 6.5.) UAS flight is restricted to 500' AGL. Crews will avoid the area when active.

Figure 6.5. Rosamond North UAS Area



6.18. Rosamond South UAS Area. (Fig 6.6.) Located on Rosamond Lakebed with flight operations approved to 3,000' AGL under the following conditions:

Figure 6.6. Rosamond South UAS Area



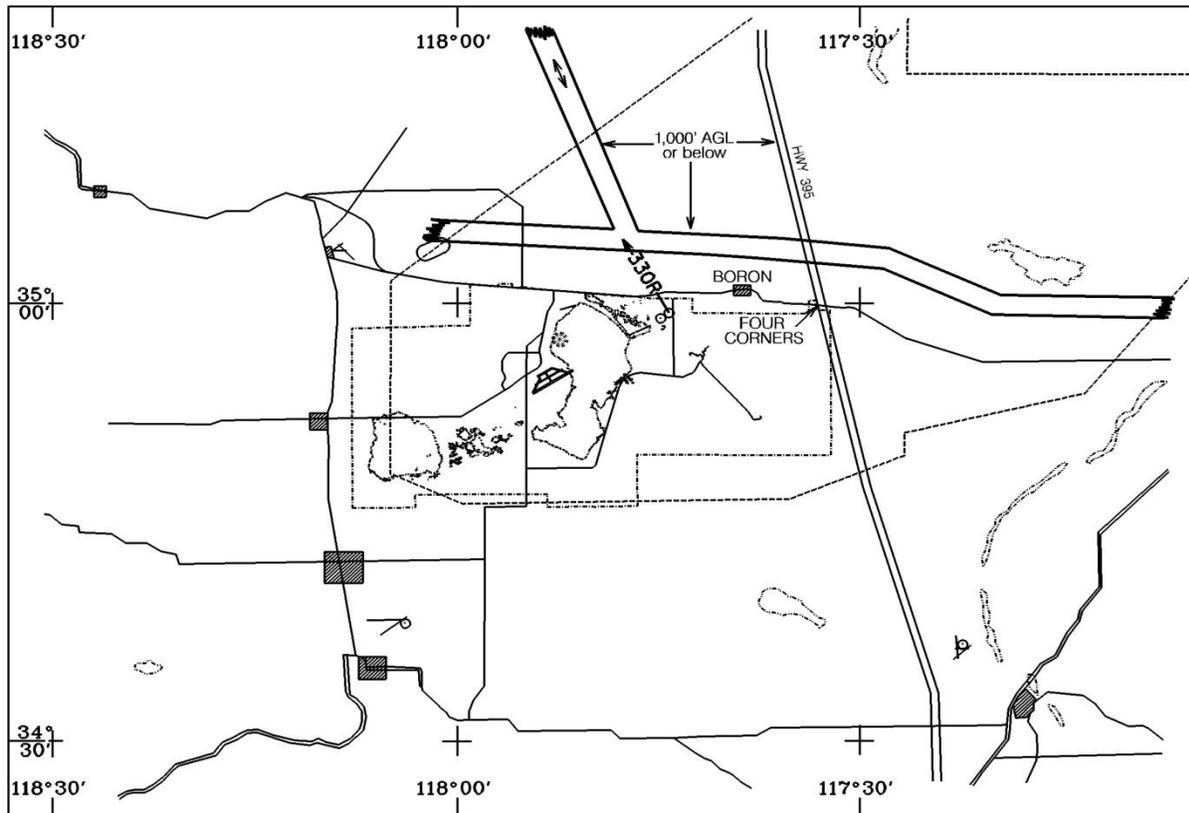
6.18.1. Contact the tower for permission to enter the Lakebed prior to commencing operations and when operations have been terminated. Use of a Land Mobile Radio is required for communications with the Tower. Cell phone communications are not authorized.

6.18.2. Contact the Security Forces prior to entry, informing them of flight activities.

6.18.3. When Rwy 04 or the PIRA Supersonic Corridor is active, no flight activity is allowed. The Buckhorn and the modified Rosamond departure/arrival procedures are closed.

**6.19. General Aviation Transit Routes.** (Fig 6.7.) General aviation routes allow authorized civilian flights access to and from Boron, North Edwards and Kramer Junction airports and to transit following Hwy 395 and Hwy 58 when R-2515 is active. Civilian aircraft maintain at or below 1,000' AGL and remain within 1/4 mile north of Hwy 58, Hwy 395 or along the EDW 330R.

**Figure 6.7. General Aviation Transit Routes**



**6.20. Tow Operations.** These procedures are for nonstandard, unique tow operations or any tow operation exceeding the 500' tow distance. Night tow operations are limited to Category A only.

6.20.1. Tow operations are divided into two categories based on distance from the tow aircraft.

6.20.1.1. Items towed within 500' of tow aircraft (Category A).

6.20.1.2. Items towed in excess of 500' from tow aircraft (Category B).

6.20.2. Tow operations in IMC require sterilized airspace. Night operations are permitted.

6.20.3. Category B tow operations must be conducted in sterilized airspace.

6.20.4. During tow operations, mission aircraft shall avoid over-flight of populated areas, roads, and high value assets to the maximum extent possible.

**6.21. Ordnance/Stores Jettison Areas.** (Fig 6.8., Attachment 4 items 208-210) The PIRA is the primary jettison area for non-explosive ordnance. Normally, jettison explosive ordnance on the range being worked. As a last resort, jettison explosive ordnance on Precision Bomb (PB) Target 13 under SPORT or DOWNFALL control. The crew chooses the jettison area and both Tower and SPORT provides advisory service.

6.21.1. Additional non-explosive ordnance jettison areas (Attachment 5).

6.21.1.1. Area 1. A triangular area northeast (NE) of Rwy 04/22 centered on EDW 237/2.5. Suggested jettison heading is 180 or 360 Magnetic. EDW VORTAC is 4,800' NE of Area 1. Use caution jettisoning in this area.

6.21.1.2. Area 2. A triangular area southwest (SW) of Rwy 04/22 centered on the EDW 219/15. Suggested jettison heading is 150 or 330 Magnetic.

6.21.1.3. Area 3. A rectangular area in the NE corner of the east range centered on the EDW 089/8. Suggested jettison heading is 165 Magnetic. Power lines to the east parallel jettison heading. Jettison west of power lines.

6.21.2. Jettison in Areas 1 and 2 at or below 3,300' MSL when able. Maintain radio contact with SPORT, if unable use Area 3.

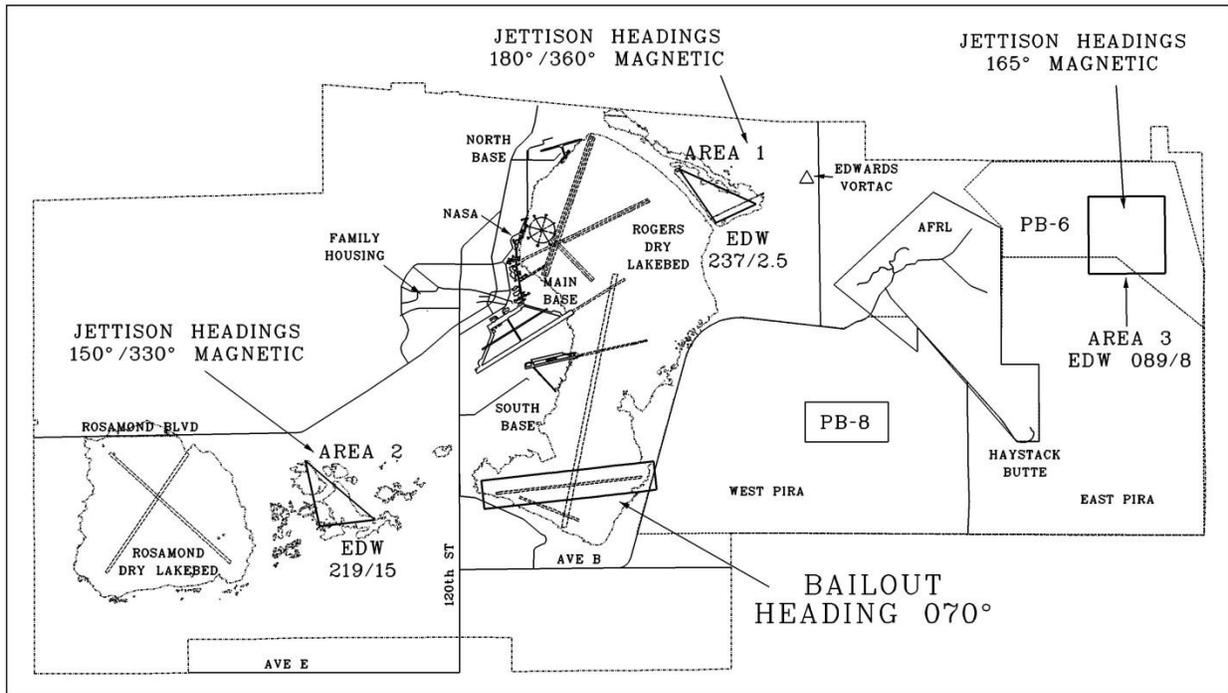
6.21.3. Use Area 3 when aircraft flight path after jettison is in doubt. Jettison altitude is 5,000'-6000' MSL. If possible, contact SPORT or Tower before jettison. Continue heading 165 Magnetic, reduce throttles to idle and eject if necessary.

6.21.4. Inform SPORT or Tower of intent to jettison. SPORT will, upon request, provide radar vectors to the area, traffic advisories and advise when entering and leaving the area. SPORT will not inform the crew when to jettison.

6.21.5. Overfly the area (if weather/time permits) before jettisoning to ensure it is clear of personnel and vehicles.

6.21.6. If SPORT assistance is not available, Tower gives only a general description of the area and advises other aircraft to avoid the area.

Figure 6.8. Jettison/Bailout Areas



**6.22. Controlled Bailout.** (Fig 6.8.) Controlled bailouts will be over the PIRA. When situation permits, arrive at the approach end of Lakebed Rwy 07 and fly a heading of 070° for entry into the PIRA.

6.22.1. Plan ejection conditions to meet flight manual requirements and to maximize the potential that the aircraft impacts beyond Mercury Blvd and within the PIRA.

6.22.2. Crew shall follow ejection procedures stated in MDS flight manuals. Prior to ejection, reduce throttles to idle.

6.22.3. Tower will plot aircraft impact coordinates using the combination of:

6.22.3.1. Crash Grid Map

6.22.3.2. Re-host display to estimate Latitude/Longitude

6.22.3.3. Visual line-of-site

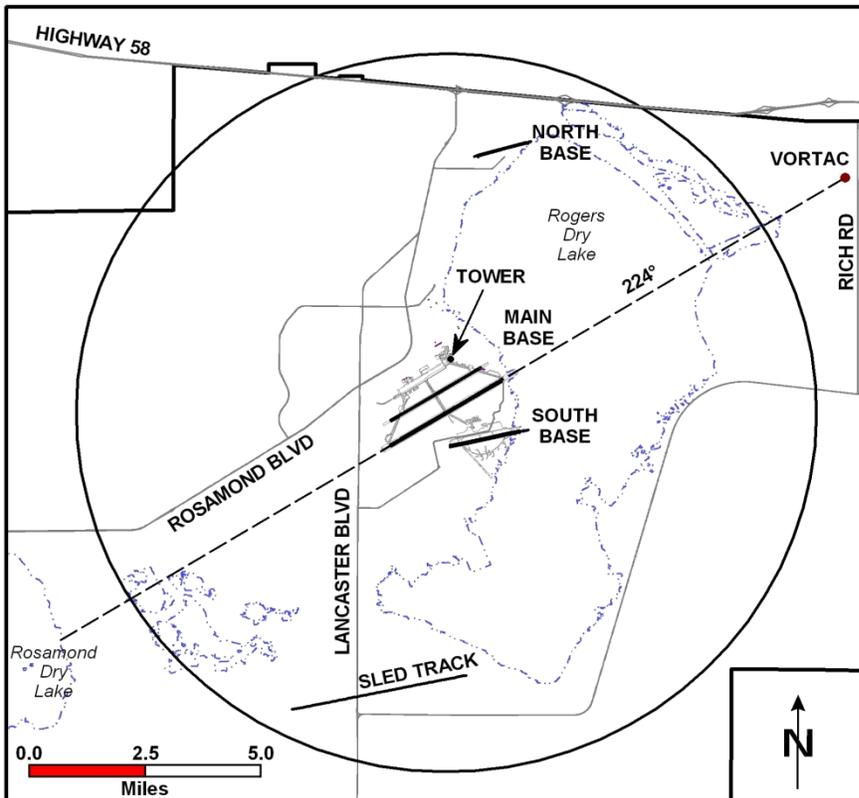
6.22.4. Tower shall activate the primary crash net.

## Chapter 7

## CONTROL TOWER PROCEDURES

**7.1. Edwards Class D Airspace (Fig 7. 1).** EDW Class D is defined as a 7NM radius from the center of Runway 04R/22L up to and including 4800' MSL. When active, the Alpha Corridor, West Range and the UAS Work Area are excluded from the Class D.

**Figure 7.1. Edwards Class D Airspace**



**7.2. Light Aircraft/Helicopter/Departure Routes (Fig 7. 2.)** Light aircraft are authorized the following low altitude arrival/departure corridors during VMC.

7.2.1. Before entering R-2515, contact SPORT for route approval and flight following. On departure, when Tower advises, contact SPORT for flight following and traffic advisories. When SPORT is unavailable, remain in contact with Tower until instructed.

7.2.1.1. The Buckhorn, Lancaster and direct north/south arrival/departure routes are not authorized when the Alpha Corridor is active.

7.2.1.2. Departures and arrivals to/from the east are not authorized when the PIRA is active.

7.2.1.3. Use caution for C-130s ingressing and egressing the ENAD and Farm DZs.

7.2.1.4. Crews flying the Buckhorn/Rosamond arrival or departure routes are reminded to use caution due to the close proximity of the Small Arms Range. It is the crew's responsibility to completely avoid overflying the Small Arms Range.

7.2.2. Rosamond Arrival. Contact SPORT 1 NM east of Rosamond. Proceed east remaining directly over Rosamond Blvd. Maintain 3,300' MSL until past the east shore of Rosamond Dry Lake, then descend to 2,800' MSL by Bend-in-the-Road. Be alert for Buckhorn arrivals/departures. Contact tower at the bend in Rosamond Blvd and continue to track directly over Rosamond Blvd until 1/2 mile east of the Rod and Gun Club/Small Arms Range then:

7.2.2.1. Main Base Arrivals: Continue to the Golf Course where route ends. Follow tower instructions to applicable runway maintaining 2,800' MSL.

7.2.2.2. South Base Arrivals: After passing Small Arms Range, turn right heading 095 to Generals' Hill for transition to applicable runway pattern maintaining 2,800' MSL. Advise Tower prior to crossing extended centerline of Rwy 4/22.

7.2.3. Rosamond Departure.

7.2.3.1. Main Base. Fly heading 270 at 2,800' MSL to the Golf Course then: Maintain one quarter 1/4 NM north of Rosamond Blvd. Contact SPORT abeam Golf Course. At Bend-in-the-Road, initiate climb to 3,300' MSL to be level by the east shoreline of Rosamond Lakebed. Continue to Rosamond.

7.2.3.2. South Base. Fly heading 235 at 2,800' MSL. Crossing Lancaster Blvd., turn right heading 275 to intercept Rosamond Blvd. then: Maintain one quarter 1/4 NM north of Rosamond Blvd. Contact SPORT abeam Golf Course. At Bend-in-the-Road, initiate climb to 3,300' MSL to be level by the east shoreline of Rosamond Lakebed. Continue to Rosamond. **CAUTION:** *Be alert for model airplanes north of Rosamond Blvd. on Rosamond Dry Lake and UAS activity extending 1NM north of the road.*

7.2.4. Buckhorn Arrival. Altitude 2,800' MSL. Crews shall not fly north of Avenue E (last major east/west surface street) without clearance from either SPORT or tower. When cleared, proceed inbound 1/2 NM east of Rosamond Dry Lake's east shoreline heading 360 to intercept Rosamond Blvd. and fly east following the Rosamond arrival procedures for South or Main Base. Be alert for Rosamond arrivals approaching Bend-in-the-Road.

7.2.5. Buckhorn Departure. Follow Rosamond Departure procedures from either Main or South Base to Bend-in-the-Road. At Bend-in-the-Road, remain at 2,800' MSL and turn left heading 180 over the east shore of Rosamond Dry Lake until crossing Avenue E (last major east/west surface street). Be alert for Rosamond arrivals at Bend-in-the-Road.

7.2.6. Lancaster Arrival. Altitude 2,800' MSL. Crews shall not fly north of Avenue E (last major east/west surface street prior to turning northbound on 120<sup>th</sup>) without clearance from either SPORT or tower. When cleared, proceed within one quarter 1/4 NM east of Lancaster Blvd. until abeam General's Hill radar to enter pattern at either South or Main Base. Contact Tower when instructed.

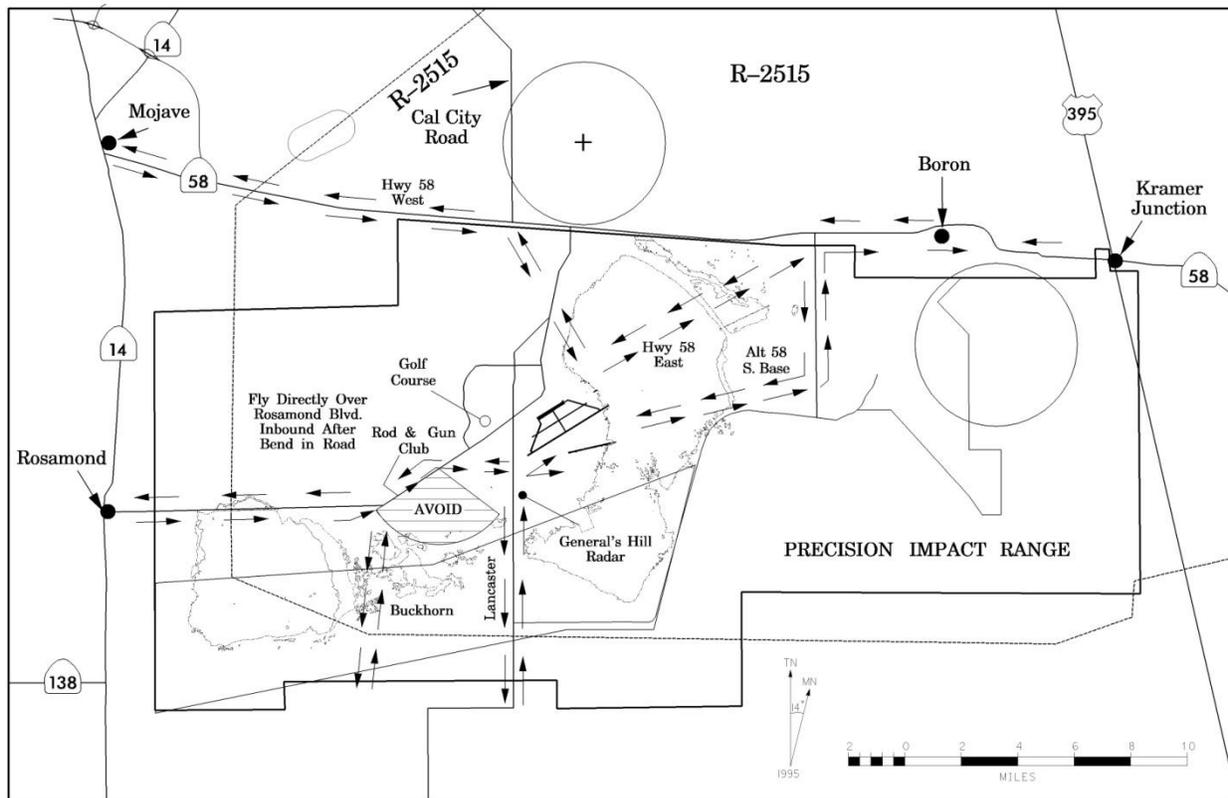
7.2.7. Lancaster Departure. Altitude 2,800' MSL. Departures from either Main or South Base will fly west of General's Hill to proceed outbound within one quarter 1/4 NM west of

Lancaster Blvd. until Avenue E (last major east/west surface street). Contact SPORT crossing or joining Lancaster Blvd.

7.2.8. Hwy 58 West Arrival. (Not authorized for South Base. South Base use Rosamond Arrival.) Altitude 2,800' MSL; Contact SPORT at Mojave; Fly east remaining within 1/4 NM south of Hwy 58 until intersection of Hwy 58 and road to California City, contact Tower when instructed. Fly heading 140° to north end of Taxiway E (Contractors' Row) for transition to applicable active runway.

7.2.9. Hwy 58 West Departure. (Not authorized for South Base. South Base use Rosamond Departure.) From the north end of Contractors' Row, fly heading 320 to intercept Hwy 58. Proceed west within one quarter 1/4 NM north of Hwy 58 maintaining 2,800' MSL. Contact SPORT joining Hwy 58.

**Figure 7.2. Light Aircraft Arrival/Departure Routes**



7.2.10. Hwy 58 East Arrival. (Not authorized for South Base). Altitude 2,800' MSL. Contact SPORT at the intersection of US 395 and Hwy 58 (Kramer Junction/Four Corners). Proceed west within one quarter 1/4 NM north of Hwy 58 until abeam Borax Mines settling ponds, then fly heading 230 to intercept or maintain parallel track with Lakebed Rwy 23. Do not go beyond 1/2 NM south of Lakebed Rwy 23. At mid-lakebed, transition to active runway (maintain 2,800' MSL). Contact Tower when instructed.

7.2.11. Hwy 58 East Departure. (Not authorized for South Base). Fly outbound parallel to Lakebed Rwy 5 remaining within 1/2 NM south to intercept Hwy 58. Remain within 1/4

NM south of Hwy 58 east to US 395, maintaining 2,800' MSL. Contact SPORT turning eastbound joining Hwy 58.

7.2.12. Alternate Hwy 58 East Departure/Arrival for South Base when Lancaster and Buckhorn routes are unavailable.

7.2.12.1. Arrival: Follow Hwy 58 East arrival procedures until abeam Borax mines settling ponds, then fly southbound keeping to right of Rich Road. Turn west abeam the Detachment 5 (Det 5), Air Force Research Laboratory (AFRL) gate to the east and the 2,450' knoll on the dry lake shoreline (approx 1.5 miles north of Mercury Blvd). Remain 1/2 mile north of both the bend in Mercury Blvd and the extended centerline of South Base Rwy 06/24. Contact Tower when instructed.

7.2.12.2. Departure: Altitude 2,800' MSL. Fly east from South Base on Rwy 06/24 extended centerline. At east shore of Rogers Dry Lakebed, remain north of bend in Mercury Blvd., intercept north/south road (Rich Road) west of Leuhman Ridge. Proceed north, maintaining right side of road until intercepting Hwy 58. Fly 1/4 NM south of Hwy 58. Contact SPORT joining Hwy 58.

**7.3. Lakebed Operations.** Lakebed departures and landings are authorized as follows:

7.3.1. Takeoffs. Aircraft may depart from lakebed runways when the main runways are unavailable, the flight is mission essential, and the 412 OG/CC approves. The following procedures apply to all aircraft with the exception of C-12s (see 7.3.7. for C-12 procedures):

7.3.1.1. Make pre-takeoff engine checks on a hard surface area before taxiing onto the lakebed. Limit afterburner takeoff unless essential for safety or required by the aircraft flight manual to prevent lakebed damage.

7.3.1.2. Obtain Tower approval to enter the lakebed.

7.3.1.3. Lakebed intersection departures are not authorized. The runways have no distance remaining markers and any variation requires approval from the 412 OG/CC.

7.3.2. Landings. Practice full-stop lakebed landings from the hours of sunrise to sunset during VMC conditions are authorized for locally operated aircraft and local aircrew.

7.3.2.1. Touch-and-go landings are not authorized. Low approaches to Green or Yellow lakebed runways are authorized when approved by Tower. Low approaches to Red lakebed runways must be authorized by 412 OG/CC.

7.3.2.1.1. T-38 and F-16 Lakebed landings for training or proficiency require unit operations officer approval.

7.3.2.1.2. Aircrew will ensure that lakebed landings performed for training or proficiency in the T-38 or F-16 are coordinated with the their unit scheduling shop NLT 1100 local the day prior to the intended lakebed landing. Unit schedulers will ensure the intent to land on the lakebed is input into CSE.

7.3.2.2. Non-local aircrew requesting authorization to land on the lakebed must receive approval from the 412 OG/CC, follow procedures in this instruction, and be qualified to perform landings on such surfaces.

7.3.2.3. Make an entry in the Air Force Technical Order (AFTO) Form (Form) 781 Aerospace Vehicle Flight Report and Maintenance Document following a lakebed landing.

7.3.3. Lakebed Obstructions. Obstructions on the lakebed are in close proximity to the peripheral of the lakebeds and present potential hazard to flight safety. These obstructions are not physically on any Green lakebed runways. Consider their presence when selecting a runway for an emergency if lack of directional control is anticipated.

7.3.4. The ROC will schedule proposed operations on the lakebed and coordinates with AMOPS on all projects desiring use of the lakebed, including Buckhorn and Rosamond Dry Lakes. AMOPS issues advisories to Tower on lakebed conditions (Table 7.1.) after the Monday through Friday inspection or when the operational status changes.

**Table 7.1. Lakebed Conditions**

<b>COLOR</b>	<b>MEANING</b>	<b>REMARKS</b>
Green	Available for landing	Runway is dry and free of potholes or hazards that would preclude a safe landing and has been inspected.
Orange	Available for specific airframe/test program only	Runway restricted to specific airframe/test programs for a defined duration. See remarks in airfield status and NOTAMS. Runway is Red for all other aircraft.
Yellow	Available for emergency use	Runway has not been inspected following a weather event. Runway was previously Green prior to the weather event. Runway may have standing water, potholes or other unspecified hazards that could preclude a safe landing.
Red	Unavailable for landing	Runway has standing water, potholes or other unspecified hazards that could preclude a safe landing. May indicate repair crews on runway and cannot be opened. Landings not recommended.
<i><b>NOTE 1:</b> Landing on a Yellow lakebed runway may cause that runway to be labeled Red for an extended period of time due to lakebed damage attributed to the landing.</i>		
<i><b>NOTE 2:</b> When landing on other than a Green lakebed runway or lakebed runways that are not clearly visible from the Tower, pilots should expect to hear “landing will be at your own risk” phraseology vice “cleared to land”.</i>		

7.3.5. Lakebed Runways. The lakebed runways are available for use when dry and free of potholes and other hazards. Monday through Friday inspections assure maintainability. A color coding system reflects the lakebed runway condition/usability (Table 7.1.).

7.3.6. Periodically EAFB lacks a green or yellow lakebed runway that faces the prevailing wind. There are large sections of lakebed runways that are free of potholes and other

obstacles, but are labeled red because the entire length is not deemed safe. When a lakebed runway facing the prevailing wind is unavailable for a long period of time, the 412 OG/CC can authorize the use of sectioned lakebed runways. This would allow the recovery of emergency aircraft on the lakebed without a high crosswind component.

7.3.6.1. The beginning and end of the usable landing area will be marked by two salmon colored Visual Assault Zone Marking Panels (VAMPs) on either side of the runway. When the sectioned runway is declared yellow the distance between the VAMPs will be opened for emergency use only.

7.3.6.2. COOL will reflect the usable section on the EDW: Airfield Runway Status page. For example, COOL may report: "23R/05L [See Notes]" where the [See Notes] brick is colored yellow. The notes section will read, for example, "23R/05L Sectioned Runway has approximately 7,000 ft between the VAMPs." Note that the runway status will never be better than yellow as it is for emergency use only. However, low approaches are allowed.

7.3.6.3. The VAMPs are visible out to about a 1-2 nm final if their location is known. Crews are encouraged to locate them visually during normal pattern operations, by orbiting over the lakebed, etc. It is possible that airfield management will move the VAMPs slightly as the lakebed runway conditions change. Occasionally checking the location of the VAMPs will ensure aircrew know where to look for them when needed.

7.3.6.4. As lakebed conditions change the VAMP location may change, the sectioned runway may be removed, or another runway may be designated as a sectioned runway. Each change will be preceded by an FCIF.

7.3.7. C-12s Austere Operations: C-12s may use lakebed runways for austere operations regardless of the status of the main runways and will comply with the following procedures:

7.3.7.1. Due to lack of runway remaining markers initial lakebed takeoffs must use the full length.

7.3.7.2. Normally accomplish lakebed takeoffs after a lakebed full stop landing. On approach the IP will determine the amount of back taxi (if any) that is required to ensure all obstacles are cleared and that runway remaining exceeds the greater of 4000', computed Accel After Liftoff to 50 feet (Accel Go), or Accel Stop computed without reverse plus 500 feet.

7.3.7.3. On lakebeds directed towards the main base no takeoffs will be initiated past the intersection with lakebed runway 33/15.

7.3.7.4. Each lakebed takeoff and landing sortie will be expressly annotated as such on the schedule.

**7.4. Aircraft Priorities.** Tower provides air traffic control services to aircraft on a "first-come, first-serve" basis as circumstances warrant. Due to special handling requirements, the following priorities apply in order as specified in Table 7.2. This listing does not supersede the Operational Priorities listed in FAA Order JO 7110.65.

**Table 7.2. Traffic Priorities**

Emergencies
Medical evacuation flights (pilot requests priority) or civilian air ambulance flights (call sign LIFEGUARD)
Search and rescue missions (when requested by the pilot)
Flight Check aircraft
Priority Alpha flight
Full stops
Departures
Touch-and-go/low approach

**7.5. Priority Alpha Designation.** Priority Alpha is a priority traffic movement designator used by all AFTC flying organizations and other agencies using Edwards' facilities. Priority Alpha notifies Tower of possible loss of mission due to takeoff or landing clearance delays.

7.5.1. Consistent with FAA regulations and safety, Tower affords priority to Priority Alpha aircraft except as listed in Table 7.2. To be effective, this procedure requires discretion by all crew members and briefing officers.

7.5.2. Missions identified in Table 7.3. may declare Priority Alpha when it is essential for successful mission completion.

7.5.3. Declare Priority Alpha as follows:

7.5.3.1. Departures. Notify Ground of required takeoff time upon request for taxi instructions (Example: "Edwards Ground, Cobra 17, request Priority Alpha for a One Four Three Three Zulu (1433Z) scheduled departure"). Update any changes to required takeoff time as soon as possible.

**Table 7.3. Priority Alpha Descriptions**

Performance takeoff or landing tests when gross weight, center of gravity, runway condition, etc. are factors critical to mission completion.
Refused takeoff tests when gross weight, center of gravity, runway condition, etc. are factors critical to mission completion.
Takeoff or landing when the crew is wearing pressure suits.
Missions that require a time critical intercept/tanker rendezvous.
Test missions with critical range time.

7.5.3.2. Arrivals. Notify Tower on initial contact of the requirement for uninterrupted approaches for data collection (Example: "Edwards Tower, Torch 41, 4 miles northeast of the mines, request Priority Alpha straight in, touch-and-go, stay with Tower").

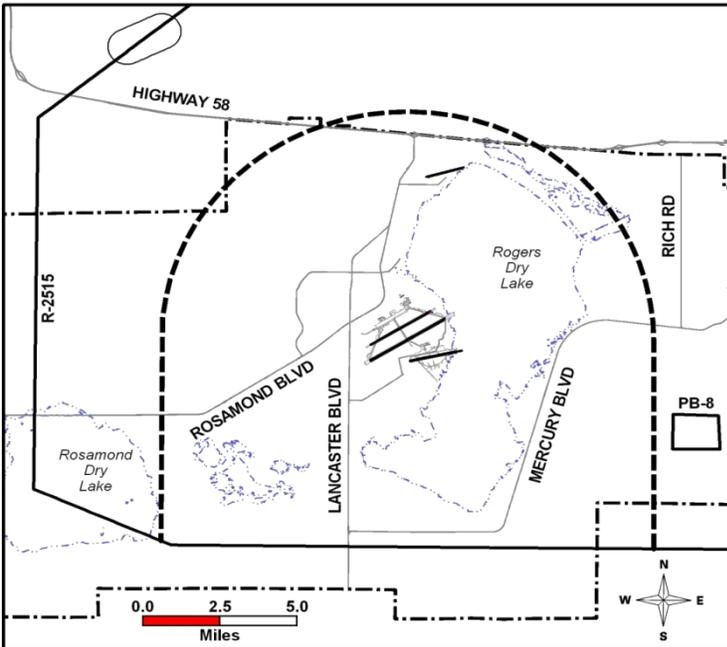
**7.6. Functional Check Flights (FCF).** Use of R-2515 is authorized. FCFs may use designated Edwards supersonic corridors. FCFs must be coordinated through SPORT airspace.

**7.7. Palmdale Corridor (Fig 7. 3.)** The Palmdale Corridor is activated on an as-needed basis for Non-participant IFR arrivals/departures. The corridor's dimensions were designed to reduce

impacts on special use airspace while operating within R-2515. The dimensions are: surface to 8,000' MSL and the width of the Class Delta with extensions ending at the southern boundary of the R-2515. Participating aircraft shall enter/exit the Class D surface area laterally, at or below 4,800' MSL when the Palmdale Corridor is active.

7.7.1. SPORT MRU will advise when the airspace is activated and provide information to affected aircraft to remain outside the confines of the Palmdale Corridor. The altitude released for corridor operations may be less than the 8,000' MSL ceiling.

**Figure 7.3. Palmdale Corridor**



## 7.8. (SOF) /Tower Operations.

7.8.1. The SOF, callsign PONDEROSA 8, is the direct representative of the OG. In this capacity, the SOF provides real-time oversight of flying operations and is a primary source of assistance to aircrews. Decision authority is delegated to this position to accomplish the 412 TW mission. SOF responsibilities are detailed in AFMCI 11-201 *Supervision of Flight Operations*.

7.8.2. The SOF shall inform the Tower Watch Supervisor (WS) of operational concerns and if an immediate hazard to flight safety exists. The Tower Watch Supervisor has sole authority to direct Tower operations. All coordination shall be accomplished via the Watch Supervisor. The WS shall notify the SOF when circumstances/activities occur that will impact aircraft operations.

7.8.2.1. Normal aircrew to SOF communication shall be on 308.7 and VHF 143.725. The WS shall ensure a GRC 171 is set to the appropriate frequency for SOF use. Upon request, other frequencies may be available to the SOF on multi-channel back-up radios. The WS shall ensure operational checks are completed prior to opening the Tower. If normal communication on SOF frequency is not possible for any reason, the SOF must coordinate with the WS prior to transmitting to the affected aircraft directly on Tower frequencies.

7.8.3. The SOF shall notify the WS and command post if performing SOF duties in a location other than the Tower. If the SOF is not in the Tower or the SOF vehicle when a pilot requests SOF assistance or when the first AFTC fighter/trainer aircraft calls for taxi, Tower personnel will contact Command Post to verify if SOF is enroute or working out of a unit. Tower will not issue take-off clearance for 412 TW fighter/trainer aircraft without a SOF on duty in the SOF vehicle, in the Tower or at the unit, unless specifically approved by the 412 OG/CC.

## **7.9. Alternate Control Tower Operations.**

7.9.1. If controllers are required to evacuate the Tower they activate the alternate control Tower atop Fire Station One located adjacent to the Tower. The following actions are necessary to continue air traffic control service:

7.9.1.1. Tower shall make a blanket broadcast on all frequencies including guard, stating: "Attention all aircraft, Edwards Tower is being evacuated. All airborne aircraft contact SPORT/JOSHUA. All aircraft on the ground remain off the active runway and taxiways until further advised." Additionally, Tower shall make a similar broadcast on the FM Nets: Crash Net / Trunk Net

7.9.1.2. Airfield lighting will be set to appropriate setting for the conditions at the airfield.

7.9.1.3. Tower will recall airfield lighting standby personnel to be dispatched to the airfield lighting vault for the duration of alternate Tower operations.

7.9.1.4. SFO, lifting body, and shuttle approaches will be terminated.

7.9.1.5. Arrivals and departures to both main base runways will be suspended until the alternate control tower is activated.

7.9.1.6. Vehicle entry into the movement area and vehicle runway crossings will be suspended until operations are re-established.

7.9.2. Operations to North Base and South Base will not be affected.

7.9.3. The following radio frequencies are available in the alternate tower:

7.9.3.1. Tower: 318.1 / 120.7

7.9.3.2. Ground: 225.4 / 121.8

7.9.3.3. Emergency: 243.0 / 121.5

7.9.3.4. DELETED

7.9.3.5. FM Nets: Crash Net / Trunk Net (available via LMR only)

7.9.4. The alternate tower has limited recording capability (frequencies/FM Nets) as long as the DVRS in the primary tower is operational.

7.9.5. CONUS Remote Maintenance Center (RMC), located in Oklahoma City, Oklahoma, will provide remote monitoring of NAVAIDS.

7.9.6. After locating to the alternate tower and controllers are ready to resume operations tower will make a blanket broadcast on all frequencies, ramp nets: "Attention all aircraft and personnel, Edwards alternate tower is now operational."

7.9.7. When the alternate tower is in use no shuttle, lifting body, or practice SFO approaches may be flown due to the lack of a radar display. Only full stops landings are permitted.

7.9.8. Lakebed Operations. Lakebed runways are not visible from the Tower. Aircraft landing or departing lakebed runways shall be issued the following: "LAKEBED RUNWAY (NUMBER) NOT VISIBLE FROM THE TOWER, LANDING/DEPARTURE WILL BE AT YOUR OWN RISK".

7.9.9. Control tower management, after assessing capabilities, will coordinate with the 412 OG/CC to determine any increase in volume of aircraft operations the alternate tower may support to the main base runway.

## Chapter 8

### TOWER PATTERNS

#### 8.1. VFR Traffic Patterns.

8.1.1. Priority. Aircraft in distress have the right of way over all other air traffic. Lakebeds may be used in an emergency regardless of condition. However, if time permits, the SOF will recommend a landing area commensurate with the type of emergency.

8.1.2. Pilots will advise Tower on initial contact of type approach, landing and if required, intentions to follow.

8.1.2.1. 360-Overhead pattern protection. All aircraft will remain below 3300' MSL until past the departure end of the runway.

8.1.3. Traffic Sequencing. Tower will issue appropriate instructions when re-sequencing is required. Aircrews will not deviate from the pattern procedures described in this paragraph unless authorized or instructed by the Tower, or as required for safety of flight.

8.1.4. Traffic Pattern Procedures. Edwards AFB traffic patterns are described in Table 8.1. *NOTE: Aircraft temporarily assigned to and using AFTC call signs may conduct approaches IAW these procedures. If flying aircraft different from the host flying unit, aircraft characteristics (speeds, altitudes, special handling requirements) must be provided to the Tower at least 72 hours in advance for controller training.* Weather minimums for patterns to be opened are as follows:

8.1.4.1. Helicopter/South Base – 3,300/3 NM

8.1.4.2. Closed Other Aircraft/Straight In – 3,800/3 NM

8.1.4.3. Closed Fighter/Trainer – 4,300/3 NM

8.1.4.4. Overhead – 4,300/3 NM

8.1.4.5. Re-entry – 4,800/3 NM

8.1.4.6. Simulated Flame Out/Shuttle Approach/Lifting Body – 1,000 feet above highest altitude flown and 5 miles visibility.

**Table 8.1. Aircraft Pattern Descriptions**

Type Pattern	Runway	Entry	Altitude/Airspeed	Remarks/Instructions
Helicopter (Fig 14.1.)	04L/R	Downwind flown over Rosamond Blvd	2800' MSL until over lakebed or turning base	
	22L/R	Downwind flown between Rosamond Blvd. and Wolfe Ave.		
Conventional (Closed Pattern)/ Rectangular (Fig 8.1.)  <i><b>NOTE:</b> South Base crews shall require Tower approval prior to crossing extended centerline upon entry/exit of the patterns</i>	04L/R	Right downwind parallel to Rwy 04	Fighter/trainee: 3800' MSL; Other aircraft: 3300' MSL.	Heavy aircraft fly first overhead at 3800' MSL and successive closed patterns at 3300' MSL.  Unless otherwise instructed, aircrews will initiate the turn to downwind upon receipt of tower approval. If unable due to aircraft configuration, speed, or altitude, advise tower when you will initiate turn.  <b>Use caution to avoid 2800' MSL pattern at South Base.</b>  Extended Closed: Initiate turn to downwind 1 mile past departure end after receipt of Tower approval.
	22L/R	Left downwind parallel to Rwy 22		
	South Base (SB) 06	45° entry from General's Hill to a right base Rwy 06	2,800' MSL  Speed as required	Use the Rosamond or Alt Hwy 58 East routes when the Alpha Corridor is active.

	SB 24	45° entry to Left downwind parallel to Rwy 24		<p>Overhead patterns are not authorized at South Base.</p> <p>Cross at least 3 miles off the approach end of Rwy 04, below 500' AGL.</p> <p>When main base Rwy 04 is in use, the Rosamond arrival will proceed to SB Rwy 06 via Buckhorn and General's Hill.</p>
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**Table 8.1. Aircraft Pattern Descriptions (Continued)**

<b>Type Pattern</b>	<b>Runway</b>	<b>Entry</b>	<b>Altitude/Airspeed</b>	<b>Remarks/Instructions</b>
North/South Reentry Patterns (Fig 8.1.)		<p>Fly south reentry outside downwind parallel to and southeast of the runway.</p> <p>Fly north reentry downwind parallel to and northwest of the runway.</p>		<p>State type approach and landing when requesting South Reentry.</p> <p>Rwy 04 South Reentry not authorized when Alpha Corridor is active.</p> <p>Rwy 22 South Reentry not authorized when Dual Air-to-Ground Range (DAGRAG) is active.</p>
South Reentry Straight-in/Overhead (Fig 8.1.)	04L/R	One mile off the departure end of Rwy 04 turn right to enter the outside downwind.	<p>Downwind: 4300' MSL,</p> <p>Initial (Overhead): 3800' MSL;</p> <p>Base/Final (Straight-In): 3300' MSL</p>	<p>Proceed outbound to the south shore of Buckhorn Lakebed. Abeam Buckhorn, descend and turn base / 90° to initial.</p>
	22L/R	One mile off the departure end of Rwy 22 turn left to enter the outside downwind.		<p>Proceed outbound toward Leuhman's Ridge. Remain north of the PIRA/Alpha Corridor when active.</p> <p>Descend to pattern altitude abeam Lakebed Rwy 30.</p> <p>For Straight-in: Turn</p>

				<p>base crossing East Lakeshore outbound.</p> <p>For Overhead: Turn 90° to initial crossing East Lakeshore outbound.</p> <p><i>NOTE: advise Tower of intentions on the go to proceed beyond East Lake Shore and Climb to 4,500' for a practice approach prior to Lakebed Rwy 30.</i></p>
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**Table 8.1. Aircraft Pattern Descriptions (Continued)**

<b>Type Pattern</b>	<b>Runway</b>	<b>Entry</b>	<b>Altitude/Airspeed</b>	<b>Remarks/Instructions</b>
North Reentry to Straight-in/Overhead (Fig 8.1.)	04L/R	Enter downwind north of North Base. Offset initial no closer than the southern edge of the main base ramp.	Downwind: 4300' MSL,  Initial (Overhead): 3800' MSL;  Base/Final (Straight-In): 3300' MSL	Turn base for 5 mile final. Scan for traffic on initial.  Enter initial at least three miles from the runway.  Do not initiate turn to final/initial until reaching appropriate altitude.
	22L/R	Enter downwind west of housing and north of North Base.	Downwind: 4300' MSL,  Initial (Overhead): 3800' MSL;  Base/Final (Straight-In): 3300' MSL	Turn base /90° to initial at the intersection of the extended centerline of Lakebed 18 and Hwy 58. Search for traffic established on initial and straight-in.  Do not initiate turn to final/90° to initial until reaching appropriate altitude.
Overhead (Fig 8.1.) Break South of and abeam approach end	04L/R	Enter initial north of Buckhorn Lakebed, 5 NM from end of runway.	3,800' MSL 300 KIAS	Report initial north of Buckhorn Lakebed abeam the bend in Rosamond Blvd.

<p><i><b>NOTE:</b> offset minimum of 1,500' for 04L/22R, no farther than the south edge of the main ramp. For 04R/22L, offset no farther than the south edge of 04L/22R.</i></p>	22L/R	<p>Initial contact with Tower occurs Hwy 58 abeam the mines.</p> <p>Enter initial at the east edge of Rogers Lakebed, 5 NM from end of runway.</p>		Report initial over the east shore of Rogers Lakebed.
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**Table 8.1. Aircraft Pattern Descriptions (Continued)**

<b>Type Pattern</b>	<b>Runway</b>	<b>Entry</b>	<b>Altitude/ Airspeed</b>	<b>Remarks/In structions</b>
<p>Tactical Initial Break South of and abeam approach end</p> <p><i><b>NOTE:</b> offset 3000' opposite the direction of break. Additional elements will be established in no more than 1 NM trail</i></p>	04L/R	Enter initial north of Buckhorn Lakebed, 5 NM from end of runway.	3,800' MSL 350 KIAS	Report initial north of Buckhorn Lakebed abeam the bend in Rosamond Blvd.
	22L/R	<p>Initial contact with Tower occurs Hwy 58 abeam the mines.</p> <p>Enter initial at the east edge of Rogers Lakebed, 5 NM from end of runway.</p>		Report initial over the east shore of Rogers Lakebed.



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**Table 8.1. Aircraft Pattern Descriptions (Continued)**

<b>Type Pattern</b>	<b>Runway</b>	<b>Entry</b>	<b>Altitude/ Airspeed</b>	<b>Remarks/Instructions</b>
Simulated Shuttle Approach (Fig 8.3.)	04L/R	Enter Low Key over Rosamond Lakebed	Low Key: between 20,000' and 28,000'  Low Key: 260-300 KIAS  Final: 180-220 KIAS	Report 1 minute to Low Key Shuttle. Tower instructs the crew to report Low Key Shuttle then High Final. Tower issues landing clearance or other pertinent instructions at High Final.
	22L/R	Enter Low Key over Hwy 58		

<p>Lifting Body Approach (Low Lift Over Drag Profile) (Fig 8.3.)</p>	<p>04L/R / 22L/R</p>	<p>Enter High Key Lifting Body Over South Base and turn toward Low Key Lifting Body</p>	<p>High Key: 24,000' to 27,000' MSL  High to Low Key: 260-300 KIAS  Final: 180-220 KIAS</p>	<p>Report 1 minute to High Key Lifting Body. Tower instructs the crew to report High Key Lifting Body then Low Key lifting Body and High Final.  Tower will issue a landing clearance or appropriate information at High final.  If unable to report High Final or a landing clearance is not received, execute a go-around and advise Tower of intentions. Request a northbound turn when conducting successive Lifting Body approaches.</p>
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8.1.5. Activity on Rwy 22R/04L will be conducted IAW paragraph 4.2.4.

8.1.6. Tactical (TAC) Initial. Use caution when conducting TAC Initial formations simultaneously with tower fly-by-line operations and shuttle L/D approaches due to offset of the overhead approach procedures. Fighter aircraft will adhere to the following procedures when performing a TAC Initial:

8.1.6.1. On initial contact with Edwards Tower, flight leads may request a “TAC Initial”. Pattern traffic and weather should be taken into consideration before making the request with Tower. Tower is the final approval authority.

8.1.6.2. Flights will enter at the VFR entry point at 350 Knots Calibrated Airspeed (KCAS). The flight lead shall fly the ground track of the normal Edwards AFB initial pattern for the active runway. Wingmen will fly line abreast with 3000’ offset opposite the direction of break. Additional elements will be established in no more than 1 NM trail. Flights will provide their own separation during the break maneuver. Flights/elements will break to arrive on downwind with normal overhead pattern spacing.

8.1.7. Tower Flyby Pattern (Fig 8.4.). The Tower Flyby Pattern is a procedure for aircraft speed and altitude calibration. The ground track is similar to the North Reentry pattern for Rwy 22. The “Final” portion of the pattern follows a ground track parallel to and just north of the extended centerline of Rwy 04/22 starting at the northeast edge of Rogers Lakebed terminating near Taxiway Alpha. Pattern alignment markers are on the lakebed between the flyby tower and the east shoreline. *NOTE: Multiple aircraft formations (two or more) are not authorized flyby line operations unless specific test requirements exist and are approved. Expect aircraft overflights at or above 3,300' MSL between the tower flyby final and the flyby tower. Be alert for opposite direction traffic when Rwy 4 is active.*

8.1.7.1. The entire pattern is approximately 4NM wide and 8NM long. The crosswind portion follows a ground track to the west of the base housing area and landfill. The downwind leg is flown to remain north of North Base and the city of North Edwards.

8.1.7.2. Tower Flyby final will be flown east to west with a right-hand turn to crosswind and base leg regardless of the active runway.

8.1.7.3. Procedures. Contact Tower for clearance before entering the Tower Flyby pattern. Maintain communications with the Tower while in the pattern and make radio calls at the positions depicted in the figure. Advise Tower on downwind leg of last pattern and intentions to follow. Abort the procedure if communications with Tower are lost.

8.1.7.3.1. Crews may enter the Tower Flyby pattern from the Rwy 22 departure leg by turning crosswind. Aircraft outside the main base traffic pattern may coordinate with Tower to enter the Tower Flyby pattern on downwind, base, or final.

8.1.7.3.2. Downwind leg will be flown at 3500' MSL. Crew may descend after starting the turn to base leg, but will not descend below 500' AGL until crossing Hwy 58. Do not descend below 200' AGL until established on final and remain below 2800' MSL on final until abeam the flyby tower.

8.1.7.3.3. Airspeed on downwind will be 250-350 KIAS as mission requirements dictate. Aircraft on final will remain below Mach 1. Maximum speed will be 450 KIAS unless part of an approved test plan or curriculum.

8.1.7.3.4. Light aircraft may turn early to crosswind between Main Base and Base Housing. This ground track is depicted in Fig 8.4. as the cross-hatched area. Advise Tower when making short turnout. Do not turn early to crosswind if carrying external stores other than fuel tanks.

8.1.7.3.5. For slow-speed patterns, the downwind and base leg groundtracks can be modified to remain south of the North Base complex and turn base leg over Rodgers Lakebed (light aircraft only).

8.1.7.3.6. For high-speed patterns, the downwind leg may be extended. Advise Tower before extending downwind and use caution for light aircraft along Hwy 58. Maintain a standard rectangular pattern groundtrack and turn to base leg at or before reaching the VORTAC.

8.1.7.3.7. Tower will hold all taxiing aircraft short of the Flyby Line at taxiway Charlie once the Flyby aircraft reports "Final, Tower Flyby". Advise Tower on downwind leg of last pattern and intentions to follow. Immediately after passing the fly-by tower, climb to 3,300' MSL and fly runway heading until Tower approves crosswind/closed traffic or as instructed by Tower.

8.1.7.3.8. Aircraft other than AFTC/DFRC assigned require 412 OG/CC approval to utilize the tower flyby. On initial contact with SPORT or Tower, advise them of this approval.

8.1.7.3.9. A Pacer Fly-By mission requires a FOD check after departure/landing and should be issued a discrete mission frequency that will be monitored by Tower.

Figure 8.1. Edwards Traffic Patterns

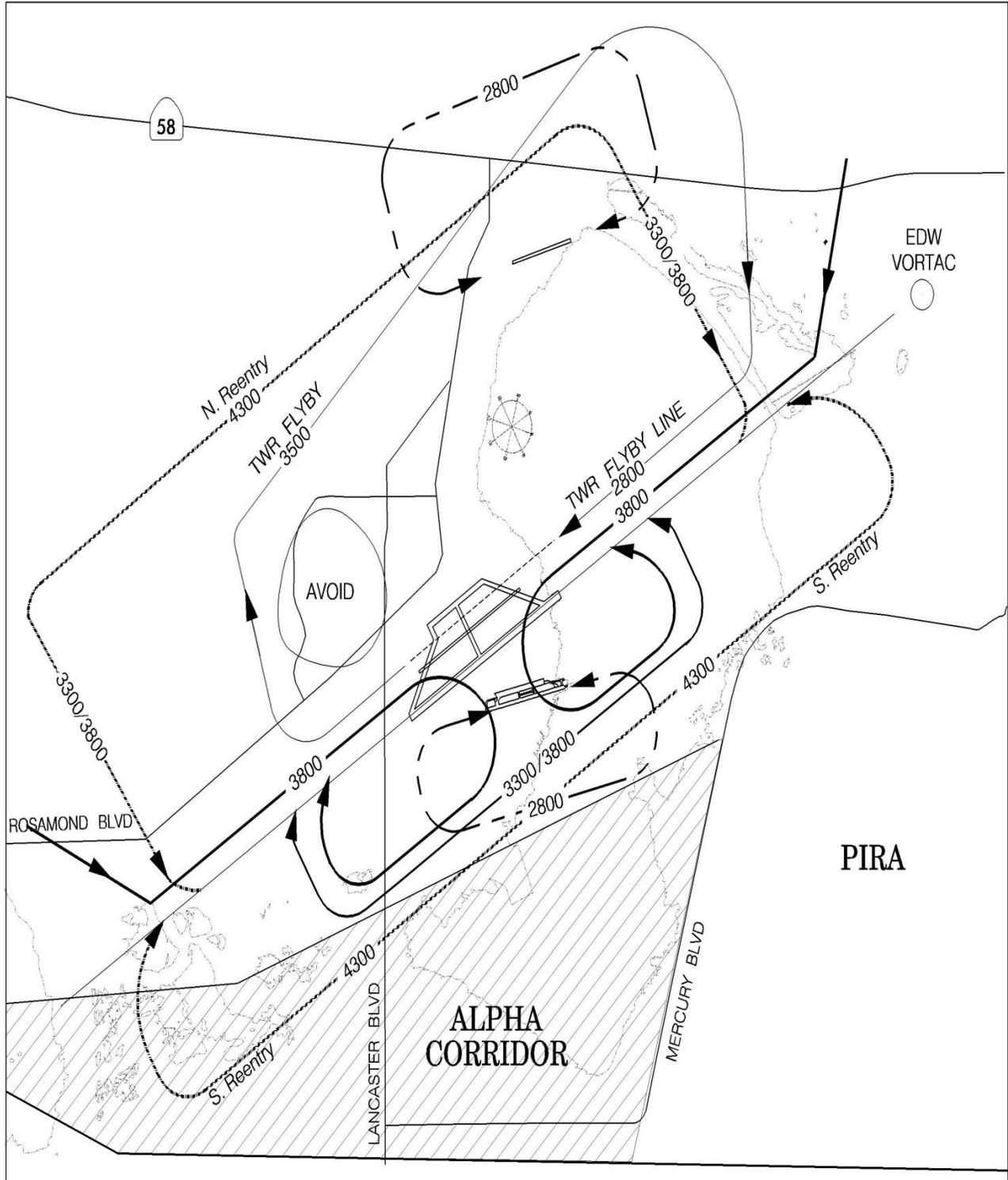


Figure 8.2. SFO Patterns

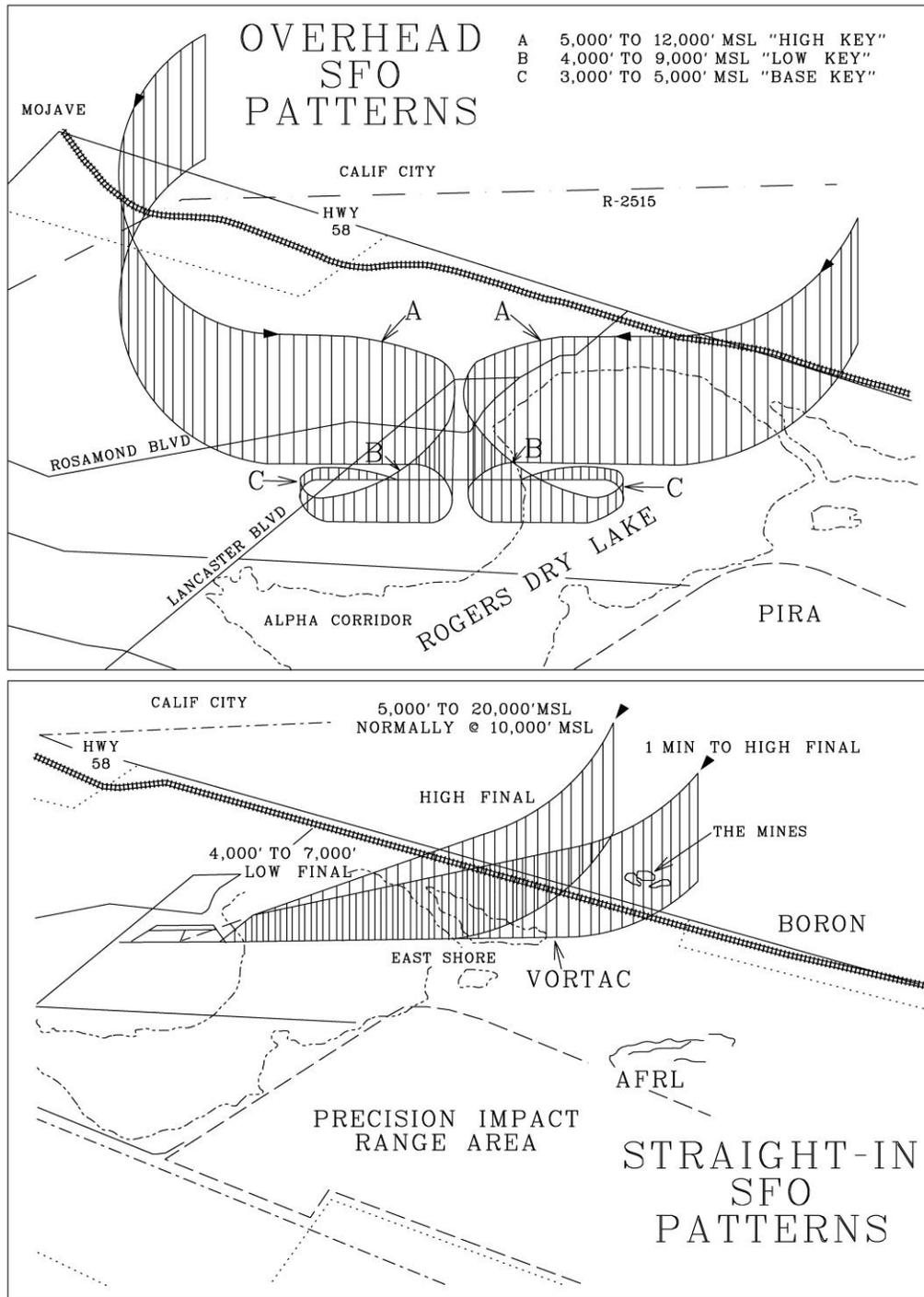


Figure 8.3. L/D-Shuttle Approaches

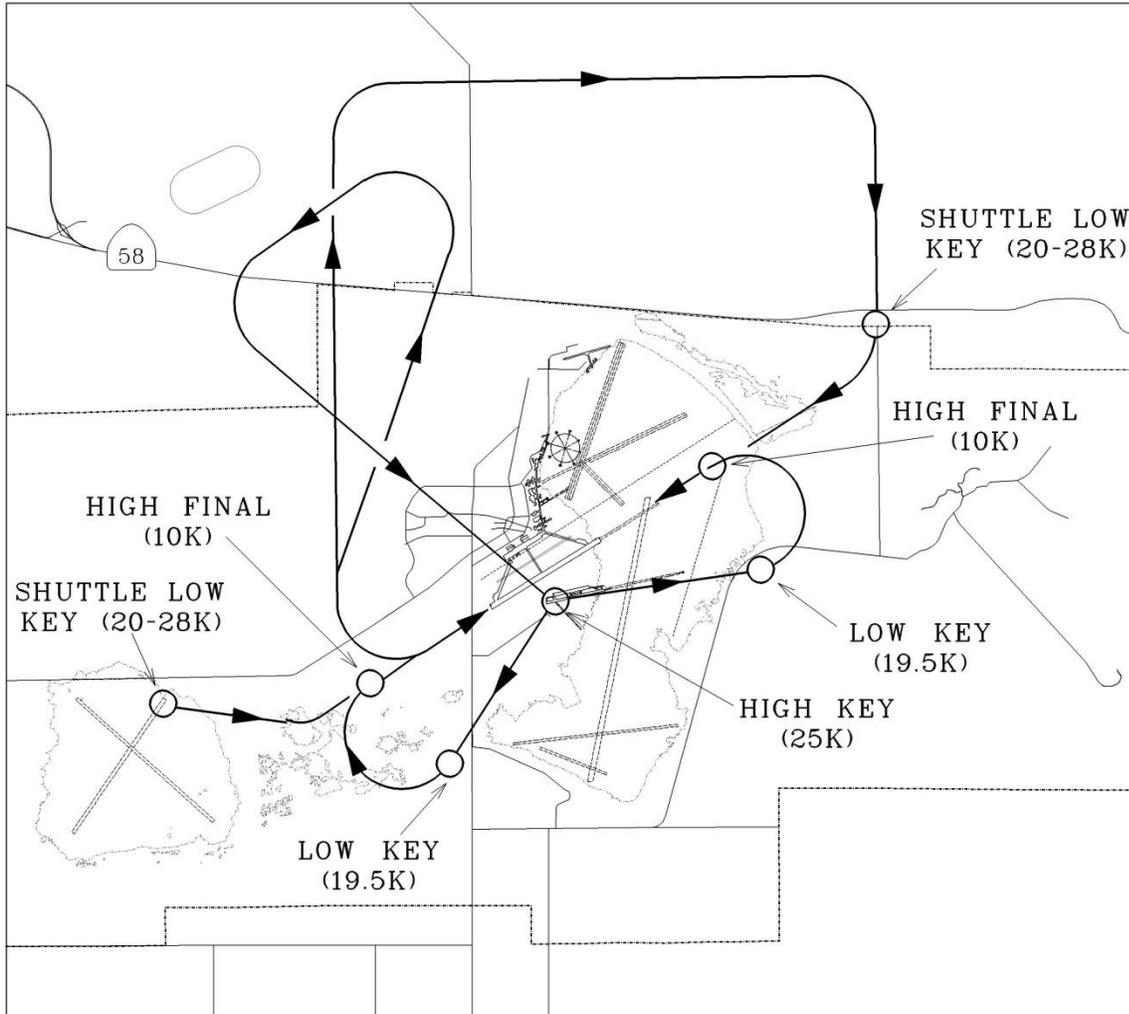
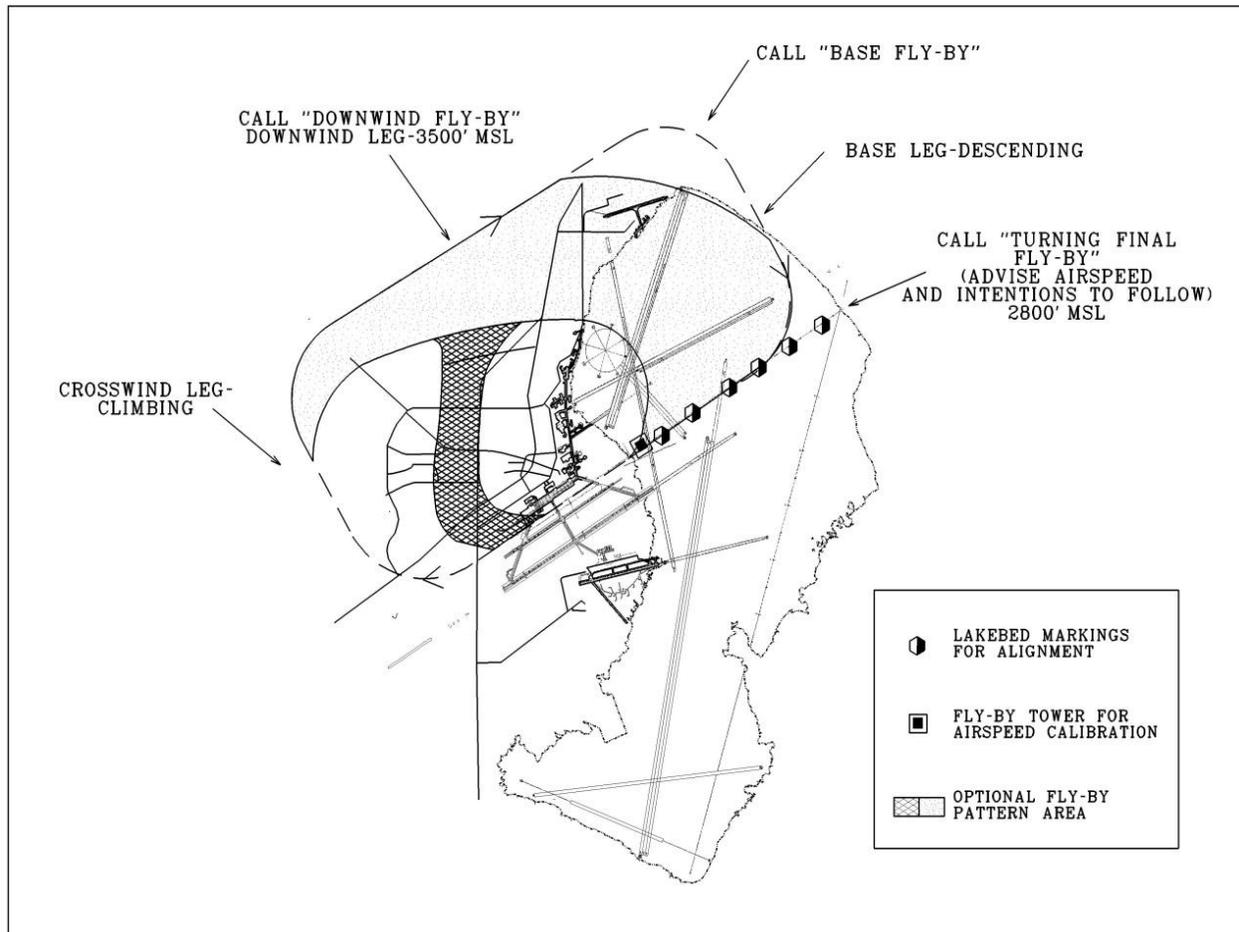


Figure 8.4. Tower Fly-By-Line



8.1.8. North Base Operations. (Fig 8.1.) Traffic Pattern. Conventional/North Base Runway 06/24. A 45° entry to a downwind leg north and parallel to Rwy 06/24. Pattern altitude is 2,800' MSL.

8.1.8.1. All operations requiring use of the North Base Runway require the approval of the 412 OG/CC. Turns are only authorized on the concrete portions of the runway (located at midfield and runway ends). Test missions using North Base will schedule Crash/Fire/Rescue support IAW AFFTCI 11-115, Scheduling Procedures for Aircraft and Air/Ground Support.

8.1.8.2. Tower provides advisory services only. Since the runway environment is not visible from the Tower, crews are responsible for providing separation from other aircraft.

8.1.8.3. Departures. Prior to taxi, obtain ATIS. North Base Runway in use is determined by runway in use at Main Base (i.e. Main Base Rwy 22 - North Base Rwy 24). Contact Ground Control when ready to taxi. Contact Tower prior to entering the runway. Crew will be instructed to report airborne (takeoff clearance will not be issued) and will receive traffic advisories.

8.1.8.4. Arrivals. Prior to entering Class D airspace, contact Tower for landing instructions with callsign and position. Tower transmits Main Base wind and runway in use, altimeter, and desired reporting point. Crew will be issued traffic advisories and instructed to report off the runway. North Base lights will only be operated for an arrival or departure.

8.1.9. South Base Operations (Fig 8.1.) Traffic Pattern. A 45° entry to downwind. Pattern altitude 2,800' MSL. Left traffic for Rwy 24. Right Traffic for Rwy 06. Overhead patterns are not authorized. Takeoffs/landings at South Base are only authorized on the center 50' keel of the runway. Runway has standard "basic runway" markings (w/o lights and distance remaining markers). Runway is limited to BE20 type aircraft and smaller weighing 12,500 pounds or less.

8.1.9.1. Tower provides advisory services only. The runway environment is not visible from the Tower therefore crews are responsible for providing separation from other aircraft. If the Alpha Corridor is active, use the Rosamond or Alternate Hwy 58 East routes.

8.1.9.2. Departures. Prior to taxi, obtain ATIS. South Base runway in use is determined by runway in use at Main Base (i.e. Main Base Rwy 22 - South Base Rwy 24). Contact Ground Control when ready to taxi. Contact Tower prior to entering the runway. Pilots will be instructed to report airborne (takeoff clearance will not be issued) and will be afforded traffic advisories. Tower approves a departure from the pattern and specifies the route to fly consistent with the status of active areas. When Rwy 04 is in use, Rosamond departures from Rwy 06 will proceed via General's Hill direct Buckhorn Lakebed.

8.1.9.3. Arrivals: Prior to entering Class D airspace, contact Tower for landing instructions with call sign and position. Crew will be provided traffic advisories and instructed to report off the runway. When Main Base Rwy 04 is in use, arrivals will proceed to South base via Buckhorn Lakebed direct General's Hill.

8.1.9.4. Tower transmits Main Base wind, South Base runway in use, altimeter, known traffic, issues route of flight consistent with the status of active areas and specifies an appropriate reporting point (except when SPORT is open): Lancaster arrival – before entering downwind; Rosamond arrival – Bend-in-the-Road. Obtain Tower approval before crossing the extended centerline of Rwy 04. Cross at least three (3) miles from the approach end of Rwy 04, below 500' AGL.

**8.2. Reduced Same Runway Separation Standards (RSRS).** AFMC RSRS is authorized for Rwy 04R/22L and 04L/22R.

8.2.1. RSRS (Tables 8.2. and 8.3.) may be applied between AFMC aircraft, aircraft assigned to Dryden Flight Research Facility and other aircraft as specified in AFI 13-204v3 AFMC SUP 1.

8.2.2. Temporarily assigned aircraft supporting flight testing or other Non-AFMC aircraft not specified in the AFI 13-204v3 AFMC SUP1 are not authorized RSRS unless covered by an LOA.

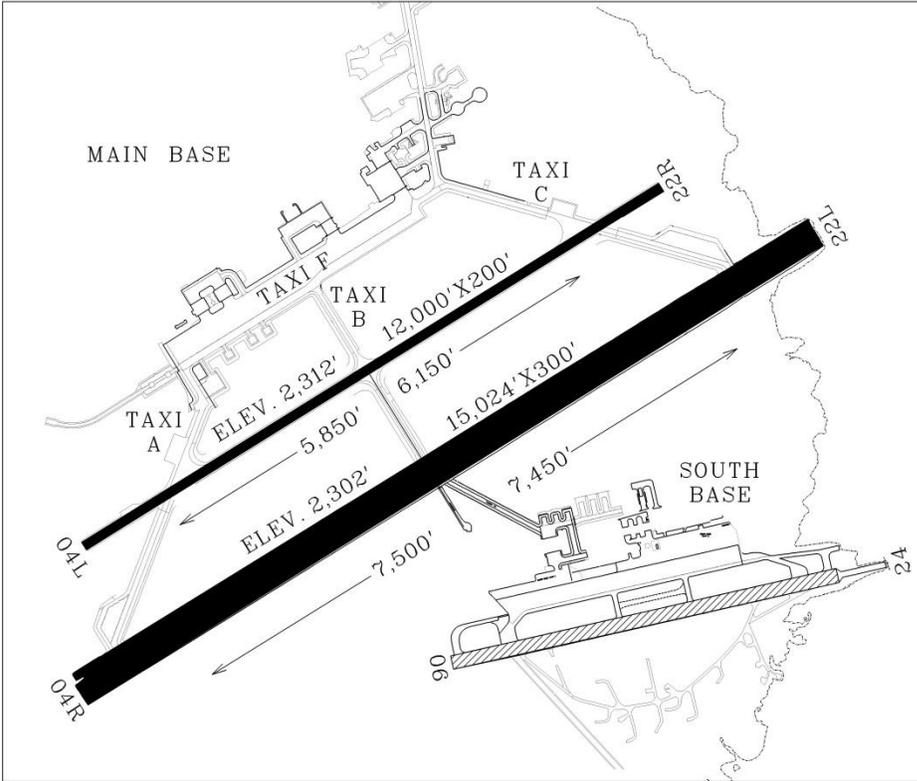
**Table 8.2. Daytime RSR Standards**

<b>PAIRINGS</b>	<b>FS behind TG</b>	<b>FS behind LA</b>	<b>LA behind LA</b>	<b>FS behind FS</b>	<b>LA behind FS</b>	<b>TG behind TG</b>	<b>TG behind LA</b>
Same Fighter-Type	3,000'	3,000'	3,000'	3,000'	3,000'	3,000'	3,000'
Same Trainer-Type	3,000'	3,000'	3,000'	3,000'	3,000'	3,000'	3,000'
Dissimilar Fighter/Trainer-Type	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'
Same Non-Heavy, Tactical Airlift Type (i.e. C-130)	3,000'	3,000'	3,000'	3,000'	3,000'	3,000'	3,000'
Same Type Aircraft Formations	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'
Same Type Heavy, FS Only	*	*	*	8,000'	*	*	*

**Table 8.3. Nighttime RSR Standards (After Civil Twilight)**

<b>PAIRINGS</b>	<b>FS behind TG</b>	<b>FS behind LA</b>	<b>LA behind LA</b>	<b>FS behind FS</b>	<b>LA behind FS</b>	<b>TG behind TG</b>	<b>TG behind LA</b>
Same Fighter-Type	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'
Same Trainer-Type	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'
Dissimilar Fighter/Trainer-Type	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'
Same Non-Heavy, Tactical Airlift Type (i.e. C-130)	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'
Same Type Aircraft Formations	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'	6,000'
Same Type Heavy, FS Only	*	*	*	8,000'	*	*	*
<b>(FS)–Full Stop (TG)-Touch &amp; Go (LA)-Low Approach</b>							
* FAA Order JO 7110.65 <i>Air Traffic Control</i> , Standard separation shall be applied.							
<i>NOTE: IAW AFTC directives, a full stop SFO landing behind another full stop landing requires a minimum of 6000 ft spacing.</i>							

**8.3. Intersection Departures (Fig 8.5.).** Due to the limited number of taxi routes available for arriving aircraft, intersection departures may experience delays for arriving aircraft taxiing from the main runway. Initiate intersection departure request with Ground Control upon initial contact. Intersection departures are not authorized for base assigned tactical/fighter, trainer/attack type aircraft such as F-16, F-22, F-35 or T-38.

**Figure 8.5. Runway 4-22 Intersection Departures**

**8.4. Circling Approaches.** Circling approaches to Rwy 04R/22L or 04L/22R are not authorized when there are aircraft in the South Base traffic pattern due to potential traffic conflicts and/or wake turbulence hazards. Advise the Tower prior to entering Class D airspace to allow time to terminate South Base operations.

**8.5. Instrument Meteorological Conditions (IMC).**

8.5.1. Departures. Crews will request an IFR clearance from ground control when departing during IMC. JOSHUA will issue the clearance and obtain a portion of R-2515 from SPORT to allow IFR operations within R-2515. This airspace will only be obtained to allow an aircraft to climb through the clouds/weather to reach VMC. Advise Tower one minute prior to departure for climbout instructions.

8.5.2. Upon reaching VMC crews shall cancel the IFR clearance with JOSHUA and resume VFR operations. JOSHUA will issue a complex clearance and accomplish a data transfer to SPORT, if applicable.

**8.6. Radar Traffic Patterns.** When required, radar traffic patterns are located 6-10 miles northwest of Runway 04R/22L. Downwind is normally flown at 5,000' MSL. The normal radar traffic patterns are:

- 8.6.1. Runway 22L: Right rectangular pattern.
- 8.6.2. Runway 04R: Left rectangular pattern.
- 8.6.3. SPORT MRU will not provide radar vectors to initial.

**8.7. Successive Instrument Approaches.** Crews are highly encouraged to complete proficiency requirements off-station. Due to the high volume of test mission activity, Palmdale is the primary airfield for all aircraft requesting multiple, practice instrument approaches.

**8.8. Local Climb-Out.** Local climb-out instructions for Rwy 04R/22L are “Maintain at or below 3,300’ MSL until departure end of the runway, fly runway heading, climb and maintain 5,000’ MSL.” Locally assigned aircraft will be issued “Execute local climb-out” unless traffic conditions dictate otherwise.

**8.9. Go Around/Missed Approach Procedures.** For Runway 04R/22L or 04L/22R, maintain at or below 3,300’ MSL until departure end of the runway, fly runway heading then climb and maintain 5,000’ MSL. Offset as required so as not to directly overfly personnel or equipment on the runway. Alternatively maintain at least 500’ AGL (1,000’ AGL for heavy aircraft) vertical separation when over flying personnel or equipment on the runway.

**8.10. Aero Club Operations.** The primary departure/landing surface is South Base Runway 06/24.

8.10.1. Use of main base and lakebeds is for official use only.

8.10.2. Tower must be open to use Main Base and/or lakebed runways.

8.10.3. If an Aero Club aircraft becomes NORDO within the Class D airspace, continue on the arrival routing and enter the traffic pattern for the runway in use at South Base.

8.10.4. Lakebed procedures:

8.10.4.1. Green lakebed operations are authorized IAW applicable Aero Club Operating Instructions and during airfield operating hours.

8.10.4.2. Lakebed operations shall be on a non-interference basis as coordinated with the Airfield Manager.

**8.11. Opposite Direction Operations.** Opposite direction traffic is not authorized when the Tower radar display is out-of-service. JOSHUA will participate in opposite direction operations in accordance with the procedures outlined below. Opposite direction operations are also authorized when SPORT is operational. When necessary for coordination between Tower and SPORT the phrase “Opposite direction departure/arrival, Runway (Number)” will be used.

8.11.1. Opposite direction takeoff/landing is authorized as listed in Table 8.4. The Tower Flyby Line is not considered opposite direction traffic during Rwy 04R operations.

**Table 8.4. Opposite Direction Requirements**

Aircraft emergency
Required by an approved test plan
Required for munitions de-arming
Aircraft performance limitations preclude using runway in use
Mandatory pilot proficiency/training

8.11.2. Aircraft requesting opposite direction operations can expect delays until the following restrictions are met.

8.11.2.1. IFR aircraft. (VFR aircraft using IFR procedures will also use these separation criteria.)

8.11.2.1.1. Arrival vs. Arrival - the succeeding arrival is 10 flying miles from the runway after the preceding opposite direction arrival has crossed the landing threshold for a full stop.

8.11.2.1.2. Arrival vs. Departure and vice versa - the departing aircraft is airborne and has turned on a diverging course prior to the arriving aircraft reaching 10 flying miles from the runway.

8.11.2.2. VFR aircraft. Aircraft are handled on a case-by-case basis depending on existing traffic. Cutoff points for arriving aircraft are Buckhorn Lake for Rwy 4 and East Lake Shore for Rwy 22 (preceding opposite direction arriving aircraft has crossed the landing threshold for a full stop or opposite direction departing aircraft has turned on a diverging course).

**8.12. F-16 Air Start Procedures.** The F-16 Combined Test Force (CTF) must accomplish airborne engine shut-down and restart maneuvers (air starts) requiring a sterile approach corridor and runway environment in the event the engine fails to restart. The aircraft's Emergency Power Unit (EPU) will be intentionally activated. This may result in the inability of the test aircraft to communicate and squawk Mode 3/C while the engine is shut down.

8.12.1. Shut-downs originate in the vicinity of the Boron Mines (Rwy 22L) or Rosamond Lakebed (Rwy 04R) from an altitude of FL200 to FL250. In the event the engine does not restart, the maneuver will terminate in either a straight-in or overhead Flame Out approach to Rwy 04R/22L (primary) or a green lakebed runway (secondary).

8.12.2. The crew will ensure the sortie is scheduled in CSE as an air start mission. As a minimum, contact the ROC, SOF, Tower and SPORT via landline to brief the mission before departure to include land time and recovery location. If information changes, crew/Tower will ensure the ROC is notified prior to landing.

8.12.3. The crew and appropriate monitoring agency (Tower or SPORT) will utilize a discrete frequency throughout the mission.

8.12.4. The standard pattern is a racetrack west of the field.

8.12.5. Terminate full-stop landings and touch-and-go approaches (low approaches authorized) and departures once the Tower has approved shut down ("Cleared Shutdown"). The runway should be kept clear of all traffic between the "Cleared Shutdown" and "Restart" calls. Tower resumes normal operations after the pilot reports "Restart." The time between "Cleared Shutdown" and "Restart" is normally 1 minute or less.

8.12.6. While conducting air start missions, Tower will broadcast on common frequencies, to include Ground Control frequencies, "air starts in progress" on an as needed basis to alert other crews as to the reason for issuing a low approach or hold short instruction.

8.12.7. The following radio calls are mandatory:

8.12.7.1. F-16 Airstarts. Crew will report "(Callsign) one minute to shutdown". This advisory call allows Tower to assess the traffic situation. If a potential conflict exists, Tower will disapprove the request ("Unable Shutdown"). If not cleared to shutdown the

pilot will orbit (one turn) at current position then report “(Callsign) one minute to shutdown.” Once cleared for shutdown Tower will announce “Cleared shutdown.” The crew is not required to acknowledge Tower’s “Cleared Shutdown” call. When ready to RTB, the crew shall call the CONFORM (ROC) and update the land time to ensure proper recovery personnel are present. An IFE will not be declared for scheduled EPU activation unless a subsequent leak is detected.

8.12.7.2. F-35 Airstarts. The pilot will report “(Callsign) two minutes to shutdown.” Tower will acknowledge the two minute call with “Tower copies, (Callsign) two minutes to shutdown.” This advisory call allows Tower to assess the traffic situation. The pilot will then report “(Callsign) one minute to shutdown.” If there are no potential conflicts, Tower will acknowledge the one minute call with “Airstart approved.” If a potential conflict exists, Tower will disapprove the request “Unable airstart.” The pilot and SPORT will acknowledge Tower’s shutdown disapproval. The pilot will orbit/hold (one turn) at the current position and then report “(Callsign) one minute to shutdown” following the turn in holding.

8.12.7.3. Upon successful restart, the crew will broadcast “(Callsign) restart”. Tower will acknowledge the restart call and resume normal traffic pattern procedures.

8.12.8. If the aircraft doesn’t have a successful restart, the pilot will call initiate a flameout landing from a high key position. The flameout pattern will normally be flown to the currently active runway. The pilot will inform Tower if the intended landing runway changes. Tower will activate the Primary Crash Phone and declare an IFE.

### **8.13. Global Hawk Operations.**

#### 8.13.1. Departure.

8.13.1.1. Tower will restrict operations south of the respective Rwy 22L/R centerline until Global Hawk has climbed above the Class D airspace.

8.13.1.2. SFO (both Straight-in and Overhead), L/D and Shuttle approaches will be restricted until Global Hawk has passed east of the VORTAC.

8.13.1.3. Tower will coordinate the departure release with SPORT when the Alpha Corridor is active.

#### 8.13.2. Arrival.

8.13.2.1. Operations south of the respective Rwy 22L/R centerline, to include SFO, L/D and Shuttle approaches are not authorized when Global Hawk reaches the VORTAC until it has landed.

8.13.2.2. North patterns and straight-in approaches are authorized during routine Global Hawk operations.

**8.14. Night Vision Device (NVD) Operations.** For operations within the Class D, NVD operations require 24 hour prior notification and a NOTAM shall be issued. Crews will notify the Tower/CONFORM prior to and upon completion of NVD operations. Tower will issue ATC instructions IAW FAAO 7110.65, Air Traffic Control. Weather minimum requirements will be basic VFR (1,000’ ceiling/3 miles visibility).

8.14.1. Airfield lighting priority will be given to non-participating aircraft. When requested, Tower will adjust lighting settings and advise crew prior to making changes. Tower will inform crews when non-participating aircraft are 15 flying miles from the airport. Tower will notify JOSHUA/SPORT when NVD operations are in effect and termination.

8.14.2. Aircraft conducting NVD operations shall terminate or exit the Class D upon notification of inbound non-participating aircraft. Taxi operations will be conducted with lights "on". During scheduling with the ROC, crews shall enter "NVD Operations" in the Sortie Title.

8.14.3. Both Tower and crew may call for immediate termination of the NVD operations based on operational priorities.

8.14.4. The following areas are authorized for NVD operations with prior approval through 412 OG: Lakebed Rwy 07/25, 09/27, 30L and 36C, and South Base Rwy 6/24. Helicopters do not need prior permission to operate on South Base Rwy 6/24.

**8.15. Airborne Pickup.** Pilots will advise Ground Control of airborne pickup intentions on initial contact. With crew concurrence, Tower may clear an aircraft for takeoff between elements of an airborne pickup. Aircraft must be assigned to Edwards.

**8.16. Weather Balloon Launch Procedures.** The 412 OSS Weather Flight (412 OSS/OSW) will contact the Tower for approval to launch a weather observation balloon within 7 SM of the airfield. Normally, weather observation balloons will be launched from building 3520 approximately 1.5 to 2 miles north of the airfield. Tower will coordinate approval with the controlling/using agency for R-2515 prior to the launch and pass the approval or disapproval in the interest of flight safety (and reason for delay if disapproved) back to the Weather Flight IAW EAFB Plan 15-1, *Weather Support Plan*. Upon approval of a balloon launch, the Weather Flight will notify Tower when the balloon is released and again when the balloon passes 12,000' AGL. Tower will pass both notifications to the using agency for R-2515.

## Chapter 9

### PRECISION IMPACT RANGE AREA AND ALPHA CORRIDOR

**9.1. Overview.** This chapter describes PIRA and Alpha Corridor procedures and range operations within these areas. It applies to range personnel and AFTC organizations, other government agencies, contractors and other organizations that use the facilities and equipment. The PIRA and Alpha Corridor are scheduled IAW AFFTCI 11-15.

**9.2. Definitions.** The following terms are common to operations within the PIRA.

9.2.1. Radio Frequency. PIRA master control station (DOWNFALL) and SPORT monitor mission frequencies when aircraft operate on the range.

9.2.2. Range Classifications (Table 9.1.). A range's classification (A, B or C) may change due to the type of activity being conducted on that range at that time.

**Table 9.1. Range Classifications**

Class A	Range is manned, has ground scoring capability and an RCO on the ground controlling the aircraft
Class B	Range is manned or unmanned with ground scoring capability but no RCO on the ground to control the aircraft
Class C	Range is unmanned with no scoring or ground aircraft control capability

9.2.3. RCO. For Class A range operations a qualified RCO controls air-to-ground operations. The RCO is the final authority for safe airborne range operations and is required during all Class A range operations and/or mission profiles with flight below 300' AGL.

9.2.4. Range Operations. The DOWNFALL supervisor is designated as the Downfall Range Control Officer (DRCO) and has delegated authority from the Range Operations Officer (ROO) to comply with all instructions requirements outlined in AFI 13-212. Under Class B Range Operations, the RCO function is delegated to SPORT .

9.2.5. SPORT. Controls airborne access to the PIRA and Alpha Corridor. SPORT uses instrumentation and surveillance radars, which provide precise positioning, airspace surveillance, traffic advisories and boundary calls.

9.2.6. DOWNFALL. Controls ground activity within the PIRA and is located in the northeast corner of the West Range. Surface vehicles must obtain approval from DOWNFALL prior to entering the PIRA Monday-Friday 0700L to 1700L or whenever DOWNFALL is manned.

9.2.7. Live Ordnance. Any munitions which contain energetic material in high enough concentration such that the material presents an explosive hazard and is capable of producing blast pressure, fragmentation, and incendiary or thermal effects. The term munitions includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes and incendiaries, bulk explosives, chemical agents, chemical weapons, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges and devices and components thereof.

9.2.8. Foul Line Road (Fig 9.3.). A hard surface roadway extending north and south from North Flank to South Flank towers immediately west of the Dual air-to-ground Range (DAGRAG) on the West Range. Strafe targets are located 2,000' from Foul Line Road. On the East Range, the road runs east to west immediately south of the strafe target. Strafing passes on DAGRAG is authorized on a west to east heading or a south to north heading on the East Guns. Strafing will terminate at or prior to crossing Foul Line Road.

9.2.9. Hot Run/Pass. Intent to release/fire an object/projectile or laser from the aircraft. SPORT issues Hot Run clearances (e.g., "Cleared to arm and release/cleared to Lase Hot Pass"). When unable to issue clearance, SPORT will instruct the aircraft to "Continue" the approach. SPORT will issue the clearance as soon as possible or instruct the aircraft to abort the hot pass (providing a reason) when the clearance cannot be issued.

9.2.10. Cold/Dry Run. A maneuver where the crew simulates weapon releasing/firing an object/projectile or laser. SPORT issues a Cold/Dry Run clearance (e.g., "Simulate cleared to arm and release/cleared to Lase Dry pass").

9.2.11. Hung Ordnance. Ordnance not released although a release was attempted.

9.2.12. South Lakebed. The area of Rogers Lakebed south of the extended centerline of South Base Rwy 06/24.

9.2.13. COWBELL. Call sign for the East Range RCO.

9.2.14. DAGRAG. Call sign for the West Range RCO.

**9.3. General PIRA Procedures.** DOWNFALL is the focal point for all ground activities. SPORT, DOWNFALL and COWBELL or DAGRAG will monitor the assigned mission frequency as required for mission support during PIRA operations. DOWNFALL maintains a log of personnel entering/exiting the PIRA and ensures those cleared onto the range are equipped with a two-way radio for communications with DOWNFALL. DOWNFALL will provide escorts as necessary.

9.3.1. The DOWNFALL (to Include DAGRAG/COWBELL) Range Control Officer:

9.3.1.1. Notifies SPORT when range conditions change during PIRA operations (vehicle/personnel movement).

9.3.1.2. Directs Hot Run abort (transmits "Abort, Abort, Abort" on mission frequency) when circumstances warrant.

9.3.1.3. Advises SPORT/Aircrew when a mission has violated range safety rules and determines the need to suspend range operations.

9.3.1.4. Notifies Det 5, AFRL Site Operations Control Center (SOCC) of pending supersonic flights through the Alpha Corridor and PIRA, Haystack Butte and operations on the East Range and PB-6.

9.3.1.5. Maintains a listening watch on mission frequencies and range land mobile radios.

9.3.2. The DOWNFALL Range Control Officer maintains a range log, which includes (Table 9.2.):

**Table 9.2. Range Log**

Details of range sorties
Types and quantities of ordnance expended
Dud rates
Air and ground safety incidents
Maintenance services requested from Civil Engineering and response dates

### 9.3.3. SPORT:

9.3.3.1. Verifies cleared to arm/release point.

9.3.3.2. Verifies expected weapon/device impact area/target, etc.

9.3.3.3. Verifies range status and briefs expected weapon/device impact area/target to DOWNFALL before the aircraft enters the range. **NOTE:** *Prior to dropping/firing any object/ordnance with undetermined or unique ballistic characteristics, the AFTC Range Safety Office will obtain appropriate data from the Project Engineer, calculate impact footprints and provide the footprint data to the SPORT Supervisor.*

9.3.3.4. Except as authorized in 9.3.4, SPORT will not authorize an aircraft to arm if an inadvertent release of the device would impact outside the PIRA. SPORT's clearance to arm will ensure a 1 statute mile (SM) buffer zone within the confines of the PIRA.

9.3.3.5. If a weapon/device is inadvertently fired, released or impacts off range, the SPORT controller immediately notifies the Ridley Mission Control Center (RMCC) Operation Duty Officer (ODO). The ODO and SPORT will complete notifications as required.

### 9.3.4. The use of live munitions on the PIRA is restricted to PB-13.

9.3.4.1. Live munitions are limited to those devices having a Net Explosive Weight of 500 pounds or less.

9.3.4.2. The release of weapons with live sub-munitions or those containing depleted uranium are not authorized. Releases are further restricted to one weapon per pass.

9.3.4.3. As a general rule, only precision guided munitions employing precision targeting methods (e.g., Laser, GPS, Infrared) will be used. Non-precision targeting methods may be approved on a case by case basis by Range Safety.

9.3.4.4. In the event a weapon fails to detonate, the mission will be terminated and the target closed until Explosive Ordnance Disposal (EOD), IAW AFI 13-212, *Range Planning and Operations*, and AFI 32-3001, *Explosive Ordnance Disposal Program*, performs a surface sweep of the target area. If the weapon is located on the surface, EOD will dispose of the weapon IAW 60-series publications. Craters will be checked for uncovered weapons and inspected for condition. In the event the weapon is determined by EOD to be below the surface (subsurface), DOWNFALL will record the event in the Expended Munitions Tracking Report. Live ordnance deliveries may resume once EOD clearance is completed.

9.3.4.5. PB-13 will not be used for the release of inert stores.

9.3.4.6. For environmental compliance, no more than 100 live weapons may be dropped in any calendar year. DOWNFALL is responsible for monitoring utilization and advising the 412th Range Squadron's ROO of any mission restrictions resulting from this requirement. DOWNFALL shall coordinate all live ordnance operations in advance with EOD.

9.3.4.7. All projects planning to use live munitions are required to contact the AFTC Range Safety Office a minimum of 15 days in advance to discuss their requirements. All projects shall notify Range Safety/DRCO a minimum of 72 hours in advance of any scheduled mission and provide data on weapon type, flight profile and planned release conditions.

9.3.4.8. After analysis of project requirements, Range Safety will provide SPORT/DRCO a mission briefing to include approved release profiles and footprint data. Deviation from Range Safety approved flight profiles is not authorized.

9.3.4.9. For live weapon delivery, a qualified RCO will visually monitor the target area from a location outside the hazard footprint to provide visual confirmation of weapon detonation. The RCO will maintain direct communications with the mission aircraft, SPORT and DOWNFALL and discontinue operations in the event of a dud round.

9.3.5. Ordnance with a maximum energy footprint that exceeds the boundaries of the PIRA may be dropped provided the device is equipped with a Range Safety approved flight termination system capable of containing the weapon within the PIRA. Test project coordinators shall contact the Range Safety Office to determine the flight termination system requirements.

9.3.6. The Project Engineer shall provide the AFTC Range Safety Office with sufficient data to calculate impact footprints when planning to drop, fire or launch ordnance/objects with undetermined/unique ballistic characteristics.

**9.4. Road Closures.** See Edwards, AFB Scheduling Procedures for Aircraft and Air/Ground Support.

9.4.1. Close Mercury Blvd (Fig 9.1.) when a mission profile indicates a hazard to people/equipment using Mercury Blvd. Test directors, test conductors or project range control officers will schedule the closure of Mercury Blvd. SPORT may choose to close the boulevard prior to mission start although the test project leaders did not request the closure. Mercury Blvd should be closed when:

9.4.1.1. As part of a test scenario, a clearance to arm is required west of Mercury Blvd and an inadvertent release of the device would result in impact west of the PIRA, on the lakebed or Mercury Blvd.

9.4.1.2. Doubt exists as to the flight characteristics of the device being dropped (e.g., fuel cells, retarded devices with sequential chute deployments) and impact west of the PIRA is possible.

9.4.1.3. A laser hazard would exist on Mercury Blvd caused by the use of a non-eye safe laser in other than a point track mode.

9.4.1.4. Forward firing projectiles, gunfire or rockets cross Mercury Blvd.

9.4.1.5. For any munitions/external stores separations conducted east to west on the West Range.

9.4.2. The Tower will close the Santa Fe Trail (Fig 9.1.) to eastbound vehicular traffic and restrict vehicles/personnel from the South Lakebed when Mercury Blvd is closed for PIRA operations. Westbound traffic is allowed since the vehicle is proceeding away from the hazard area.

**9.5. Range Control Officer.** A qualified RCO is required in DAGRAG tower and/or COWBELL tower when weapons delivery altitudes require Class A range operations. Class B range operations are conducted under SPORT control using normal PIRA procedures when Class A is not required. Exceptions for maneuvering deliveries or laser-designated deliveries, which create a hazard for personnel in the range tower, must be approved in the applicable test plans.

9.5.1. Each unit or CTF will ensure RCO training includes the following:

9.5.1.1. The RCO performs a DAGRAG or COWBELL RCO tour of duty supervised by the DRCO as part of the RCO training program.

9.5.1.2. The RCO is thoroughly familiar with the following directives (Table 9.3.):

**Table 9.3. Range Directives**

AFI 13-212, <i>Range Planning and Operations</i> , and its AFMCSUP
Major Command publications/instructions governing tactical fighter weapons delivery procedures
Edwards AFB Instruction 13-100, <i>Airfield Operations (AO)</i>

9.5.1.3. Arrange for the provision of a qualified RCO for actual or simulated weapons delivery missions when the recovery altitude for any event is below 300' AGL.

9.5.2. RCO Responsibilities.

9.5.2.1. Controls DAGRAG/COWBELL missions under the provisions of the directives listed above.

9.5.2.2. Is responsible for the safety of all DAGRAG/COWBELL operations during tour of duty.

9.5.2.3. Briefs range personnel on scheduled mission(s).

9.5.2.4. Monitors aircraft in the pattern with primary concern for aircraft on final.

9.5.2.5. Monitors passes for dive angle, minimum altitude, fouls and dangerous passes.

9.5.2.6. Monitors strafe passes closely for flat passes, firing past foul line, lazy pull offs and improper pattern procedures.

9.5.2.7. Duty location is in DAGRAG tower (located between north and south targets) or COWBELL tower (located between SCATT and PB-12).

**9.6. DAGRAG and COWBELL Procedures.** Contact DOWNFALL (5-5603) for ground range entry approval.

9.6.1. The DAGRAG RCO or COWBELL RCO inspects target areas to be used prior to mission start for safety hazards and ricochet potentials.

9.6.1.1. Is responsible for ground personnel within the DAGRAG/ COWBELL area.

9.6.1.2. Maintains a complete Mission/PIRA range log.

9.6.2. DRCO Responsibilities.

9.6.2.1. Advises and assists the DAGRAG or COWBELL RCOs as required.

9.6.2.2. Schedules EOD and target clearance. EOD is scheduled by directly contacting EOD during duty hours or CP after duty hours.

9.6.2.3. Conducts visual inspections of facilities, in particular, the area next to the strafe/bombing targets for cleanliness and conditions.

9.6.3. When the Det 5, AFRL Motor Behavior Complex experimental area 1-36 Pad D (Fig 11.4.) is active, AFRL personnel assigned to 1-36 are not required to obtain permission to enter the East Range to work on Pad D as long as they remain within the 1-36 area.

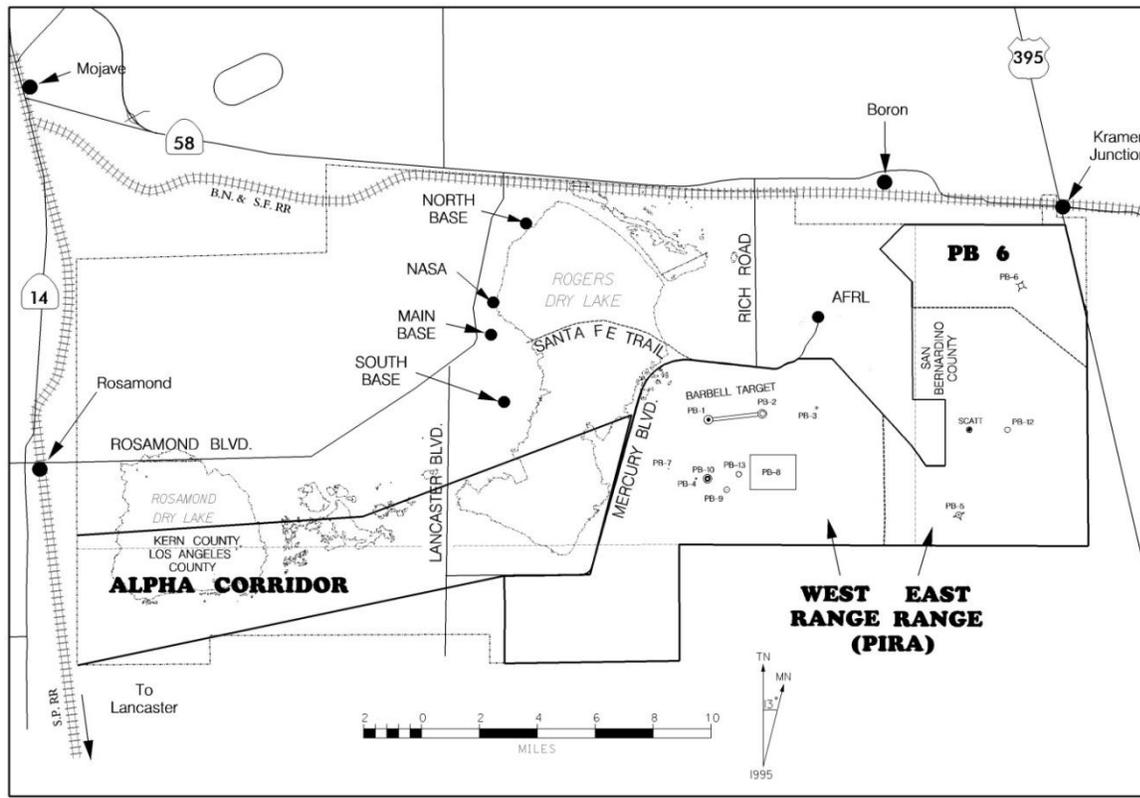
9.6.3.1. When the site is not supporting Det 5, AFRL operations, over-flight is the same as the rest of the PIRA (minimum 100' AGL).

9.6.3.2. When the site is active, over-flight is restricted to the minimum altitude plus site elevation (2,727' MSL) as scheduled by Det 5, AFRL. Det 5, AFRL Safety will notify DOWNFALL when the site and over-flight restrictions are active and when mission is complete. DOWNFALL will notify SPORT and the Range Operations Duty Officer

**9.7. Alpha Corridor (Fig 9. 1., Attachment 4 item 204).** A west to east air corridor into the West Range beginning at the SW corner of the Edwards AFB reservation and extending east to the western boundary of the PIRA. The northern boundary runs across the north side of the settling ponds and intersects Mercury Blvd near the point the road turns east towards Det 5, AFRL. SPORT provides status advisories (hot or cold). Treat the Alpha Corridor as hot until confirmed otherwise. Boundary coordinates are listed in Attachment 4.

**9.8. PIRA (Fig 9. 1.).** Located on the eastern portion of the EAFB reservation, the PIRA is used for air-to-ground gunnery, precision bombing tests, photo resolution, spin testing, aerial decelerator tests, air-to-ground laser tests and other tests requiring precision instrumentation. Contact Range Safety for approved lasers and laser operations on the PIRA. Any laser operation outside the scope of a Consultative Letter from AFRL Det 5 (711 HPW/RHDO), PIRA Laser Safety Survey, has to be reviewed and approved by Test Safety and Range Safety. The PIRA is subdivided into 2 ranges, West Range and East Range. Each range is scheduled individually or in conjunction with each other depending on mission requirements. Conduct concurrent operations within these ranges under SPORT control.

Figure 9.1. Alpha Corridor/PIRA



9.8.1. The West Range is a conventional Class A or Class B dual air-to-ground gun/bomb and limited rocket range with associated airspace. The range contains 5 Precision Bombing (PB) circles, PB-8 recovery target, a saturation bombing target (Barbell Target) and the DAGRAG. PB-1 and PB-10 have scoring instrumentation. PB-13 is approved for limited release of live ordnance. West Range boundary coordinates are listed in Attachment 4 item 206 and PBs are items 91, 124, 148, 162, 172-173, 177, 182 and 183.

9.8.1.1. A additional target has been added to West range called B target (old PB-4), this target has a permanent reflector and also a hot barrel stand for IR testing. Both NGA surveyed.

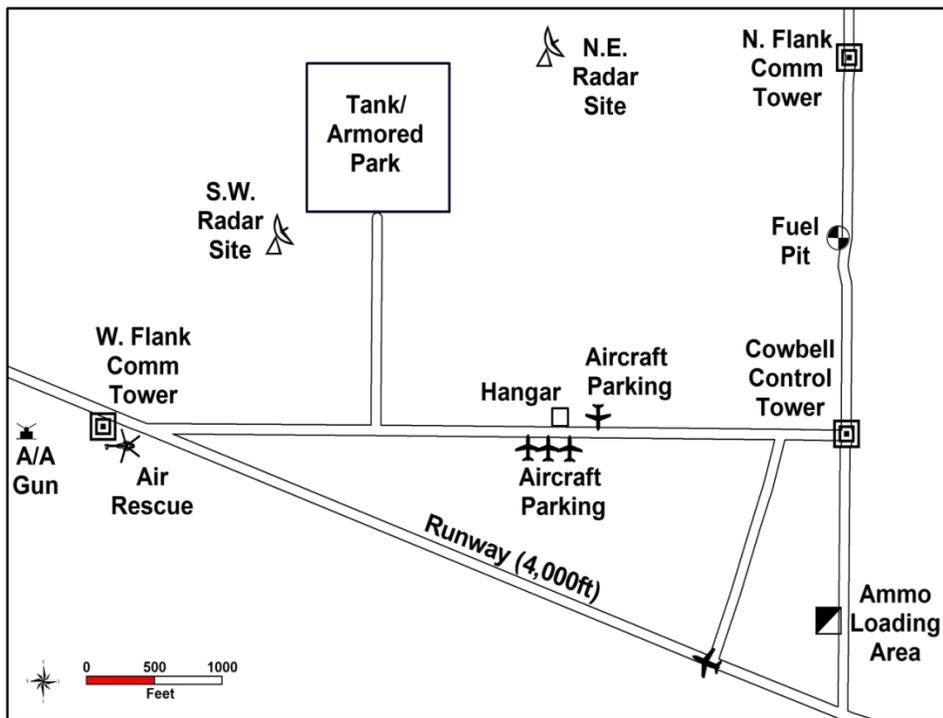
9.8.2. The East Range is a conventional Class A or Class B, single air-to-ground gunnery, bombing and limited rocket range with associated airspace. The East Range has 2 PB bomb circles (PB-6 and PB-12), a single air-to-ground gunnery/rocket range and a sensor only Mobile Target System (MTS) Simulated Combat Airfield and Tactical Target (SCATT) Range (Fig 9.2.). Fig 9.2. depicts a "typical" configuration, which may be modified to support mission requirements. PB-6 is part of the East Range but is not approved for bombing, it is primarily used for laser/sensor testing. PB-12 has video bomb scoring and is the only target available for bombs and has the Video Bombing Scoring (VBS) capability. The gunnery range has a left-hand pattern for strafing/bombing with 10 strafe targets and a bomb circle, lanes one and two have the acoustic scoring capability. The East Range boundary, Precision Bombing Targets and SCATT Range coordinates are listed in Attachment 4 items 174, 176, 205 and 215-221.

9.8.2.1. A additional target has been added to East range called A target, this target has a permanent reflector and also a hot barrel stand for IR testing. Both NGA surveyed.

9.8.2.2. No Southwest bombing run ins allowed on PB-12 when COWBELL is manned due to the location of the tower.

9.8.3. Fig 9.1. depicts the locations of the PB targets located on the East and West Range. The Barbell Target is located between PB-1 and PB-2. This saturation-bombing target will be used for missions requiring multiple weapons releases. The area extends from the centers of the two precision bombing circles (1.8 NM) and outward 300' either side of centerline. Centerline coordinates are N3453.15' W11745.38' to N3453.32' W11743.47'.

**Figure 9.2. SCATT Range**



**9.9. Alpha Corridor and PIRA Procedures.** Schedule IAW AFFTCI 11-15.

9.9.1. Crew procedures:

9.9.1.1. Contact SPORT prior to departure to confirm range schedule and provide ordnance release parameters.

9.9.1.2. Coordinate entry point for the Alpha Corridor or PIRA with SPORT.

9.9.1.3. Without prior coordination with SPORT, avoid flying between 2500' MSL to 3500' MSL crossing Rosamond Blvd north of Rosamond Dry Lake.

9.9.1.4. Request PIRA/Alpha Corridor clearance from SPORT on mission frequency or 343.7 (Channel 5) prior to entry.

9.9.1.5. Entry to the East Range is generally from north of Hwy 58 in the vicinity of Kramer Junction.

9.9.1.6. Enter PB-6 from the north or west, remain north of Det. 5, AFRL, if possible.  
*NOTE: Remain at or above 5300' MSL when overflying Det 5, AFRL unless otherwise coordinated with the Det 5, AFRL Site Operations Control Center (SOCC).*

9.9.1.7. Confirm the following (Table 9.4.) with SPORT before first run:

**Table 9.4. Weapons Release/Fire Information**

Type and quantity of weapons to release/fire and whether ordnance is live/inert/training
Intended speed at release/fire point
Intended altitude at release/fire point
Aircraft maneuver (level, dive, turn, etc.)
Target

9.9.1.8. Acknowledge position advisories and range constraints.

9.9.1.9. Supersonic approaches into the PIRA are restricted to the Alpha Corridor and Pira Supersonic Area as defined in paragraph 12.3.

9.9.1.10. Mission plan changes must be forwarded to SPORT as soon as they are known to ensure successful coordination.

9.9.2. The Test Director (TD) or Test Conductor (TC) determines if minimum altitudes require a Class A or Class B range for planned operations.

9.9.3. Missions requiring the Alpha Corridor, the PIRA in conjunction with the Alpha Corridor or use of any PIRA ranges, under SPORT control, will:

9.9.3.1. Provide Range Division ODO pre-mission planning and briefing information.

9.9.3.2. Use COLD SPOTTING charges for ALL air-to-ground weapons deliveries to reduce the risk of fire from spotting charges during the summer months (April-September). Hot spots for test plans or build-up sorties for test plans may be used if required. If hot spots are used for test or test prep purposes, deliveries should be restricted to the more accurate delivery methods listed in Table 9.5. Exceptions to this policy may be granted on a case by case basis by contacting the PIRA supervisor (5-6148) or the Range Operations Office (7-2727).

9.9.3.3. When planning to drop/fire/shoot an object onto the PIRA, regardless of the intent to use instrumentation radar or other range assets, the TD/TC or RCO assisting the test mission will provide SPORT with the information identified in Table 9.6., as applicable, no later than 1 hour prior to departure:

**Table 9.5. Delivery Methods**

F-16	CCIP, CCRP, DTOS
Other MDS	Plan the most accurate combination of weapon type, release parameters and targeting method for proficient weapon deliveries

**Table 9.6. Range Information**

<b>ORDNANCE</b>	
Type/quantity of weapons/devices to be released/fired/jettisoned	Size and weight
Drag (high/low)	Time of fall, trail distance, etc
Tank, full/empty	Inert
<b>PARAMETERS</b>	
True Air Speed (TAS) or Calibrated Air Speed (CAS)	Altitude in MSL
Type of release (single, ripple, salvo, automatic, manual)	Aircraft maneuver (dive angle, level, dive toss, turn)
Inert	
<b>AREA</b>	
Range (West, East or Alpha Corridor)	Target, DAGRAG, or PB number

#### 9.9.4. Simultaneous mission operations:

9.9.4.1. Lead crew commences final coordination to de-conflict their respective operation after preliminary agreement to conduct simultaneous operations between missions/test squadrons. Crews should exchange significant details of each operation to prevent conflicts. DO NOT place the burden of de-conflicting missions on a single user. Do not require visual separation from a DZ at extreme altitude or when restrictions to flight visibility exist.

9.9.4.2. If crews from conflicting missions agree to conduct simultaneous operations, each crew must telephone the SPORT supervisor, brief their respective mission, confirm each has coordinated with the other and agreed to simultaneous operations. The Survival School, Farm and ENAD DZs are within the Alpha Corridor. PIRA missions and paradrop operations in the Alpha Corridor may operate concurrently under SPORT control. Crews will advise SPORT of specific flight paths, altitudes and expected proximity to a DZ when simultaneous operations involve paradrop missions.

9.9.4.3. Aircrews of conflicting missions will contact SPORT prior to departure and brief mission changes, verify coordination with the other crew and agreement to conduct simultaneous operations.

9.9.4.4. SPORT is the final authority for simultaneous or continued simultaneous operations.

#### 9.9.5. Arming procedures:

9.9.5.1. Crews will not select Master Arm Enable without specific clearance from SPORT/RCO except when using Flight Lead Control Operations (paragraph 9.11). The

phrase “Cleared to Arm” in this and subsequent paragraphs is used to denote whatever process or procedure is used to unlock weapons prior to weapons release.

9.9.5.2. SPORT/RCO will not authorize a test mission to arm weapon(s) without assurance:

9.9.5.2.1. The aircraft has crossed into range airspace, or

9.9.5.2.2. The gun fire, rocket, gravity bomb or other devices would impact within the PIRA if an inadvertent release would occur at the moment of arming, or

9.9.5.2.3. If Mercury Blvd is closed and an inadvertent release occurs, the device being deployed would impact on Rogers Lakebed within the confines of the Alpha Corridor or PIRA. See AFFTCI 11-15 for authorized times when Mercury Blvd may be closed.

9.9.5.3. The following is required if SPORT is using radar to obtain position information on the test aircraft. SPORT will not issue clearance to arm when:

9.9.5.3.1. Position/identity of test aircraft is uncertain or questionable.

9.9.5.3.2. The controller is dissatisfied with the radar presentation.

9.9.5.4. Crews will ensure armament switches are safe until “Cleared to arm.” Do not arm (Table 9.7.) until:

**Table 9.7. Cleared to Arm Points**

Crossing Mercury Blvd on west to east runs into West Range
Crossing Lancaster Blvd when Mercury Blvd is closed. <i>NOTE: SRB may impose more stringent requirements</i>
Crossing Hwy 395 on east to west runs into West Range
Established on the range south of Haystack Butte on south to north runs on East Range
Crossing Hwy 58 on north to south runs into the East Range

9.9.5.5. Abort a hot run any time circumstances warrant. Acknowledge and confirm all arming switches are safe when directed to abort run ("Abort, Abort, Abort").

9.9.5.6. Notify SPORT of suspected malfunctions/anomalies.

9.9.5.7. Automatic delivery/separation by onboard radar or other methods is authorized.

9.9.5.8. SPORT will issue Simulate/Cleared to Arm calls.

9.9.5.8.1. First run will be dry unless pre-coordinated with SPORT/DOWNFALL, otherwise a first hot pass requires Class A procedures. (Reference AFI 11-214 para 5.3.2.1. The crew/mission director will determine hot/dry status before beginning each new run.

9.9.5.8.2. All missions involving the release of live ordnance are required to conduct a dry pass without exception.

9.9.6. SPORT will:

9.9.6.1. Brief DOWNFALL on range operations and pending supersonic flights in the Alpha Corridor (include number of runs and duration). Verify range status and brief expected weapon/device impact areas/targets, etc. prior to aircraft range entry.

9.9.6.2. Provide a qualified controller to direct/monitor PIRA missions.

9.9.6.3. Confirm the following (Table 9.8.) with crew before first run:

**Table 9.8. Aircraft/Weapons Data**

Type and quantity of weapon(s) to be released/fired
Aircraft maneuver (level, dive turn, etc.)
Planned target
Weapon status (live or inert)

9.9.6.4. Transmit, "Abort, Abort, Abort" to terminate a hot run when circumstances warrant.

9.9.6.5. Confirm weapon(s) switches are "Off/Safe" after actual/attempted release/fire.

9.9.6.6. When an air-to-ground tone correlation is used in conjunction with the release of a device, it should not be transmitted on the frequency (343.7) being used for advisory instructions. If possible, a second frequency will be scheduled to record the tone. A nominal period of five seconds is established for tone correlation.

9.9.6.7. Verify with DOWNFALL that the PIRA is clear prior to conducting a weapon/device drop/separation or laser operations.

9.9.6.8. Notify Tower and DOWNFALL of mission termination.

9.9.6.9. Provide traffic advisories and boundary calls as required.

9.9.6.10. Terminate range activity when safety is in question.

9.9.6.11. No restrictions are implied for maneuvers associated with either simulated evasive maneuver by the crew or when unusual maneuvers are required to satisfy test objectives.

**9.10. Combat or NON-Eye Safe Laser Operations.**

9.10.1. Roles and Responsibilities. For the purposes of this instruction, the terms “area track” and “point track” are interchangeable and indicate a targeting pod mode that will continue to track a specific geographic area without crew inputs. TC/TDs will perform pre-mission planning and coordination with SPORT IAW paragraph 9.9.2. and 9.9.3. Pilot pre-flight briefing with SPORT will include combat LASER attack plans IAW paragraph 9.9.1. Once airborne, SPORT will confirm planned attacks IAW paragraph 9.9.6.

9.10.2. Airborne Combat Laser Operations. Pilots will ensure LASER switches are OFF / SAFE until cleared by SPORT. Prior to the combat laser pass, the pilot will inform SPORT of the target, planned altitude, run-in direction, and ordnance to be dropped, if applicable, (e.g., “Zoom 01, next attack dry with combat LASER against PB-1, west-to-east run-in, FL200”). Combat LASER Communications is located in Table 9.9. below.

**Table 9.9. Example Communication for Combat LASER**

A/C: Inform SPORT of next attack target / altitude / run-in direction & ordnance to be dropped if applicable. “Zoom 01, next attack dry with combat LASER against PB-1, west-to-east run-in, FL200”
A/C: Complete area / point track on target “Zoom 01, point / area track on PB-1, request permission to lase”
SPORT: Checks for traffic between F-16 and Target, receives clearance from DOWNFALL for LASER Operation “Zoom 01, Cleared to lase PB-1” OR “Zoom 01, Continue” used to respond to radio calls while SPORT is awaiting clearance for Zoom 01 to lase. “Zoom 01, Cleared to lase PB-1”
A/C: LASER – ARM [Time permitting] “Zoom 01, Lasing” Complete Lasing Run “Zoom 01, LASER ARM-OFF” [For attacks with actual weapons delivery] : “Zoom 01, Off Hot, Switches Safe, LASER ARM - OFF”
SPORT: “Zoom 01, Roger”

9.10.3. Prior to and during Laser Operations. The aircraft will achieve area or point track on the target and will inform SPORT once this is accomplished. SPORT will then check for traffic between the lasing aircraft and the target, receive clearance from DOWNFALL for LASER operation and clear the aircraft to lase (e.g., “Zoom 01, Cleared to lase PB-X”). If there is a conflict, SPORT will call “Zoom 01, Continue” until the conflict is resolved. The aircraft will acknowledge clearance to lase, and, time permitting, will inform SPORT the LASER is armed and call when lasing begins and ends. Following the lasing pass, the aircraft will inform SPORT they are complete and the LASER is OFF / SAFE (e.g., “Zoom 01, LASER ARM-OFF”). If actual weapons delivery occurred in conjunction with laser operations, the call will be “Zoom 01, Off Hot, Switches Safe, LASER ARM - OFF”. SPORT will acknowledge this call.

9.10.4. SPORT will confirm Mercury Blvd is closed IAW paragraph 9.4.

9.10.5. Dragging LASER Passes. For passes where the LASER will be dragged across the ground or other than area / point track on the targeting pod, pilots will use plain terminology to communicate requirements to SPORT.

9.10.6. Lasing Contingencies. Lasing aircraft will maintain vigilant lookout in the targeting pod for an unstable pod track and for air and/or ground traffic. If traffic is encountered or if the pod stops tracking the target, the lasing aircraft will immediately stop lasing, break track and switch LASER to OFF / SAFE. A “knock-it-off” call will be made over the radio.

**9.11. PIRA Flight Lead Control Operations.** Flight Lead Control Operations allow the Flight Lead/Aircraft Commander (FL/AC) to assume range safety responsibilities and eliminates the requirement for SPORT to clear the crew to “arm and release” on every pass.

9.11.1. Flight lead control operations are authorized for fighter and trainer aircraft on test or training missions using training munitions with a known footprint. FL/AC is not authorized for missions using live ordnance.

9.11.2. Under flight lead control, SPORT and DOWNFALL monitor mission frequency and will call for an abort if required for safety. SPORT controls airborne access to the PIRA.

9.11.3. Flight lead control procedures:

9.11.3.1. The FL/AC will contact DOWNFALL and SPORT to pre-brief the mission prior to stepping. Briefings will cover type and amount of training munitions, planned events, pattern ground tracks and run-in headings.

9.11.3.2. DOWNFALL will provide the crew run-in/pattern restrictions and location of manned sites on the range.

9.11.3.3. The FL/AC must fully understand restrictions imposed and the location of manned sites. The FL/AC will advise SPORT and DOWNFALL of plans to operate within the PIRA under "flight lead control". It is critical the FL/AC clearly communicate expectations, mission requirements and planned profile to DOWNFALL and SPORT.

9.11.3.4. After takeoff the FL/AC will check-in with SPORT and DAGRAG or COWBELL on mission frequency for restrictions/planned events update. SPORT will clear the FL/AC for flight lead control operations.

9.11.3.5. The FL/AC assumes range safety responsibilities once cleared for flight lead control operations.

9.11.4. Due to the small size of the PIRA, the weapon's footprint for an unintentional release may not remain within the range boundary. Therefore, the FL/AC will safe delivery systems and call "OFF (hot/dry), SWITCHES SAFE" after each pass. FL/AC may arm delivery systems when established on base leg within the range boundary (i.e. conventional pattern). When the release pattern either exits or starts outside the range boundary, FL/ACs may arm delivery systems when entering the range and the weapons footprint for an inadvertent release is within the range boundary (i.e. on final for a radar release pattern after crossing the range boundary) and does not endanger manned sites.

**9.12. DAGRAG (Fig 9. 3).** A conventional low altitude, Class A or Class B, air-to-ground gunnery, bombing and limited rocket range with associated airspace.

9.12.1. DAGRAG has a North Range (right traffic) and a South Range (left traffic). Each range has 1 bomb/rocket circle, 5 strafe targets, 3 flank instrumentation towers and 1 common range control tower. (South Range has the acoustic scoring capability on lanes six and seven) Conventional 3 by 4 NM flight patterns (Fig 9.4.) support the ranges. Patterns are limited to Mercury Blvd to the north, Ave A to the south and a west base leg 1 NM east of the north/south lakebed runway. Normally, the eastern crosswind legs of the patterns are 1 NM beyond the target for a single aircraft. When 2 or more aircraft are in the same pattern, each adjusts the eastern crosswind leg to maintain adequate separation. There is no minimum altitude restriction on the north range pattern. Restrict south range pattern base leg to 4,800' MSL minimum until passing the south base runway centerline extension (Fig 9.5.). The airspace extends vertically to 14,000' MSL.

9.12.2. Minimum recovery altitudes are flown IAW AFI 11-2FT V3, *Flight Test Operations Procedures*. Lower minimum recovery altitudes must be included in the test plan approved by the Test Safety Review process.

9.12.3. Crews will brief the RCO on the mission including ordnance and type(s) of delivery, minimum altitudes, type patterns and foul criteria for Class A range operations and review pattern communication procedures. See AFI 11-2FT V3 for Weapons Employment Minimum Altitudes. RCO requirements concerning range classifications are defined in paragraph 9.2.

9.12.4. Contact SPORT on mission/common frequency for range clearance. Hold as directed by SPORT while awaiting clearance.

9.12.5. After receiving range clearance, contact DAGRAG Control on assigned frequency. DAGRAG Control/RCO assumes control of the mission in the DAGRAG pattern. Provide the following (Table 9.10.):

**Table 9.10. DAGRAG Information**

Aircraft type and tail number
Estimated number of sorties/passes
Type/quantity of ordnance

9.12.6. Procedures.

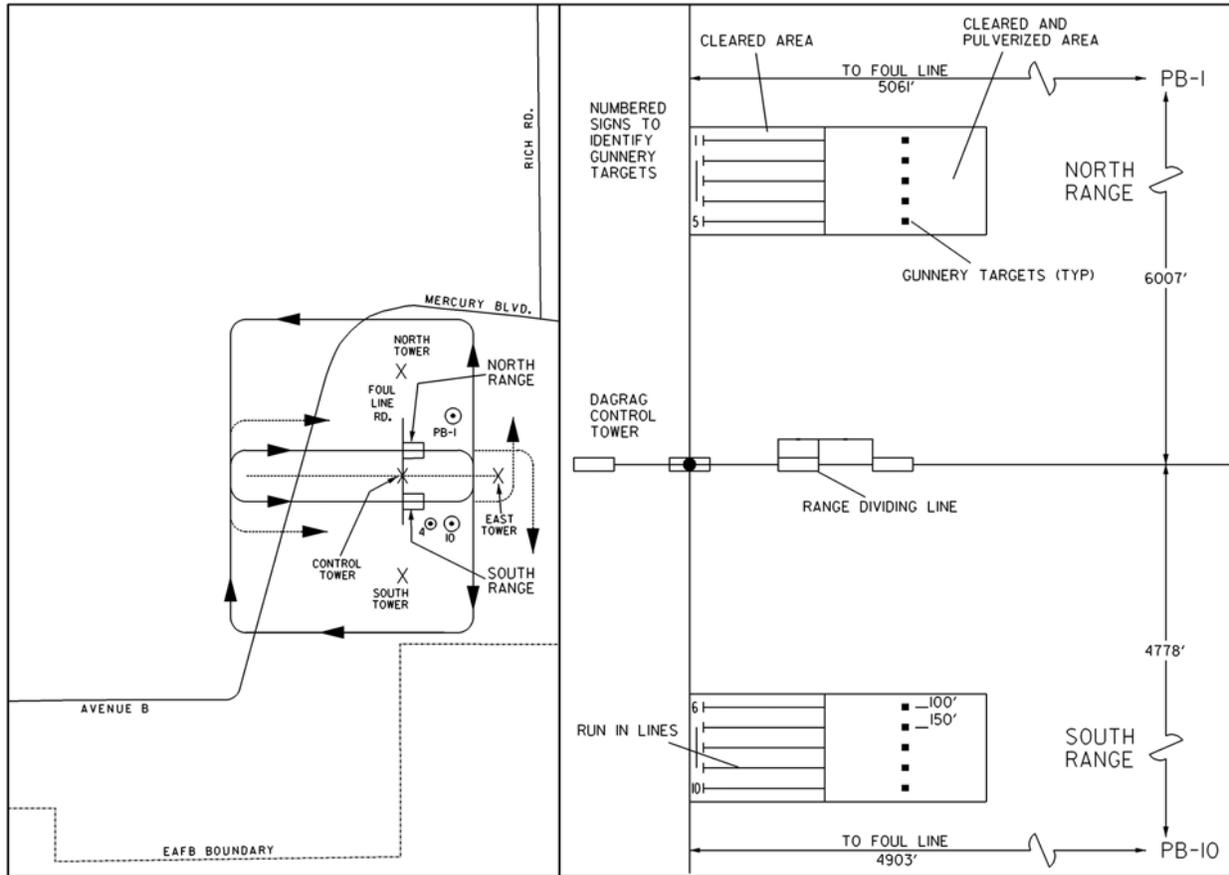
9.12.6.1. Fly at least one dry pass on each target complex (i.e. PB-10, strafe, PB-1, etc.).

9.12.6.2. Obtain DAGRAG Control clearance for each sortie/pass. During Class A range operations, armament and firing clearances are issued by the RCO.

9.12.6.3. Comply with mandatory radio calls in the DAGRAG pattern as follows:

9.12.6.3.1. Before rolling in on final, transmit "(call sign), in hot/cold." Do not switch on armament master switches until after rollout on final and cleared by DAGRAG Control/RCO. "SAFE" switches as soon as practicable after pullout.

Figure 9.3. DAGRAG



9.12.6.3.2. After release, "SAFE" armament master switch and call: "(call sign), off hot/dry, Switches Safe."

9.12.7. Follow SPORT position advisories, if applicable.

9.12.8. Crews will maintain separation from other aircraft while flying DAGRAG missions.

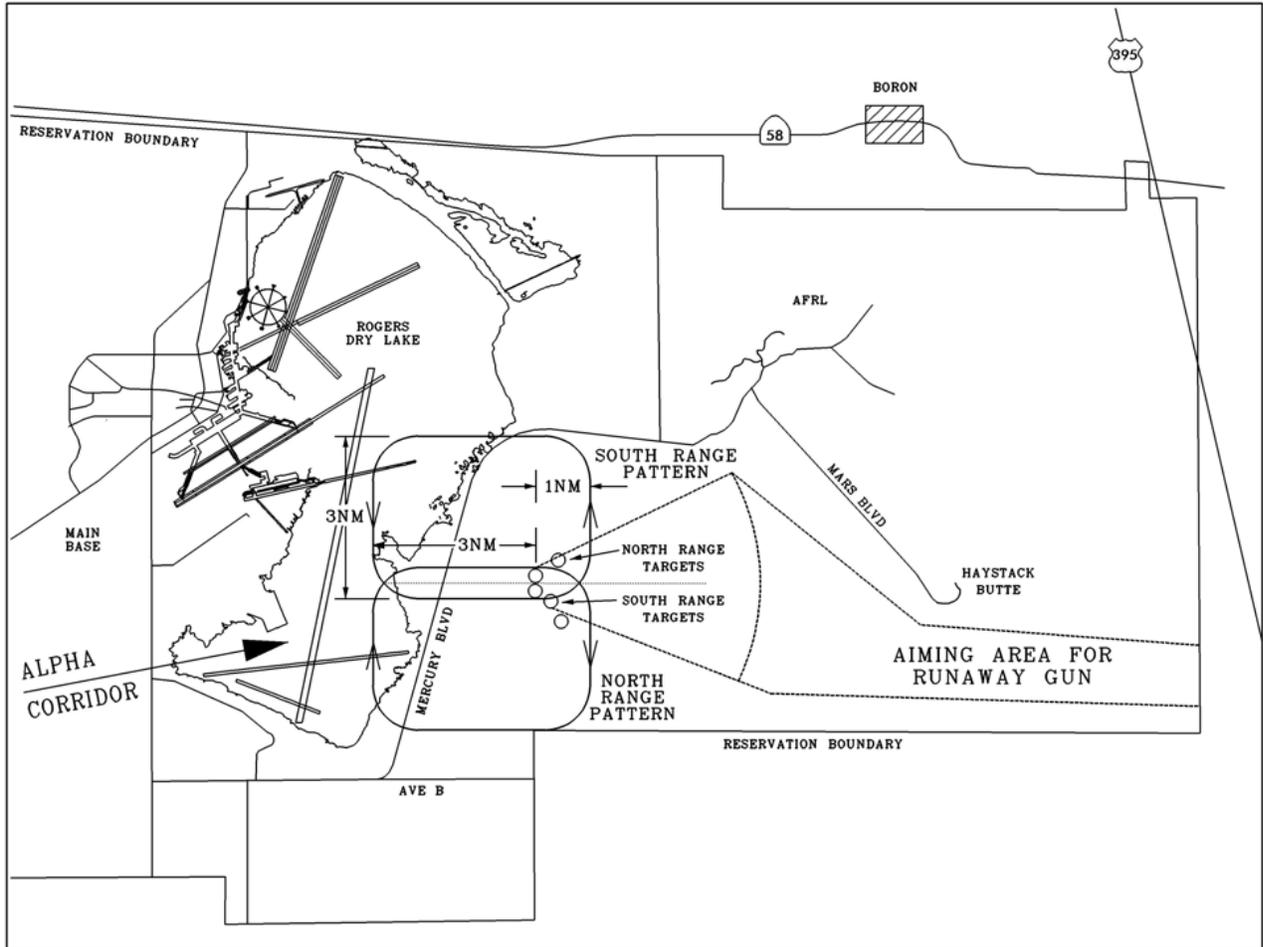
9.12.8.1. When more than 1 aircraft are in the same DAGRAG pattern, each crew adjusts position in the pattern to maintain proper spacing. Extend the pattern as far east as the western boundary of the East Range, or as far as required within the PIRA to maintain separation when the East Range is not in use.

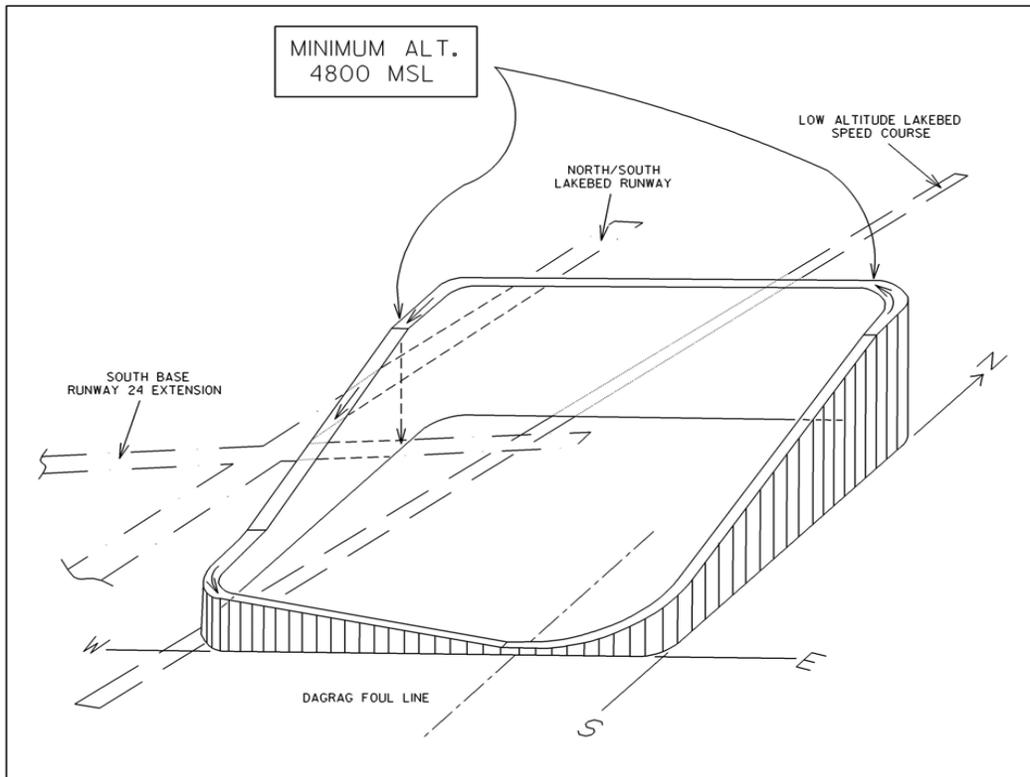
9.12.8.2. To minimize range use time and to provide time between each sortie for weapon scoring, DAGRAG may request the crew to extend the pattern 3 miles east of Foul Line Road before turning crosswind. This minimizes the potential ricochet hazard and ensures when one aircraft is turning final, the second aircraft is turning downwind. Further, both aircraft will intercept Foul Line Road simultaneously.

9.12.9. Notify DAGRAG and SPORT of suspected ordnance malfunction/anomaly.

9.12.10. Inform DAGRAG and SPORT of mission completion.

Figure 9.4. DAGRAG Traffic Patterns



**Figure 9.5. South Range Traffic Pattern Altitude Restriction****9.13. Emergency Procedures.**

9.13.1. Lost Communications. Abort the run if radio contact is lost with SPORT/DAGRAG Control at or prior to countdown to release/fire.

9.13.1.1. Attempt contact on SPORT common. If unable, contact Tower and RTB. DO NOT use the range without clearance.

9.13.1.2. SPORT immediately notifies Tower.

9.13.2. For hung ordnance notify SPORT:

9.13.2.1. Remain with SPORT and follow instructions to jettison on the PIRA.

9.13.2.2. Notify SPORT if jettison is unsuccessful.

9.13.3. Runaway Gun:

9.13.3.1. Direct fire into the targets as long as possible and then toward an uninhabited area, preferably a point approximately 1 NM south of Haystack Butte if on DAGRAG or West Range.

9.13.3.2. Aircraft with a rear firing gun will continue to direct fire into target area.

9.13.3.3. Aircraft with a side-firing gun will fly a course parallel to Foul Line Road then circle the target area directing fire into the target area.

9.13.4. If an aircraft crash occurs, the RCO/DRCO will:

9.13.4.1. Immediately notify SPORT who in turn notifies Tower to activate the Primary Crash Phone.

9.13.4.2. Provide SPORT/Tower the following (Table 9.11.):

**Table 9.11. PIRA Aircraft Emergency Information**

Aircraft type and call sign	Crash location
Condition of crew, if known (Use “DIM” code as outlined in Contingency Response Plan 10-211)	Aircraft’s organization, if known

9.13.4.3. Terminate all air activity on PIRA except that associated with search and rescue.

9.13.4.4. Advise 412 TW/CP (UHF 304.0) and Range Operations.

9.13.4.5. Provide/direct rescue efforts until relieved by fire department.

9.13.4.6. Maintain communications and provide assistance.

9.13.5. Missions Involving Flares and Tracer Munitions.

9.13.5.1. DOWNFALL will notify the Fire Department and cancel the requirement if mission cancels.

9.13.5.2. DOWNFALL will confirm fire department coordination (5-5232 or 5-5181) 30 minutes before scheduled mission time. DOWNFALL will terminate fire department standby when the mission concludes.

9.13.6. If a serious ground accident occurs, DOWNFALL will (Table 9.12.):

**Table 9.12. PIRA Ground Emergency Information**

Notify SPORT who will notify Tower to activate Primary Crash Alarm, if required.
Define the nature of the accident and requests aid
Describe accident location
Terminate appropriate air activity
Inform the RMCC ODO and Range Operations

**9.14. Photo and Infrared Tactical and Resolution Range.** The Photo and Infrared Tactical Range (Fig 9.6.) is located in the Alpha Corridor and PIRA. The range consists of a variety of targets at sited locations along the resolution range and the PB-7 Strip Range.

9.14.1. The Photo and Infrared Resolution Range (Fig 9.7.) is in the southeast part of Edwards proper. The range covers an area 2 NM wide and 21 NM long with 18 bar-type resolution targets, 1 tri-density target, 5 circle targets, 1 oblique target and 14 check-cross patterns. Photo resolution patterns are Military Standard 150.

9.14.2. Contact SPORT on mission frequency or UHF 343.7 to confirm range time and entry clearance. Hold as instructed and advise when mission is complete.

9.14.3. When SPORT is closed, contact Tower before entry. Maintain contact with Tower and advise when mission is complete.

Figure 9.6. Photo Infrared Tactical Ranges

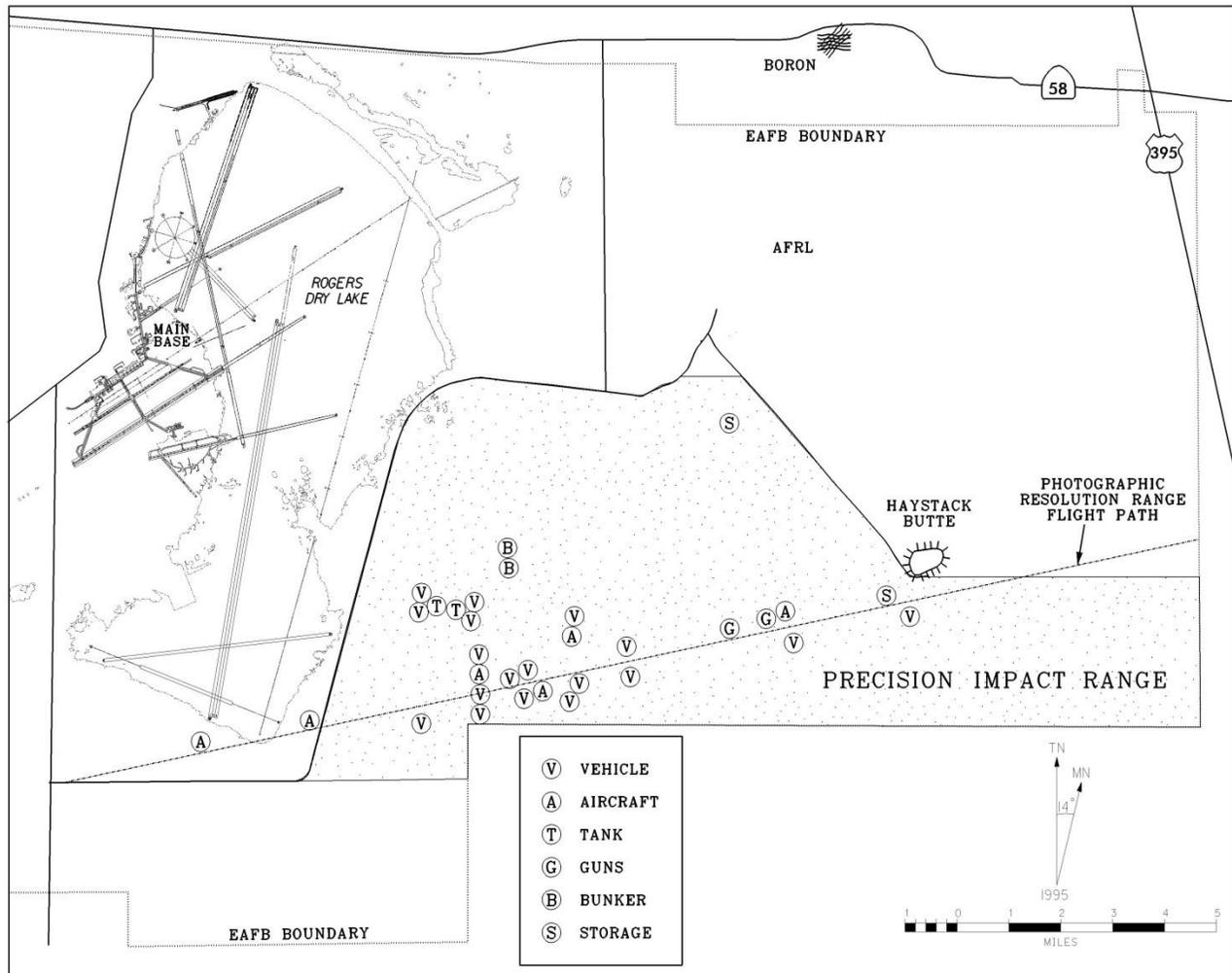
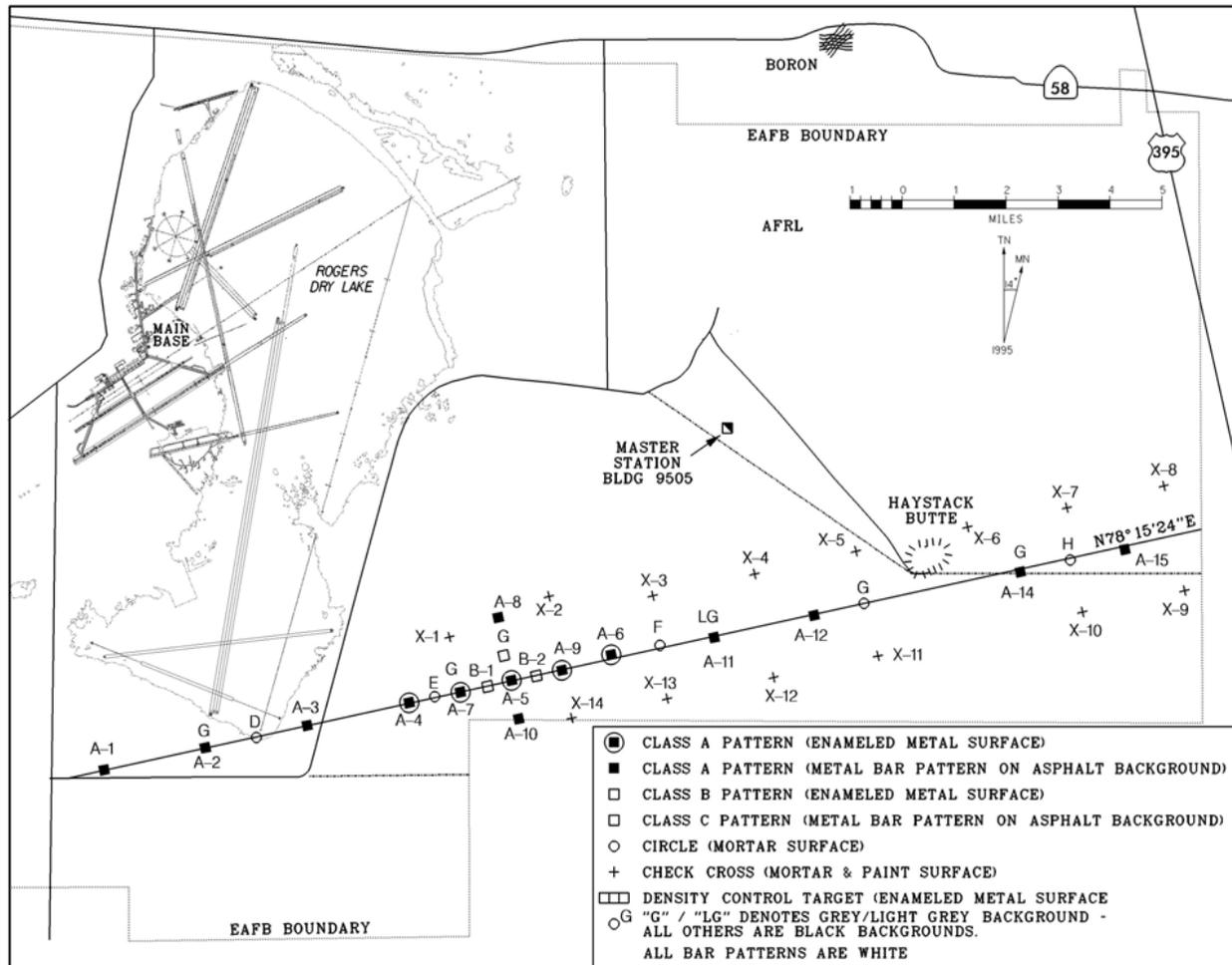


Figure 9.7. Photo Infrared Resolution Range



**9.15. Airdrop Malfunction.** An airdrop malfunction is defined as the complete or partial failure of: the aircraft airdrop systems, any piece of airdrop equipment, personnel or cargo rigging to function as designed regardless of the after-impact condition, serious injury or death to a crewmember or other personnel, damage to aircraft equipment or structure, or damage to the airdrop load or related equipment. **EXCEPTION: Any drogue malfunction (i.e. "cigar rolling" or blown panels) and the crew are able to successfully jettison the drogue without using any emergency drogue jettison procedures (i.e. emergency drogue jettison switch or cutting the drogue line), the mission may continue, including further airdrops, with concurrence of the mission commander/Pilot-in Charge.**

9.15.1. If in the R-2508 complex notify the SOF and/or the 418 FLTS Operations Supervisor. Outside the R-2508 complex notify the nearest USAF command post.

9.15.2. Notify the DZ control when a malfunction occurs so the load can be isolated and/or inspected.

9.15.3. Unless a greater hazard exists, crews will not de-rig the aircraft or reposition or adjust the airdrop systems or equipment. Record all mission computers, FMS, etc.

information relating to the airdrop. If possible, download the mission history to disk or other media device.

9.15.4. For test missions continue or discontinue testing in accordance with the test and/or safety package. For non-test missions aircrews must receive approval from the FOA to continue with non-airdrop related training.

9.15.5. Use of DD Form 1748-2, Joint Malfunction Report, to document airdrop malfunctions and incidents. Aircrews will describe the malfunction and/or incident in as much detail as possible. Attach all mission planning materials, load plan, DD Form 1748-1, weather sheets, etc. to the DD Form 1748-2. Turn in to the 418 FLTS Operations Supervisor within 12 hours who will follow guidance in AFI 13-217 for processing the DD Form 1748-2.

9.15.6. All airdrop system malfunctions and damage to aircraft equipment require an entry in the AFTO Form 781.

**9.16. PIRA DZs: Off DZ but On PIRA Procedures.** For suspected or confirmed off-DZ airdrops involving death or injury to personnel, comply with airdrop malfunction procedures, terminate the mission, and land as soon as possible. For all other suspected or confirmed off-DZ but on-PIRA airdrops not involving death or injury to personnel, airdrops may continue once approved by the FOA.

**9.17. PIRA and NON-PIRA DZs: Off DZ and OFF PIRA Procedures.** For suspected or confirmed off-PIRA airdrops, comply with airdrop malfunction procedures, terminate the mission, and land as soon as possible.

**9.18. Non-Aircraft Calculated Computed Air Release Points.** For suspected or confirmed off-PIRA airdrops, comply with airdrop malfunction procedures, terminate the mission, and land as soon as possible; however, for non-aircraft calculated CARPs (e.g. jumpmaster directed, range control provided release point), the unit or organization responsible for calculating the CARP assumes responsibility for an off-DZ drop.

## Chapter 10

### LOW LEVEL ROUTES

#### 10.1. Military Training Routes (MTR).

10.1.1. AFTC is the originating/scheduling agency for several IFR Instrument Training Routes (IR) and VFR Military Training Routes (VR). Aircrews flying published VR routes will squawk code 4000 unless ATC or SPORT directs otherwise. Complete route descriptions are located in the FLIP Area Planning Publication, AP/1B Military Training Routes.

##### 10.1.2. AFTC IR Routes:

10.1.2.1. IR 234. Cruise missile route from Reveille MOA to Utah Test and Training Range (UTTR).

10.1.2.2. IR 235. Reversal of IR 234.

10.1.2.3. IR 236. Contained entirely in restricted airspace and the R-2508 MOAs. Used only for missions when route is IMC.

10.1.2.4. IR 237. Cruise missile route from Reveille MOA near Tonopah and return to Reveille MOA.

10.1.2.5. IR 238. Reversal of IR 237.

10.1.2.6. IR 425. Reversal of IR 200 from UTTR to Warning Area 289.

##### 10.1.3. AFTC VR Routes:

10.1.3.1. VR 1205. LL route from near the OAL VORTAC through the Panamint Valley, R-2524 and R-2515.

10.1.3.2. VR 1206. LL route from near Gorman through the Alpha Corridor to the PIRA.

10.1.3.3. VR 1214. LL route from Lucerne Valley through the Silver MOA, past BTY VORTAC to R-4807.

10.1.3.4. VR 1215. LL route from Lucerne Valley through the Silver MOA, circling west and north of R-2502 into R-2524.

10.1.3.5. VR 1217. LL route from Silverwood Lake, past Hector VORTAC through the Barstow MOA into R-2515.

10.1.3.6. VR 1218. LL route from Silverwood Lake, north of R-2501 transiting the Silver and Barstow MOAs and entering R-2515.

10.1.3.7. VR 1293. LL route from near Gorman to Isabella MOA.

##### 10.1.4. Scheduling agencies for other LL routes within the R-2508 Complex.

10.1.4.1. Marine Corps Air Station Miramar, San Diego - IR 211, IR 212.

10.1.4.2. Naval Air Station LeMoore - VR 1255, VR 1262.

10.1.4.3. Point Mugu - IR 200.

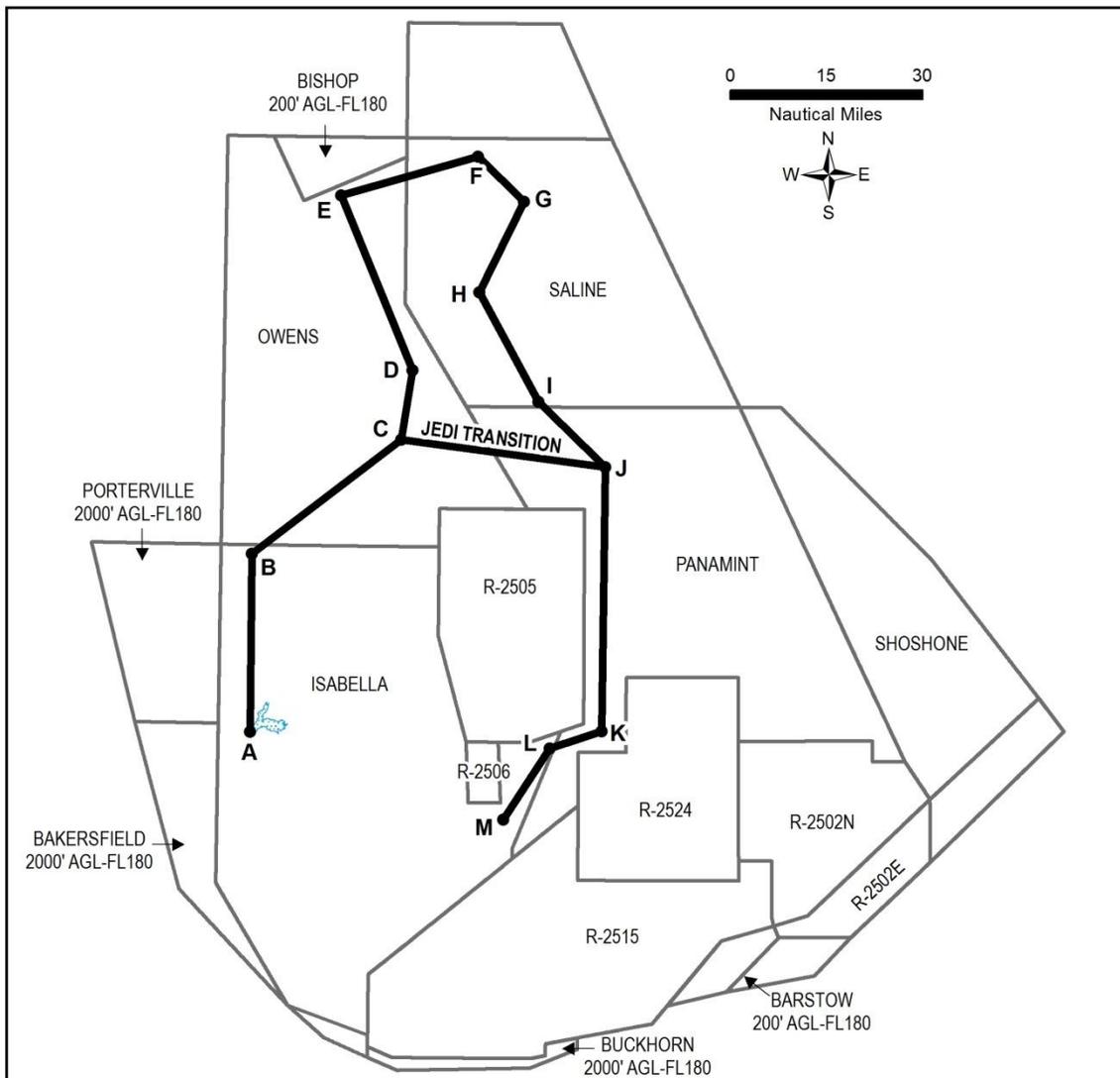
10.1.4.4. 146th Air Wing, Port Hueneme – Slow Speed Low Altitude Military Training Route (SR) 390.

10.1.5. Submit test route requirements to 412 OG/CC for approval as part of the Test Safety Plan. Justification must include reason existing routes are not adequate.

10.1.6. All LL routes are evaluated annually for obstructions IAW AFI 13-201 and associated AFMC Sup 1. New routes established in conjunction with a flight test program will be evaluated using the same criteria prior to the route being flown and annually thereafter as long as the route is utilized.

10.1.7. Submit route or procedural changes to the Airspace Management Office. 412 TW/CC is the final approval authority.

**Figure 10.1. Sidewinder/Jedi Transition Low Level**



**10.2. Low Level (LL) Operations in the R-2508 Complex (Fig 10. 1.).**

10.2.1. Use the following route for test missions, test mission preparation and proficiency training. The routes adhere to the rules established by 412 TW/CC.

10.2.2. The Sidewinder provides a Low Level Route through the R-2508 Complex with alternate entry and exit points. The Jedi Transition provides for a shorter route that may satisfy mission requirements.

### **10.3. Terrain Following Routes (Fig 10. 2).**

10.3.1. There are 6 single-leg TFRs approved for test use.

10.3.1.1. Haystack Range: N34°49.7' W118°01' to N34°52.4' W117°30.5' (supersonic tests permitted).

10.3.1.2. Desert Butte: N3505' W11701' to N3505' W11756' (underlies Cords Road Test Area).

10.3.1.3. Harpers: N3509.9' W11753' to N3500.9' W11716'.

10.3.1.4. Saltdale: N3518.9' W11747' to N3502.9' W11701'.

10.3.1.5. Black Mountain: N3510.9' W11725' to N3510.9' W11702' (supersonic tests permitted).

10.3.1.6. Rough One: N3514.9' W11808' to N3554.9' W11808'.



10.3.7.4. Rough One: Numerous windmills in vicinity of route. Aircrew should carefully examine all obstacles prior to use. Within the first 7.5 miles of the route there are approximately 7 windmills within 2 miles of route centerline. The closest windmill is approximately 7 miles north of the start point and is within 1 mile of the centerline on the west side. The windmills are approximately 500' AGL, intruding significantly into the 200' floor of the route

**10.4. Special Operating Procedures.** See AFI 11-2FTV3, *Flight Test Operations Procedures*, for additional guidance and restrictions.

10.4.1. All route altitudes are 200' AGL to 1500' AGL except to avoid airports and noise sensitive areas and when flying supersonic in approved corridors where the minimum altitude is 500' AGL. Test missions requiring altitudes lower than 200' AGL are treated on a case-by-case basis.

10.4.2. For the Sidewinder/Jedi low levels, direction of flight is clockwise only.

10.4.3. Routes are subsonic except as noted in Paragraph 10.3.4.

10.4.4. Sidewinder/Jedi low level route width is 2 NM either side of centerline.

10.4.5. Avoid flying along highways and/or valleys to avoid high-density civil air traffic.

10.4.6. Avoid charted, uncontrolled airports by 3 NM miles or 1500' AGL. When active, avoid Mojave's Class D airspace (4.3NM or 4,800' MSL). Ensure flight paths do not violate airport airspace boundaries.

10.4.7. Avoid certain designated noise sensitive natural recreation areas (Para 5.2.7) where MOA floors are above route ceilings (3,000' AGL and 3,000' lateral from canyon walls and mountains).

10.4.8. To mitigate the risk of opposite direction traffic, offset right of centerline when transiting the saddles between valleys. Rising terrain may mask advisory calls.

10.4.9. If R-2524 has been scheduled and confirmed for any route that transits this airspace, aircrews are required to establish contact with either China Control (UHF 301.0) or Echo Control (UHF 381.9) prior to entry. If contact cannot be established aircrews shall exit the route and not enter R-2524.

10.4.10. Aircraft re-entering the R-2508 Complex on a low level shall re-establish radio contact with JOSHUA/SPORT to receive a complex clearance and squawk.

10.4.11. *Course reversals are not authorized.*

10.4.12. A gold mining operation (Briggs Mining Company) located in the Panamint Valley approximately 7 NM south of Ballarat (N3556.28' W11711.20') conducts daily blasting between 1200L-1330L and 1600L-1730L with a flying rock hazard to indeterminable altitudes. Avoid over-flight during blasting periods.

10.4.13. The ITA affects the transition to the Sidewinder low level route. Crew shall avoid the vertical/lateral limits of the transition area when it is active unless they have a clearance to transit from JOSHUA.

**10.5. Scheduling.**

10.5.1. Schedule routes IAW AFFTCI 11-15.

10.5.2. Contact either the ROC or the Airspace Manager for the latest list of approved IR/VR routes.

10.5.3. SPORT will approve/disapprove unscheduled use of R-2515 TFR routes on a case by case basis. Aircrews will provide callsign, aircraft type and entry/exit time.

10.5.4. Neither JOSHUA nor SPORT separate aircraft operating on conflicting routes.

**10.6. Low Level Procedures.**

10.6.1. Aircrew will:

10.6.1.1. Advise SPORT/JOSHUA of your intentions to operate on a Complex low level route.

10.6.1.2. When utilizing the Sidewinder/Jedi/Rough One routes, monitor UHF 315.9 while below 1500' AGL and on the low level route.

10.6.1.2.1. UHF 315.9 is the low level frequency used exclusively by all aircraft engaged in low level flight activities below 1,500' AGL within R-2508. This is an aircrew-to-aircrew frequency and is not monitored by JOSHUA/SPORT.

10.6.1.2.2. High Frequency (HF) converter/repeaters located on Sherman Peak northwest of Domeland, Silver Peak east of Bishop and Keeler Peak in the Panamint Valley enable aircrews to communicate with land management aircraft working in the local area. A tone precedes voice communications.

10.6.1.3. Make predetermined radio calls in the blind at points identified during preflight planning using conflict information contained in route descriptions and Special Operating Procedures. Include call sign, number of aircraft, area/point entering and direction of flight and altitude (AGL). During low level flight, restrict transmissions to:

10.6.1.3.1. Initial check in (route entry) on frequency and calls to de-conflict traffic.

10.6.1.3.2. Report exiting the route to SPORT or JOSHUA on the appropriate sector frequency and reestablish radar identification. Missions requiring continued support after completing a low level route shall contact JOSHUA or SPORT on appropriate sector frequency to provide services on an assigned mission frequency.

10.6.2. Over-flight of populated areas within and surrounding the R-2508 Complex is restricted to 3,000' AGL or above. See Para 11.1, Over-flight of Populated Areas, and Attachment 5, Geographical Coordinates for R-2508 Airspace Areas, where over-flights are restricted.

**10.7. Low Altitude Charts.** 412 OSS will maintain master charts in the Airfield Management Operations flight planning room, to include locally surveyed obstructions. Previously undocumented obstructions observed by 412 OSS/OSAA will be submitted to 412 OG/OGV and published in a Flight Crew Information File (FCIF). The FCIF will remain active until the obstruction is published in the AP-1B.

**Table 10.1. Sidewinder Route Description.**

<b>CAUTION:</b> These are R-2508 procedural controls for local use only. Points will be flown sequentially (i.e. A, B, C...M or C, J, K...M, etc). <b>OPPOSITE DIRECTION IS PROHIBITED.</b>		
<i>The SIDEWINDER and JEDI Transition are not published MTRs.</i>		
<b>ROUTE DESCRIPTION:</b>		
<b>PT</b>	<b>Lat/Long Pt</b>	<b>Description/Elevation</b>
A	N 35 38.75 W118 28.94	Ctr of West Dam/2575
B	N 36 06.60 W118 29.12	Needles Lookout Twr/8107
C	N 36 24.74 W118 00.57	Washed Out Bridge/3615
D	N 36 35.61 W117 58.53	Wash/Road Int/3635
E	N 37 02.88 W118 12.79	SE Tinemaha Dam/3894
F	N 37 09.18 W117 46.19	Center of Wash/2956
G	N 37 02.17 W117 37.09	Center of Knoll/4738
H	N 36 47.95 W117 45.69	West Tip Lava Flow/1352
I	N 36 30.84 W117 34.05	Road Int/6109
J	N 36 20.69 W117 21.08	Road/Wash Int/2093
K	N 35 39.34 W117 21.62	Road Y/1624
L	N 35 36.61 W117 31.56	Road Int/2480
M	N 35 25.40 W117 40.32	Road/RR Int/2785
<p><b>ALTITUDE:</b> NLT 200' AGL to 1500' AGL (points A to K); NLT 500' AGL to 1500' AGL (points K to M). Climb above 1500' AGL as required to avoid noise sensitive areas and airports (see note 7).</p> <p><b>ROUTE WIDTH</b> – 2 NM either side of centerline.</p> <p><b>Special Operating Procedures:</b></p> <p>(1) Entry Procedure: Prior to entry, notify JOSHUA of intentions and planned Entry/Exit point. Above 3000' AGL and prior to route entry, make intentions call on Low Level Common (315.9). Give way to any traffic already established on the route prior to entry.</p> <p>(2) Alternate Entry: This is procedural control and traffic may enter at any point. Preferred alternate entry points are C and E.</p> <p>(3) Alternate Exit: This is procedural control and traffic may exit at any point. Preferred alternate exit points are H and K.</p> <p>(4) All aircraft operating on the Sidewinder/Jedi Transition will utilize the R-2508 low altitude common frequency 315.9. When entering low level environment, transmit in the blind call sign, number and type of aircraft, and intentions. Monitor 315.9 until exiting low altitude regime. Repeat calls entering new areas, or crossing ridge lines.</p> <p>(5) Slower aircraft (i.e. C-12, T-34) may be on the route at the same time. Use caution for airspeed variations that may exist between aircraft. Aircraft being overtaken has the right of way.</p> <p>(6) To mitigate the risk of opposite direction traffic, offset right of centerline when transiting saddles between valleys. Rising terrain may mask advisory calls.</p> <p>(7) Avoid all noise sensitive areas by 3000' AGL or 3000' laterally. Avoid all airports along route by 1500' AGL or 3 NM.</p> <p>(8) Point A to B, fly 2 NM left of centerline or above 3000' AGL to avoid the Isabella Dam, surrounding communities, and Kernville.</p>		

- (9) Point B to C, avoid the extremely noise sensitive areas of Olancha and Cartago.
- (10) Point C to D, avoid the extremely noise sensitive areas of Keeler and Lone Pine.  
Caution: intensive hang glider activity in the vicinity of Dolomite and northeast shore of Owens lake.
- (11) Caution: high migratory bird activity between F and H during daylight hours.
- (12) **CAUTION:** Possible merging traffic from aircraft on Jedi Transition (approaching from west via Point C). Sidewinder users offset east of Point J for deconfliction. Sidewinder users make mandatory radio call approaching Point J “Call sign, Sidewinder, approaching Point Juliet”. Make calls on 315.9.
- (13) Point J to K. 198’ multi unlit towers N35°53.797 W117°17.558. Avoid Trona Airport by 1500’ AGL or 3 NM.
- (14) Point K to M, watch for traffic northbound to China Lake initial at 4000’ MSL.
- (15) Point L to M, route transits underneath instrument procedure at NID (arc and final approach). Use caution if exiting route prior to point M.
- (16) Conflicts: A to L: IR-236; B to D: VR-1255; E to I: VR-1205-1255-1262; I to L: VR-1262, IR-200; K to M: IR-200-211.

**JEDI TRANSITION:** At Point C, proceed east to Point J.

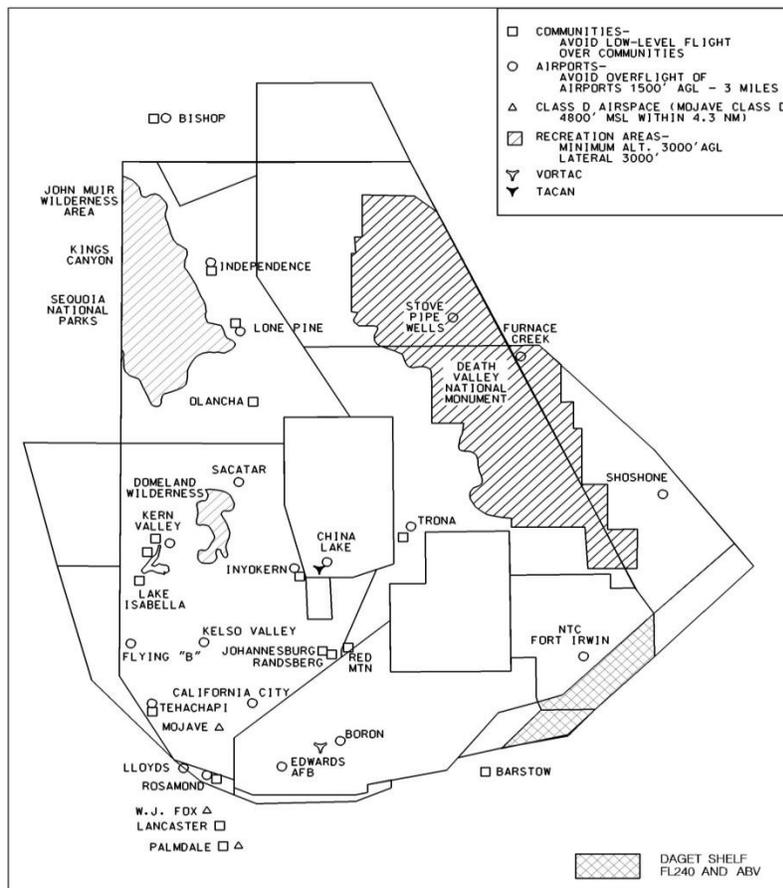
**CAUTION:** Possible merging Sidewinder traffic from the north via Point I. Jedi users offset west of Point J for deconfliction. Jedi users make mandatory radio call approaching Point J “Call sign, Jedi Transition, approaching Point Juliet”. Make calls on 315.9.

Chapter 11

RESTRICTIONS

**11.1. Over-flight of Populated Areas (Fig 11. 1).** Over-flights shall be conducted so that persons on the ground experience a minimum of annoyance. It is not enough for the pilot to be satisfied that no person is actually endangered. Definite and particular effort shall be taken to fly in such a manner that the individuals do not believe they or their property are endangered. All communities within the R-2508 Complex are considered “noise sensitive areas”. Noise sensitive areas shall be avoided by 3,000’ AGL. The only exception to this restriction is while operating on an approved test plan. Noise sensitive areas include North Edwards, Victorville, Palmdale, Apple Valley, Lancaster, Mojave, Tehachapi, Adelanto, Boron, Rosamond, Keeler, Lone Pine, Trona, Inyokern, Independence, Olancha, Randsburg, Johannesburg, Red Mountain, Ridgecrest, Stove Pipe Wells, Lake Isabella, Kernville or other residential communities. Helicopters and Aero Club aircraft are not restricted at any time except under emergency conditions or during airport transitions.

Figure 11.1. Communities Airports Recreation Areas



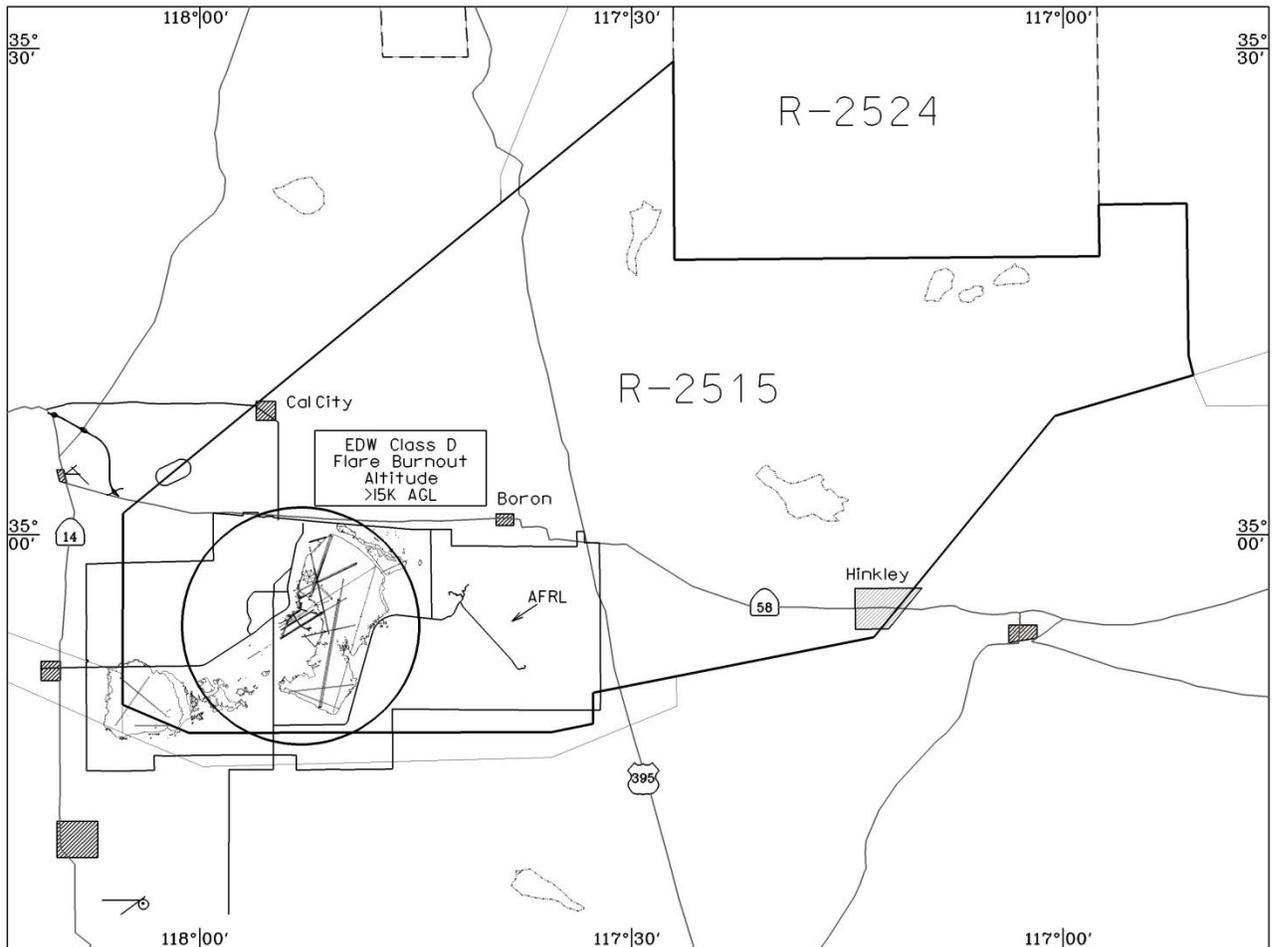
11.1.1. Avoid low level over-flight of any obviously inhabited area.

11.1.2. Recreational use near these communities and along the Kern River is highest during the summer months. Crews should anticipate increased sensitivity to operations near these areas.

## 11.2. Aircraft Expendable Operations (Fig 11. 2.).

11.2.1. Aircraft expendable operations are allowed for currently fielded flares in R-2515, west of Hwy 395, so that the burn-out altitude is greater than 2,000' AGL except as noted within Fig 11.2.

**Figure 11.2. R-2515 Flare Burnout Altitude**



11.2.1.1. Crews shall pre-brief SPORT prior to flight on intended flare operations.

11.2.1.2. Flares are restricted to R-2515 only, unless previously coordinated with R-2524, R-2502, and/or R-2505 airspace managers. Flares may be used above 5,000' AGL in R-2515. Use of flares below 5,000' AGL requires a low fire danger as decided upon by RSO or applicable DoD agency. Chaff and/or Flares are prohibited below 5,000' AGL over the PIRA during EOD removal operations.

11.2.1.3. The dry months (June through September) pose the greatest fire hazard. Crews will report all fires within R-2515 to SPORT, Tower or DOWNFALL as soon as possible.

11.2.1.4. Crews shall comply with standing altitude restrictions over populated areas, the mines, etc.

11.2.1.5. Release over Edwards Class D airspace shall be greater than 15,000' AGL.

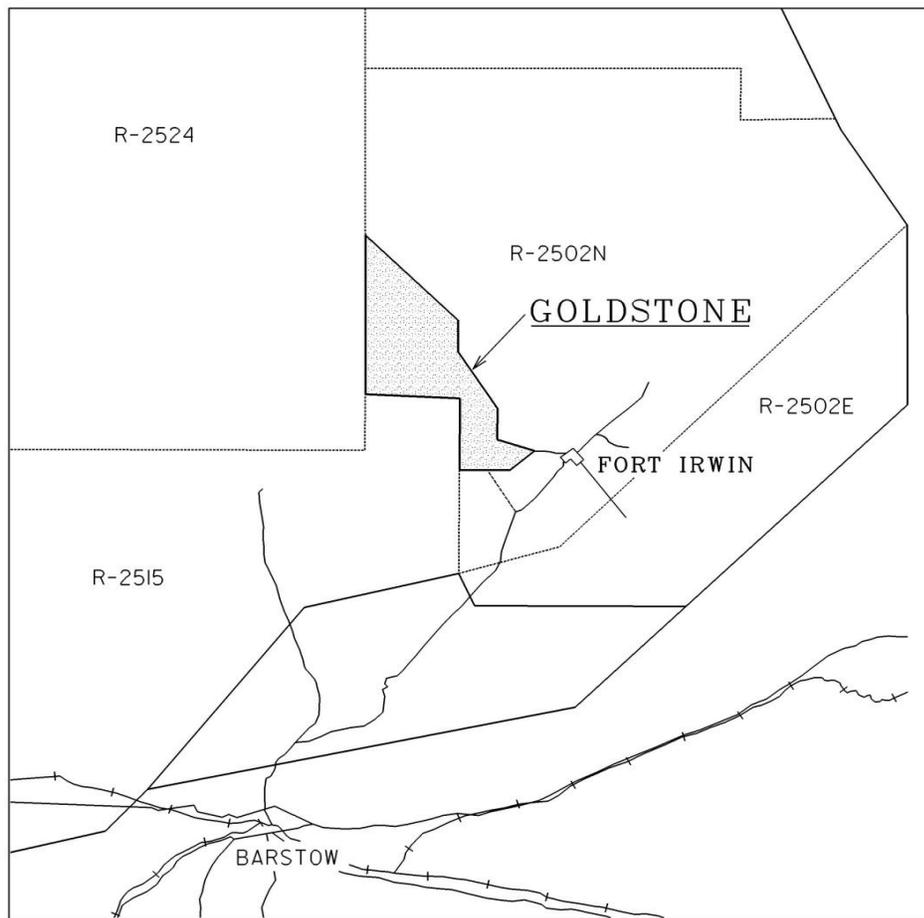
11.2.2. Chaff release is only authorized on specifically approved air-to-ground gunnery ranges, MOAs and Warning Areas.

11.2.2.1. Chaff release is authorized in R-2515, Owens, Saline, Panamint and Shoshone. Contact AFTC's Frequency Management Office for restrictions.

11.2.2.2. Chaff release is not authorized on military training routes or within non-approved MOAs.

**11.3. NASA Goldstone Facility Over-flight (Fig 11. 3.)** Overflight is restricted to 10,000' MSL.

**Figure 11.3. NASA Goldstone**



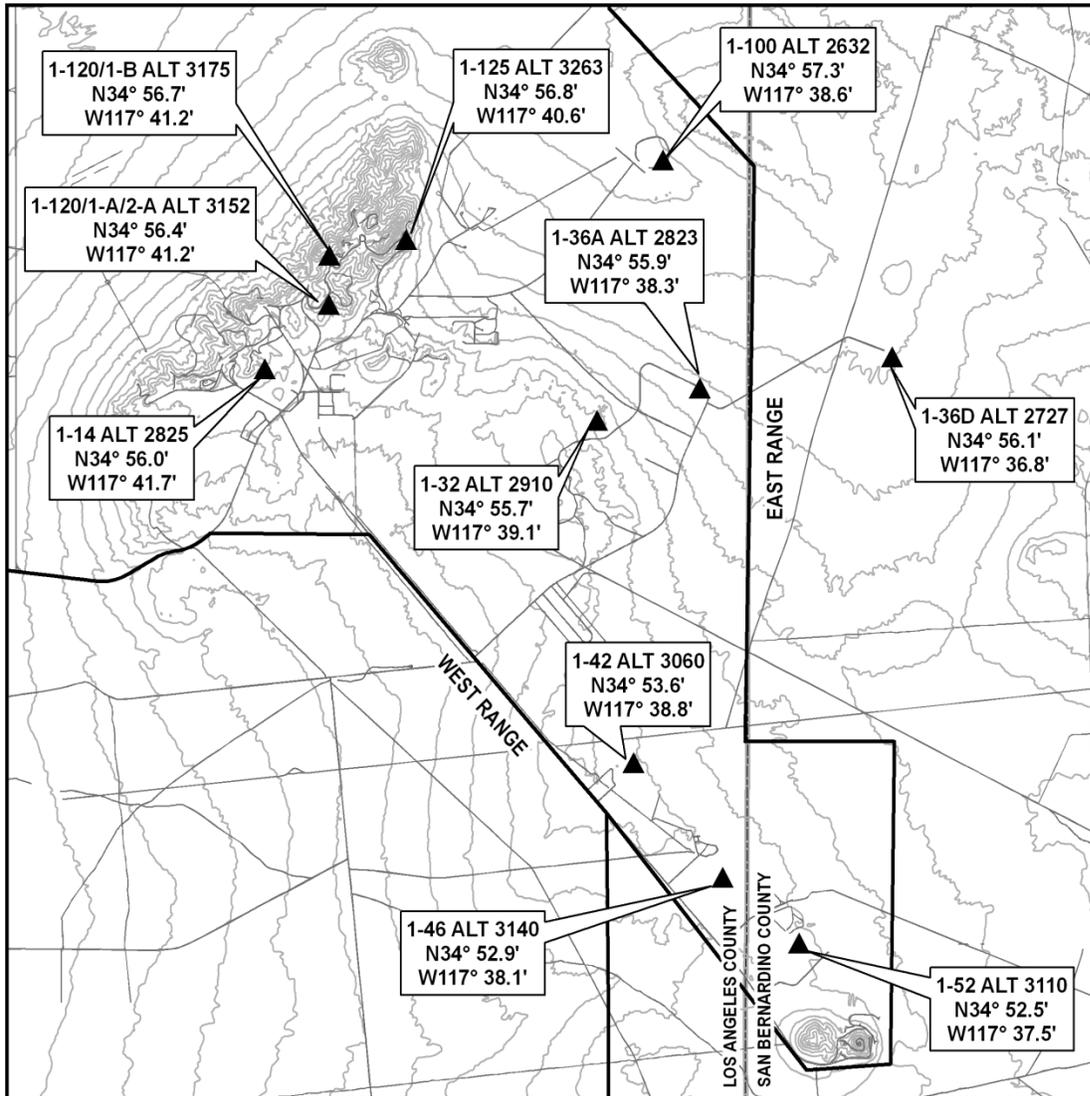
**11.4. Detachment 5 Air Force Research Laboratory (Det 5, AFRL) (Fig 11. 4.).**

11.4.1. Rocket engine firings are periodically conducted at the site. A potential hazard exists from blast fragments or toxic fumes/clouds. The hazard area begins at Leuhman Ridge extending southeast along Mars Blvd to Haystack Butte. Coordinate with the Det 5, AFRL

Site Operation Control Center (SOCC), via DSN 525-5632, before conducting flight below 5,300' MSL over the Laboratory.

11.4.2. The following procedures and requirements outline hazardous/toxic testing by Det 5, AFRL in the area of Leuhman Ridge or the PIRA.

**Figure 11.4. AFRL Sites**



11.4.2.1. Det 5, AFRL SOCC notifies the ROC at least 24 hours in advance of any large motor or high-risk test scheduled at Det 5, AFRL. The Det 5, AFRL SOCC will provide the critical operation times (T-Initial, T-Arming, and T-Go) for the specific test to the ROC for dissemination.

11.4.2.2. All Hazardous/Toxic Test Operations, which affect the availability of AFTC airspace, shall be scheduled in accordance with AFFTCI 11-115. When deemed

appropriate, a local Airfield Advisory shall be issued by Airfield Management Operations to identify a specific hazard and no fly area.

11.4.2.3. Initial Call (T-Initial): Det 5, AFRL SOCC shall notify SPORT, DOWNFALL, Tower and the Range ODO of the test status and that the count is proceeding as scheduled or of any anomalies.

11.4.2.4. Arming Call (T-Arming): Det 5, AFRL SOCC shall notify SPORT, DOWNFALL, Tower and the Range ODO to begin airspace restrictions for system arming. After verification is received by Det 5, AFRL SOCC that airspace restrictions are active, the arming party will then proceed to the test site and begin installation of explosives.

11.4.2.5. Last Hold Point (T-Go): Det 5, AFRL SOCC shall notify SPORT, DOWNFALL, Tower and Range ODO confirming airspace status and intent to proceed. This should be the last hold point at which the test can be put on a hold safely. If the T-Go time has been exceeded, Det 5, AFRL SOCC will contact the Test Conductor and determine the status of the test. If another T-Go is required, Det 5, AFRL SOCC will reinitiate T-Go notifications.

11.4.2.6. Test (T-0): Det 5, AFRL SOCC shall notify SPORT, DOWNFALL, Tower and Range ODO that the test has occurred.

11.4.2.7. All Clear (T+All Clear): Det 5, AFRL SOCC shall notify SPORT, DOWNFALL, Tower and Range ODO that the test is complete and airspace restrictions can be cancelled.

11.4.2.8. In the event a condition should arise which could jeopardize the safety of the test (e.g., Inflight emergency over PIRA, lost personnel, potential intrusion into exclusion area etc.) immediate action shall be taken by the agency identifying the problem to notify Det 7, AFRL SOCC to "hold" the test. Testing shall not resume until such time as the hazardous condition has terminated.

**11.5. Borax Mine Blasting.** High explosive blasting routinely occurs at the Borax mine (open pit) near Boron. Avoid flight below 4,500' MSL within a 1/2 mile area from the west-north-east perimeter of the mine and 1-1/4 miles south of the mine pit.

**11.6. Inoperative Transponder.** Advise the controlling agency of the situation and attempt an equipment reset as soon as possible. Terminate the mission and Return to Base (RTB) providing position reports if system reset is not possible. JOSHUA will not provide separation from participating traffic. The aircraft must RTB unless controlling agency approves otherwise.

11.6.1. SPORT may, on a real-time basis depending on traffic within R-2515, allow an aircraft to continue operations with an inoperative transponder. If a suitable location cannot be located based on traffic, the aircraft will be directed to sterile airspace (e.g., Alpha Corridor/West Range/East Range).

11.6.2. 412 OG/CC may approve special exceptions within R-2515 provided aircrews adhere to procedures contained in the FLIP General Planning. Aircrews will brief SPORT on special exceptions before departure.

**Figure 11.5. DELETED****11.7. DELETED**

11.7.1. DELETED

11.7.2. DELETED

11.7.2.1. DELETED

11.7.2.2. DELETED

**11.8. Weather Recall Areas (Fig 11. 6.).** Five areas within R-2515 and R-2508 (Isabella and Panamint Work Areas) have been identified to be recalled in the event severe weather requires route deviations by aircraft operating in the National Airspace System. These areas will only be released to the FAA after coordinating with users and may be recalled from the FAA with a 20 minute notice.

11.8.1. JOSHUA will request the airspace (weather area) to include altitudes required and estimated duration. Altitudes for weather areas will be as coordinated.

11.8.2. SPORT will determine if airspace may be released back to the FAA based on active and scheduled missions. If the AFTC flying schedule indicates a mission conflict with the FAA request, SPORT shall coordinate with the affected organization(s). If the airspace release disrupts flight tests, the 412 OG/CC will make the final decision concerning airspace release.

11.8.3. The weather areas are:

11.8.3.1. Weather Area 1 encompasses R-2515 east of the China Lake (NID) 152 radial.

11.8.3.2. Weather Area 2 is west of the NID 152 radial to the western boundary of R-2515. NOTE: Hwy 395 falls along the NID 152° radial providing a visual reference dividing Weather Areas 1 & 2. Coordinates are: N35°21.41' W117°35.57' to N34°51.23' W117°26.65'.

11.8.3.3. Weather Area 3 is that portion of the complex west of the PMD 330 radial. Although the radial follows no visible landmarks, a viable reference is a line extending from Mojave, Kernville, to the southwestern corner of the Owens Work Area or the northwest corner of the Isabella Work Area. Coordinates are: N3448.66' W11807.62' to N3607.99' W118°35.05'.

11.8.3.4. Weather Area 4 overlies the Panamint MOA east of the BTY 182 radial. The radial follows the eastern slopes of the Panamint Range. Aircrews should remain west of the Panamint Range to avoid the area. Coordinates are: N3626.06' W11653.13' to N3547.78' W11707.25'.

11.8.3.5. Weather Area 5 is defined by the Fillmore (FIM) 049 radial and the area south of the radial to the boundary of R-2515. Boundary coordinates where the radial intersects the boundary of R-2515 are N3448.01' W11747.47' and N3511.05' W11649.05'.

**11.9. Multiple Aircraft Operations.** Test or training missions with greater than 1v1 limited or unlimited maneuvering (ACM, Intercept, ACBT) will utilize airspace IAW Attachment 8. Test or training missions with more than 4 aircraft will utilize the airspace IAW Attachment 8

regardless of maneuver category. Test or training missions with up to 4 aircraft are excluded from these requirements if the target maneuvers are scripted or restricted (as defined by AFI 11-214) The OG/CC is the waiver authority for this paragraph.

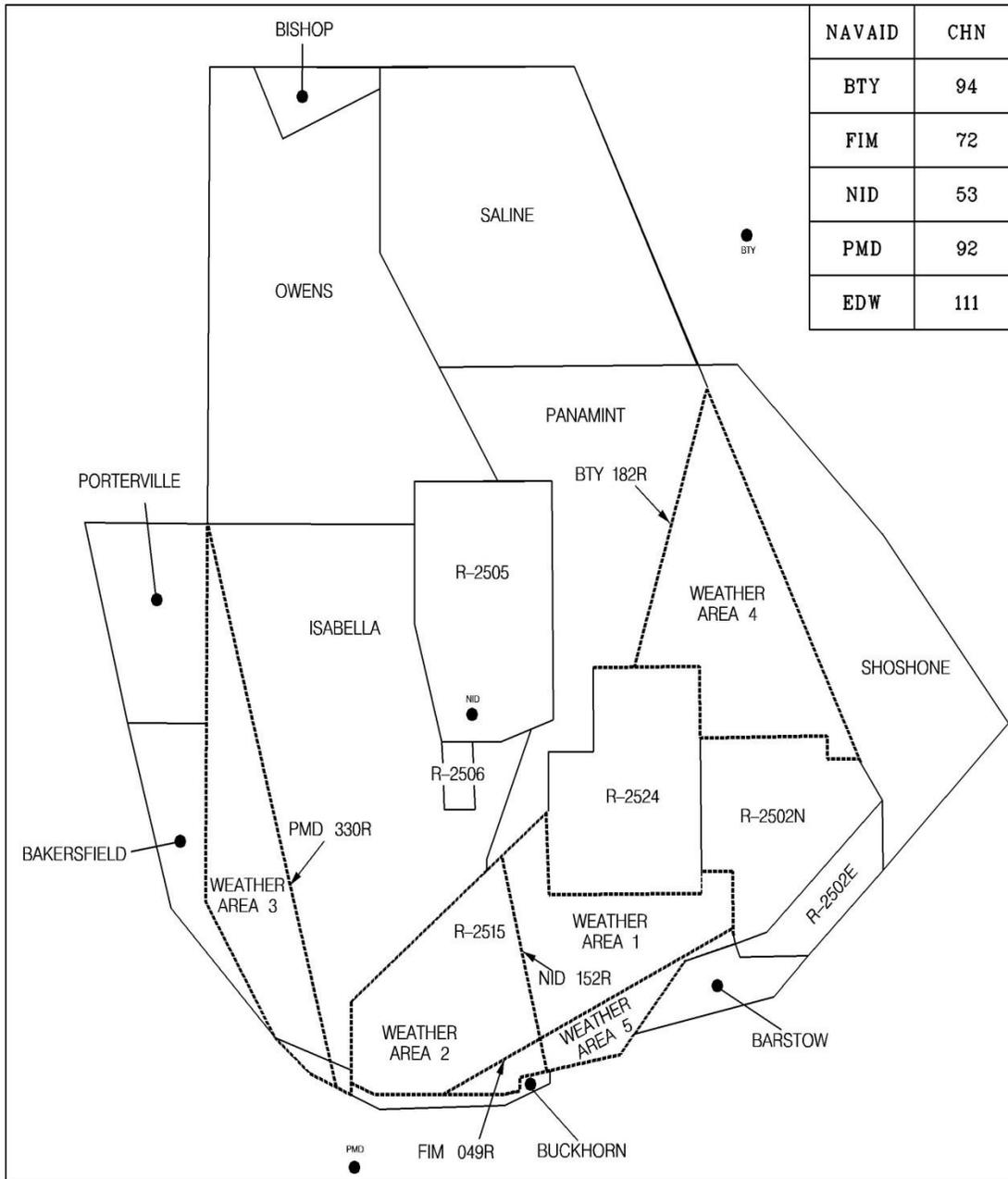
**11.10. Fuel Dumping Procedures.** Do not dump fuel within the R-2508 Complex except when emergency or test requirements dictate.

11.10.1. Conduct emergency/test fuel dumping above 10,000' AGL unless condition/situation warrants exception.

11.10.2. Notify JOSHUA or SPORT of intention, altitude, location, and termination.

11.10.3. Record fuel dumped on AF Technical Order (TO) IMT 781 IAW AFI 11-2FT V3, aircraft specific attachment, and TO 00-20-1, Aerospace Equipment Maintenance Inspection Documentation Policies & Procedures.

Figure 11.6. Weather Recall Areas



11.11. Wave Camp (Fig 11. 7.) Wave Camp lies within the Isabella MOA/ATCAA and R-2508 (FL180BFL600) where sailplanes with radios and transponders may operate.

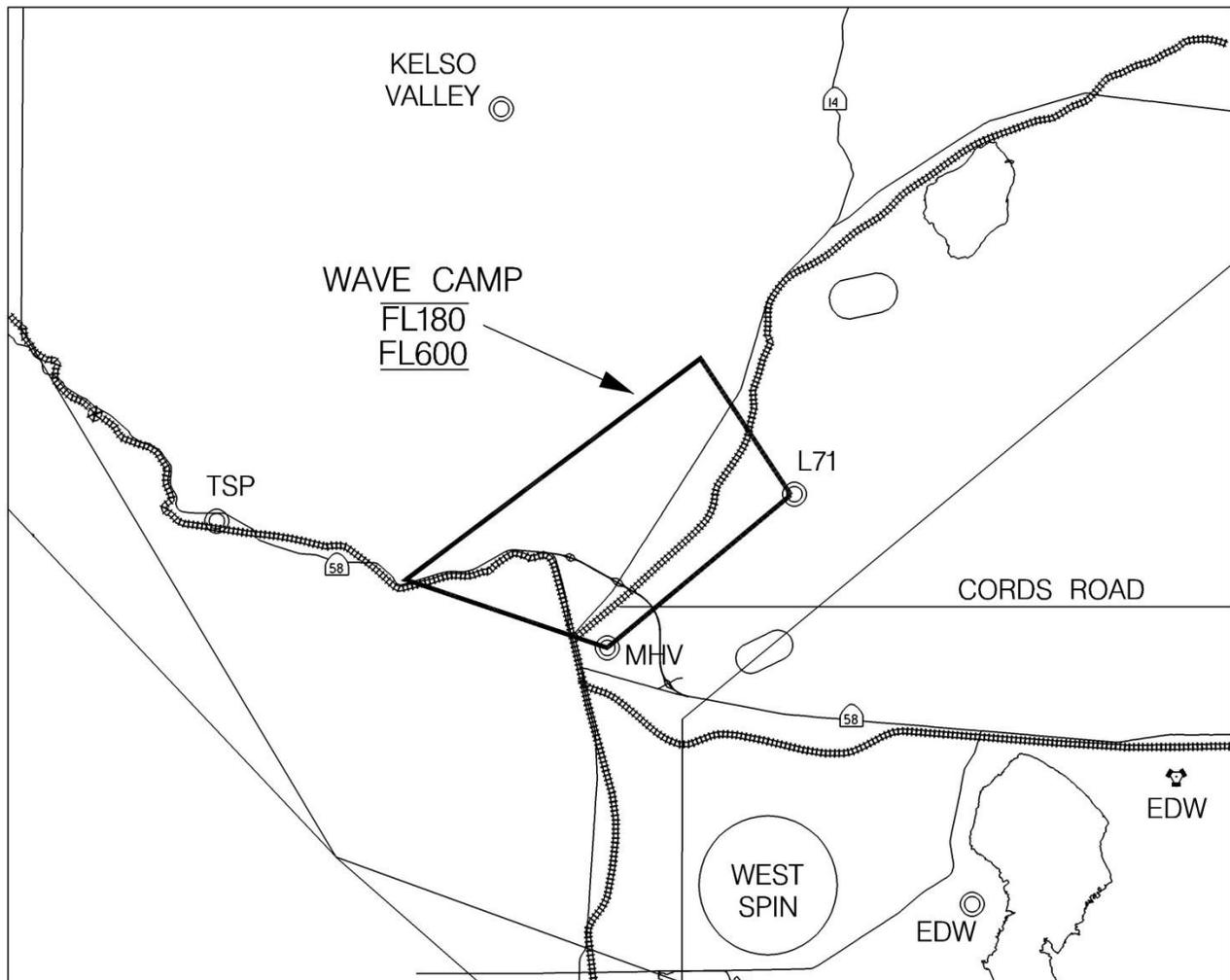
11.11.1. When operating as a flight of two (one without radios or a transponder), the sailplanes must remain within 500' vertical and lateral separation at and above FL180.

11.11.2. JOSHUA Approach controls Wave Camp.

11.11.3. Wave Camp activation will be advertised via Edwards local NOTAM.

11.11.4. Mission commanders/test engineers will contact CCF if Wave Camp activation conflicts with a mission profile. CCF will coordinate to deconflict Wave Camp and mission flights.

**Figure 11.7. Wave Camp**



**11.12. Small Arms Range.** Located S of Rosamond Blvd (Fig 4.5.) the Range has a minimum over-flight altitude of 7,000' MSL. A ceiling of 4,500' AGL and five miles visibility is required for the range to be operational.

## Chapter 12

### SUPERSONIC OPERATIONS

#### 12.1. Supersonic Operations.

12.1.1. Conduct supersonic operations only in designated supersonic areas as defined in this instruction. Avoid supersonic areas and spin areas at hot altitudes as reported by SPORT/JOSHUA if not conducting supersonic operations. Supersonic flight test profiles designed for specific mission requirements that cannot be accommodated within designated supersonic areas must be coordinated with the 412 OG/CC. Supersonic test profiles that cannot be accomplished within designated supersonic corridors require AFMC/DO approval.

12.1.2. JOSHUA will only provide assistance to the High Altitude Supersonic Corridor. The Black Mountain and PIRA Supersonic Corridors are not depicted on their radar indicators.

#### 12.2. Black Mountain Supersonic Corridor (Fig 12. 1., Attachment 4 item 211).

12.2.1. Black Mountain is 8 NM wide extending across the northern section of R-2515 from 500' AGL to unlimited. SPORT is the controlling agency. Border coordinates are listed in Attachment 4.

**Figure 12.1. Supersonic Areas**

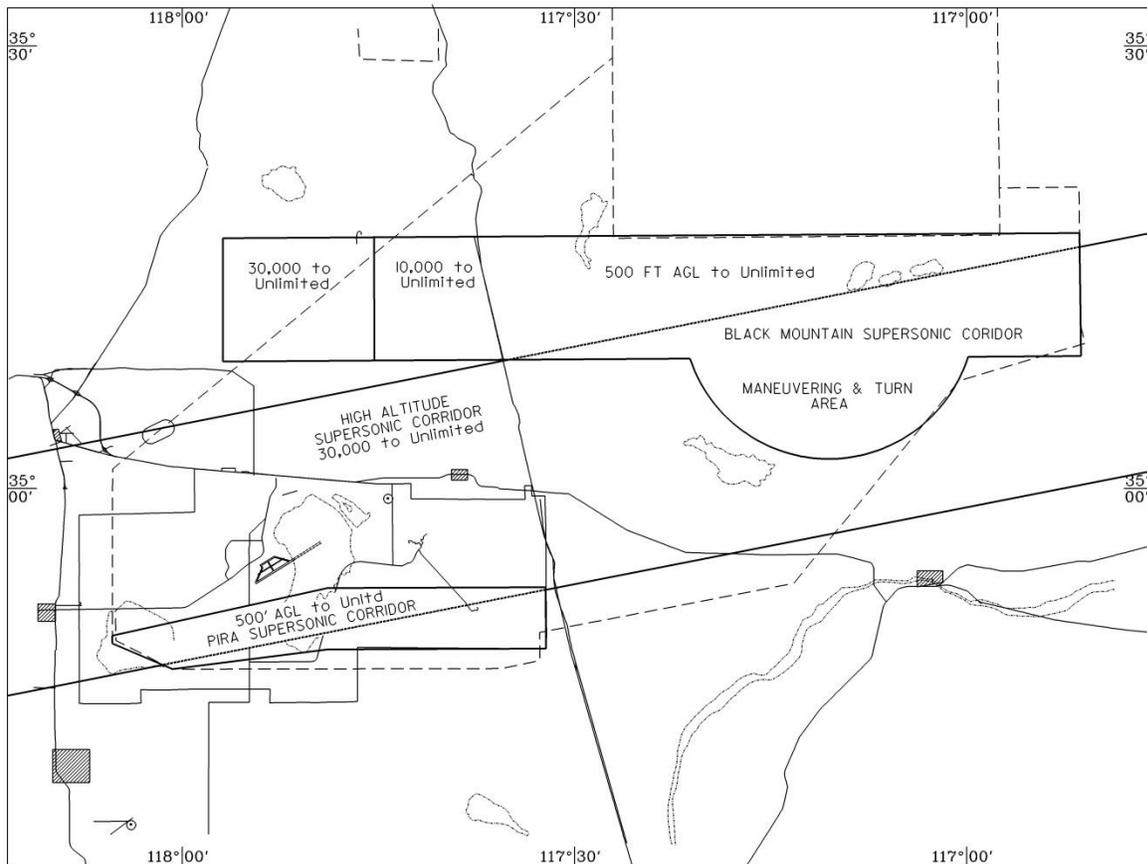
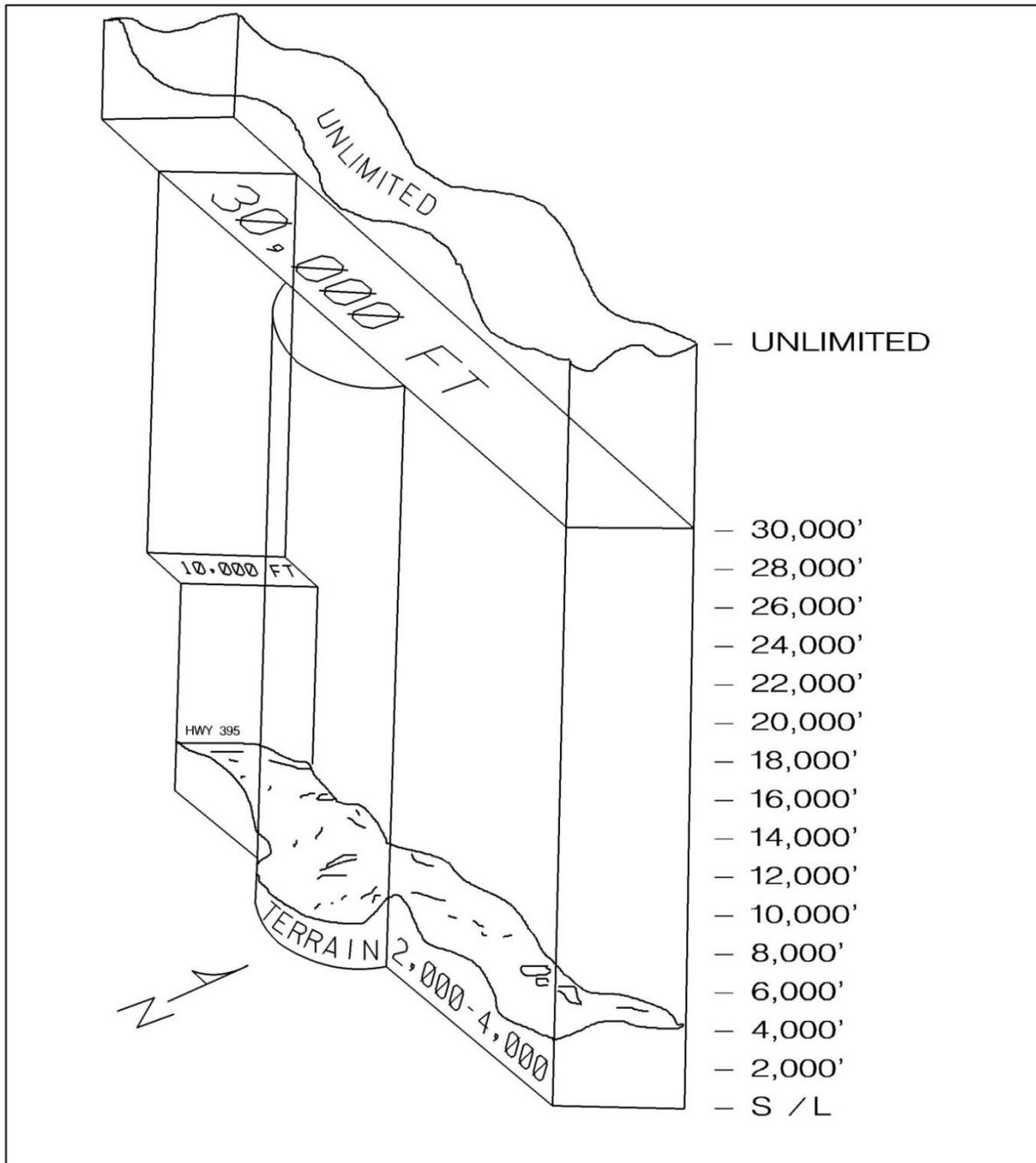


Figure 12.2. Black Mountain Supersonic Altitude Structure



12.2.1.1. Supersonic flight is authorized (Fig 12.2.):

12.2.1.1.1. Above FL300 within W11757' to W11745'.

12.2.1.1.2. 10,000' MSL to unlimited between W11745' to Hwy 395.

12.2.1.1.3. 500' AGL to unlimited between Hwy 395 to W11649'.

12.2.1.2. There is a small circular extension with a 9.5 NM radius centered at N3510.9' W11709' of the southern boundary immediately NE of Harpers Lake for supersonic turns or maneuvers. The extreme southern limit of the half circle is N3501.9'.

12.2.2. Request clearance from SPORT prior to entry and provide altitudes, direction of flight, number of runs and intended maneuvers.

12.2.3. Minimum altitude is 500' AGL for supersonic flight below 10,000' MSL east of Hwy 395 and the eastern boundary of R-2515. Dive missions must fly west to east only and inform SPORT when dive commences and terminates.

12.2.4. Advise SPORT of mission completion.

12.2.5. SPORT makes the following broadcast on all frequencies: "Attention all aircraft Black Mountain Supersonic Corridor is (Hot/Cold) (altitudes)."

### **12.3. PIRA Supersonic Corridor (Fig 12. 1., Attachment 4 item 212).**

12.3.1. An elongated area across the southern portion of the reservation, approximately 20 NM in length and 4NM wide extending from 500' AGL to unlimited. Centerline coordinates for supersonic operations are from N3448.9' W11803.5' to N3451.4' W11731.5'. Border coordinates are listed in Attachment 4.

12.3.2. Supersonic flight below 15,000' MSL is restricted west to east only.

12.3.3. Schedule VR-1206 for subsonic acceleration low altitude west to east flights.

12.3.4. Aircraft shall be subsonic prior to exiting the East Range and crossing Hwy 395.

### **12.4. High Altitude Supersonic Corridor (Fig 12. 3., Attachment 4 item 213).**

12.4.1. Encompasses 7.5 NM either side of centerline and 224 NM long from FL300 to unlimited. Centerline coordinates N3449' W11900' (Mt Pinos) to N3458.9' W11743.9' (EDW VORTAC) to N3525' W11440' Lake Mojave on the Colorado River. Border coordinates are listed in Attachment 4.

12.4.2. High Altitude Entry/Exits (Radial/DME). Conduct all corridor entries and exits at or above FL300.

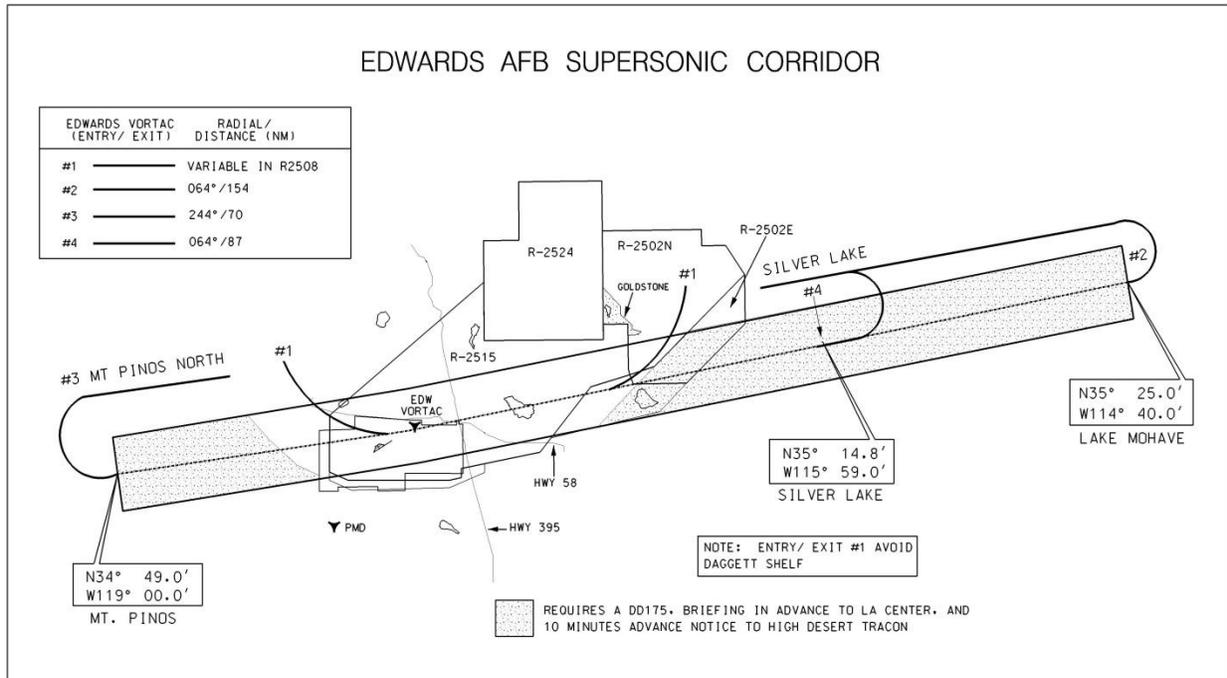
12.4.2.1. Entry/Exit Point 1 (East-West, West-East). Use these for runs totally contained within R-2508. Request over-flight clearance for R-2502N and R-2524 from JOSHUA or SPORT.

12.4.2.2. Entry/Exit Point 2 (Lake Mojave). Route directly between Silver Lake and Lake Mojave (EDW 064/154) to include a turning radius to and from the east end of the supersonic corridor.

12.4.2.3. Entry/Exit Point 3 (Mt Pinos) via EDW 260 Radial (EDW 244/70) to a point directly north of Mt Pinos to include a turning radius to and from the west end of the supersonic corridor.

12.4.2.4. Entry/Exit Point 4 (Silver Lake) route between R-2508 Complex directly over Silver Lake (EDW 064/87) to include a turning radius to or from Soda Lake to join/exit the corridor.

Figure 12.3. High Altitude Supersonic Corridor



### 12.4.3. Procedures.

#### 12.4.3.1. Flights remaining within the R-2508 Complex boundaries.

12.4.3.1.1. Schedule R-2502E and Barstow East FL300 and above when needed for additional airspace. Otherwise, expect delays from Los Angeles Air Route Traffic Control Center (ARTCC). Supersonic flight within the R-2508 boundaries (Entry #1/Exit #1) requires no advance notification.

12.4.3.1.2. Contact controlling/monitoring facility (SPORT or JOSHUA) at least 15 minutes prior to airspace time when Daggett Shelf (R-2502E and Barstow East FL240 and above) is required.

12.4.3.1.3. Before entering supersonic corridor, specify Entry #1/Exit #1, number of runs, direction of flight and altitudes.

12.4.3.1.4. Obtain over-flight altitudes for R-2502N and R-2524 from JOSHUA or SPORT as required.

12.4.3.1.5. Advise JOSHUA or SPORT when mission is complete.

12.4.3.2. Flights exiting the R-2508 Complex boundaries shall coordinate proposed supersonic flight with Los Angeles ARTCC (661-265-8287) at least one hour prior to takeoff. If possible, coordinate one day prior to scheduled mission and provide the following information as listed in Table 12.1.

12.4.3.3. Supersonic flight should be planned for 0700L to 0930L and 1230L to 1500L daily to minimize excessive restrictions. Supersonic flight outside the R-2508 Complex at FL390 and above can normally expect minimal restrictions.

**Table 12.1. Supersonic Coordination Requirements**

Aircraft call sign and type
Corridor entry/exit point(s)
Proposed time of crossing R-2508 boundary enroute to the entry point
Altitude restrictions on entry or exit route (If critical for the mission)
Flight levels requested (describe flight profile)
Whether early corridor entry/exit is possible
Special requirements (additional runs, pacer/chase aircraft, equipment limitations, etc.)
Air/ground frequency to be used when a discrete frequency is requested
Point of contact information for Los Angeles ARTCC to contact with coordination reply (allow approximately 15 minutes for reply)

12.4.3.4. Los Angeles ARTCC will accommodate requests outside R-2508 to the maximum extent possible based on traffic conditions. However, due to high-density enroute traffic, the corridor extending west beyond the boundary of the R-2508 Complex (entry/exit point 3) shall only be used when absolutely required.

12.4.3.5. Unless mission essential and specifically approved, the entry and/or exit phases of the route outside the R-2508 Complex shall be conducted under the control of Los Angeles Center at air traffic control assigned altitudes. Normally, expect frequency change to SPORT or JOSHUA at or prior to the entry point and to re-contact center prior to the exit point (except on Exit #1).

12.4.3.6. Upon receiving the Supersonic request from the Range Control Officer (RCO), the Los Angeles ARTCC Military Operations Specialist (MOS) will file the flight plan. Center will enter the R-2508 Complex exit altitude as the requested altitude of the flight plan. In the remarks section, Center will enter the block altitudes requested. Plan an altitude above FL370 enroute to corridor entry or exiting the corridor for return to R-2508. Fill out DD-175 and maintain in dispatch section but do not file through Airfield Management.

12.4.3.7. Receipt of a flight data strip by SPORT or JOSHUA constitutes Center approval. Any special air traffic control requirements will be coordinated with JOSHUA/SPORT.

12.4.3.8. Advise JOSHUA or SPORT when scheduled supersonic flight is canceled or delayed by 30 minutes or more. Delayed flights may require re-coordination with the Traffic Management Unit.

12.4.3.9. Notify JOSHUA or SPORT 10 minutes prior to R-2508 exit time with supersonic corridor request.

12.4.3.10. Whenever a chase aircraft becomes separated by more than 1 NM laterally or 100' vertically from the lead, the pilot will immediately squawk code normal with mode C encoded.

12.4.3.11. Remain south of corridor centerline on a ground track approximately between North Base and Main Base when the North Spin is active above FL300. If using Entry/Exit #1 eastbound, use a ground track over Mojave to Main Base then continue east.

12.4.3.12. Remain east of Kramer Junction when the West Spin is active above FL300. If using Entry/Exit #1 eastbound, use a ground track over California City to Kramer Junction through the North Spin.

12.4.3.13. Aircraft will not be cleared into the High Altitude Supersonic Corridor when ATC radar or computers fail or when prearranged coordination is not practicable.

**12.5. Sonic Boom Log.** IAW AFI 13-201, *Airspace Management*, USAF organizations assigned/attached to AFTC will submit supersonic activity utilizing the form within COOL located under Mission Planning. The reporting period is from 0001L Monday to 2400L Sunday. Forward direct questions to 412 OSS Airspace Management.

## Chapter 13

### EMERGENCY PROCEDURES

**13.1. Operation of Primary Crash Alarm Systems (PCAS)/ Secondary Crash Net (SCN).** The crash alarm system is composed of PCAS and SCN. AFI 13-204 V3, *Airfield Operations Procedures and Programs*, limits organizations authorized two-way communication on the primary crash phone. Others are limited to receive only.

13.1.1. The PCAS is activated by the Tower and comprised of the following agencies listed in Table 13.1.

**Table 13.1. PCAS Organizations**

Control Tower	Flight Surgeon
AMOPS	Fire and Emergency Services

13.1.2. The SCN is activated by AMOPS. 412 TW/CP activates the SCN when AMOPS is unable to or when the AMOPS facility is closed. The SCN is comprised of the following agencies listed in Table 13.2.

**Table 13.2. SCN Organizations**

Test Wing/CC	Air Base Wing/CC	Operations Group/CC
MOCC	Explosive Ordnance Disposal	Security Forces Control Center
Flight Safety	Emergency Management	Command Post
Crash Recovery	Weather	Flight Surgeon
Fire Dept		

### 13.2. PCAS/SCN OPERATIONAL CHECKS.

#### 13.2.1. PCAS.

13.2.1.1. The Tower will check the PCAS daily, except when the airfield is closed, between 0800L and 0815L.

13.2.1.2. Outside of normal airfield operating hours the Tower will check the PCAS once per 24-hour period.

13.2.1.3. PCAS agencies will respond when queried by the Tower indicating the reception quality of the circuit followed by their operating initials. PCAS agencies will remain on the line until tower requests agencies to "secure the net".

13.2.1.4. Report circuit malfunctions to 412th Client Services Center and Tower.

13.2.2. AMOPS will check the SCN immediately after the PCAS check. Procedures are identical to those used during the primary crash phone check.

13.2.3. Alternate SCN. 412th Test Wing CP will check the system on first duty day of the month. Testing will be immediately after the SCN is tested. Procedures are identical to the SCN.

**13.3. ACTIVATION OF PCAS/SCN.** The PCAS and SCN are for dissemination of emergency information only.

13.3.1. The following situations require activation of the PCAS, but not limited to:

13.3.1.1. Emergencies declared by the AC, ATC or other competent authority.

13.3.1.2. Emergency fuel aircraft.

13.3.1.3. NORDO aircraft when it cannot be determined whether or not another malfunction exists.

13.3.1.4. Reported or suspected hot brakes.

13.3.1.5. Unauthorized aircraft movement/hijack.

13.3.1.6. Aircraft bomb threat.

13.3.1.7. On/off base accidents/forced landings of aircraft including suspected incidents. Forward off base, non-DOD, aircraft accidents/forced landings to JOSHUA and/or Los Angeles Center for implementation of search and recovery procedures.

13.3.1.8. Major fuel spills (when requested by competent authority).

13.3.1.9. Reported or suspected Hydrazine spills.

13.3.1.10. Exercise injects.

13.3.1.10.1. Exercise involvement with Airfield Facilities to include airfield assets will be coordinated with the Airfield Operations Flight Commander 48 hours prior to the event.

13.3.1.10.2. IAW AFI 13-204 V3, Tower personnel will participate only as long as events do not interfere with ATC services or jeopardize flight safety.

13.3.1.11. Tower evacuation.

13.3.1.12. Perceived aircraft high speed aborts.

13.3.1.13. Updates on emergency situations.

13.3.1.14. Unauthorized civil aircraft landings.

13.3.2. The Tower relays emergency information verbatim as prescribed in FAA Order JO 7110.65, *Air Traffic Control*. Essential information for relay, if known, is identified below:

13.3.2.1. Type emergency (inflight/ground).

13.3.2.2. Nature of emergency.

13.3.2.3. Pilot's desires.

13.3.2.4. Landing runway.

13.3.2.5. Fuel remaining in time.

13.3.2.6. Estimated time of arrival.

13.3.2.7. Aircraft identification and type.

13.3.2.8. Hazardous cargo/armament.

13.3.2.9. Wind.

13.3.2.10. Aircraft position 9grid coordinates as applicable).

13.3.2.11. Personnel on board.

13.3.3. Information received over the PCAS will be relayed verbatim by AMOPS over the secondary crash phone.

13.3.4. The Tower forwards all emergency termination times to AMOPS via landline.

13.3.5. Personnel responsible for answering the PCAS/SCN will:

13.3.5.1. Pick up the receiver and listen - do not say anything.

13.3.5.2. Copy information verbatim.

13.3.5.3. When asked, give initials to acknowledge receipt of information or state question(s).

**13.4. Emergency Response/Communication Procedures.** The crew will, time permitting, provide JOSHUA or SPORT the information as listed in Table 13.3. If conditions permit, crews will inform the SOF of situation and/or request technical assistance via SOF mission frequency (UHF 308.7/VHF 143.1). If a technical assistance frequency (TAF) is needed, non-test aircraft within R-2515 will normally use Edwards SOF frequency (308.7). For test aircraft requiring a TAF, either the SOF frequency or the test aircraft's mission frequency may be used as the TAF.

13.4.1. Once an emergency aircraft lands, pilots can expect frequency assignment to 353.6 (Ch 19) for direct communications with the incident commander.

13.4.2. Pilots who require a single frequency approach will be assigned frequency 353.6 (Ch 19) by the control tower.

13.4.3. Tower will activate the PCAS and relay all known information.

13.4.4. Tower shall notify the Edwards Emergency Communications Center of hazardous aircraft operations being conducted at North and/or South Base (experimental flights, initial flight test, auto-rotations, etc) and when operations are terminated.

13.4.5. CONFORM, when required, will:

13.4.5.1. Notify the organization having operational control of the aircraft, SOF, 412 TW/CC and 412 OG/CC.

13.4.6. SOF will:

13.4.6.1. Notify the emergency aircraft's organization when time permits.

13.4.6.2. Provide technical assistance (if requested by the crew) to the extent possible when the emergency aircraft's organization is unavailable until relieved by that flying organization's CC or authorized representative.

13.4.6.2.1. Arrange for chase aircraft, emergency air refueling, technical consultation, etc., as deemed appropriate by the duty officer or when requested by the organization, SOF or crew.

13.4.6.3. Retain all other responsibility and authority when flying organizations provide technical assistance unless relieved by 412 OG/CC.

13.4.6.4. Not interfere with air traffic controller duties.

13.4.7. The flying organization's CC or authorized representative (may be a contractor) provides technical assistance upon request.

13.4.8. Tower/AMOPS will use the Ramp/Crash FM Nets to communicate with emergency vehicles once they are deployed to standby positions. Other agencies use the Ramp/Crash Nets to accomplish coordination and relay follow-up information. Tower will broadcast on all ground control frequencies except Guard when emergency aircraft is next to land. Tower will instruct the IFE pilot to contact incident commander on UHF 353.6 or another frequency as directed by tower.

13.4.9. The Senior On-Scene Fire Official is the final authority on emergency termination and fire/crash equipment release. The Senior On-Scene Fire Official shall notify Tower of emergency termination via Ramp/Crash FM Net.

**13.5. Hydrazine (H-70) Areas (Fig 13. 1).** When an aircraft with an unscheduled activated EPU lands or an aircraft EPU has activated on the ground, has a leak and/or leak contamination, declare a ground emergency. An airstart mission (scheduled activation) does not require an IFE declaration. If a leak/contamination is found after landing, a ground emergency will be declared.

13.5.1. After landing, Tower will advise the crew of departure end wind conditions. For Taxiway Delta provide Rwy 22 approach end winds.

13.5.2. Aircraft with an activated EPU can recover at Rwy 04R/22L and 04L/22R hammerheads or for any lakebed runway at Taxiway Delta. Taxiway Bravo shall only be used if the departure end hammerhead has on-going activities.

13.5.3. Crews shall:

13.5.3.1. Taxi to the designated parking spot (if possible) and park with the left wing into the wind at a 45-degree angle.

13.5.3.2. Keep canopy closed, visor down, mask up and maintain 100% oxygen. Crew will turn off the EPU and follow Hydrazine Response Team (HRT) and Senior Fire Official directions. The HRT/Senior Fire Official will establish visual or radio communications using UHF 353.6 or as directed by Tower.

13.5.3.3. HRT will secure the aircraft and conduct an initial visual inspection for hydrazine leaks. HRT/Senior Fire Official will inform the aircrew of leak/contamination status and direct engine shutdown. After shutdown, HRT will pin the EPU. Leave canopy closed (until directed to egress by HRT) and mask up.

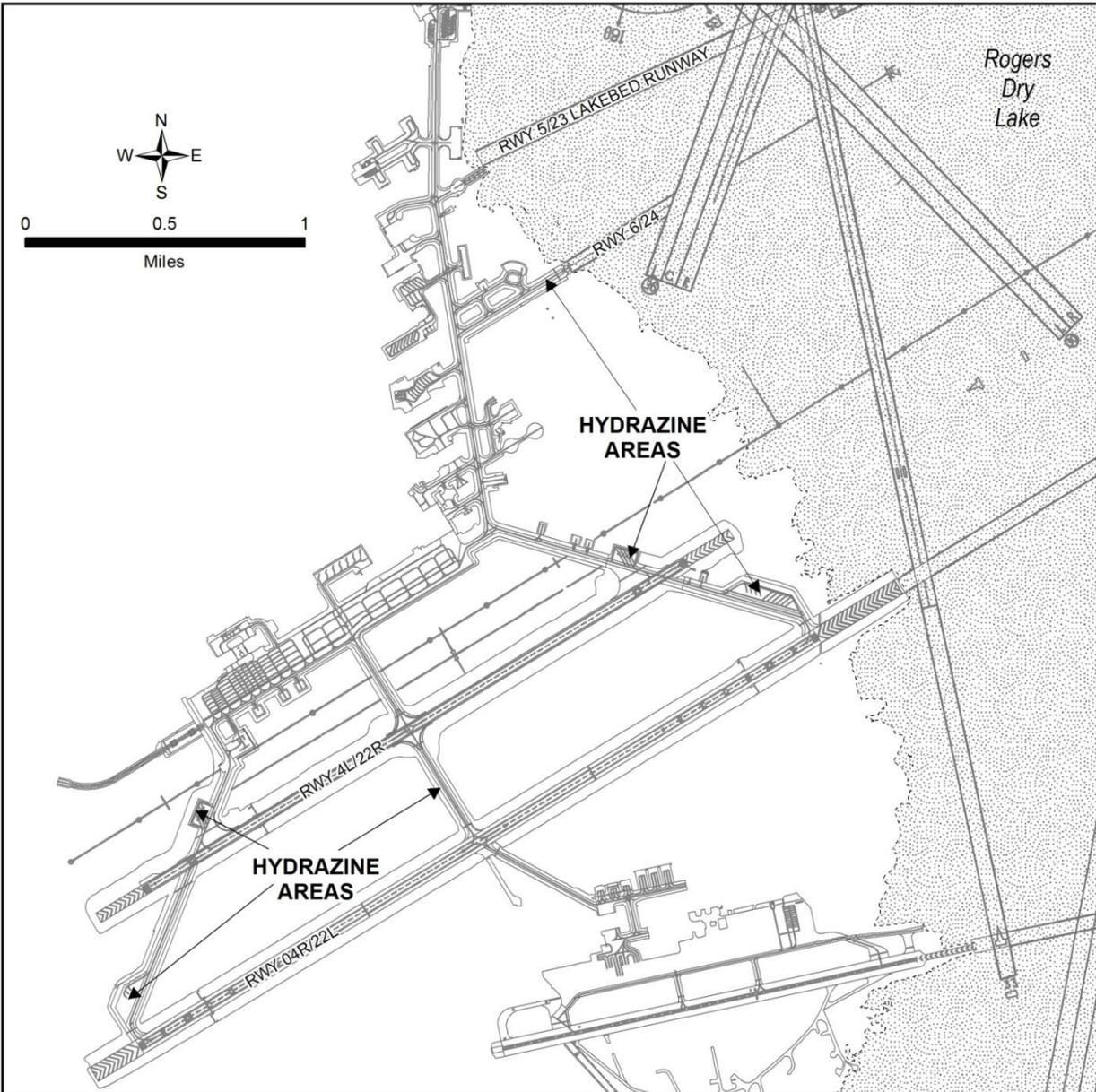
13.5.3.4. After opening the canopy, regardless of leak status, HRT will provide portable oxygen bottles for the aircrew during egress. The portable oxygen bottle has the same connections as the aircraft life support system.

13.5.4. The aircraft will be towed to the appropriate spot.

13.5.5. Routine hydrazine maintenance will be performed on the Gun Butt (Pad 6) or Taxiway Delta.

13.5.6. See EAFBI 21-209, *Hydrazine Response Procedures* and 412 TW Viper Guide for detailed procedures.

Figure 13.1. Hydrazine Areas



**13.6. Hot Brakes and Procedures.** Air/ground crews experiencing/suspecting hot brakes shall declare an emergency with the Tower and provide aircraft identification, type and location. Crews will accomplish the appropriate Tech Order emergency procedures. (Crew safety is paramount. If a fire develops, consider immediate engine shutdown and egress). Normally, the crew should continue to the end of the runway and taxi to the designated hot brake areas (22L/04R hammerheads). Park so that the wind will blow any flames/smoke away from the cockpit and help cool the brakes. (Refer to Fig 4.4.)

13.6.1. If exiting at the center taxiway, the crew will stop the aircraft after clearing the runway. If past the designated hot brake area, the crew will taxi to the nearest uncongested

area and stop. In either situation, stop the aircraft so the sides of the wheels are not facing any other aircraft in the area.

13.6.2. If hot brakes are discovered after arriving in the parking area, the crew will declare a ground emergency with Ground Control and taxi to an uncongested area. The crew chief will notify the airfield expediter of the problem and monitor the aircraft for possible tire/brake fire. The airfield expediter will radio the aircraft location to the ROC who will ensure that a ground emergency has been declared.

13.6.3. If a hot brake aircraft blocks the center taxiway, Tower will cease operations on the taxiway until notified the danger of a blown tire, etc., has passed.

13.6.4. The aircraft should be chocked as soon as it is safe so brake pressure may be released to aid cooling and help prevent fusing. Fire and Crash Rescue personnel will provide standby support during brake cooling.

13.6.5. Ensure fire support/response equipment is in place before shutdown if the aircraft may vent fuel upon shutdown.

13.6.6. All support vehicles, except Crash Recovery and Fire and Crash Rescue, will remain at least 300' from an aircraft with hot brakes.

**13.7. Personnel/Crash Locator Beacon Signal/Emergency Locator Transmitter (ELT) Response Procedures.** Tower will notify SPORT, JOSHUA and AMOPS when an ELT signal is received or terminated.

13.7.1. AMOPS will activate checklist to ascertain if the ELT is originating from the airfield. The 412 TW/CP assumes responsibility when AMOPS is closed.

13.7.2. The ATC Tower will contact Frequency Management who will attempt to locate the ELT. If no one is available at the location to deactivate the ELT, Frequency Management will contact the ROC who will recall the appropriate individual to assist in deactivating the ELT. Frequency Management will contact the ROC and AMOPS or 412 TW/CP (when AMOPS is closed) upon termination of the ELT.

13.7.3. Aircrew Flight Equipment (AFE), when notified, will search its shop for the activated ELT and if found, immediately deactivate and report ELT termination to AMOPS or 412 TW/CP when AMOPS is closed. AFE personnel will remain at their building until AMOPS/412 TW/CP confirms the ELT is terminated.

13.7.4. The ROC, when notified, will contact the Survival Equipment Shop, Egress Shop and Line Trucks. Each will check their respective area for the ELT. Upon completion of check, each shop will contact the ROC with the results. ROC will then contact AMOPS or 412 TW/CP and report findings.

13.7.5. Planned ELT/Survival Radio Tests. ELT testing is authorized during the first 5 minutes of each hour. Operators will advise AMOPS or 412 TW/CP of test duration times (start/end) and the test location prior to keying survival radios on UHF 243.0 or VHF 121.5 for a test, lecture or demonstration. Do not key the transmitter for more than three audible sweeps.

**13.8. Lost Communications.**

13.8.1. ATC/SPORT MRU will declare an emergency when communication (i.e. receiver only acknowledgement) cannot be established with airborne, single aircraft (no wingman/chase).

13.8.2. Fixed Wing crews shall:

13.8.2.1. Set transponder to 7600 and follow radio out procedures as published in the 412 TW In-flight Guide.

13.8.2.2. Monitor VHF 121.5/UHF 243.0.

13.8.2.3. During VMC, ascertain landing direction prior to entering the traffic pattern by over flying Edwards at or above 6,000' MSL. Enter initial at 3,300' MSL for the runway in use midway between the runway and Tower Flyby Line, rocking wings during daylight or flashing landing lights at night and break at departure end. Observe Tower for light gun signals.

13.8.2.4. If IMC is encountered, proceed to the IAF for Rwy 22L, execute one turn in holding and commence approach. If Rwy 04R is the active runway, execute the approach to Rwy 22L and circle to land Rwy 04R.

**13.9. Lost or Overdue Aircraft.** The ROC is responsible for notifying AMOPS when an aircraft within the Edwards scheduling system has exceeded its ETA by 30 minutes.

**13.10. Evacuation of Airfield Operations Facilities:**

13.10.1. AMOPS Facility. When necessary to evacuate Bldg 1202, AMOPS will:

13.10.1.1. Evacuate to the base of the Tower or alternate Tower. Fly-away kits will be taken with personnel when relocating.

13.10.1.2. Vehicle staging will be positioned on the airfield in close proximity to the alternate locations. Aircraft delays should be expected until operations may resume.

13.10.1.3. AMOPS personnel will conclude actions IAW the Facility Evacuation Quick Reference Checklist.

13.10.2. Alternate Control Tower Operations and Tower Wind Limitations. Tower personnel will evacuate when the surface wind velocity reaches a sustained speed of 80 mph (70 knots) or gusts up to 100 mph (87 knots). In the event of a Tower evacuation the PCAS will be utilized by Tower personnel to inform associated agencies of the evacuation (Para 13.3.1.11). The following general procedures will be utilized by Tower personnel when evacuating to the Alternate Control Tower on Fire Station One. A detailed list of actions and responsibilities are published in 412 OSS Tower OI 13-2, *Facility Management*.

13.10.2.1. Tower shall make a blanket broadcast on all frequencies, stating, "Attention all aircraft, Edwards Tower is being evacuated, all airborne aircraft contact SPORT/JOSHUA. All aircraft exit and remain off runway. Taxiing aircraft hold position until further advised." Make a similar broadcast on the FM Nets (Crash Net/Trunk Net/government cell phones).

13.10.2.2. Airfield lighting will be set to "pilot controlled" (Para. 4.4).

13.10.2.3. All aircraft/vehicle operations and activities to the controlled movement area(s) will be suspended until operations are resumed at the alternate facility.

13.10.2.4. Tower shall transmit on all available frequencies and LMR nets: "Attention all aircraft and personnel, Edwards alternate Tower is operational."

**13.11. Evacuation of SPORT MRU Facilities:**

13.11.1. When necessary to evacuate the SPORT MRU, SPORT will:

13.11.1.1. Evacuate to the southwest corner of the parking lot west of Ridley Mission Control. Fly-away kits will be taken with personnel when relocating.

13.11.1.2. SPORT MRU will transmit on all available frequencies: "Attention all aircraft, SPORT is evacuating, radar service terminated, maintain VFR and contact JOSHUA approach 348.7/133.65."

## Chapter 14

### UNMANNED AIRCRAFT SYSTEM (UAS) OPERATIONS

**14.1. Overview.** This chapter establishes the additional instructional guidance for conducting Unmanned Aircraft System (UAS) operations from Edwards AFB and within Restricted Area R-2515. Instructions in this chapter augment instructions contained in other chapters of this document. UAS pilots must abide by the overall guidance contained in this instruction – not solely this chapter.

14.1.1. The procedures in this instruction apply to locally assigned UAS/UAS test programs, NASA/NASA sponsored UAS programs and UAS operations transiting R-2515.

14.1.2. UAS operations not listed above shall be covered in an LOA.

#### **14.2. Definitions.**

14.2.1. UAS: A powered, aircraft that does not carry a human operator; uses aerodynamic forces to provide vehicle lift; can fly autonomously or be piloted remotely; can be expendable or recoverable and can carry a lethal or non-lethal payload. Ballistic or semi ballistic vehicles, cruise missiles, and artillery projectiles are not considered an unmanned aircraft system.

14.2.2. Sense and Avoid: Detection of other aircraft, personnel or obstruction (airborne and ground) that will potentially be a factor to the UAS operation. This information is displayed to the UAS pilot in a manner that makes it easy to interpret the severity of the potential conflict and decide on an appropriate avoidance course of action.

14.2.3. Lost Link: When the ground control segment loses command and control data link with the aircraft. Mitigation procedures will be evaluated by the SRB for the specific aircraft. An example of such a mitigating procedure would be for the aircraft to go to an autonomous orbit and then recover automatically based on time or fuel.

14.2.4. UAS pilot: Individual directly responsible for the UAS's flight path.

14.2.5. Cooperative Traffic: Aircraft in direct communication with air traffic control (ATC), or military radar unit (MRU) controllers and on an assigned Mode 3 beacon code.

14.2.6. Non-Cooperative traffic: Aircraft not in direct communication with ATC or MRU controllers and/or not squawking a Mode 3 beacon code.

#### **14.3. Coordination and Relationship to Test Package**

14.3.1. The testing and operation of unmanned air vehicles can often involve unique hazard considerations. These considerations are directly related to the type of UAS, the planned operations and the level of maturity of the air vehicle. The AFTC Safety Review Board, via a Test Safety Package, and subsequent commander's approval establish the types of mitigation procedures required and may vary throughout a test program.

14.3.2. UAS programs shall coordinate Test Safety Package requirements to include type designation, and appropriate mitigation requirements described below, through the 412 OG/CC for procedural integration into R-2515 operations.

14.3.3. Requests for unpublished exclusive use airspace for UAS operations within R-2515 shall be coordinated at least 14 days in advance through R-2515 Airspace Management.

14.3.4. UAS operations on Rosamond/Rogers lakebeds when tower and SPORT are closed require prior approval from 412 OG/CC.

14.3.5. Additional mitigation procedures will be communicated to ATC (JOSHUA), SPORT, Tower and other aircrews as required through FCIFs, NOTAMs or LOAs.

14.3.6. To simplify this process and provide standard terminology, the following standard mitigation procedures can be referenced. Variations or deviations from these standard definitions should be clearly defined and documented in the approved test package and subsequent FCIF/NOTAM/etc.

**14.4. Type Designation.** A UAS will be assigned a type designation by the AFTC Safety Review Board will assign a type designation to each UAS. Traffic avoidance capability is an important consideration for type designation and may be accomplished via on-board or off-board systems. Capability must be tested for suitability before it can be considered for categorizing the UAS.

14.4.1. Type 1: UAS has the ability to conduct sense and avoid to an equivalent level of capability as a manned aircraft (cooperative and non-cooperative traffic).

14.4.2. Type 2: UAS able to detect factor traffic (cooperative only) and take appropriate avoidance action in a timely manner (usually within a few seconds). The detection to action decision loop only involves the UAS and the operator.

14.4.3. Type 3: UAS able to detect factor traffic (cooperative only), but unable to react in a timely manner (usually within a few seconds). This delay may be due to detection method (ATC traffic monitoring, Chase aircraft) and/or latency inherent in UAS system (long link delays, complicated command sequences).

14.4.4. Type 4: UAS unable to deviate from flight path for traffic avoidance. ATC may be able to detect the conflict and direct the conflicting traffic to maneuver (ATC transponder required).

14.4.5. Type 5: UAS unable to deviate from flight path for traffic avoidance and ATC unable to accurately track a UAS to detect traffic conflicts (no transponder).

## **14.5. Hazard Mitigation**

### **14.5.1. Flight (See and Avoid) Mitigation**

14.5.1.1. Exclusive Use Airspace (EUA): Airspace dedicated to the sole use of the UAS mission. SPORT is responsible for directing non-participant traffic to avoid entering and advising the UAS pilot if there is an airspace incursion. UAS operations are required to remain within the confines of the airspace boundaries. Examples include PIRA and Alpha Corridor.

14.5.1.2. Airspace bubble (BA): Aircrews shall remain clear of any UAS by 2000' vertical and 5 NM horizontal airspace bubble around the UAS. Exception: Chase aircraft are exempt from this requirement.

14.5.1.2.1. The BA is not required for UAS operations flying with a chase aircraft providing see and avoid functions.

14.5.1.2.2. SPORT is responsible for advising traffic of the current direction of flight and altitude of UAS. SPORT will then recommend a direction or altitude change to protect the BA. The UAS pilot will be prepared to make avoidance maneuver if required.

14.5.1.2.3. Once a UAS is established in Rosamond North/South UAS Areas, the Four Corners UAS Work Area, PIRA and/or the North Base UAS Special Use Airspace, to include the transition airspace between the North Base UAS and PIRA, the BA will terminate. BA is only valid in R-2515 outside the aforementioned areas.

14.5.1.2.4. Tower cannot provide separation services for BA for aircraft on final approach or inbound aircraft outside Class Delta Airspace. The BA shall be maintained by SPORT until the UAS enters Class Delta Airspace.

14.5.1.2.5. Departures shall receive BA separation services from SPORT once they depart Class Delta Airspace.

14.5.1.2.6. Inside Class Delta Airspace

14.5.1.2.6.1. BA cannot be maintained within Class Delta airspace. If EUA airspace is needed, the Class Delta shall be sanitized of other operations. Coordination to sanitize Class Delta operations shall be coordinated at least 72 hours in advance.

14.5.1.2.6.2. Controllers will not instruct UAS pilots to visually follow another aircraft. Exception: A UAS flying with a chase aircraft providing see and avoid functions.

14.5.1.2.6.3. Use of visual separation between UAS pilots and UAS pilots and manned aircraft is not authorized. Tower shall provide positive control instructions to ensure appropriate landing sequence and runway separation.

14.5.1.2.6.4. If applicable the UAS pilot will notify Tower of planned go around altitude.

14.5.1.3. Chase aircraft (CA): Primary purpose may be to conduct see and avoid for both the UAS and the chase aircraft. If the chase aircraft is providing see and avoid functions, they will advise the UAS pilot of all traffic conflicts and recommend or direct a course of action as appropriate.

14.5.1.4. Traffic Avoidance (TA): UAS pilot depends on ATC active monitoring to detect traffic and advise UAS pilot of all traffic conflicts and recommended avoidance maneuver.

14.5.1.5. Ground Hazard Mitigation.

14.5.1.5.1. Test programs will use the ground hazard mitigation procedures described below as necessary and as specified by the Safety Board.

14.5.1.5.2. Sanitized ground footprint (FS): Geographic area on the ground actively cleared of all personnel. Risk is accepted to structures and vehicles remaining within

the footprint in case of an aircraft crash. Flight path is planned to afford the maximum practical protection for personnel. Example: PIRA, Echo Range, other bombing ranges.

14.5.1.5.3. Limited ground footprint (FLG): Geographic area on the ground with widely dispersed population and/or structures. Flight path is planned to minimize personnel risk exposure. Example: The corner of R-2515 north of Hwy 58 and east of Hwy 395, or flight planning to avoid designated population areas.

14.5.1.5.4. Takeoff exclusion zone (TE): Designated zone around takeoff runway to minimize risk to personnel, aircraft and equipment from a takeoff accident. Active procedures are utilized to prevent non-participating personnel from being within the exclusion zone.

14.5.1.5.5. Landing exclusion zone (LE): Designated zone around landing runway to minimize risk to personnel, aircraft and equipment from a landing accident. Active procedures are utilized to prevent non-participating personnel from being within the exclusion zone.

14.5.1.5.6. Road closure (RC): Closure of roads the UAS ground track crosses to minimize risk to drivers and their vehicles. Active procedures are utilized to stop traffic at a safe distance from the UAS ground track. Examples include Lancaster Blvd and Mercury Blvd.

#### 14.5.1.6. Airfield Conflict Avoidance.

14.5.1.6.1. Test programs will use the airfield conflict avoidance procedures described below as necessary and as specified by the Safety Board.

14.5.1.6.2. Sanitized Taxi Route (ST): Taxi route from engine start location to runway is sanitized of all non-participant aircraft, ground vehicles and personnel.

14.5.1.6.3. Safety Ground Chase vehicle (SGC): Primary purpose is to monitor UAS ground operations/taxi for conflicts with aircraft, personnel and structures. The Safety Ground Chase vehicle will advise the UAS pilot of all traffic conflicts and recommend or direct a course of action as appropriate.

14.5.1.6.4. Lakebed takeoff (LBT): UAS takeoff restricted to approved/coordinated lakebed surfaces only. (Specify planned lakebed(s)).

14.5.1.6.5. Lakebed landing (LBL): UAS landing restricted to approved/coordinated lakebed surfaces only. (Specify planned lakebed(s)).

**Table 14.1. UAS Mitigation Matrix**

	Type 1	Type 2	Type 3	Type 4	Type 5
Mature		BA	BA TA	BA TA	EUA or BA/CA TA
Provisional	BA	BA	BA TA	BA TA	EUA or BA/CA TA
Experimental	BA FL FTS	BA FL FTS	BA FL FTS GC	BA/CA FL FTS GC	EUA FL FTS GC
Unproven	EUA or BA/CA FS TE/LE/RC or LBT/LBL or RC/CF FTS ST	EUA or BA/CA FS TE/LE/RC or LBT/LBL or RC/CF FTS ST	EUA or BA/CA FS TE/LE/RC or LBT/LBL or RC/CF FTS GC ST	EUA FS TE/LE/RC or LBT/LBL or RC/CF FTS GC ST	EUA FS TE/LE/RC or LBT/LBL or RC/CF FTS GC ST
<p>Note a '/' indicates all listed mitigating factors on that line of the cell are required -- read as 'and'. Each line in the cell indicates additional mitigating factors required.</p>					

**14.6. Lost Link Procedures.**

14.6.1. Lost Link profiles: UAS pilot shall forward lost link profiles to Air Traffic Control (Tower/SPORT/TRACON) and AOF/CC/DO NLT 72 hours prior to mission execution for each flight unless otherwise coordinated via an LOA, COA or LOP.

14.6.1.1. Tower will not activate the PCAS or request rescue service for lost link UAS aircraft unless the pilot/operator declares an emergency. An UAS pilot may declare an emergency via voice communication or by squawking "7700" and following pre-coordinated lost link procedures.

14.6.1.2. PCAS activation: The PCAS shall be activated as if an emergency is declared.

14.6.1.3. Notify ATC immediately of the following (if applicable):

- 14.6.1.3.1. Time of Lost Link
- 14.6.1.3.2. Last known Position
- 14.6.1.3.3. Altitude
- 14.6.1.3.4. Direction of Flight
- 14.6.1.3.5. Confirmed execution of lost link

## 14.6.1.3.6. Confirmed visual contact of UAS

**14.7. Chase Vehicles**

14.7.1. Chase vehicles may request simultaneous access to the runway with their UAS for departures and arrivals. The UAS and chase vehicle will be considered a formation during ground operations. If a request for simultaneous access is granted by the tower, operators are solely responsible for the separation of vehicles and aircraft within their formation.

14.7.2. Departures: Chase vehicles are automatically cleared onto the runway when their assigned aircraft is cleared onto the runway.

14.7.2.1. Chase vehicles shall exit the runway at the next available taxiway or as directed by Tower.

14.7.3. Arrivals: Chase vehicles shall request runway entry from Tower, while still holding short of the runway at the approach end in a position to conduct a “run in” on the landing aircraft. Once their assigned UAS aircraft is cleared to land, the chase vehicle is approved access to rejoin the landing aircraft at their discretion based on operational need.

14.7.3.1. Any additional chase vehicles holding short of the runway at any other entry point other than the approach end, will continue to hold short until Tower gives specific approval to access the runway to rejoin the UAS after landing.

14.7.3.2. Tower will suspend runway operations to the runway being used once the aircraft receives a clearance to land. Runway operations will remain suspended until all vehicles report off the runway.

**14.8. Communication.**

14.8.1. Communication with ATC and/or SPORT is required for all UAS operations within R-2515.

14.8.2. Communication shall be on primary or alternate ATC frequencies unless otherwise coordinated. Examples of other approved means of communication include calling tower/SPORT landlines, LMR, pre-coordinated automated methods.

14.8.3. An initial communication check shall be accomplished between the UAS pilot (Via voice pass-through if available) and ATC prior to commencing operations.

14.8.4. UAS operators conducting multiple launches within Rosamond North/South UAS areas, North UAS Area, ROA Corridor, Four Corners or PIRA will notify Tower/SPORT at the beginning and end of each individual launch to allow for real-time airspace de-confliction.

**14.9. Emergency Recall of Airspace:** In the event of an emergency that requires the use of EUA being occupied by a UAS. ATC or SPORT will coordinate with the UAS pilot to have the UAS move to other available mission airspace. If other mission airspace is not available or the UAS does not meet mitigation requirements for BA, the UAS will be instructed to return to base.

**14.10. NOTAM Requirements:** The responsible agency must coordinate UAS operations with Airfield Management at least 72 hours in advance or no later than 24 hours prior to scheduled mission to publish applicable NOTAMS.

14.10.1. NOTAMS are not required for a UAS who will operate in Rosamond North/South UAS areas, North UAS area, ROA corridor, Four Corners UAS Area or PIRA. These areas will be scheduled via CSE and de-conflicted real-time with ATC and SPORT. Exception: A NOTAM may be required if Tower/SPORT is closed.

14.10.2. A NOTAM is required for UAS's conducting operations outside of published UAS areas.

**14.11. Automated Terminal Information Service (ATIS):** Tower shall update the ATIS to reflect when UAS operations are conducted and when they terminate.

14.11.1. An "Unmanned Aircraft Operations are in Progress" advisory shall be included once a UAS requests to taxi or launch and 15 minutes prior to its estimated time of arrival.

14.11.2. Individual flying units will pre-coordinate any additional operational requirements with Airfield Operations Flight at least 14 days prior to the planned operation to ensure proper training/coordination.

**14.12. R-2515 Entry and Exit Procedures for UASs.**

14.12.1. The following points are identified for entry/exit of R-2515 for all UAS platforms originating outside R-2515. The points are as follows:

14.12.1.1. Point Grizzly is the primary entry point for R-2515, located on the southeast boundary of the Four Corners UAS Work Area. N34 53'09.00" W117 13'16.20". Entry altitude is 8,500' MSL or as coordinated with SPORT.

14.12.1.2. Point Dana is the primary exit point for R-2515, located on the southwest boundary of the Four Corners UAS Work Area. N34 50'38.45" W117 30'02.11". Exit altitude is 7,500' MSL or as coordinated with SPORT.

14.12.1.3. Point Reaper is located at 35 10' 29"N/116 49' 08" and is the entry/exit point for the eastern boundary. Altitude will be appropriate altitude for direction of flight and will coordinated with SPORT.

14.12.1.4. Red Mountain is located at 35 21' 27"/117 35' 25" and is the is the entry/exit point for the northern boundary. Altitude will be appropriate altitude for direction of flight and will be coordinated with SPORT

14.12.1.5. Point Rosamond is located at 34 49' 40"N/118 05' 48" W and is the entry/exit point along the western boundary. Altitude will be appropriate altitude for direction of flight and will be coordinated with SPORT.

**14.13. Departures and Arrivals to Unlighted Runways.** UAS with autonomous takeoff and landing capabilities are authorized to depart and land at Edwards AFB without the use of runway lighting aids. A UAS without autonomous takeoff and landing capabilities may depart and land at Edwards AFB without the use of runway lighting aids, if on an approved test plan and approved by 412 OG/CC.

14.13.1. Arrivals/departures from lakebed runways require prior approval from 412 OG/CC.

**14.14. Arresting Gear.** 24-hour prior notification required with airfield management for removal or change of barrier cable configuration.

14.14.1. Emergencies require a 2-hour prior notification to recall stand-by personnel to reconfigure and certify barriers.

14.14.2. In the event of short notice emergency, the Fire Department may remove a barrier with a 20 minute notification.

## Chapter 15

### MUNITIONS PROCEDURES

#### 15.1. General Definitions.

15.1.1. Forward Firing Munitions - A munitions item propelled forward from an aircraft or propelled from the aircraft after separation (e.g., guns, rockets, missiles, etc.).

15.1.2. Hot Guns - An aircraft gun system not mechanically safed.

15.1.3. Hot Gun Line - The directional aircraft parking location in which an aircraft loaded with gun ammunition must be positioned during EOR arming/dearming. The Hot Gun Line for Edwards AFB is 040 degree magnetic heading at the 22L hammerhead and 220 degree magnetic heading at the 04R hammerhead.

15.1.4. Gun Jam - An aircraft gun system that malfunctioned during firing.

15.1.5. Hung Munitions - Munitions not released after a release attempt.

15.1.6. Inert Munitions - Munitions with inert filler and no live explosives, spotting charges or motors (e.g. cement filled bombs, dummy missiles, etc.).

15.1.7. Live Munitions - Munitions with explosive fillers capable of producing a high-order detonation.

15.1.8. Training Munitions - An inert filled munition or ballistic shape with only a spotting charge with no high order detonation (e.g. BDU- 33, captive air training missile(s), etc.).

15.1.9. Unexpended Munitions - Remaining munitions where no release was attempted.

15.1.10. CAPA - Combat Aircraft Parking Area (areas sited for loading of live munitions HD 1.1 – 1.4)

15.1.11. AECPA - Aircraft Explosives Cargo Parking Area (areas sited for loading of munitions in shipping configuration)

#### 15.2. Munitions Loaded Aircraft.

15.2.1. Deviations from these procedures is not authorized unless approved in writing by the 412 TW Chief of Weapons Safety and the Wing Weapons Manager. Additionally, they may restrict all ground operating procedures identified within this chapter.

15.2.2. Aircraft loaded or being loaded/downloaded with hazard division (HD) 1.4 munitions (i.e., chaff squibs, captive-carry training missiles, BDU-33s), HD 1.3 installed aircraft defensive flares and HD 1.2.2 internal gun ammunition (30 mm or less) may be conducted at any designated aircraft parking area with the following restrictions:

15.2.2.1. Aircraft to be loaded/downloaded with HD 1.2.2 gun ordnance (to include 30MM or less) will be positioned in the parking locations as shown in Fig 15.1. thru 15.4.

**Figure 15.1. Ramp 8, Compound Bldg. #1820 spots 8-5 and 8-6 ONLY**



**Figure 15.2. Ramp 12, Compound Bldg. #1864 Sun Shade ONLY**



**Figure 15.3. Ramp 7, Compound Bldg. #1635, spots 7-1 and 7- 2 ONLY**



**Figure 15.4. Ramp 1, Shadow spots O-5 and O-6, 20° off center line ONLY**



15.2.2.2. All other hazard division munitions not previously discussed (HD 1.1 – 1.3) will be loaded/downloaded at the respective EOR arm/de-arm areas located in the runway hammerheads as identified in Fig 15.5.

15.2.2.3. All munitions safing pins will remain installed until aircraft goes through an End of Runway (EOR) inspection at the primary/alternate EOR arm/de-arm areas identified in Fig 15.5.

### **15.3. Ground Operations Involving Munitions.**

15.3.1. The primary EOR arm/de-arm area for live munitions is the 22L hammerhead and the alternate is the 04R hammerhead (Fig 15.5). Collectively, these areas will be referred to as EOR arm/de-arm areas. Aircraft with forward firing munitions or hot guns must park heading 040 on 22L hammerhead and 220° when using 04R hammerhead.

15.3.2. The EORs are not authorized for concurrent operations of AECPA and CAPA operations.

15.3.3. For inert and training munitions (including chaff/flares), arm in EOR arming areas.

15.3.4. If an aircraft has been armed with forward firing ordnance (rockets, missiles, gun, etc) and then must taxi an extensive distance for takeoff the crew will taxi as far as practicable from personnel and equipment while trying to minimize the amount of time the aircraft nose is pointed at base assets. When armed with live free fall ordnance taxi as far as practicable from personnel and equipment. For example, if armed in 22L EOR and a 04R takeoff is required, advise ground control and request back taxi down 22R to enter 04R at taxiway Alpha.

### **Figure 15.5. EOR Arm/De-Arm Load/Unload Areas**

### **15.4. In-Flight Operations Involving Munitions.**

15.4.1. All flights involving live munitions should originate and terminate at main base. Except in an emergency, do not land at North Base, South Base or the lakebed runways when carrying munitions or returning from missions expending munitions.

15.4.2. Make a straight-in approach to landing when carrying external expendable ordnance.

15.4.3. Overhead Approaches. The straight-in approach restrictions are waived if the flight test requires overhead approaches with munitions/stores. Overhead patterns may be flown with the following external stores:

15.4.3.1. External fuel and tanks.

15.4.3.2. Stores, other than vertical drop munitions, secured to the aircraft and not intended to be jettisoned or dropped (e.g. instrumentation pods, gun pods, baggage pods, empty rocket pods, aerodynamic shapes, and ARDs pods).

15.4.3.3. Forward firing missiles, if no attempt has been made to fire.

15.4.3.4. Unexpended BDU-33s.

15.4.3.5. Captive Carry Munitions.

15.4.4. If hung flares are suspected, return using hung munitions procedures and shut down the aircraft in EOR.

**15.5. After Landing Procedures.** All aircraft that required munitions arming prior to flight will go thru EOR de-arm after landing. There is no need to go thru EOR de-arm for CATMs, fuel tanks, inert TGMs that are not carted, etc.

**15.6. Diverted Munitions Loaded Aircraft.** Tower will notify AMOPS of any known, non-emergency aircraft diversions into Edwards, which are carrying munitions. AMOPS will notify agencies as required. Forward type, quantity of munitions and stations loaded when provided by the pilot. Paragraph 15.2. above will be used as a guide when parking diverted or transient aircraft.

**15.7. Unexpended Munitions Landing Procedures.**

15.7.1. Land from a straight-in approach except as stated in Paragraph 15.4.3.

15.7.2. All aircraft with forward firing ordnance will go thru EOR de-arm and park heading 040 degrees when de-arming at the end of runway 22L and 220 degrees when de-arming at the end of runway 04R.

15.7.3. Unless weapons load crews are pre-briefed the time and location (EOR de-arm area or alternate EOR de-arm area) of recovery de-arming inform CONFORM (UHF 304.0) of ETA.

15.7.4. Once in the appropriate de-arm area ensure all switches are in the Off/Safe/Normal position and raise both hands in full view of the weapons load crew until safing is completed.

15.7.5. Aircraft with live munitions loaded internally will taxi to the primary EOR de-arm area (heading 040°) or the alternate arm/de-arm load/unload area (heading 220°) with the weapons bay doors closed. Ensure switches are Off/Safe/Normal and shut down the aircraft.

15.7.6. Park munitions loaded transient aircraft at the primary or alternate hot gun line until type of munitions can be determined.

15.7.7. If munitions safing pins/devices cannot be installed, the munitions are hung. Stop safing and call weapons/EOD immediately. Follow hung munitions procedures (paragraph 15.8).

15.7.8. After safing, taxi to the appropriate parking/downloading area.

**15.8. Hung Munitions Landing Procedures (Includes hung flares).** If you cannot positively determine all intended munitions have been released/fired, assume hung munitions, return to the de-arm area and follow hung munitions procedures.

15.8.1. Land from a straight-in approach. The primary recovery runway (winds permitting) for hung free fall ordnance is 22L/R. The primary recovery runway (winds permitting) for forward firing ordnance is 04R/L. Declare an emergency for all hung munitions.

15.8.1.1. If landing on Rwy 22 with forward firing ordnance is required make a 180° left turn at the 4,000' remaining marker to maintain a maximum safe distance to South Base and Lancaster Blvd. Taxi northeast on the active runway to the primary EOR de-arm area (heading 040).

15.8.2. Notify tower of the type of hung munitions. CONFORM notifies weapons/EOD when an emergency is declared. MOC notifies weapons loading personnel to respond to the designated end of the runway.

15.8.3. When live internally loaded munitions are hung, taxi to the Hot Gun Line de-arm area (heading 040) or the alternate arm/de-arm area (heading 220°) with the weapons bay doors closed (aircraft with jammed guns will use the Hot Gun Line). Ensure switches are

Off/Safe/Normal and shut down the aircraft. This also applies to aircraft suspecting hung flares (taxi to the de-arm area and shut down).

15.8.4. Once on the Hot Gun Line or applicable arm/de-arm area, ensure all switches are Off/Safe and raise both hands in full view of weapons loading personnel.

15.8.5. Hung munitions and unsafe munitions indications in the cockpit should be verified by weapons loading personnel at the de-arm area. If weapons personnel cannot safe the munitions, weapons will safe all other stations, and the crew will shut down the aircraft and request EOD thru CONFORM or the command post. When safed, weapons/ EOD informs the aircrew and releases the aircraft to the weapons load crew or contractor loading personnel.

15.8.6. When safed, taxi or tow the aircraft to the appropriate download area. Taxi or tow any aircraft containing internally loaded stores to the desired unloading area with the weapons bay doors closed. F-22 and F-35 weapons bay doors may remain open.

### **15.9. Hung Munitions Ground Procedures (Includes flares and jammed guns).**

15.9.1. MOC notifies applicable weapons loading personnel to respond to the designated end of the runway.

15.9.2. Once on the Hot Gun Line or applicable arm/de-arm area, weapons loading crew chief will ensure all armaments switches are OFF, Safe or Normal and have aircrew raise both hands in full view of loading personnel.

15.9.3. Aircraft with jammed guns will use the primary Hot Gun arm/de-arm area (040 Magnetic) or the alternate Hot Gun Line arm/de-arm area (220 Magnetic). Weapons loading crew chief will ensure all armament switches are Off, Safe or Normal and have the aircraft shut down.

15.9.4. If weapons personnel cannot safe the munitions, weapons will safe all other stations, and the crew will shut down the aircraft and request EOD through CONFORM or the command post. The weapons/ EOD team chief evacuates all nonessential personnel. EOD safes the hung munitions. When safed, weapons/EOD informs the aircrew and releases the aircraft to the weapons load crew or contractor loading personnel

15.9.5. When safed, taxi or tow the aircraft to the appropriate download area. Taxi or tow any aircraft containing internally loaded stores to the designated loading/unloading area with the weapons bay doors closed. F-22 and F-35 weapons bay doors may remain open.

15.9.6. EOD and weapons loaders will remove hung flares at the primary arm/de-arm area (040 Magnetic) or the alternate arm/de-arm area (220 Magnetic). The weapons loading crew chief will ensure all armament switches are Off, Safe or Normal and have aircraft shut down.

### **15.10. Towing Aerial Targets.**

15.10.1. General. Air-to-air operations may be conducted at Point Mugu, Mojave B2 North Range or Nellis AFB, NV. When scheduled to use Pt Mugu or Nellis AFB, contact the MOC for prior coordination with the appropriate control agency to ensure operations are conducted under the local operating procedures for those particular ranges.

15.10.2. Responsibilities. The tow aircraft commander is responsible for the safe conduct of the mission, and will:

15.10.2.1. Make sure the range is clear before firing and while firing is in progress. The tow pilot may designate the firing aircraft/safety chase to do the range sweep.

15.10.2.2. Ensure target reel-out or deployment is done over the gunnery range or over the PIRA.

15.10.2.3. Avoid populated areas when carrying or towing targets to or from the range. Cross all major highways as nearly perpendicular as practical. Flights to Pt. Mugu may be made VFR for this purpose.

15.10.2.4. Require a chase aircraft to remain with the tow aircraft until the target and all cable are jettisoned or dragged off or until the target is re-stowed. The firing aircraft may be used as chase.

### 15.10.3. Aerial Gunnery Tow System (AGTS-36) Targets:

15.10.3.1. Take off from either runway.

15.10.3.2. Make a straight-in, normal landing configuration approach/landing if the target fails to deploy.

15.10.3.3. Return deployed AGTS targets to Edwards if they are stable and structurally sound enough for the return trip.

15.10.3.4. If the target and/or cable cannot be reeled in, jettison the cable and target over the using range. The alternate jettison area is PB-8 within the PIRA. Jettison at 3,500' MSL or higher, if necessary, due to cable length/target droop. Prior coordination with SPORT is required. If cable and/or target cannot be jettisoned, use Target Drag Off procedures (paragraph 15.11).

## 15.11. Target Drag Off and Landing (Fig 15.5.).

15.11.1. Primary tow target drag off area is from the West side of Lakebed Rwy 17/35 to the West lakeshore. Coordinate with Tower prior to beginning the approach.

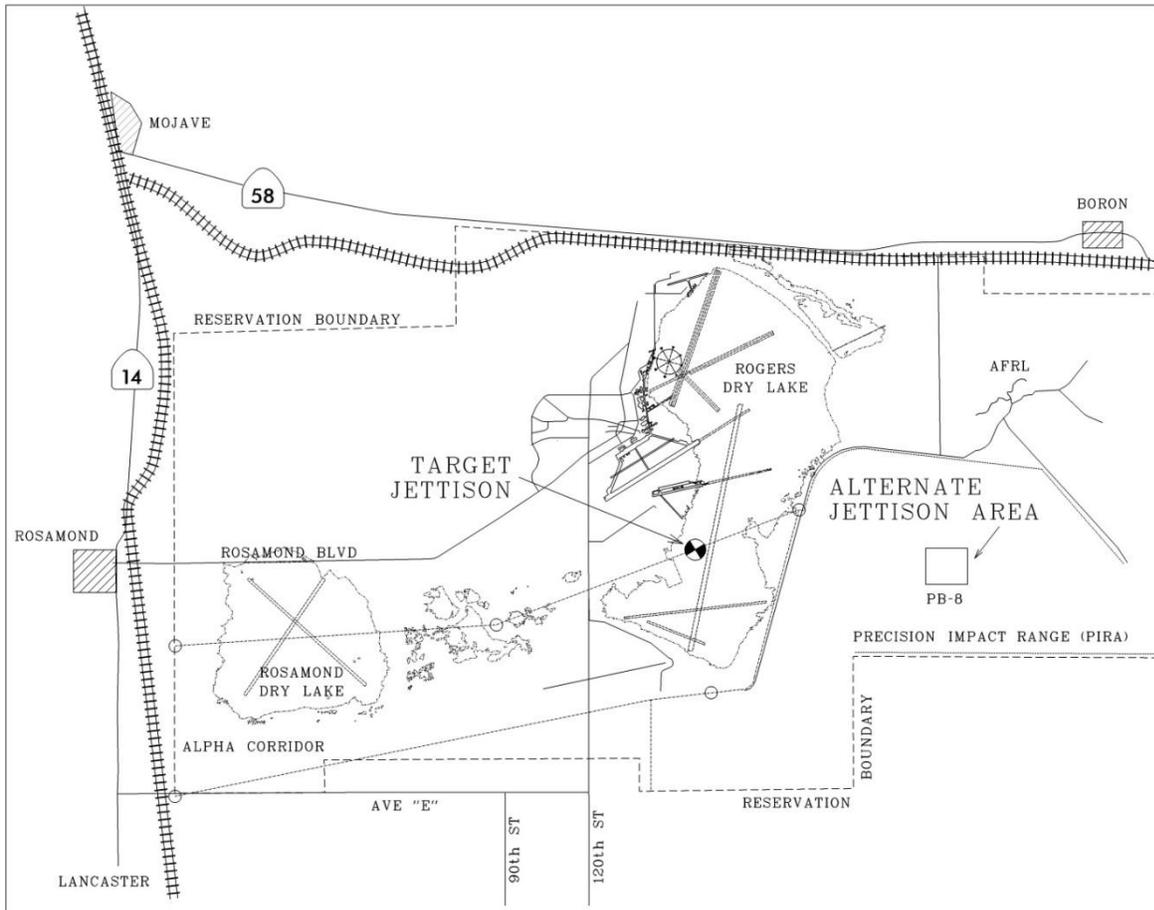
15.11.2. A recommended technique for target drag off is to approach the drag off point at 250 KIAS in a 5° to 10° dive. Level off by 200' AGL. The target will usually impact within 1,000' of the level off point. Be aware several hundred feet of cable may remain attached to the tow aircraft after drag off.

15.11.3. If landing with a deployed target or with trailing cable, the tow pilot will inform CONFORM. The following procedures will apply:

15.11.3.1. Make a straight-in approach and land on a suitable Lakebed runway. After landing, hold position until maintenance removes remaining cable.

15.11.3.2. If Lakebed runways are unusable make a straight-in landing on Rwy 22L. Tower will clear personnel and aircraft from within 1,000' of each side of the approach end. Remain at or above 4,300' MSL until passing the VORTAC. Make a steep approach and aim for touchdown on the paved overrun so that the target impacts on the Lakebed.

Figure 15.6. Target Drag Off



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Commander

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFPD 11-2, *Aircrew Operations*, 19 January 2012

AFI 10-1001, *Civil Landing Permits*, 01 September 1995

AFI 11-2FT V3, *Flight Test Operations Procedures*, 16 November 2011

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EAFBI 21-209, *Hydrazine Response Procedures*, 16 March 2012

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Appendix 16 to Annex C to EAFB PLAN 31, *Flight Line Photography*, 11 January 2012

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Tower OI 13-2, *Facility Management*, 15 March 2012

412 MXG OI 21-218, *Aircraft Engine Maintenance Run*, 03 October 2012

TO 00-20-1, *Aerospace Equipment Maintenance Inspection Documentation Policies & Procedures*, 01 September 2010

FAA Order JO 7110.65, *Air Traffic Control*, 09 February 2012

FAA Order JO 7610.4, *Special Operations*, Change 2, 26 July 2012

(UFC) 3-260-01, *Airfield and Heliport Planning and Design*, 17 November 2008

### *Adopted Forms*

**DD Form 175**, Military Flight Plan

**DD Form 1801**, DoD International Flight Plan

**FAA Form 7233-1**, Flight Plan

**Air Force Form 3616**, Daily Record of Facility Operations

**Air Force Technical Order Form 781**, Aerospace Vehicle Flight Report and Maintenance Document

**DD Form 1748-1**, Airdrop Inspection Record, Joint (Containers)

**DD Form 1748-2**, Airdrop Malfunction Report (Personnel-Cargo)

### *Abbreviations and Acronyms*

**AC**—Aircraft Commander

**ACM**—Air Combat Maneuvers

**AEI**—Aerospace Equipment Instruction

**AF**—Air Force

**AFB**—Air Force Base

**AFFTCI**—Air Force Flight Test Center Instruction

**AFTC**—Air Force Test Center

**AFTCI**—Air Force Test Center Instruction

**AFI**—Air Force Instruction

**AFM**—Air Force Manual

**AFMC**—Air Force Material Command

**AFRC**—Air Force Reserve Command

**AFTC**—Air Force Test Center

**AFRL**—Air Force Research Laboratory

**AFTO**—Air Force Technical Order

**AGE**—Aerospace Ground Equipment

**AGTS**—Aerial Gunnery Tow System

**AGL**—Above Ground Level

**AM**—Airfield Management  
**AMC**—Air Mobility Command  
**AMOPS**—Airfield Management Operations  
**ANG**—Air National Guard  
**AOB**—Airfield Operations Board  
**API**—Area Planning  
**AP/1A**—Area Planning Special Use Airspace  
**AR**—Air Refueling Areas  
**ARTC**—Air Route Traffic Control Center  
**ATC**—Air Traffic Control  
**ATCAA**—Air Traffic Control Assigned Airspace  
**ATCAL**S—Air Traffic Control and Landing Systems  
**Atch**—Attachment  
**ATIS**—Automatic Terminal Information Service  
**Ave**— Avenue  
**BA**—Airspace Bubble  
**BAK**—Barrier Arresting Kit  
**BASH**—Bird Aircraft Strike Hazard  
**BFM**—Basic Fighter Maneuver  
**BFTF**—Birk Flight Test Facility  
**Bldg**—Building  
**Blvd**—Boulevard  
**BTY**—Beatty VORTAC  
**CA**—Chase Aircraft  
**CALP**—Civil Aircraft Landing Permit  
**CAP**—Civil Air Patrol  
**CAS**—Calibrated Air Speed  
**C2**—Command and Control  
**CC**—Commander  
**CF**—Closed Field Operation  
**CFA**—Controlled Firing Area  
**CCB**—Complex Control Board

**CCF**—R-2508 Central Coordinating Facility  
**CFA**—Controlled Firing Area  
**China Control**—Callsign China Lake Military Radar Unit  
**CMA**—Controlled Movement Area  
**COMSEC**—Communications Security  
**CONFORM**—Callsign Command Post  
**COOL**—Center Ops Online  
**CP**—Command Post  
**CSE**—Center Scheduling Enterprise  
**CTF**—Combined Test Force  
**DAGRAG**—Dual air-to-ground Range  
**DD Fm**—Department of Defense Form  
**Det**—Detachment  
**Det 5, AFRL**—Detachment 5, Air Force Research Laboratory  
**DFRC**—Dryden Flight Research Center  
**DME**—Distance Measuring Equipment  
**DO**—Operations Officer  
**DoD**—Department of Defense  
**Downfall**—Callsign Edwards PIRA range control tower  
**DRCO**—Downfall Range Control Officer  
**DSN**—Defense Switching Network  
**DUATS**—Direct User Access Terminal System  
**DZ**—Drop Zone  
**E**— East  
**EAFB**—Edwards Air Force Base  
**ECR**—Electronic Combat Range  
**EDW**—Edwards Air Force Base (VORTAC)  
**EGM96**—Earth Gravity Model 1996  
**ELT**—Emergency Locator Transmitter  
**ENAD**—Drop Zone southern edge of Rosamond Lakebed  
**EOD**—Explosive Ordnance Disposal  
**EPU**—Emergency Power Unit

**ETA**—Estimated Time of Arrival  
**ETD**—Estimated Time of Departure  
**ETE**—Estimated Time Enroute  
**EUA**—Exclusive Use Airspace  
**EVTS**—Enhanced Terminal Voice Switch  
**FAA**—Federal Aviation Administration  
**FAD**—Force Activity Designator  
**FCIF**—Flight Crew Information File  
**FCF**—Functional check Flight  
**Fig**—Figure  
**FIM**—Fillmore  
**FL/AC**—Flight Lead/Aircraft Commander  
**FL**—Flight Level  
**FLG**—Limited Ground Footprint  
**FLIP**—Flight Information Publication  
**FLTS**—Flight Test Squadron  
**Fm**—Form  
**FOA**—Flight Operations Authority (412 OG/CC or as delegated)  
**FOD**—Foreign Object Damage  
**FS**—Sanitized Ground Footprint  
**FSS**—Flight Service Station  
**FTS**—Flight Termination System  
**GC**—Ground Chase Vehicle  
**GFS**—Goffs VORTAC  
**GP**—General Planning  
**GPS**—Global Positioning System  
**GS**—Glideslope  
**HF**—High Frequency  
**HIRLS**—High Intensity Runway Lights  
**HQ**—Headquarters  
**HRT**—Hydrazine Response Team  
**Hwy**—Highway

**HSSC**—High Altitude Supersonic Corridor

**I**—Instruction

**IAF**—Initial Approach Fix

**IAW**—In Accordance With

**IFE**—In-flight Emergency

**IFR**—Instrument Flight Rules

**ILS**—Instrument Landing System

**IMC**—Instrument Meteorological Conditions

**INS**—Inertial Navigation System

**ITA**—DELTED

**IR**—IFR Military Training Route

**JPPB**—Joint Policy and Planning Board

**JOSHUA**—Callsign FAA TRACON

**KCAS**—Knots Calibrated Airspeed

**KIAS**—Knots Indicated Airspeed

**L**— Local

**LBL**—Lakebed Landing

**LBT**—Lakebed Takeoff

**LE**—Landing Exclusion Zone

**LL**—Low Level

**LOA**—Letter of Agreement

**LOC**—Localizer

**LOP**—Letter of Procedure

**Mag**— Magnetic

**MAG**—Marine Aircraft Group

**MAJCOM**—Major Command

**MHV**—Mojave Airport

**Min**—Minute

**MMLS**—DELTED

**MOA**—Military Operations Area

**MoA**—Memoranda of Agreement

**MOCC**—Maintenance Operations Center

**MOS**—Military Operations Specialist

**MOU**—Memoranda of Understanding

**Mph**— Miles per hour

**MRU**—Military Radar Unit

**MSL**—Mean Sea Level

**MTS**—Mobile Target System

**MTR**—Military Training Route

**N**—North

**NAD 27**—North American Data of 1927

**NAD 83**—North American Data of 1983

**NASA**—National Aeronautics & Space Administration

**NAVAID**—Navigational Aid

**NAWCWD**—Naval Air Warfare Center Weapons Division (China Lake)

**NE**—Northeast

**NGA**—National Geospatial-Intelligence Agency

**NID**—China Lake (TACAN)

**NM**—Nautical Mile

**NORDO**—No Radio

**NOTAM**—Notice to Airmen

**NTC**—National Training Center (Ft Irwin)

**NTPS**—National Test Pilot School (Mojave)

**NVD**—Night Vision Device

**NW**—Northwest

**OAL**—Coaldale VORTAC

**ODO**—Operations Duty Officer (Ridley)

**OG**—Operations Group

**OI**—Operating Instruction

**OIC**—Officer in Charge

**OPR**—Office of Primary Responsibility

**OPSEC**—Operations Security

**OSS**—Operations Support Squadron

**OSOA**—Airspace Management Office

**PAPI**—Precision Approach Path Indicator

**Para**—Paragraph

**PB**—Precision Bomb Target

**PCAS**—Primary Crash Alarm System

**PE**—Project Engineer

**PIC**—Pilot in Command

**PIRA**—Precision Impact Range Area

**PMD**—Palmdale VORTAC

**PPR**—Prior Permission Required

**R**—Radial

**RC**—Road Closure

**RCO**—Range Control Officer

**RDS**—Records Disposition Schedule

**REILs**—Runway End Identifier Lights

**RMC**—Remote Maintenance Center

**RMCC**—Ridley Mission Control Center

**ROC**—Resource Operations Center

**ROO**—Range Operations Officer

**ROTS**—Remote Operations Training Site

**RSC**—Runway Surface Condition

**RSO**—Range Safety Officer

**RSRS**—Reduced Same Runway Separation

**RTB**—Return to Base

**Rwy**— Runway

**S**— South

**SB**—South Base

**SCATT**—Simulated Combat Airfield and Tactical Target

**SCN**—Secondary Crash Net

**SE**—Southeast

**SFC**—Surface

**SFO**—Simulated Flameout

**SIIs**—Special Interest Items

**SM**—Statue Mile  
**SOCC**—AFRL Site Operations Control Center  
**SOF**—Supervisor of Flying  
**SPORT**—Callsign AFTC Military Radar Unit  
**SR**—Slow Route  
**SRB**—Safety Review Board  
**ST**—Sanitized Taxi Route  
**STA**—Shuttle Training Aircraft  
**SW**—Southwest  
**SUA**—Special Use Airspace  
**SUP**—Supplement  
**TA**—Traffic Avoidance  
**TAC**—Tactical  
**TAF**—Technical Assistance Frequency  
**TACAN**—Tactical Air Navigation  
**TAS**—True Airspeed  
**TC**—Test Conductor  
**TD**—Test Director  
**TDY**—Temporary Duty  
**TE**—Takeoff Exclusion Zone  
**TERPS**—Terminal Instrument Procedures  
**TFR**—Terrain Following Route  
**TO**—Technical Order  
**TPS**—United States Air Force Test Pilot School  
**TRACON**—Terminal Radar Approach Control  
**TW**—Test Wing  
**USAF**—United States Air Force  
**UAS**—Unmanned Aircraft System  
**UFC**—Unified Facilities Criteria  
**UHF**—Ultra High Frequency  
**UTC**—Coordinated Universal Time  
**UTTR**—Utah Test & Training Range

**VFR**—Visual Flight Rules

**VHF**—Very High Frequency

**VMC**—Visual Meteorological Conditions

**VOR**—VHF Omni-directional Range

**VORTAC**—VHF Omni-directional Range/Tactical Air Navigation

**VR**—VFR Military Training Route

**W**—West

**WGS 84**—World Geodetic System of 1984



## Attachment 3

## FREQUENCIES AND CALLSIGNS

## A3.1. Communications Frequencies.

Table A3.1. Preset UHF/VHF Communications Frequencies

<b>412th Test Wing Support Fleet/USAF Test Pilot School</b>			
Channel	UHF	VHF	Use
1	269.9		ATIS
2	304.0		CONFORM
3	225.4	121.8	EDW GND CONT
4	318.1	120.7	EDW TWR PRI
5	343.7	132.75	SPORT
6	348.7	133.65	JOSHUA (Isabella)
7	322.3	126.55	JOSHUA (Owens)
8	256.8	123.95	JOSHUA (Saline)
9	291.6	120.25	JOSHUA (Panamint)
10	354.4		AIR REFUELING
11	315.9		LOW LEVEL COMMON
12	340.2	120.15	NID TOWER
13	363.0	124.55	JOSHUA (Antelope)
14	317.6	123.7	PMD TOWER
*15	286.4		MISSION
**16	354.0		MUROC COMMON
*17	286.8		TPS MISSION
*18	375.025		TPS MISSION
***19	353.6		EDW TWR DISCRETE
20	308.7	143.275	SOF/TECH ASSIST
*Fleet support aircraft only. Flight Test Squadrons will provide their own aircraft frequencies.			
**Utilized for SPORT area briefs and inter-flight airspace coordination.			
***May be used for single frequency approaches.			

**Table A3.2. Squadron/Organization Frequencies**

<b>Flight Test Squadron</b>	<b>Callsign</b>	<b>Primary</b>	<b>Secondary</b>	<b>Tertiary</b>
AFLCMC OL DET3	PREDATOR OPS	122.65	122.55	
411 FLTS	RAPTOR OPS	251.35	141.725	
370/445 FLTS	GHOST OPS	385.9	142.75	
412 FLTS	TROUT OPS	141.85	292.3	
416 FLTS	ZOOM OPS	314.4	141.4	
412 OG/DOAB	LASER OPS	251.175	149.175	
418 FLTS	TIGER OPS HERK OPS	379.7 138.2	267.8	251.25 257.075
419 FLTS	TORCH OPS B-1 B-52 B-2	283.725 383.2 287.2	359.2 286.25 286.4	149.8 149.8 149.8
412 OG/DOBU	HAWK OPS	314.2	136.225	
461 FLTS	JESTER OPS	314.6 280.1	141.95 143.15	
TPS	COBRA OPS	301.5	375.025	286.8 239.95
NASA	NASA 4	373.15	135.825	
DET 2, WR-ALC	XRAY CONTROL	328.025	138.55	

**A3.2. General.**

A3.2.1. Use and assignment of ground-based call signs are as shown below:

**Table A3.3. Ground-Based Call Signs**

412 TW Command Post/ROC	CONFORM
AFTC Command Net	PONDEROSA
R-2515 Military Radar Unit	SPORT

A3.2.2. Use and assignment of airborne call signs are as shown below:

**Table A3.4. Use and assignment of airborne call signs**

AFTC Commander	EDDIE
USAF Test Pilot School	COBRA – Normal Operations AMMO – Student Crew Solo (No IP on board) DRAG – Low L/D Approaches
411th Flight Test Squadron (F-22)	RAPTOR/RAGE/VAPOR
370/445 FLTS (C-12, C-135, T-38, F-16)	GHOST/HOUND
412th Flight Test Squadron (Speckled Trout)	TROUT
416th Flight Test Squadron (F-16, T-38)	ZOOM/SUNDOG/SATAN/VORON/JIMMY/ CURLY/ERASER/SKULL/SHAKA/TIGRE
418th Flight Test Squadron (C-17, C-130, C-135 & KC-10 (Test), C-5)	ARRIS
419th Flight Test Squadron (B-1, B-2, B-52)	TORCH
Global Vigilance CTF	HAWK/HITEST
461st Flight Test Squadron (F-35)	JESTER/LIGHTNING
AFLCMC OL DET3 OL-A, Gray Butte (MQ-1/9)	PREDATOR/REAPER
AFLCMC Det 4, Palmdale (U-2)	XRAY
NASA	NASA
AERO Club	QUAIL

**A3.3. Procedures.**

A3.3.1. Use numerical suffix assigned by the applicable organization. Formation flights may use the lead aircraft call sign or use the call sign of the individual aircraft.

A3.3.2. All foreign national aircraft commanders flying in the R-2508 Complex will use a “90-series” call sign (e.g. Cobra 95). Foreign national pilots or other crewmembers that are flying with a US pilot-on-board need not use the 90-series call sign.

A3.3.3. For units that use tail numbers as call signs, add the number nine (9) to the beginning of the numerical portion of the call sign.

## Attachment 4

## SURVEY COORDINATES

**A4.1.** The National Geospatial-Intelligence Agency (NGA) Edwards Support Team recommends that the data in this instruction not be used. NGA is located at Edwards as a support to the Flight Test Squadron and the Western Test Range for all geospatial information. They maintain a database of these and many other points for the Western Test Range. The following is an example as to how this was made.

A4.1.1. The date of data collection for the listed points is unknown and may differ by as much as a few hundred feet. The reason for this error is due to the time between data collection and/or the difference in the datum used. For example, some of the data in this AFTCI was collected prior to the advent of GPS and were positioned on the North American Datum 1927 (NAD27) rather than the World Geodetic System 1984 (WGS84). Even if these points were transformed to the WGS the transformation parameters have their own set of problems.

A4.1.2. GPS has helped us to know and understand more about the earth than ever before. With this knowledge came changes to the ellipsoid and geoid models. The most current ellipsoid model used today is the WGS84 (G1150). The most current geoid model accepted by the DoD is the Earth Gravity Model 1996 (EGM96). The EGM96 geoid is coincident with the WGS84 in that it is a global system. The heights provided from this model are known as orthometric heights which approximate MSL. If unsure of the quality of this data, recommend contacting the National Geospatial-Intelligence Agency located at Edwards AFB, Commercial: (661) 277-5050.

**A4.2. Survey Coordinates (All Coordinates are WGS-84). NOTE: 412 TW/ENRE (73162) maintains Master survey file for points in and around Edwards AFB.**

**Figure A4.1. Survey Coordinates**

<u>ID</u>	<u>DESCRIPTION</u>	<u>LAT</u>	<u>LONG</u>	<u>ELEV</u>	<u>REMARKS</u>
1	PMD TACAN	N34°37.9092'	W118°03.8242'	2495	Palmdale
2	East end Tank Farm	N35°13.5978'	W119°28.7571'	420	EHF 020/21
3	Pump Station	N34°56.6982'	W118°49.5557'	1280	
4	Rd Bridge over Aqueduct	N34°47.2987'	W118°34.8551'	2980	
5	Center Lg Bldg Cement Plant	N35°07.3379'	W118°22.2949'	3955	EDW 270/38
6	Center of West Dam	N35°38.7771'	W118°28.8751'	2605	TTE 105/31
7	Onyx Peak	N35°39.4972'	W118°13.5546'	5300	NID 250/26
8	Owens Peak	N35°44.2970'	W117°59.8344'	8452	NID 265/15
9	Red Hill Peak	N35°59.2267'	W117°55.1145'	3954	NID 312/21
10	Power house	N36°06.6165'	W117°57.3947'	3580	NID 327/28
11	Sawmill	N35°50.9669'	W117°52.4143'	2576	NID 301/13
12	FIM TACAN	N34°21.3999'	W118°52.8558'	2200	Fillmore
13	Rd Bridge over Creek	N34°41.4990'	W119°21.5570'	3580	Out of R-2508
14	Road Intersection	N35°18.7276'	W117°59.2142'	2126	EDW 313/23
15	Substation	N35°24.0977'	W117°40.8936'	2822	NID 163/18

16	Water tank	N35°26.5976'	W117°38.1536'	2820	NID 154/15
17	East Searles Mine	N35°41.7974'	W117°12.8530'	2500	NID 073/23
<b>ID</b>	<b>DESCRIPTION</b>	<b>LAT</b>	<b>LONG</b>	<b>ELEV</b>	<b>REMARKS</b>
18	Missile Trailer	N35°30.1278'	W117°05.5225'	2680	NID 095/31
19	Bldg Cuddyback Airfield	N35°16.7380'	W117°23.9431'	2845	NID 134/28
20	Block house	N35°07.5182'	W117°36.3935'	3002	EDW 021/10
21	Peak - Castle Butte	N35°06.8681'	W117°52.6740'	3124	EDW 302/11
22	Laurel Mountain Radar	N35°28.7575'	W117°40.9937'	4470	NID 162/21
23	Tank Farm	N35°34.2975'	W117°25.8533'	2020	NID 103/15
24	Railroad "Y" Searles	N35°29.2475'	W117°38.3436'	3225	NID 152/12
25	Ballarat Radar	N36°02.0369'	W117°16.8734'	1210	NID 029/20
26	Peak-Danny's Mound	N36°51.5459'	W117°52.7449'	2315	BTY 258/55
27	Center Manzanar Airport Rwy	N36°44.1959'	W118°08.6755'	3821	BTY 258/68
28	Dam North end Haiwee Reservation	N36°13.7563'	W117°57.8748'	3771	NID 322/35
29	Bldgs - Robbers Roost	N35°32.8473'	W117°55.9041'	3210	NID 228/15
30	Tehachapi FWY/RR overpass	N35°06.6180'	W118°19.6148'	3930	EDW 270/30
31	Red Hill	N34°52.1886'	W118°07.0943'	2726	EDW 235/20
32	Rd/RR overpass	N35°00.3684'	W117°52.8740'	2335	EDW 267/8
33	Jackrabbit Hill	N34°50.3289'	W117°42.2236'	2877	EDW 196/9
34	Water Tower Sled Track	N34°49.1388'	W117°53.5339'	2295	EDW 204/14
35	Bridge	N34°57.0884'	W118°09.5844'	2660	EDW 250/21
36	Independence Airport	N36°49.2159'	W118°12.0657'	3935	BTY 255/70
37	Peak - N. Lake Hill Panamint	N36°24.1164'	W117°24.5538'	1695	BTY 217/40
38	Radar Site/Trailer Complex	N35°31.3976'	W117°18.2829'	2450	NID 102/21
39	Cal City Tank	N35°09.9180'	W117°51.3439'	2573	EDW 316/13
40	Haystack Butte	N34°51.8788'	W117°37.0034'	3412	EDW 127/9
41	HQ Bldg - Echo Range	N35°31.1676'	W117°17.7529'	2405	NID 102/22
42	Road/Railroad Crossing	N35°23.5476'	W117°47.8338'	2090	NID 180/19
43	Wilson Ranch	N36°28.9862'	W117°36.6141'	5310	BTY 230/46
44	Panamint Road Intersection	N36°20.3765'	W117°25.3938'	1576	BTY 214/43
45	Convoy Hill - R-2524	N35°38.4976'	W117°04.5026'	2198	NID 079/30
46	Cuddy Tank	N35°19.9578'	W117°31.5834'	2686	NID 143/23
47	Railroad Munitions Ldg	N35°02.0784'	W117°40.0536'	2460	EDW 031/4
48	Three Sisters	N35°14.0983'	W117°03.4524'	3001	DAG 289/29
49	Solar Station	N35°00.2685'	W117°34.0234'	2450	EDW 066/9
50	Mojave Airport	N35°03.2981'	W118°09.8545'	2787	EDW 267/22
51	Lookout Tower	N35°50.6769'	W118°29.9852'	6000	TTE 083/26
52	Rest Area North of Hwy	N35°00.4785'	W117°43.1537'	2363	EDW 009/2
53	Northwest end Lost Lake	N35°46.0475'	W116°50.0324'	2330	NID 067/42
54	Little Hill Road Intersection	N35°40.8873'	W117°23.4833'	1680	NID 075/15
55	Microwave Tower	N35°01.2883'	W118°01.3542'	2400	EDW 264/15
56	Water tank	N35°20.6279'	W117°25.6732'	2707	NID 132/24
57	Lucerne Valley Road Intx	N34°26.7000'	W116°57.1521'	3100	VCV 097/23

58	Newberry Interchange	N34°49.7992'	W116°41.6718'	1903	DAG 199/10
59	Mount Afton Interchange	N35°04.2489'	W116°24.7413'	1772	DAG 086/11
60	Peak	N35°11.5888'	W116°18.0012'	3617	DAG 030/19
<b>ID</b>	<b>DESCRIPTION</b>	<b>LAT</b>	<b>LONG</b>	<b>ELEV</b>	<b>REMARKS</b>
61	EDW TACAN	N34°58.9385'	W117°43.9637'	2338	Edwards
62	Center - Large Bldg	N35°44.6073'	W117°19.5533'	1618	NID 063/18
63	Peak of Lake Hill Panamint	N36°23.0665'	W117°24.2738'	2030	BTY 216/40
64	Large Bldg White Swan Mine	N36°20.9863'	W117°43.5044'	4810	NID 342/40
65	Large Tank Bartlett Mine	N36°28.5860'	W118°00.9151'	3650	NID 325/50
66	Peak Templeton Mountain	N36°18.8262'	W118°12.4451'	9830	NID 310/45
67	Needles Lookout Tower	N36°06.5967'	W118°29.1152'	8245	TTE 050/28
68	Tower West Isabella (218')	N35°42.3371'	W118°33.5752'	6980	TTE 133/26
69	Rosamond Lake/Blvd X	N34°51.9086'	W118°06.8143'	2277	EDW 234/20
70	Center Large Bldg - B-1 CTF	N34°55.3786'	W117°53.5240'	2298	EDW 230/9
71	Peak of Desert Butte	N35°05.1281'	W117°56.3441'	2849	EDW 286/12
72	Peak	N34°59.0386'	W117°14.1428'	2563	EDW 075/25
73	Center of Bldg Manzanar	N36°43.6559'	W118°08.9055'	3860	BTY 251/68
74	Center Bldg East end Airfield	N35°34.6277'	W117°01.9225'	2115	NID 085/33
75	Railroad bridge	N35°02.6990'	W116°07.7508'	1100	DAG 055/15
76	Road Intersection	N35°23.1987'	W116°07.7509'	1000	DAG 025/34
77	Tecopa	N35°50.8979'	W116°13.7514'	1400	DAG 002/56
78	Road bend	N36°26.7973'	W116°16.5523'	2550	BTY 127/31
79	Road Intersection	N35°51.7170'	W117°44.1440'	2686	NID 332/11
80	Dam on Reservoir	N36°08.2065'	W117°57.0347'	3780	NID 319/30
81	Road Intersection (Olancha)	N36°16.8962'	W118°00.2549'	3700	NID 321/39
82	BTY TACAN	N36°47.9968'	W116°44.8534'	2925	Beatty
83	Peak	N36°53.9959'	W118°07.7555'	5884	BTY 260/67
84	Peak	N36°36.6959'	W117°59.5551'	4534	BTY 244/61
85	Buckhorn	N34°50.2987'	W117°59.7041'	2400	EDW 221/15
86	Dry Lake	N34°52.1788'	W117°33.4833'	2820	EDW 115/10
87	Hill	N34°57.2487'	W117°07.7526'	2925	EDW 077/30
88	Gravel Pit	N35°44.7970'	W118°07.4546'	3175	NID 266/22
89	Owens Road Intersection	N36°25.7962'	W117°49.4746'	3796	NID 337/45
90	PB-10 PIRA	N34°51.3792'	W117°45.4258'	2375	EDW 176/08
91	Gravel Pit	N35°07.4880'	W118°11.1445'	3290	EDW 275/24
92	Base Red Hill	N35°59.0167'	W117°55.1145'	3500	NID 312/21
93	Sand dune W tip Dry Lake	N37°05.0759'	W117°40.2547'	3400	BTY 278/49
94	SW tip Saline (Salt) Lake	N36°41.7660'	W117°49.5347'	1060	BTY 247/52
95	Base Lt Robbers Roost	N35°35.5973'	W117°46.8839'	3750	NID 205/07
96	Cement plant	N35°02.1982'	W118°18.7547'	3550	EDW 262/29
97	Base East Harpers Butte	N35°03.7084'	W117°23.3831'	2165	EDW 058/17
98	Jawbone Mine	N35°18.0976'	W118°07.0544'	2875	EDW 296/29
99	Railroad Station	N34°58.2484'	W118°01.2542'	2440	EDW 255/13

100	Echo Road Intersection	N35°33.0677'	W117°06.4726'	2110	NID 090/29
101	Cabin	N37°00.8958'	W117°54.6551'	5780	BTY 267/57
102	NW end Tinemaha Dam	N37°03.3759'	W118°13.6359'	3880	BTY 267/73
103	West slope Inyo Mtn Range	N36°36.9959'	W117°59.3551'	4200	BTY 245/62
<b>ID</b>	<b>DESCRIPTION</b>	<b>LAT</b>	<b>LONG</b>	<b>ELEV</b>	<b>REMARKS</b>
104	SE RD/RR Intersection of 2	N35°52.9569'	W117°53.3943'	2772	NID 304/15
105	Castle Rock Peak	N36°10.6465'	W118°27.5552'	7740	TTE 046/31
106	Peak Desert Butte	N35°04.3582'	W117°55.6641'	2140	EDW 284/11
107	Saltdale	N35°21.5976'	W117°53.2540'	1920	NID 192/22
108	Saddleback Robbers Mtn	N35°27.0978'	W117°11.5527'	3500	NID 105/28
109	Windgate Butte	N35°45.2474'	W116°58.2026'	2010	NID 068/35
110	Airfield - Lake Butte	N35°53.7169'	W117°40.0539'	2725	NID 348/13
111	South side Lake Hill	N36°22.4965'	W117°23.9538'	1542	BTY 216/41
112	East Chocolate Butte	N35°55.9970'	W117°13.5233'	1085	NID 042/27
113	Cannon Butte	N35°32.3976'	W117°18.1529'	2516	NID 100/21
114	Hairpin curve	N35°00.1982'	W119°24.6571'	2300	EHF 090/23
115	Microwave Tower on Peak	N34°50.8985'	W118°46.9556'	5430	GMN 047/05
116	Northwest end Lake	N35°14.0978'	W119°18.3567'	288	EHF 058/29
117	East end of Lake	N34°46.2988'	W118°44.2554'	3350	GMN 092/06
118	Road bridge over canal	N35°16.0978'	W119°18.5567'	375	EHF 055/29
119	Road intersection	N35°11.7980'	W119°42.8576'	2500	EHF 035/10
120	Pond	N34°47.8987'	W118°34.6551'	2882	GMN 077/14
121	Approach end Runway 22L	N34°54.9486'	W117°51.7539'	2281	EDW 223/08
122	Approach end Runway 4R	N34°53.6986'	W117°54.2540'	2302	EDW 223/10
123	PB-1 PIRA	N34°53.1579'	W117°45.3874'	2205	EDW 180/06
124	Shutdown (F-16)	N34°55.7986'	W117°53.2540'	2296	EDW 232/08
125	Center - Harper lake	N35°01.4986'	W117°16.5529'	3000	EDW 068/22
126	Boron Mines	N35°02.5984'	W117°40.0536'	2500	EDW 024/05
127	Cross Mountain Saddle	N35°16.4976'	W118°07.4044'	4250	EDW 297/26
128	Rands Road Intersection	N35°36.6174'	W117°31.5535'	2490	NID 104/09
129	West end Owl Lake	N35°43.5677'	W116°42.3921'	1696	NID 072/48
130	East Panamint Hill (rocks)	N35°55.9970'	W117°13.5233'	1085	NID 041/27
131	West end Dry Lake R-2505	N35°54.8269'	W117°46.5041'	2290	NID 327/15
132	Willow Creek Camp	N36°50.2759'	W117°55.1550'	2290	BTY 257/57
133	Bend in Aqueduct	N36°55.5960'	W118°13.7058'	3815	BTY 261/71
134	Cowhorn Lake	N37°09.9958'	W117°59.3054'	6560	BTY 275/64
135	Road Intersection	N36°21.5763'	W117°37.5541'	4855	NID 349/41
136	Road Intersection	N36°02.0369'	W117°16.8734'	1303	NID 029/29
137	Center - Kelso Rwy	N35°22.7975'	W118°13.5546'	4040	EDW 300/34
138	Caliente Hill Peak	N35°19.8975'	W118°23.0549'	3835	EDW 287/39
139	Superior Valley Rwy	N35°17.1281'	W117°05.9525'	3065	DAG 290/31
140	Freeman	N35°36.0772'	W117°54.1941'	3200	NID 230/12
141	Salt Plant	N36°27.0261'	W117°53.8548'	3560	NID 333/47

142	Power station	N36°56.3360'	W118°16.9359'	4462	BTY 260/74
143	North tip ridge	N37°12.1858'	W117°50.1551'	3120	BTY 280/57
144	Aqueduct	N36°13.6463'	W117°58.0648'	3771	NID 322/35
145	Peak - Monache Mountain	N36°12.3163'	W118°11.7650'	9410	NID 306/40
146	Lookout Tower	N35°51.2969'	W118°30.3552'	7400	TTE 084/25
<b>ID</b>	<b>DESCRIPTION</b>	<b>LAT</b>	<b>LONG</b>	<b>ELEV</b>	<b>REMARKS</b>
147	PB-9 PIRA	N34°51.0443'	W117°44.7247'	2423	EDW 171/08
148	IR Board PIRA	N34°53.0637'	W117°41.0058'	2721	EDW 144/06
149	South Gate	N34°48.5988'	W117°55.0540'	2300	EDW 207/14
150	Cement Plant	N35°00.0383'	W118°09.3745'	3560	EDW 257/21
151	Small Knoll	N35°18.1975'	W118°25.7550'	3250	EDW 284/40
152	Saddleback Mountain	N35°44.6970'	W118°31.9552'	6200	TTE 099/25
153	Peak (Domeland Wild)	N35°43.6971'	W118°12.6547'	6250	NID 260/26
154	Sewage Pond (EAFB)	N34°51.1988'	W117°52.6539'	2302	EDW 199/11
155	Boron Radar	N35°04.8683'	W117°34.9934'	3070	EDW 036/09
156	PB-8 Pad PIRA	N34°51.5705'	W117°43.2227'	2511	EDW 163/08
157	North Base Hangar	N34°59.0084'	W117°51.9339'	2285	EDW 255/07
158	Searles Tunnel	N35°27.7976'	W117°37.6536'	3214	NID 158/13
159	Highway Bridge	N34°54.4785'	W118°09.8544'	2606	EDW 243/22
160	South tip sewer lake	N34°51.9987'	W117°52.6539'	2770	EDW 199/11
161	PB-2 PIRA	N34°53.3346'	W117°43.4142'	2383	EDW 165/05
162	P-2	N34°49.7789'	W117°47.6438'	2410	EDW 185/10
163	B-52s	N34°49.1289'	W117°51.3639'	2280	EDW 199/12
164	Storage tanks	N34°59.7283'	W118°09.7945'	2670	EDW 257/22
165	Kramer Junction	N34°59.5285'	W117°32.4634'	2473	EDW 070/09
166	DAGRAG Tower PIRA	N34°52.1688'	W117°46.4637'	2452	EDW 185/07
167	Wing HQ	N34°55.4186'	W117°53.9740'	2330	EDW 234/09
168	Boat SE Harpers Lake	N35°00.0086'	W117°10.9527'	2111	EDW
169	Rwy Intersection Lakebed	N34°50.4988'	W117°51.3539'	2270	EDW 200/10
170	Ridley	N34°55.3486'	W117°53.4940'	2332	EDW 230/09
171	PB-3	N34°53.5091'	W117°41.4414'	2651	PIRA
172	PB-5	N34°50.2642'	W117°36.2716'	2944	PIRA
173	PB-6	N34°57.1691'	W117°33.9675'	2569	PIRA
174	SCATT	N34°52.8319'	W117°35.8747'	2773	PIRA
175	PB-12	N34°52.8279'	W117°34.4809'	2720	PIRA
176	PB-13	N34°51.5130'	W117°44.2931'	2430	PIRA
177	EDW LOC	N34°53.4919'	W117°54.6580'	2293.93	
178	EDW GS	N34°54.7920'	W117°51.9100'	2275.72	
179	Helicopter Pad Hotel 1	N34°54.6610'	W117°54.1120'	2301	Tow Lane Hotel
180	Helicopter Pad Hotel 2	N34°54.6250'	W117°54.1769'	2301	Tow Lane Hotel
181	Barbell (Center)	N34°53.2461'	W117°44.4001'		
182	PB-4	N34°51.3811'	W117°45.8450'	2351	PIRA
183	Downfall	N34°54.1166'	W117°41.1998'	2745	
184	DAGRAG	N34°52.1688'	W117°46.4018'	2342	

185	Coaldale Refueling Area OAL155/60 (N36°59.9960' W117°33.0544') to OAL 155/90 (N36°30.9963' W117°27.0539')			
186	Shoshone Refueling Area. BTY150/60 (N35°49.9978' W116°26.0517') to BTY 150/40 (N36°09.4973' W16°32.0524')			
<b>ID</b>	<b><u>DESCRIPTION</u></b>	<b><u>LAT</u></b>	<b><u>LONG</u></b>	<b><u>ELEV</u> <b><u>REMARKS</u></b></b>
187	Isabella Refueling Area. PMD345/35 (N35°12.9978' W18°04.5543') to PMD 345/75 (N35°52.99' W18°03.88')			
188	Triad Refueling Area GFS262/105 (N35°18.4980' W117°17.9529') to GFS 262/75 (N35°15.8984' W116°41.1518')			
189	R-2515 Refueling Area EDW068/09 (N34°59.9985' W117°32.5534') to EDW 068/49 (N35°04.9988' W116°44.7519')			
190	R-2515 Modified Refueling Area EDW068/09 (N34°59.9985' W117°32.5534') to EDW 068/34 (N35°03.9985' W117°03.0524')			
191	R-2524 Echo Range N35°35.9977' W116°55.4356' to N35°24.9980' W116°55.4355' to N35°24.9977' W117°26.1032' to N35°35.9974' W117°26.1033' thence to point of beginning			
192	Mojave B2 North N35°47.7641' W116°55.4359' to N35°35.9977' W116°55.4356' to N35°35.9975' W117°16.9696' to N35°47.7639' W117°16.9699' thence to point of beginning.			
193	Superior Valley Range N35°24.0' W116°55.3833' to N35°15.9333' W116°55.3833' to N35°15.9333' W117°12.450' to N35°24.0' W117°12.45' thence to point of beginning			
194	Trona Firing Area N35°40.5' W117°25.05' to N35°36.0' W117°16.9166' to N35°27.6666' W117°26.05' to N35°37.5' W117°35.5500' thence to point of beginning.			
195	BAE Systems DZ (Contact 412 OSS/OSLT for updated coordinates - DSN 525-4280)			
196	Viper Range N35°03.9' W117°59.8'			
197	Survival School DZ (Contact 412 OSS/OSLT for updated coordinates - DSN 525-4280)			
198	Farm DZ (Contact 412 OSS/OSLT for updated coordinates - DSN 525-4280)			
199	Housing DZ (Contact 412 OSS/OSLT for updated coordinates - DSN 525-4280)			
200	Enad DZ (Contact 412 OSS/OSLT for updated coordinates - DSN 525-4280)			
201	Lakebed Spin Area N34°57.0985' W117°49.8539'			
202	Alpha Corridor N34°45.6822' W118°08.4376' to N34°49.6821' W118°08.4377' to N34°50.2488' W117°58.0541' to N34°53.2987' W117°48.2538' to N34°48.2489' W117°49.8038' to N34°48.2489' W117°53.0539' thence to point of beginning			
203	East Range N34°49.2822' W117°31.5532' to N34°49.3489' W117°38.9868' to N34°53.2154' W117°38.9868' to N34°51.7488' W117°37.5201' to N34°51.7488' W117°36.7534' to N34°53.7487' W117°36.7534' to N34°53.7487' W117°37.9368' to N34°57.2819' W117°37.9368' to N34°58.2819' W117°39.1369' to N34°58.9985' W117°38.2535' to N34°58.9652' W117°32.4867' to N34°56.1320' W117°31.5533' thence to point of beginning			
<b>ID</b>	<b><u>DESCRIPTION</u></b>	<b><u>LAT</u></b>	<b><u>LONG</u></b>	<b><u>ELEV</u> <b><u>REMARKS</u></b></b>
204	West Range The West Range boundary begins at the Mercury Blvd/Ave B intersection; north (N) on a line paralleling Mercury Blvd., then east (E) following Mercury Blvd. to the intersection of Rocket Site Road; east to Mars Blvd., connecting Leuhman Ridge and Haystack Butte; SE paralleling Mars Blvd. to N34°53.2988' W117°38.9702'; south to N34°49.3322'			

W117°38.9701'; then west along the south reservation boundary (Ave. A) to 300th St. East; then south along 200th St. East to Ave. E; west to 140th St East; then north to Avenue B; then east to the point of beginning.

205 Barbell Target centerline  
N34°53.1587' W117°45.3837' to N34°53.3287' W117°43.4736'

206 Ordnance/Stores Jettison Area 1  
N34°57.9152' W117°45.6871' to N34°57.4319' W117°46.9704' to N34°58.8318' W117°48.1371'

207 Ordnance/Stores Jettison Area 2  
N34°49.7488' W117°57.7207' to N34°49.5821' W117°59.4708' to N34°51.2820' W117°59.9208'

208 Ordnance/Stores Jettison Area 3  
N34°58.0819' W117°32.8034' to N34°56.0820' W117°32.8033' to N34°56.0820' W117°35.2201' to N34°58.0819' W117°35.2201'

209 Black Mountain Supersonic Corridor  
N35°15.9984' W116°49.0520' to N35°07.9986' W116°49.0520' to N35°07.9980' W117°57.0541' to N35°15.9977' W117°57.0541' to point of beginning.

210 PIRA Supersonic Corridor  
N34°50.1654' W118°05.8043' to N34°53.2654' W117°48.7871' to N34°53.2654' W117°31.5533' to N34°49.2656' W117°31.5532' to N34°49.2655' W117°48.7871' to N34°47.9988' W118°01.0541' to N34°49.6654' W118°05.8043'

211 High Altitude Supersonic Corridor border coordinates  
N34°55.35' W119°10.767'; N34°41.667' W119°07.483'; N35°32.383' W114°41.267'; N35°17.650' W114°38.833'

212 Area Alpha 7  
Beginning at N37°12' W117°20' to N37°22' W117°00.3' to N36°51' W116°33.33' to N36°41' W116°26.33' to N36°30' W116°09.37' to N36°30' W116°55.33 then to point of beginning

213 SCATT Fuel Pit N34°52'43.32" W117°35'11.35" 2725

214 SCATT Ammo Loading Area N34°52'17.0" W117°35'11.0" 2816

215 SCATT Aircraft Parking Area N34°52'30.08" W117°35'36.47" 2834

216 SCATT Tank/ Armored Park N34°52'49.93" W117°35'52.46" 2279

217 SCATT NE Radar Site N34°52'56.58" W117°35'36.54" 2754

218 SCATT SW Radar Site N34°52'43.61" W117°36'00.42" 2821

219 SCATT A/A Gun N34°52'29.81" W117°36'22.94" 2854

220 Four Corners UAS Work Area  
N35° 00' W117° 30.467' to N35° 00' W117° 05.38' to N34° 53.5' W117° 11.883' to N34° 50.95' W117° 28.55' then to point of beginning. East west division line is N34° 59.97' W117° 19.7' to N34° 52.3' W117° 19.75'

<b>ID</b>	<b>DESCRIPTION</b>	<b>LAT</b>	<b>LONG</b>	<b>ELEV</b>	<b>REMARKS</b>
221	Approach end Runway 22R	N34°55'12.36546	W117°52'14.83746	2287	EDW 226/008
222	Approach end Runway 4L	N34°54'09.87581	W117°54'17.31195	2310	EDW 226/010
223	Dana Point	N34°50'38.45	W117°30'02.11		
224	Point Grizzly	N34°53'09.00	W117°13'16.20		

## Attachment 5

## GEOGRAPHICAL COORDINATES FOR R-2508 AIRSPACE AREAS

**A5.1.** All positional data is based on World Geodetic System 1984. Altitudes and specific exceptions are noted beneath airspace descriptions.

**A5.2. Major Work Areas (MOA, ATCAA and R-2508 coordinates)**

**Figure A5.1. Major Work Areas (MOA, ATCAA and R-2508 coordinates)**

**ISABELLA:** Use Edwards AFB local Altimeter

- Beginning at lat. 36° 08.000'N, long. 118°35.050'W;
- to lat. 36°08.000'N, long. 117°53.050'W;
- thence south and east along the boundary of R-2505 to lat. 35°39.250'N, long. 117°29.433'W;
- to lat. 35°21.000'N, long. 117°38.550'W;
- to lat. 35°19.333'N, long. 117°38.550'W;
- thence along the western boundary of R-2515 to lat. 34°49.667'N, long. 118°05.800'W;
- to lat. 34°48.000'N, long. 118°05.800'W;
- to lat. 34°51.000'N, long. 118°14.050'W;
- to lat. 34°56.000'N, long. 118°21.050'W;
- to lat. 35°15.000'N, long. 118°35.050'W;
- to the point of beginning.

**ALTITUDES:** 200' AGL up to but not including FL180. Excluding that airspace up to and including 3,000' AGL over Domeland Wilderness Area; and excluding that airspace up to and including 1,500' AGL within a 3 NM radius of the following airports: Rosamond, California City, Mountain Valley, Tehachapi, Inyokern, Kelso Valley Ranch, Flying S Ranch, Kern Valley, and Sacatar-Meadows; and excluding that airspace up to and including 4,800' MSL within a 4.3 NM radius of Mojave airport excluding that airspace east and parallel to a line 1/2 mile west of R-2515.

**OWENS:** Use China Lake Local Altimeter.

- Beginning at lat. 37°12.000'N, long. 118°35.050'W;
- to lat. 37°12.000'N, long. 118°26.050'W;
- to lat. 37°02.000'N, long. 118°20.050'W;
- to lat. 37°09.000'N, long. 118°00.050'W;
- to lat. 36°46.000'N, long. 118°00.050'W;
- to lat. 36°14.000'N, long. 117°36.050'W;
- thence along the northern and western boundaries of R-2505 to lat. 36°08.000'N, long. 117°53.050'W;
- to lat. 36°08.000'N, long. 118°35.050'W;
- to the point of beginning.

**ALTITUDES:** 200' AGL up to but not including FL180. Except 3,000' AGL floor over Kings Canyon National Park, Sequoia National Park and John Muir Wilderness Area and except 1,500' AGL within a three (3) NM radius of the following airports: Lone Pine and Independence.

**BISHOP MOA:** Use Bishop Local Altimeter when in use by Oakland Center. Use China Lake Local Altimeter when in use by JOSHUA/Los Angeles Center.

- Beginning at lat. 37°12.000'N, long. 118°26.050'W;
- to lat. 37°12.000'N, long. 118°26.050'W;
- to lat. 37°12.000'N, long. 118°00.050'W;
- to lat. 37°09.000'N, long. 118°00.050'W;
- to lat. 37°02.000'N, long. 118°20.050'W;
- to the point of beginning.

**ALTITUDES:** 200' AGL up to but not including FL180.

**SALINE:** Use China Lake Local Altimeter.

- Beginning at lat. 37°12.000'N, long. 118°00.050'W;
- to lat. 37°12.000'N, long. 117°20.050'W;
- to lat. 36°30.000'N, long. 116°55.050'W;
- to lat. 36°30.000'N, long. 117°48.050'W;
- to lat. 36°46.000'N, long. 118°00.050'W;
- to the point of beginning. Excluding that airspace 3,000' AGL and below south and east of a line beginning at lat. 37°01.317'N, long. 117°13.650'W;
- to lat. 37°01.317'N, long. 117°13.833'W;
- to lat. 37°50.017'N, long. 117°18.900'W;
- to lat. 37°05.083'N, long. 117°33.783'W;
- to lat. 36°58.950'N, long. 117°33.783'W;
- to lat. 36°58.933'N, long. 117°34.083'W;
- to lat. 36°53.917'N, long. 117°34.183'W;
- to lat. 36°53.850'N, long. 117°35.267'W;
- to lat. 36°51.167'N, long. 117°35.267'W;
- to lat. 36°51.133'N, long. 117°36.333'W;
- to lat. 36°47.967'N, long. 117°36.300'W;
- to lat. 36°47.850'N, long. 117°37.117'W;
- to lat. 36°40.350'N, long. 117°37.133'W;
- to lat. 36°40.350'N, long. 117°36.050'W;
- to lat. 36°37.750'N, long. 117°36.083'W;
- to lat. 36°37.750'N, long. 117°31.733'W;
- to lat. 36°36.867'N, long. 117°31.733'W;
- to lat. 36°36.933'N, long. 117°30.833'W;
- to lat. 36°36.633'N, long. 117°30.433'W;
- to lat. 36°36.517'N, long. 117°29.900'W;

- to lat. 36°35.900'N, long. 117°29.717'W;
- to lat. 36°35.450'N, long. 117°28.983'W;
- to lat. 36°35.483'N, long. 117°28.683'W;
- to lat. 36°34.350'N, long. 117°28.533'W;
- to lat. 36°33.483'N, long. 117°28.750'W;
- to lat. 36°32.650'N, long. 117°30.267'W;
- to lat. 36°31.933'N, long. 117°30.133'W;
- to lat. 36°31.483'N, long. 117°28.333'W;
- to lat. 36°30.267'N, long. 117°25.567'W;
- to lat. 36°30.000'N, long. 117°25.583'W.

**ALTITUDES:** 200' AGL up to but not including FL180. Except 3,000' AGL floor over Death Valley National Monument.

**PANAMINT:** Use China Lake Local Altimeter. (MOA, ATCAA, and R-2508 Coordinates)

- Beginning at lat. 36°30.000'N, long. 117°48.050'W;
- to lat. 36°30.000'N, long. 116°55.050'W;
- to lat. 35°34.500'N, long. 116°23.550'W;
- thence along the northern boundary of R-2502N, the eastern, northern, and western boundary of R-2524, and the northwestern boundary of R-2515 to lat. 35°19.333'N, long. 117°38.550'W;
- to lat. 35°21.000'N, long. 117°38.550'W;
- to lat. 35°39.250'N, long. 117°29.433'W;
- thence along the eastern and northern boundary of R-2505 to lat. 36°14.000'N, long. 117°36.050'W;
- to the point of beginning. Excluding that airspace 3,000' AGL north and east of a line:
- Beginning at lat. 36°30.000'N, long. 117°25.583'W;
- to lat. 36°29.767'N, long. 117°25.600'W;
- to lat. 36°27.233'N, long. 117°22.017'W;
- to lat. 36°25.683'N, long. 117°20.967'W;
- to lat. 36°25.567'N, long. 117°20.483'W;
- to lat. 36°26.267'N, long. 117°19.183'W;
- to lat. 36°25.000'N, long. 117°18.600'W;
- to lat. 36°25.167'N, long. 117°17.950'W;
- to lat. 36°24.250'N, long. 117°17.383'W;
- to lat. 36°23.800'N, long. 117°15.600'W;
- to lat. 36°13.950'N, long. 117°15.550'W;
- to lat. 36°13.917'N, long. 117°09.150'W;
- to lat. 36°08.733'N, long. 117°09.067'W;
- to lat. 36°08.667'N, long. 117°04.650'W;
- to lat. 36°06.967'N, long. 117°03.783'W;
- to lat. 36°05.900'N, long. 117°04.550'W;
- to lat. 36°05.467'N, long. 117°03.900'W;

- to lat. 36°01.700'N, long. 117°02.567'W;
- to lat. 36°58.883'N, long. 117°04.517'W;
- to lat. 36°58.617'N, long. 117°05.283'W;
- to lat. 35°57.217'N, long. 117°06.750'W;
- to lat. 35°55.383'N, long. 117°06.583'W;
- to lat. 35°54.183'N, long. 117°05.400'W;
- to lat. 35°53.167'N, long. 117°01.650'W;
- to lat. 35°52.900'N, long. 116°55.350'W;
- to lat. 35°47.733'N, long. 116°55.367'W;
- to lat. 35°47.733'N, long. 116°36.083'W;
- to lat. 35°39.050'N, long. 116°36.017'W;
- to lat. 35°39.050'N, long. 116°26.100'W.

**ALTITUDES:** 200' AGL up to but not including FL180. Except 3,000' AGL over Death Valley National Monument as boundary existed in 1977 except 1,500' AGL within a three (3) NM radius of Trona Airport.

**BARSTOW:** Use Edwards AFB Local Altimeter.

- Beginning at lat. 35°07.000'N, long. 116°34.050'W;
- to lat. 35°01.333'N, long. 116°41.050'W;
- to lat. 34°56.333'N, long. 117°09.050'W;
- thence along the eastern border of R-2515 and the southern boundary of R-2502E to the point of beginning.

**ALTITUDES:** 200' AGL up to but not including FL180.

**BARSTOW WEST:** (ATCAA Airspace FL 180 to FL 600)

- Beginning at lat. 35°06.500'N, long. 116°58.717'W;
- to lat. 35°08.750'N, long. 116°48.550'W;
- to lat. 35°07.000'N, long. 116°47.550'W;
- to lat. 34°58.500'N, long. 116°57.800'W;
- to lat. 34°56.333'N, long. 117°09.050'W;
- to the point of beginning.

**BARSTOW EAST:** (ATCAA Airspace FL180 to FL600)

- Beginning at lat. 35°07.000'N, long. 116°46.550'W;
- to lat. 35°07.000'N, long. 116°34.050'W;
- to lat. 35°01.000'N, long. 116°41.050'W;
- to lat. 34°58.500'N, long. 116°57.800'W;
- to the point of beginning.

**BUCKHORN:** Use Edwards AFB Local Altimeter. (MOA and ATCAA Coordinates)

- Beginning at lat. 34°49.667'N, long. 118°05.800'W;
- thence along southern boundary of R-2515 to lat. 34°51.283'N, long. 117°26.050'W;
- to lat. 34°49.500'N, long. 117°26.050'W;
- to lat. 34°46.500'N, long. 117°35.050'W;
- to lat. 34°46.000'N, long. 118°00.050'W;
- to lat. 34°48.000'N, long. 118°05.800'W;
- to the point of beginning.

**ALTITUDES:** MOA from 200' AGL up to but not including FL180. ATCAA is FL180 to FL600

**BAKERSFIELD:** Use Edwards AFB Local Altimeter. (MOA and ATCAA Coordinates)

- Beginning at lat. 35°40.000'N, long. 118°51.050'W;
- to lat. 35°40.000'N, long. 118°35.050'W;
- to lat. 35°15.000'N, long. 118°35.050'W;
- to lat. 34°56.000'N, long. 118°21.050'W;
- to lat. 35°14.000'N, long. 118°42.050'W;
- to the point of beginning.

**ALTITUDE:** 2,000' AGL up to but not including FL180. ATCAA is FL180 to FL600.

**PORTERVILLE:** Use China Lake Local Altimeter. (MOA and ATCAA Coordinates)

- Beginning at lat. 36°08.000'N, long. 119°00.050'W;
- to lat. 36°08.000'N, long. 118°35.050'W;
- to lat. 35°40.000'N, long. 118°35.050'W;
- to lat. 35°40.000'N, long. 118°51.050'W;
- to the point of beginning.

**ALTITUDES:** 2,000' AGL up to but not including FL180. ATCAA is FL180 to FL600.

**SHOSHONE:** Use China Lake Local Altimeter. (MOA Coordinates below FL180)

- Beginning at lat. 36°30.000'N, long. 116°55.050'W;
- to lat. 36°30.000'N, long. 116°47.050'W;
- to lat. 36°06.000'N, long. 116°18.050'W;
- to lat. 35°39.000'N, long. 115°53.050'W;
- to lat. 35°18.750'N, long. 116°18.800'W;
- to lat. 35°28.583'N, long. 116°18.800'W;
- to lat. 35°34.500'N, long. 116°23.550'W;
- to the point of beginning. Excluding that airspace 3,000' AGL and below north and west of a line from beginning:
- at lat. 35°39.050'N, long. 116°26.100'W;

- to lat. 35°39.050'N, long. 116°21.800'W;
- to lat. 35°48.233'N, long. 116°21.817'W;
- to lat. 35°48.183'N, long. 116°29.683'W;
- to lat. 35°52.283'N, long. 116°29.717'W;
- to lat. 35°52.367'N, long. 116°29.433'W;
- to lat. 35°58.383'N, long. 116°35.783'W;
- to lat. 36°10.133'N, long. 116°35.783'W;
- to lat. 36°10.183'N, long. 116°38.967'W;
- to lat. 36°17.950'N, long. 116°39.017'W;
- to lat. 36°17.967'N, long. 116°40.550'W;
- to lat. 36°18.500'N, long. 116°41.083'W;
- to lat. 36°24.900'N, long. 116°41.067'W;
- to lat. 36°24.900'N, long. 116°40.850'W.; excluding that airspace 1,500' AGL and below within a 3NM radius of Shoshone Airport.

**ALTITUDES:** 200' AGL up to but not including FL180. Except 3,000' AGL over Death Valley National Monument as boundary existed in 1977 except 1,500' AGL within a three (3) NM radius of the Shoshone Airport.

**SHOSHONE NORTH:** (ATCAA Airspace FL 180 to FL 600)

- Beginning at lat. 36°30.000'N, long. 116°55.050'W;
- to lat. 36°30.000'N, long. 116°47.050'W;
- to lat. 36°06.000'N, long. 116°18.050'W;
- to lat. 35°44.250'N, long. 115°57.800'W;
- to lat. 35°28.583'N, long. 116°18.817'W;
- to lat. 35°34.500'N, long. 116°23.550'W;
- to the point of beginning.

**SHOSHONE SOUTH:** (ATCAA Airspace FL 180 to FL 600)

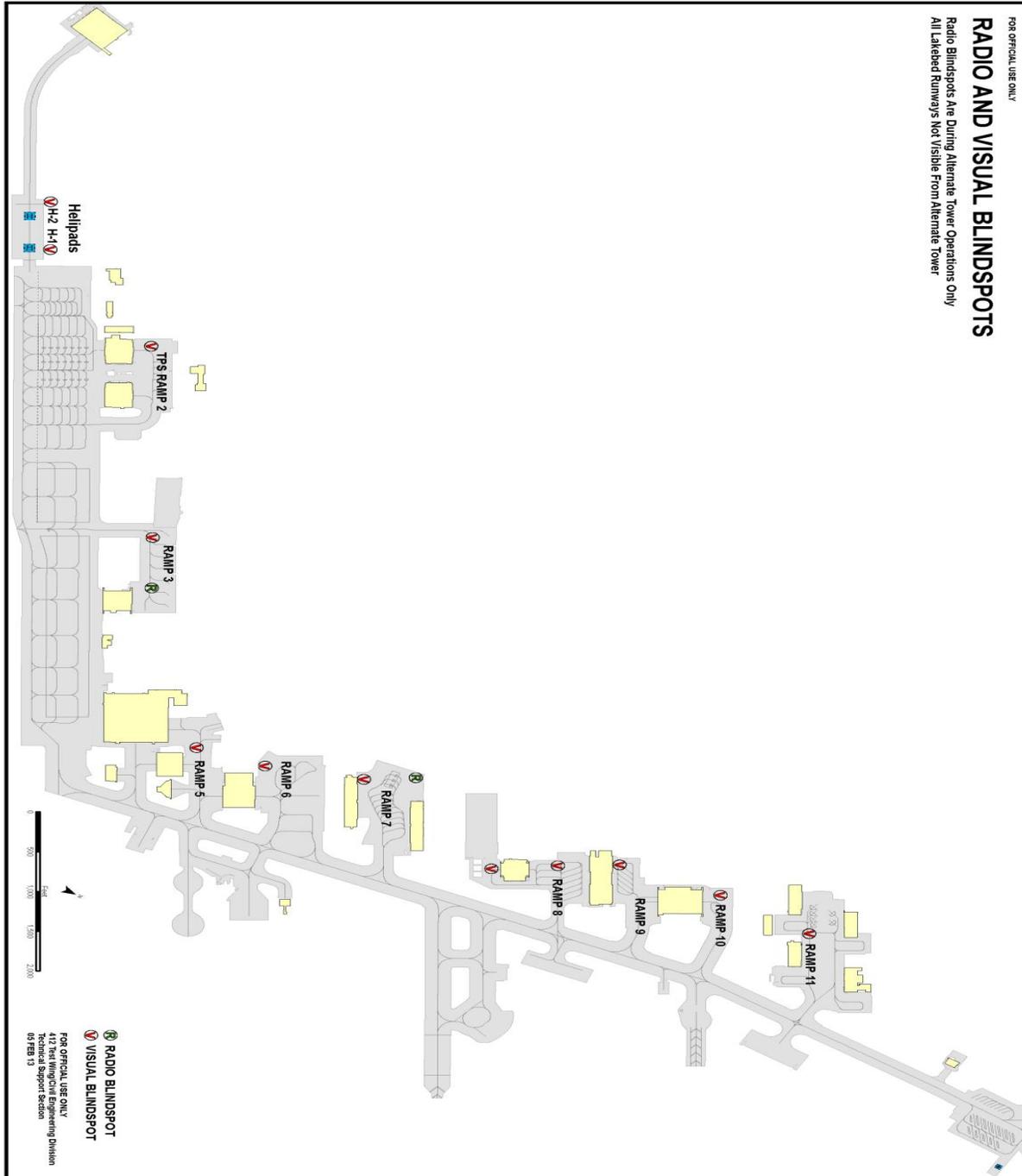
- Beginning at lat. 35°44.250'N, long. 115°57.800'W;
- to lat. 35°39.000'N, long. 115°53.050'W;
- to lat. 35°18.750'N, long. 116°18.817'W;
- to lat. 35°28.583'N, long. 116°18.817'W;
- to the point of beginning.

**DEEP SPRINGS:** (ATCAA Airspace FL 240 to FL 600)

- Beginning at lat. 37°12.000'N, long. 118°00.050'W;
- to lat. 37°30.000'N, long. 118°00.050'W;
- to lat. 37°30.000'N, long. 117°30.050'W;
- to lat. 37°12.000'N, long. 117°20.050'W;
- to the point of beginning.

### Attachment 6 RADIO AND VISUAL BLIND SPOTS

Figure A6.1. Radio and Visual Blind Spots



**Attachment 7****NIGHT/WEEKEND DECONFLICTION PLAN**

**A7.1. Maneuvering Airspace During Night/Weekend Flying.** During night/weekend flying, aircrews will coordinate a deconfliction plan with Wing Scheduling. In general, aircrews will utilize the following profiles in order to maximize deconfliction.

A7.1.1. Cords Road North – Airspace north of Cords Road (R2515), all altitudes unless further subdivided.

A7.1.2. Cords Road South – Airspace south of Cords Road (R2515), all altitudes unless further subdivided.

A7.1.3. R2524 – All airspace within R2524, all altitudes unless defined otherwise.

**A7.2. Altitude and/or Lateral Separation.** These profiles may be broken down further with altitude and/or lateral separation or combined as necessary to meet mission requirements. If there are limited users, these profiles may be expanded as long as a positive deconfliction plan has been coordinated (i.e. two users: one in R2524 and one in all of R2515).

**A7.3. Scheduling.** Coordination with Wing Scheduling will be accomplished through the standard scheduling process but NLT 1300 the day of the sortie. After this time, Wing Scheduling will schedule the airspace based on airspace availability and the planned mission. The profile will be annotated on the schedule. Deviations from published profiles must be coordinated with all players either before flight or in-flight via R2508 Common Chat Freq.

**A7.4. Coordination.** Aircrews will contact Wing Scheduling at 7-6013 to confirm night/weekend profiles. SPORT (if open) and JOSHUA must also be briefed on profile/deconfliction plans prior to step.

Attachment 8

TACTICAL MANEUVERING AIRSPACE

**A8.1. Tactical Maneuvering Areas.** Test or training missions with greater than 1v1 limited or unlimited maneuvering (ACM, Intercept, ACBT) will utilize airspace listed below. Test or training missions with more than 4 aircraft will utilize the airspace listed below regardless of maneuver category. Test or training missions with up to 4 aircraft are excluded from the airspace requirements below if the target maneuvers are scripted or restricted (as defined by AFI 11-214).

A8.1.1. "Skull Corner Area" over Panamint and Shoshone, (Fig A8.1. and Table A8.1.).

A8.1.2. R2524.

A8.1.3. R2505.

A8.1.4. R2515 (if scheduled and other non-cooperative aircraft are not present).

A8.1.5. Any airspace outside of the R2508 Complex which can provide exclusive use.

**A8.2. Scheduling and Use.**

A8.2.1. All airspace must be scheduled and activated in order to provide exclusive use to the maximum extent possible. A "Knock it Off" IAW with the training rules (AFI 11-214) will be called if any non-cooperative aircraft are identified within the airspace.

A8.2.2. OG/CC approval is required to deviate from these procedures.

Figure A8.1.

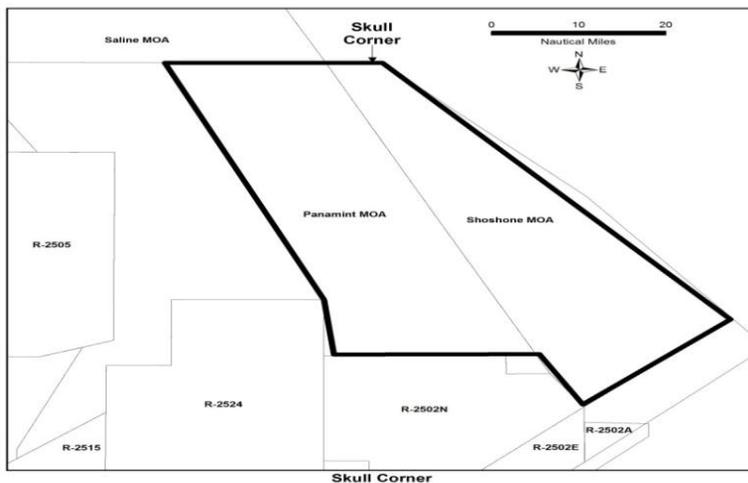


Table A8.1. Boundary Points

N35° 29' W116° 19'	N35° 44' W115° 58'	N36° 30' W116° 47'	N36° 30' W117° 18'
N35° 48' W116° 55'	N35° 38' W116° 54'	N35° 38' W116° 25'	N35° 29' W116° 19'

**A8.3. Skull Corner Operations.** The lateral dimensions of Skull Corner are defined by the following points. Skull Corner is composed of the eastern half of Panamint and the whole of

Shoshone North, as shown in Figure 1 below. All other attributes, such as vertical dimensions, chaff/flare use, etc. of Skull Corner are as defined in the parent airspace definitions.

A8.3.1. Skull Corner will be scheduled for all ACBT missions desiring to use the airspace and "Skull Corner" will be annotated in the remarks. The Skull Corner scheduling template should include a Pancho 3 clearance, with the added airspace of Shoshone MOA and Shoshone North ATCAA from 200' AGL to FL500.

A8.3.2. To minimize impact to Los Angeles Center, Shoshone South ATCAA will not normally be scheduled. If intending to transit R2502 N/E to/from Skull Corner, units should obtain a PPR for R2502 N/E. Only one AFTC user will be scheduled for Skull Corner at any one time.

A8.3.3. In accordance with the LOA governing Shoshone airspace, the airspace will not be given over to JOSHUA control until the ACBT flight requests activation. That activation request should be made with JOSHUA in EOR, or immediately airborne if contact is not possible in EOR. Expect a delay of up to 25 minutes for Los Angeles Center to clear the airspace of airline traffic and transfer control to JOSHUA.

A8.3.4. The flight lead is responsible to maintain visibility on other possible users of Skull Corner and to coordinate use with the R-2508 CCF. This should be accomplished by calling DSN 527-2508 a minimum of one day prior to use to brief with the controller on the intended mission and obtain a report from the controller on other scheduled traffic. The flight lead should call back for traffic updates at step time. ACBT is approved in Skull Corner when **any** of the following conditions are met:

A8.3.4.1. There is no other traffic in the airspace.

A8.3.4.2. A deconfliction plan has been established with any traffic in the airspace. For example, if a flight of F-18s from China Lake is using the north portion of the airspace to do E-W runs into R-2505, the ACBT flight could deconflict to remain south of the F-18s desired flight path.