

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

**EDWARDS AIR FORCE BASE  
INSTRUCTION 13-204**



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

***FLYING AND AIRFIELD OPERATIONS***

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## ***SUMMARY OF CHANGES***

This document should be reviewed in its entirety as major revisions have been made to include the following (1) Removing R-2515 and R-2508 procedures. Contact R-2515 for distribution of Airspace User Handbook DSN: 277-2515 email: [412OSS.OSO.R-2515AirspaceMgr@us.af.mil](mailto:412OSS.OSO.R-2515AirspaceMgr@us.af.mil) or at <https://www.edwards.af.mil/About/R-2515-Airspace/> (2) electronic filing of flight plans, (3) controlled movement area definition, (4) Tower Closed Procedures, (5) Small Unmanned Aerial System procedures.

<b>Chapter 1—INTRODUCTION</b>	<b>8</b>
1.1. Policy .....	8
1.2. Waivers to Airfield Operations .....	8
<b>Chapter 2—AIRFIELD FACILITIES</b>	<b>9</b>
2.1. Runways and Taxiways .....	9
Table 2.1. Runways.....	9
Table 2.2. Taxiways.....	10
Table 2.3. Intersection Departures Distance Remaining.....	10
Table 2.4. Dry Lakebed Runways.....	11
2.2. Runway Selection Procedures.....	11
2.3. Control of Ground Traffic in the Controlled Movement Area (CMA).....	11
Figure 2.1. Airfield Diagram including CMA (Main Base).....	12
2.4. Airfield Lighting Systems.....	12
Table 2.5. Airfield Lighting.....	13
2.5. Permanently Closed/Unused Areas of the Airfield.....	13
2.6. Aircraft Arresting Systems .....	13
2.7. Parking Plan/Restrictions.....	13
Table 2.6. Standard Parking. Note: Deviations to require the Airfield Manager and MOC coordination and approval.....	14
2.8. Air Traffic Control Facilities: Operating Hours and Designated Airspace. Note:...	14
2.9. Local Frequencies/Channelization/Callsigns.....	14
Table 2.7. Local Frequencies/Channelization/Callsigns.....	15

	2.10.	Radar, Airfield and Weather Systems (RAWS).....	15
	2.11.	Transient Alert (TA). .....	15
	2.12.	Automatic Terminal Information Service (ATIS) Procedures.....	15
	2.13.	Aircraft Special Operations Areas/Ramps. ....	15
Table	2.8.	Aircraft Special Operations Areas/Ramps. ....	16
	2.14.	Aircraft Towing Procedures.....	16
	2.15.	Aircraft Taxiing Requirements/Routes. ....	16
	2.16.	Airfield Maintenance. ....	16
	2.17.	Runway Surface Condition (RSC) / Runway Condition Reading (RCR) Values. ..	17
	2.18.	Procedures/requirements for conducting Runway inspections/checks. ....	17
	2.19.	Procedures for Opening and Closing the Runway.....	17
	2.20.	Procedures for Suspending and Resuming Runway Operations.....	17
	2.21.	Engine Test/Run-up Procedures. ....	17
	2.22.	Noise Abatement Procedures.....	17
	2.23.	Procedures for Protecting Precision Approach Critical Areas.....	17
Figure	2.2.	Localizer Critical Area.....	18
Figure	2.3.	Glideslope Critical Area. ....	19
	2.24.	Restricted/Classified Areas on the Airfield. ....	19
	2.25.	Auxiliary power for RAWS facilities. ....	19
	2.26.	Blind Spots.....	19
	2.27.	SPORT MRU Pre-Brief Sheet. ....	19
	2.28.	SPORT C2 Services.....	20
	2.29.	Joshua Approach (JCF).....	20
	2.30.	Weather Dissemination and Coordination Procedures. ....	20
<b>Chapter 3—FLYING AREAS</b>			<b>21</b>
	3.1.	Local Flying Area/Designation of Airspace. ....	21
Figure	3.1.	Edwards Class D Airspace.....	21
	3.2.	VFR Local Training Areas. ....	21
<b>Chapter 4—VFR PROCEDURES</b>			<b>22</b>
	4.1.	VFR Weather Minimums. See Table 4.1.....	22
	4.2.	VFR Traffic Patterns.....	22
Table	4.1.	Normal Patterns. See also Attachment 2.....	22
Table	4.2.	Re-Entry Patterns.....	23

Table	4.3.	Special Patterns/Approaches. See Attachments 2 through 4. ....	24
	4.3.	Special procedures. ....	26
	4.4.	Reduced Same Runway Separation (RSRS) Procedures. ....	26
	4.5.	Intersection Departures. ....	26
Figure	4.1.	Main Base Intersection Departures. ....	27
	4.6.	Standard VFR Departure Procedures. ....	27
Figure	4.2.	Small Arms Range. ....	28
Table	4.4.	South Base Departure. ....	29
Table	4.5.	South Base Arrival. ....	29
Figure	4.3.	Light Aircraft Arrivals South Base. ....	30
<b>Chapter 5—IFR PROCEDURES</b>			<b>31</b>
	5.1.	Radar Traffic Patterns. ....	31
	5.2.	Availability/Restrictions for Surveillance (ASR) Approaches and Precision Approach Radar (PAR) Approaches/Monitoring. ....	31
	5.3.	Local Departure Procedures. ....	31
	5.4.	IFR Clearances. ....	31
	5.5.	Ingress/Egress Fixes. ....	31
Table	5.1.	Ingress/Egress Fixes. ....	31
	5.6.	Radar Vector to Initial Procedures. ....	31
<b>Chapter 6—EMERGENCY PROCEDURES</b>			<b>32</b>
	6.1.	Operation of Primary Crash Alarm Systems (PCAS)/Secondary Crash Net (SCN). ....	32
	6.2.	PCAS/SCN Operational Checks. ....	32
	6.3.	Emergency Response Procedures. ....	32
	6.4.	Stores Jettison Area Procedures. ....	33
Figure	6.1.	Jettison/Bailout Areas. ....	34
	6.5.	Fuel Dumping. ....	34
	6.6.	Emergency Aircraft Arresting System Procedures. ....	34
	6.7.	Hot Brake Area and Procedures. ....	35
	6.8.	Abandonment of Aircraft. ....	35
	6.9.	Personnel/Crash Locator Beacon Signal/Emergency Locator Transmitter (ELT) response procedures. ....	35
	6.10.	Evacuation of AO Facilities. ....	35

	6.11.	Alternate Facility Procedures.....	36
	6.12.	Other Emergency Procedures. ....	36
	<b>Chapter 7—FLIGHT PLANNING PROCEDURES</b>		<b>37</b>
	7.1.	Flight Plan Filing. ....	37
	<b>Chapter 8—MISCELLANEOUS PROCEDURES</b>		<b>38</b>
	8.1.	Airfield Operations Board (AOB) Membership. ....	38
	8.2.	NOTAM Procedures. ....	38
	8.3.	Flight Information Publication (FLIP) Accounts. ....	38
	8.4.	Prior Permission Requested (PPR) Procedures.....	38
	8.5.	AirEvac Notification and Response Procedures. ....	39
	8.6.	Unscheduled/Unauthorized Aircraft Arrivals. ....	39
	8.7.	Distinguished Visitor (DV) Notification Procedures. ....	39
	8.8.	Dangerous/Hazardous Cargo. ....	39
	8.9.	Night Vision Device (NVD) Operations.....	39
	8.10.	Local Aircraft Priorities. ....	40
Table	8.1.	Traffic Priorities.....	40
	8.11.	Lost Communications. ....	40
	8.12.	Standard Climb-Out Instructions. ....	41
	8.13.	Opposite Direction Take-Offs and Landings.....	41
	8.14.	Breakout/Go Around/Missed Approach Procedures.....	42
	8.15.	Civilian Aircraft Operations. ....	42
	8.16.	Civil Use of Military Air Traffic Control Landing Systems.....	42
	8.17.	Aero Club Operations. ....	42
	8.18.	Airfield Snow Removal Operations.....	42
	8.19.	Bird/Wildlife Aircraft Strike Hazard (BASH) and Bird Watch Conditions. ....	42
	8.20.	Supervisor of Flying (SOF) Operations.....	44
	8.21.	Airfield Maintenance. ....	44
	8.22.	Tactical Arrival/Departure Procedures. ....	44
	8.23.	Lost or Overdue Aircraft.....	44
	8.24.	Dry Lakebed Operations. ....	44
Table	8.2.	Dry Lakebed Conditions. ....	45
	8.25.	Drop Zone (DZ) Procedures. ....	46
Figure	8.1.	Edwards Drop-Zones (DZs).....	47

	8.26.	SPIN Areas. ....	47
Figure	8.2.	Spin Areas.....	48
	8.27.	Engine Test Lab/Hush House. ....	48
Figure	8.3.	Engine Test Lab & Hush House Locations.....	49
	8.28.	Uncontrolled Airfield Operations (UAO) refers to operations while the control tower and airfield are closed. ....	49
<b>Chapter 9—UNMANNED AERIAL SYSTEM OPERATIONS PROCEDURES</b>			<b>53</b>
	9.1.	Overview.....	53
	9.2.	Definitions. ....	53
	9.3.	Coordination and Relationship to Test Package. ....	54
	9.4.	Type Designation. ....	55
	9.5.	Airport Environment.....	55
	9.6.	Ground Hazard Mitigation.....	56
	9.7.	Airfield Conflict Avoidance. ....	57
Table	9.1.	UAS Mitigation Matrix.....	58
	9.8.	Lost Link Procedures. ....	58
	9.9.	Chase Vehicles.....	59
	9.10.	Operations to Unlighted Runways. ....	59
	9.11.	Exclusive use North Base UAS Work Areas. (See Attachment 11).....	59
	9.12.	Small Unmanned Aerial System (sUAS) Operations (Military).....	61
	9.13.	ET CTF sUAS Exclusive Use Operations Area. Figure 9.1. ....	62
	9.14.	Maia Bridge. ....	62
Figure	9.1.	ET-CTF sUAS Operations Areas.....	63
Figure	9.2.	ET CTF Exclusive use Operations Area.....	64
	9.15.	Small Unmanned Aerial System (sUAS) Operations (Civilian).....	64
	9.16.	Additional Requirements. ....	64
<b>Chapter 10—MUNITIONS PROCEDURES</b>			<b>65</b>
	10.1.	General Definitions.....	65
	10.2.	Munitions Loaded Aircraft. ....	65
Figure	10.1.	Ramp 8 Compound (Bldg. 1820) spots 8-5 and 8-6 ONLY. ....	66
Figure	10.2.	Ramp 7 Compound (Bldg 1635) Spots 7-1 and 7-2 ONLY. ....	67
Figure	10.3.	Ramp 1 Shadow spots O-5 and O-6 20° off center line ONLY.....	68
	10.3.	Ground Operations Involving Munitions.....	68

Figure 10.4.	Arm De Arm Load Unload Areas.....	70
10.4.	In-Flight Operations Involving Munitions.....	71
10.5.	After Landing Procedures.....	71
10.6.	Diverted Munitions Loaded Aircraft.....	71
10.7.	Unexpended Munitions Landing Procedures.....	71
10.8.	Hung Munitions Landing Procedures (Includes hung flares).....	72
10.9.	Hung Munitions Ground Procedures.....	72
10.10.	Hung Munitions Landing Procedures.....	72
10.11.	Towing Aerial Targets.....	73
10.12.	Target Drag Off and Landing.....	74
Figure 10.5.	Target Drag-Off.....	75
<b>Attachment 1—GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION</b>		<b>76</b>
<b>Attachment 2—MAIN BASE DIAGRAM</b>		<b>81</b>
<b>Attachment 3—SOUTH BASE DIAGRAM</b>		<b>82</b>
<b>Attachment 4—NORTH BASE DIAGRAM</b>		<b>83</b>
<b>Attachment 5—ROGERS DRY LAKEBEDS</b>		<b>84</b>
<b>Attachment 6—ROSAMOND DRY LAKEBED</b>		<b>85</b>
<b>Attachment 7—TRAFFIC PATTERNS</b>		<b>86</b>
<b>Attachment 8—LIFTING BODY &amp; SHUTTLE APPROACHES</b>		<b>87</b>
<b>Attachment 9—SIMULATED FLAME-OUT (SFO) PATTERNS</b>		<b>88</b>
<b>Attachment 10—NORTH BASE UAS WORK AREA AND UAS WORK CORRIDOR/NORTH BASE UAS EXTENSION AREA</b>		<b>89</b>
<b>Attachment 11—ROSAMOND NORTH AND SOUTH UAS AREAS (ROSAMOND DRY LAKEBED)</b>		<b>90</b>
<b>Attachment 12—FORBES AND SOPP ROAD UAS WORK AREAS</b>		<b>91</b>
<b>Attachment 13—SUAS CLASS D GRID MAP</b>		<b>92</b>
<b>Attachment 14—UAS AIRFIELD COMPLEX</b>		<b>93</b>
<b>Attachment 15—AIRSTART.</b>		<b>94</b>

## Chapter 1

### INTRODUCTION

**1.1. Policy.** This instruction sets standard operating procedures for airfield use at Edwards Air Force Base. This instruction takes precedence over conflicting local directives.

**1.2. Waivers to Airfield Operations.** The 412th Test Wing Commander may waive operating procedures in this document. Coordinate all deviations or waiver requests through the 412th Operations Support Squadron (OSS), Airfield Operations (AO).

## Chapter 2

## AIRFIELD FACILITIES

**2.1. Runways and Taxiways.** See Attachments **2 thru Attachment 6** for the airfield diagrams and **Table 2.1** through **Table 2.3** for runway and taxiway details and restrictions.

Table 2.1. Runways.

Runway	Dimensions	Elevation	Gradient	Composition	Overrun Note 7
<b>23L</b> Note 1, 3, 8	15,024' x 300'	2,282'	+0.14%	Concrete	994' x 300'
<b>5R</b> Note 2, 3, 8	15,024' x 300'	2,302'	-0.14%	Concrete	1,778' x 300' 50' shoulders
<b>23R</b> Note 4, 8	12,000' x 200'	2,289'	+0.19%	Asphalt/Concrete	1,002' x 200' 25' shoulders
<b>5L</b> Note 4, 8	12,000' x 200'	2,312'	-0.19%	Asphalt/Concrete	1,000' x 200'
<b>North Base 6</b> Note 5	5,998' x 150'	2,299'	-0.29%	Asphalt/Concrete	200' x 150'
<b>North Base 24</b> Note 5	5,998' x 150'	2,276'	+0.29%	Asphalt/Concrete	200' x 150'
<b>South Base 7</b> Note 6	8,000' x 50'	2,289'	+0.16%	Concrete	1,103' x 50'
<b>South Base 25</b> Note 6	8,000' x 50'	2,278	-0.16%	Concrete	200' x 50'

Note 1: Runway 23L is the primary instrument and calm wind Runway.

Note 2: **Use of the 5R Dry Lakebed extension may only be used for taxiing and requires prior coordination.**

Note 3: Non-standard markings **located on Runway 05R/23L.**

Note 4: Routinely available for takeoff and landing of UASs and all aircraft 67,000 pounds or less. Available for takeoff and landing of all aircraft 421,000 pounds or less when Runway 5R/23L is unavailable. No arresting systems are installed on this runway. Touch and goes prohibited.

Note 5: North Base Runway use requires 412 OG/CC approval. Turns are only authorized on the concrete portions of the Runway.

Note 6: South Base Runway is limited to daytime Visual Flight Rules (VFR) operations for aircraft weighing 12,500 lbs. or less. Only use the center 50' of the south base Runway for takeoff/landing. There are no lights or distance remaining markers.

Note 7: **Overruns/underruns are not intended to be used as part of the runway landing and takeoff surface. Runway 05R overrun/23L underrun is load bearing, however, it may be used as needed to meet mission/testing requirements.**

Note 8: The distance between the Main Base runway **centerlines is 2500'.**

Table 2.2. Taxiways.

<b>Taxiway</b>	<b>Width</b>	<b>Composition</b>	<b>Shoulders</b>
<b>Alpha</b>	100'	Concrete	70' Asphalt
<b>Bravo</b>	75'	Concrete	50' Asphalt
<b>Charlie</b>	100'	Concrete	70' Asphalt
<b>Delta</b>	100'	Concrete	70' Asphalt
<b>Foxtrot (taxi lane)</b>	100' between A-B 150' between B-C	Concrete Concrete	50' Asphalt 25' Asphalt
<b>Echo</b>	100'	Concrete	70' Asphalt
<b>Golf</b>	75'	Concrete	60' Asphalt
<b>Hotel (tow lane)</b>	60'	Concrete	25' Asphalt
<b>November 1</b>	100'	Asphalt	Unpaved Shoulder
<b>Sierra 1</b>	75'	Concrete	Unpaved Shoulder
<b>Sierra 2 - Closed</b>	150'	Concrete	Unpaved Shoulder
<b>Sierra 3</b>	Varies 75' to 340'	Concrete	Unpaved Shoulder
<b>Sierra 4</b>	100'	Concrete	Unpaved Shoulder
<b>Sierra 5</b>	100'	Concrete	Unpaved Shoulder
<b>Sierra 6 - Closed</b>	Varies 100' to 340'	Concrete	25' West side only
<b>Sierra 7</b>	150'	Concrete	55' Asphalt

Table 2.3. Intersection Departures Distance Remaining.

<b>Runway</b>	<b>Taxiway</b>	<b>Distance Remaining</b>
<b>5R</b>	<b>Bravo</b>	7,450'
<b>23L</b>	<b>Bravo</b>	7,500'
<b>5L</b>	<b>Alpha</b>	10,850'
	<b>Bravo</b>	6,100'
	<b>Charlie</b>	Not Authorized
<b>23R</b>	<b>Alpha</b>	Not Authorized
	<b>Bravo</b>	5,800'
	<b>Charlie</b>	11,400'
<b>North Base 6/24</b>	<b>November 1</b>	2,950'
<b>South Base 7</b>	<b>Sierra 3</b>	6,800'
	<b>Sierra 4</b>	4,500'
	<b>Sierra 5</b>	3,000'
<b>South Base 25</b>	<b>Sierra 3</b>	Not Authorized
	<b>Sierra 4</b>	3,500'
	<b>Sierra 5</b>	5,000'

Table 2.4. Dry Lakebed Runways.

Dry Lakebed	Runway	Distance	Notes
Rogers Dry Lakebed	5L/23R	14,999' x 300'	
	12R/30L	9,235' x 300'	
	12L/30R	9,235' x 300'	
	15/33	29,487' x 300'	
	09/27	9,991' x 300'	
	06/24 North	7,050' x 300'	
	UAS 18R/36L	5,293' x 300'	For local UAS use only.
	05/23 Extension	9,588 x 300'	Not available for takeoff and/or landing rollout. Taxi only except for takeoff abort emergency use
Rosamond Dry Lakebed Auxiliary Airfield	2/20	18,821' x 300'	

**2.2. Runway Selection Procedures.** The Tower Watch Supervisor/Senior Controller will determine the active runway based on the weather forecast.

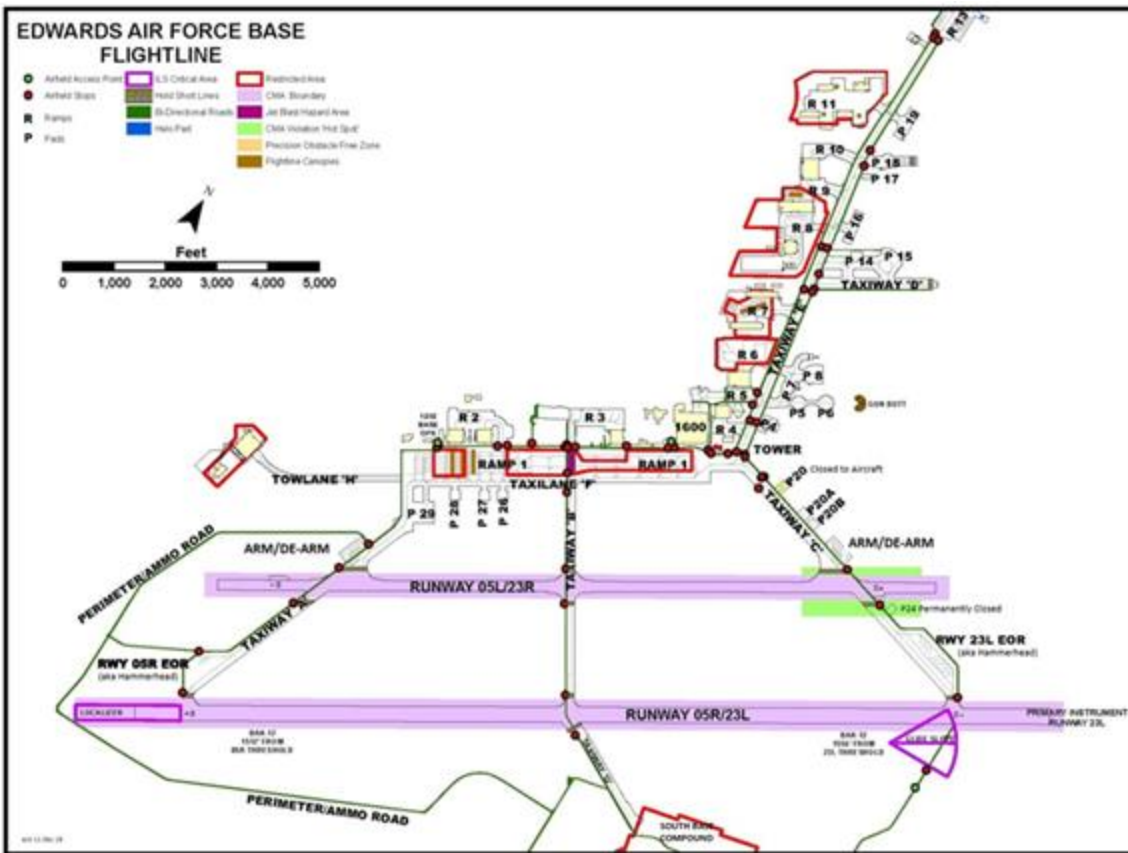
2.2.1. During a Runway change, Tower will advise aircraft on ATC frequencies (except Guard), and notify the following:

- 2.2.1.1. Airfield Management Operations (AMOPS)
- 2.2.1.2. SPORT Military Radar Unit (MRU)
- 2.2.1.3. Fire Department
- 2.2.1.4. Barrier Maintenance
- 2.2.1.5. Joshua Control Facility (JCF), Callsign "Joshua Approach"
- 2.2.1.6. Maintenance Operations Center (MOC)
- 2.2.1.7. Weather

**2.3. Control of Ground Traffic in the Controlled Movement Area (CMA).** See EAFBI 13-213, *Airfield Driving* for control of ground traffic within the CMA. The CMA starts at the VFR hold lines and extends laterally and parallel to the runways and overruns for the following:

- 2.3.1. Runway 05R/23L (including ILS critical areas) (Main Base)
- 2.3.2. Runway 05L/23R (Main Base)
- 2.3.3. Runway 6/24 (North Base)
- 2.3.4. Runway 7/25 (South Base)
- 2.3.5. Rogers Dry Lakebed in its entirety (excluding Fly-By Line tower) **Note:** Rosamond Dry Lakebed does not contain a CMA.

Figure 2.1. Airfield Diagram including CMA (Main Base).



Note: North Base and South Base CMA Diagrams can be found in the DAFI13-213\_EDWSUP.

2.4. Airfield Lighting Systems.

Table 2.5. Airfield Lighting.

<b>Airfield</b>	<b>Rwy/Twy</b>	<b>Available Airfield Lighting</b>
<b>Main Base</b>	Rwy 5R/23L	High Intensity Runway Lights (HIRL), Runway End Identifier Lights (REIL), Precision Approach Path Indicators (PAPI)
	Twy A/B/C/E/F/G	Blue flush-mounted taxiway lights with 3 adjustable settings  <b>Note:</b> Rwy 5L/23R has no lighting configuration, operations limited between sunrise and sunset.
<b>South Base</b>	Rwy 7/25	No lighting configuration, operations limited between sunrise and sunset
<b>North Base</b>	Rwy 6/24	HIRL, PAPI, Threshold Lighting
	Twy N	Blue single intensity flush-mounted taxiway lights  <b>Note:</b> North Base lighting system is equipped with pilot-controlled capability on Very High Frequency (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.
<b>Note:</b> See the DoD Flight Information Publication Enroute - IFR Supplement for latest airfield lighting systems available at KEDW.		

**2.5. Permanently Closed/Unused Areas of the Airfield.** South Base Taxiways Sierra 2 and Sierra 6 and Main Base Pad 20.

**2.6. Aircraft Arresting Systems.** EAFB is equipped with one aircraft arresting system located on Runway 23L/5R. The Barrier Arresting Kit (BAK) 12B cable locations are 1,559' from the threshold of Runway 23L and 1,518' from the threshold of Runway 05R. Coordinate with AMOPS for equipment status and coordinate equipment use with Tower.

**2.7. Parking Plan/Restrictions.** Due to the constantly changing nature of ramp space at Edwards, use of all parking spots/pads must be pre-coordinated with Maintenance Operations Center (MOC) or the Airfield Manager. MOC will provide specific rows/spots once a Prior-Permission Request has been filed.

**Table 2.6. Standard Parking. Note: Deviations to require the Airfield Manager and MOC coordination and approval.**

Area	Assigned Users	Restrictions
<b>Ramp 1</b>	TPS 416 FLTS 419 FLTS Transients	1. Sunshades only for wingspans less than 44.7' 2. Rows A-F wingspans less than 132' on the parking spots immediately adjacent to Taxi Lane Foxtrot. 3. Airlift or airliner-type aircraft picking-up or dropping-off deployed personnel will be parked A-D rows. 4. Non-base assigned aircraft must coordinate parking instructions with the Airfield Manager when requesting Prior Permission Required.
<b>Ramp 2</b>	TPS	No aircraft with wingspan greater than 58' allowed to taxi under own power.
<b>Ramp 3</b>	452 FLTS	No aircraft with wingspan greater than 58' allowed to taxi under own power.
<b>Ramp 4, 5</b>	MXG	No taxi, tow only. Coordinate with MOC for use
<b>Ramp 6</b>	418 FLTS	Parking apron and spots support C-17, KC-46, and KC-135 airframes only.
<b>Ramp 7</b>	411 FLTS	F-22 use only
<b>Ramp 8</b>	JOTT	F-35 use only
<b>Ramp 9</b>	461 FLTS	F-35 use only
<b>Ramp 10</b>	MXG	Coordinate with 412 MXG Strategic Plans for use
<b>Ramp 11</b>	420 FLTS	B-21 only
<b>Ramp 13</b>	NASA	NASA use only
<b>Note:</b> All deviations/exceptions must be coordinated with the Airfield Manager at least 24 hours in advance.		

## **2.8. Air Traffic Control Facilities: Operating Hours and Designated Airspace.**

**Note:** Operating hours below are for reference only, see the DoD Flight Information Publication Enroute - IFR Supplement and Notice to Airmen (NOTAM) for the most current operation times.

2.8.1. AMOPS and Control Tower. Weekdays, 0600-2200L. Closed on weekends, federal holidays, Training Days, and AFMC Family Days. Tower's designated airspace is the Class D.

2.8.2. SPORT MRU. Weekdays, 0700-1700L standard time. During daylight savings time SPORT is open 0700-1900L. Closed on weekends and federal holidays. SPORT's designated airspace is Restricted Area R-2515.

2.8.3. Weather. Weekdays, 0400-2200L; Saturdays, 0400-1800L; Sundays, 0800-1600L. Closed on federal holidays.

## **2.9. Local Frequencies/Channelization/Callsigns.**

Table 2.7. Local Frequencies/Channelization/Callsigns.

412th Test Wing Support Fleet/USAF Test Pilot School			
Channel	UHF	VHF	Use
1	269.9	127.425	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	China Lake Tower
13	363.0	124.55	JOSHUA (Antelope)
14	317.6	123.7	Palmdale Tower
15*	286.4		MISSION
16**	354.0	123.2	MUROC COMMON
17*	286.8		TPS MISSION
18*	375.025		TPS MISSION
19***	353.6		EDW TWR DISCRETE
20	308.7	143.725	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.			

2.9.1. For an up-to-date listing of frequencies and channelization listing, contact 412 OG/OGV at: 195 East Popson Ave, Edwards AFB, CA 93524-6843, DSN 525-9084/9007/9071/9018/3739, Comm (661) 275-9084/9007/9071/9018/3739, e-mail: [s531c2@us.af.mil](mailto:s531c2@us.af.mil).

**2.10. Radar, Airfield and Weather Systems (RAWS).** EDW VHF Omni-directional Range/Tactical Air Navigation (VORTAC) and ILS preventative maintenance downtimes are published as a NOTAM.

**2.11. Transient Alert (TA).** Weekdays from 0600-2200L, weekend standby. 24-hour notice is required for services on holidays. Fleet service is limited but available. See IFR Supplement.

**2.12. Automatic Terminal Information Service (ATIS) Procedures.** ATIS is operational weekdays 0600-1800L and can be extended based on operational necessity.

**2.13. Aircraft Special Operations Areas/Ramps.** (See [Attachment 2](#) for illustration).

**Table 2.8. Aircraft Special Operations Areas/Ramps.**

<b>Activity</b>	<b>Area/Ramps</b>
<b>Arm/De-Arm</b> Coordinate with the Airfield Manager for special needs.	05 or 23 Hammerheads (primary)
<b>Engine Run-Up</b>	05 or 23 Hammerheads
<b>Drag Chute Jettison</b>	Twys Alpha, Bravo, Charlie, or Golf at a minimum of 300' away from the active Runway. Release chute to not obstruct Twy movement. Note: Chutes may be released on the runway IAW aircraft T.O. or pilot requirement in the interest of flight safety.
<b>Hot Pit Refueling</b>	Pad 7 (primary)
	Pad 29 (alternate)

**2.14. Aircraft Towing Procedures.** Contact Ground prior to tow operations.

**2.15. Aircraft Taxiing Requirements/Routes.** There is no standard taxi route. Contact Ground for taxi clearance.

2.15.1. Heavy/large aircraft will contact Tower when abeam to the “last chance” building for takeoff sequencing instructions. Heavy/large aircraft will not block access to the Runway by stopping beyond the exit from “last chance” Bldg 1737, until appropriately sequenced by Tower.

2.15.1.1. End of Runway (EOR) frequency is 123.525. Aircrew will tune this frequency when visually directed by EOR crews.

2.15.2. Opposite direction taxi procedures. During daytime, locally assigned aircraft with a wingspan of 45’ or less are authorized to conduct opposite direction taxi operations on all taxiways except Bravo and Golf (Taxiways are less than 100’ in width). Only aircraft with a wingspan of 45’ or less can conduct opposite direction taxi operations. Aircraft will offset their wingtips at a minimum of 15’ either side of the centerline when passing oncoming taxiing aircraft. Tower will advise aircraft of opposite direction traffic. The aircraft can expect to hear the following phraseology "(Callsign) TAXI RIGHT/LEFT SIDE, OPPOSITE DIRECTION (AIRCRAFT TYPE) ON TAXIWAY (X)".

2.15.3. Taxi Restrictions.

2.15.3.1. No taxi to Ramp 2 by aircraft with wingspans greater than 58’. Deviations require Airfield Manager’s coordination and approval.

2.15.3.2. No taxi to Ramp 3 by aircraft with wingspans greater than 58’. Deviations require Airfield Manager’s coordination and approval.

**2.16. Airfield Maintenance.** Activities may include sweeper operations (runways, taxiways and parking aprons), dry lakebed repairs, and vegetation control.

2.16.1. All construction on the airfield must be coordinated through AMOPS. Construction must meet requirements published in applicable Unified Facilities Criteria (UFC) and have an approved and current temporary airfield construction waiver (TACW) prior to initiating/conducting construction activity.

2.16.2. Airfield sweeper support is available weekdays 0700-1600L. Contact AMOPS for sweeper requests outside hours indicated. Sweeper support personnel will monitor the Ramp Net when performing sweeping operations on the airfield.

2.16.3. Construction requiring grading or earth work must apply dust minimization measures and obtain a dust permit if greater than 2 acres.

**2.17. Runway Surface Condition (RSC) / Runway Condition Reading (RCR) Values.** AMOPS will report the RSC to Weather and Tower. Tower will include this information on the ATIS. RCR values are not used at Edwards.

**2.18. Procedures/requirements for conducting Runway inspections/checks.** AMOPS performs daily airfield inspections weekdays, to include Rogers Dry Lakebed runways. During weekend operations, North Base and Rogers Dry Lakebed runways may be inspected upon request. Rosamond Dry Lakebed Auxiliary Airfield is only inspected prior to any scheduled use.

**2.19. Procedures for Opening and Closing the Runway.** Closures of runways are published in the NOTAMS as needed.

**2.20. Procedures for Suspending and Resuming Runway Operations.** When runways become temporarily unsafe, operations to/from the Runway will be suspended. Tower will coordinate unsafe conditions with AMOPS, SPORT, JOSHUA and MOC. AMOPS will position at the approach end of the affected Runway to initiate any necessary actions. AMOPS will ensure the Runway is safe prior resuming Runway operations.

2.20.1. Tower, Airfield Management, the Supervisor of Flying (SOF), and Safety have the authority to suspend runway operations.

2.20.2. Airfield Management and Safety have the authority to resume runway operations.

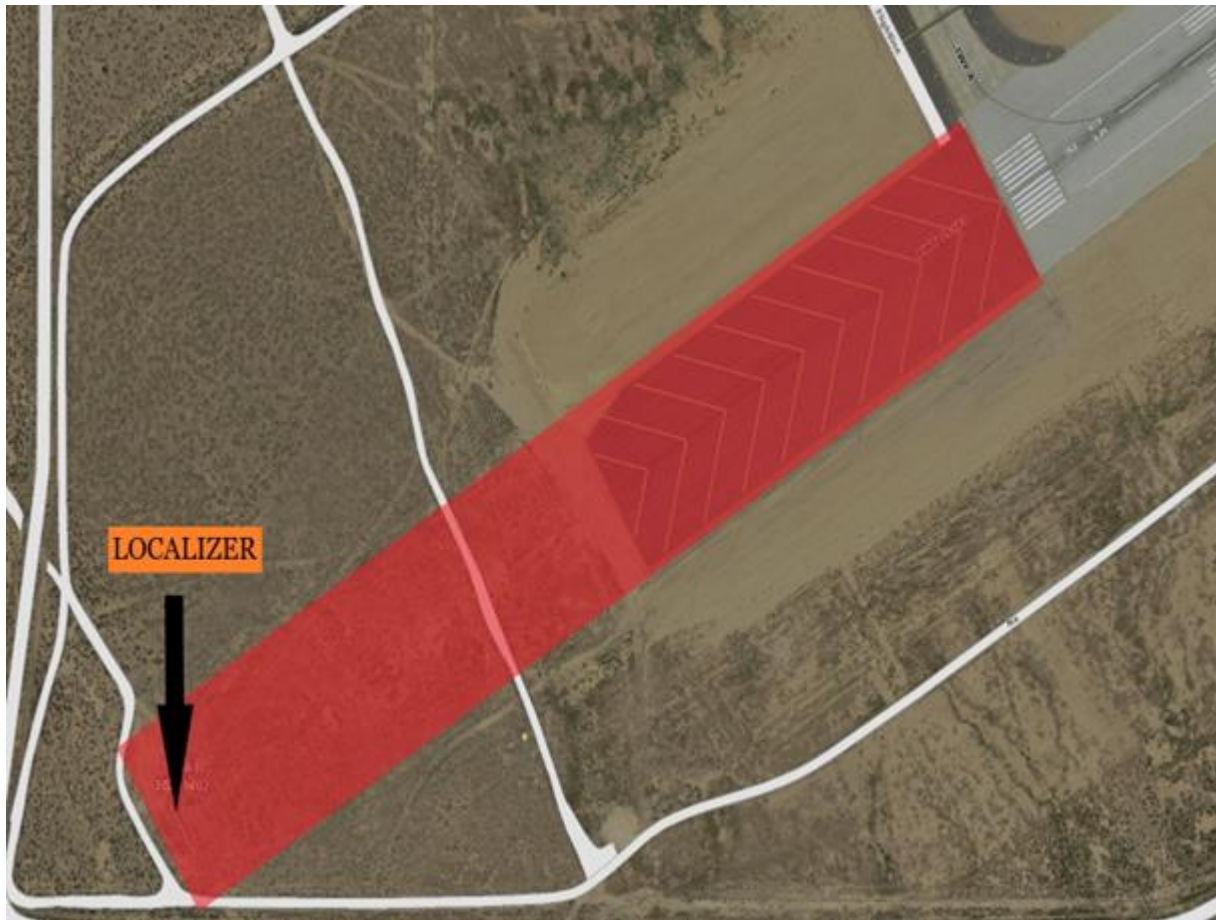
**2.21. Engine Test/Run-up Procedures.** See local guidance (i.e., 412 MXG OI 21-218).

**2.22. Noise Abatement Procedures.** See FLIPS for procedures.

**2.23. Procedures for Protecting Precision Approach Critical Areas.** There are no instrument hold lines, follow Tower instructions during instrument meteorological conditions (IMC).

2.23.1. The localizer 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 to include a 50' extension behind the localizer antenna.

Figure 2.2. Localizer Critical Area.



2.23.2. The glide slope critical area 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° each side of a line drawn through the glide slope antenna and parallel to the Runway centerline.

**Figure 2.3. Glideslope Critical Area.**

**2.24. Restricted/Classified Areas on the Airfield.** See 412 TW Integrated Defense Plan.

**2.25. Auxiliary power for RAWS facilities.** All RAWS facilities are supported by generator power capable of 24-hour backup.

**2.26. Blind Spots.**

2.26.1. The following areas are not visible from the Tower:

2.26.1.1. Ramps 2-3

2.26.1.2. Ramp 5-11

2.26.1.3. South Base parking, taxiways, runways

2.26.1.4. North Base parking, taxiways, runways

2.26.2. The following areas have known radio transmission blind spots:

2.26.2.1. Ramp 3

2.26.2.2. Ramp 7

**2.27. SPORT MRU Pre-Brief Sheet.**

2.27.1. Aircrews will use the R-2515 SPORT Pre-brief Sheet available on the public airspace web page at <https://www.edwards.af.mil/About/R-2515-Airspace/> to provide detailed information to SPORT. Fax this sheet to SPORT at 661-277-8863 or email to [412OSS.SPORT.Ops@us.af.mil](mailto:412OSS.SPORT.Ops@us.af.mil) as early as possible.

2.27.2. 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 mission frequency, but instead will be monitoring SPORT (343.7/132.75), aircrew will use Muroc Common (354.0/123.2) to conduct pre-takeoff coordination. SPORT controllers will communicate the de-confliction plan to the aircrew during the pre-takeoff airspace brief.

## **2.28. SPORT C2 Services.**

2.28.1. Although C2 is not an ATC function, to support the Air Force Test Center (AFTC) mission in a dynamic Special Use Airspace environment, SPORT MRU controllers will provide the following C2 service functions using phraseology and techniques found in FAA Order JO 7110.65, *Air Traffic Control*. Participating aircrews will comply with all C2 instructions issued by SPORT. If unable to comply with SPORT C2 instructions, aircrews will immediately advise SPORT of their intentions. SPORT C2 services include: radar monitoring, radar traffic advisories, safety alerts, boundary calls, tactical maneuvering traffic calls, radar vectoring, issuing flight information, arrival sequencing, de-conflict aircraft and/or airspace, issue altitudes and/or headings, establish aircraft on approach, 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, coordinate special operating requirements established by Safety Review Board (SRB) or other flight safety direction with SPORT for execution, control airborne access into the PIRA and Alpha Corridor.

2.28.2. Aircrews should advise SPORT prior to executing maneuvers that require rapid changes of altitude or dynamic maneuvering (e.g., course reversal) so appropriate advisories may be issued. The authority of SPORT or JCF to approve or disapprove requests for entry is final. All directions to evacuate the assigned airspace in R-2515 or comply with any of the requirements or restrictions thereby imposed are mandatory. Responsibility for safety of flight remains with the pilot.

**2.29. Joshua Approach (JCF).** When R-2515 is not scheduled for DoD use, it is released to the FAA. JCF provides limited services, such as traffic information and airspace boundary calls. Unlike SPORT, they do not provide de-confliction services within R-2515.

**2.30. Weather Dissemination and Coordination Procedures.** EAFB is a Basic Weather Watch station. Tower certified limited weather observers will, time and workload permitting, advise the duty observer of items identified below.

2.30.1. Observed differences between current weather and official observation.

2.30.2. Significant increases or decreases in prevailing visibility.

2.30.3. Formations of fog, thunderstorms, funnel clouds or tornadoes.

2.30.4. Lightning/hail observed; first sound of thunder or the beginning/ending of precipitation.

2.30.5. Any obstruction to vision observed but not reported.

## Chapter 3

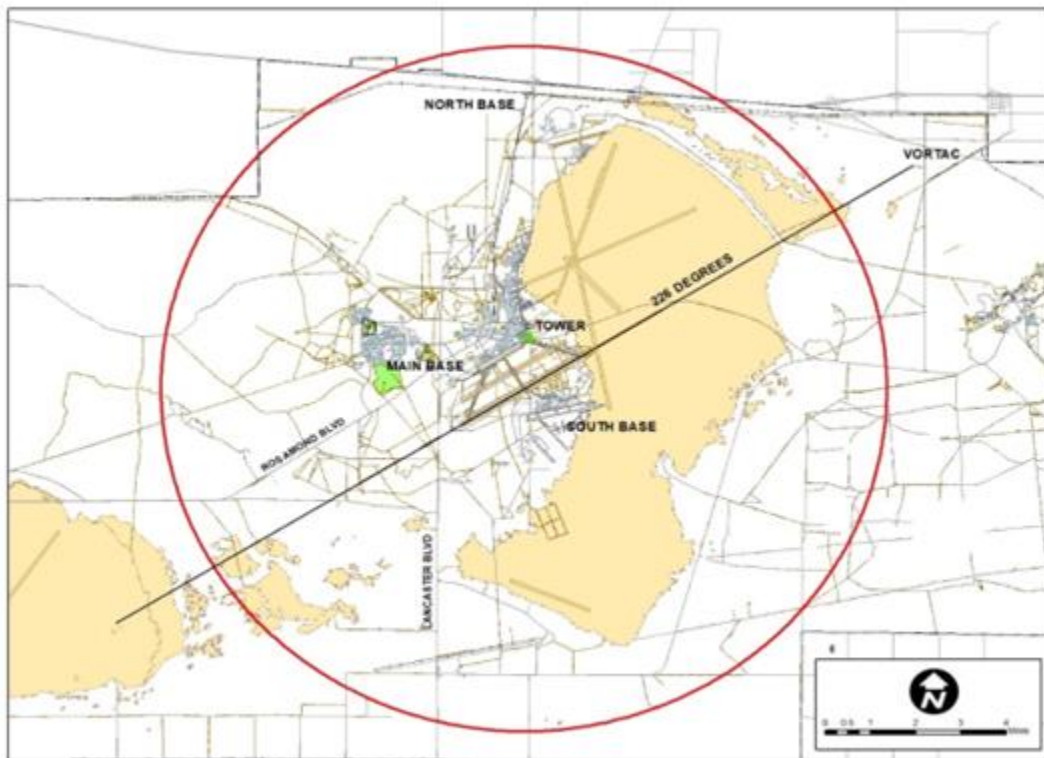
### FLYING AREAS

#### 3.1. Local Flying Area/Designation of Airspace.

3.1.1. Edwards Class D Airspace. Edwards Class D resides primarily within R-2515 and is defined as, that airspace extending upward from the surface to and including 4,800 feet MSL, within a 7-mile radius of Edwards AFB. When the Tower is closed, the Class D reverts to Restricted Airspace.

3.1.2. R-2515 Alpha Corridor, West Range and North Base UAS Work Areas transverse the Class D and are excluded from Tower control when active. See the R-2515 Airspace Users Handbook available at <https://www.edwards.af.mil/About/R-2515-Airspace/>.

**Figure 3.1. Edwards Class D Airspace.**



**3.2. VFR Local Training Areas.** See the R-2515 Airspace Users Handbook available at <https://www.edwards.af.mil/About/R-2515-Airspace/> and the R-2508 Users Handbook available at <https://www.edwards.af.mil/About/R-2508/>.

## Chapter 4

## VFR PROCEDURES

4.1. VFR Weather Minimums. See Table 4.1.

4.2. VFR Traffic Patterns. See Tables 4.1 thru Table 4.3 for details and Attachments 2-5 for depictions.

Table 4.1. Normal Patterns. See also Attachment 2.

Pattern	Weather Minimum (AGL-SM)	Pattern Altitude (MSL)	Notes
<b>Closed (Fighter/Trainer)</b>	2000'-3	3800'	Use caution to avoid South Base pattern at 2,800' MSL. Initiate turn to downwind upon Tower approval. Extended closed is initiated 1-mile past departure end.
<b>Closed (Other)</b>	1500'-3	3300'	
<b>Overhead (Initial)</b>	2000'-3	3800'	<p><b>Runway 05:</b> Enter/report initial north of Buckhorn abeam the bend in Rosamond Blvd.</p> <p><b>Runway 23:</b> Contact Tower at the mines. Report initial over East Lakeshore.</p> <p><b>Runway 5L/23R:</b> Offset initial by a minimum of 1,500' but no farther than the South edge of the Main Ramp. Begin offset NLT 5 mile initial.</p> <p><b>Runway 5R/23L:</b> offset initial by a minimum of 1,500' but no farther than the South edge of Runway 5L/23R. Begin offset NLT 5 mile initial.</p> <p>Note: Break South of and abeam the approach end of the Runway unless otherwise directed by Tower.</p>
<b>TAC Initial</b>	2000'-3	3800'	Same as overhead at 350 KIAS. Wingmen will line abreast 3000' offset opposite the direction of break. Additional elements will fly no more than 1 NM trail. Flights will provide their own separation during the break. Use caution when conducting TAC Initial formations simultaneously with Tower Fly-by Line operations

<b>Helicopter</b>	1000'-3	2800'	Runway 05 downwind will be flown over Rosamond Blvd. Runway 23 downwind will be flown between Rosamond Blvd and Wolfe Ave.
<b>South Base</b>	1000'-3	3300'	Use caution to avoid Main Base closed pattern at 3,300' MSL. Remain south. Left traffic to Runway 25, right traffic to Runway 07.
<b>North Base</b>	1000'-3	3300'	Remain north. Right traffic to Runway 24, left traffic to Runway 06.

**Table 4.2. Re-Entry Patterns.**

<b>Pattern</b>	<b>Weather Minimum (AGL-SM)</b>	<b>Pattern Altitude (ft MSL)</b>	<b>Notes</b>
<b>South Re-Entry</b>	2500'-3	4300'	One mile off the departure end of runway turn south and enter outside downwind. Runway 23: Downwind outbound toward the Air Force Research Laboratory (AFRL). Remain north of the PIRA when active. Descend to pattern altitude or climb to intended approach altitude on the extended centerline of Lakebed Runway 12/30. Turn base crossing East Lakeshore or request to extend to Tactical Air Navigation (TACAN). Runway 05: Not authorized when the Alpha Corridor is active. Downwind outbound to Buckhorn. Descend to pattern altitude abeam Buckhorn and turn base.
<b>North Re-Entry</b>	2500'-3	4300'	Runway 23: While adhering to published noise abatement procedures, enter downwind west of housing and north of North Base. Descend to pattern altitude or climb to intended approach altitude abeam Lakebed Runway 15. Turn base at the intersection of the extended centerline of Lakebed 18 and Highway 58. Do not initiate turn to final/initial until reaching correct altitude. Requests to extend to the TACAN should be made during request for North Reentry Runway 05: Enter outside downwind north of North Base. Turn base for 5 mile final or enter initial at 3 miles from the Runway. Do not initiate turn to final/initial until reaching correct altitude.

Table 4.3. Special Patterns/Approaches. See Attachments 2 through 4.

Pattern	Weather Minimum (AGL-SM)	Pattern Altitude (ft MSL)	Notes
<b>Tower Fly-By Line</b>	2000'-3	3500'	Tower Fly-By Line is always East-to-West. <b>See restrictions at 4.2.1.</b> The Tower Fly-By Line is always flown East-to-West. The Fly-By Line is marked on the Dry Lakebed with open circles on a line from east lakeshore to the airfield, aligned roughly half-way between Runway 23R and Taxiway F. A right-hand pattern north of the VFR pattern is flown by default. Left hand patterns south of the airfield may be flown with specific tower clearance, if traffic permits.
<b>Overhead Simulated Flame Out (SFO)</b>	1000' above lowest altitude requested, 3 SM visibility	High Key 5K-12K	Do not proceed to High Key until instructed or asked to report 1 minute to High Key. Expect instructions at High Key and landing clearance at Low Key. On the go, make a north turn for climb out to high key unless directed otherwise by Tower. The standard for Runway 23L is left traffic and for Runway 5R is right traffic. See airspace protection at 4.2.2.
Low Key 4K-9K			
<b>Straight-In Simulated Flame Out (SFO)</b>		High Final 9K-12K	Call High Final at East Lakebed Shore (Runway 23) or Buckhorn (Runway 05). Expect landing clearance at High Final.
	Low Final 4K-7K		
<b>Lifting Body</b>		High Key 24K-27K	Do not proceed to High Key until instructed or asked to report 1 minute to High Key Lifting Body. Enter over South Base. Report High Key Lifting Body, Low Key Lifting Body, and High Final. Tower will issue a landing clearance at High Final. If unable to report High Final or a landing clearance not received, go-around and contact Tower. Expect north turnouts when conducting successive Lifting Body approaches.
		Low Key 18K-21K	
		High Final 10K-13K	
<b>Shuttle</b>		Low Key 20K-28K	Do not proceed to Low Key Shuttle until instructed or asked to report 1 minute to Low Key Shuttle. Enter over Rosamond Dry Lakebed (Runway 05) or Hwy 58 (Runway 23). Report Low Key Shuttle and High Final. Expect landing clearance at High Final.
		High Final 10K-13K	

## 4.2.1. Tower Fly-By Line (TFB) Restrictions.

- 4.2.1.1. Only specifically trained 412 TW and NASA Armstrong aircrew are authorized to conduct TFB operations. All others require 412 OG/CC approval prior to entering training and conducting TFBs.
- 4.2.1.2. Non-412 TW/NASA aircraft and aircrew may conduct TFB operations without 412 OG/CC approval provided a TFB instructor-qualified pilot is in the cockpit. The instructor pilot need not be qualified in the aircraft. If the instructor pilot does not have access to flight controls, the minimum altitude is 200 feet AGL.
- 4.2.1.3. Unless required by an approved test plan or United States Air Force Test Pilot School (TPS) curriculum, minimum altitude on the TFB line is 100 feet AGL, minimum airspeed is final approach speed/AOA, and maximum airspeed is 450 KCAS or 90% of VNE (whichever is less). Supersonic TFB operations are not authorized under any circumstance.
- 4.2.1.4. While on the TFB line, remain at or below 500' AGL/2800' MSL from East Lake Shore to the departure end of Runway 23L unless otherwise cleared by Tower.
- 4.2.1.5. For north TFB patterns, turn outside base housing and fly downwind at 3,800' MSL, remaining north of NASA Armstrong. Do not overfly North Edwards. Overflight of North Base is authorized at TFB downwind altitude. Do not overfly facilities or personnel below 500 feet AGL. Start descent in the turn to base, remaining above 500' AGL until south of Hwy 58, and no lower than 200' AGL until established on final and over the lakebed. Early crosswind turnouts (between the Base Exchange and Fitness Center) may be approved by Tower for light aircraft.
- 4.2.1.6. For south TFB patterns, comply with south reentry guidance until beginning descent abeam Lakebed Runway 30L/R. Start the base turn no earlier than abeam the east lake shore. Remain above 500' AGL/3100' MSL until starting the base turn. Advise tower if extending past the TACAN. Descend no lower than 200' AGL until established on final and over the lakebed. Remain south of Hwy 58.
- 4.2.1.7. Downwind may be adjusted for airspeed. When extending, do not overfly any portion of Boron, the mines, or the AFRL. Line up on final no earlier than the VORTAC. Use caution for aircraft along Highway 58. Remain at or below 350 KCAS until turning base.
- 4.2.1.8. Aircraft outside the Main Base traffic pattern may enter the TFB pattern from any point in the pattern prior to mid-lakebed on the fly-by line. Coordinate with Tower on initial contact.
- 4.2.1.9. Unless conducted as part of an approved test plan or TPS curriculum, multiple-aircraft formations (including chase) are not authorized.
- 4.2.1.10. Two-way communication with Tower is required for all TFB operations.
- 4.2.1.11. When Runway 05 is in use the TFB pattern is considered "same runway, opposite direction." Opposite direction cut-offs will apply. Be alert for opposite direction traffic.
- 4.2.1.12. Ground Control will hold taxiing aircraft as required to prevent TFB overflight of aircraft on Taxiway C.

4.2.2. Overhead SFO Airspace Protection. When utilizing Overhead SFO patterns, remain within the designated SFO airspace.

4.2.2.1. Overhead SFO airspace to all runways except Rogers Dry Lakebed Runways 15, 18, 23, and 27 is defined as a 5-mile radius circle, centered on Runway 05R/23L, up to and including 12,000' MSL.

4.2.2.2. Overhead SFO airspace for Rogers Dry Lakebed Runways 15, 18, 23, and 27 is defined as the lateral confines of Class D, up to and including 12,000' MSL.

4.2.2.3. Protection of 360-Overhead Pattern. All aircraft will remain below 3300' MSL until past the departure end of the runway.

### 4.3. Special procedures.

4.3.1. Circling Approaches. Circling approaches to Runway 05R/23L or 05L/23R are not authorized when there are aircraft in the South Base traffic pattern.

4.3.2. Airborne Pickup. Pilots will advise Ground of airborne pickup intentions on initial contact. Expect delays.

4.3.3. Weather Balloon Launch Procedures. Weather will contact the Tower for approval to launch a weather observation balloon within 7 SM of the airfield. Tower will coordinate airspace approval prior to the launch and pass the approval or disapproval. Upon approval of a balloon launch, Weather will notify Tower when the balloon is released and again when the balloon passes 12,000' AGL. Tower will pass both notifications to the control agency for R-2515.

4.3.4. Paradrup. Aircrews and jumpers will coordinate with Tower and SPORT for operations at requested Drop Zone (DZ).

4.3.5. Airstart. See [Attachment 6](#).

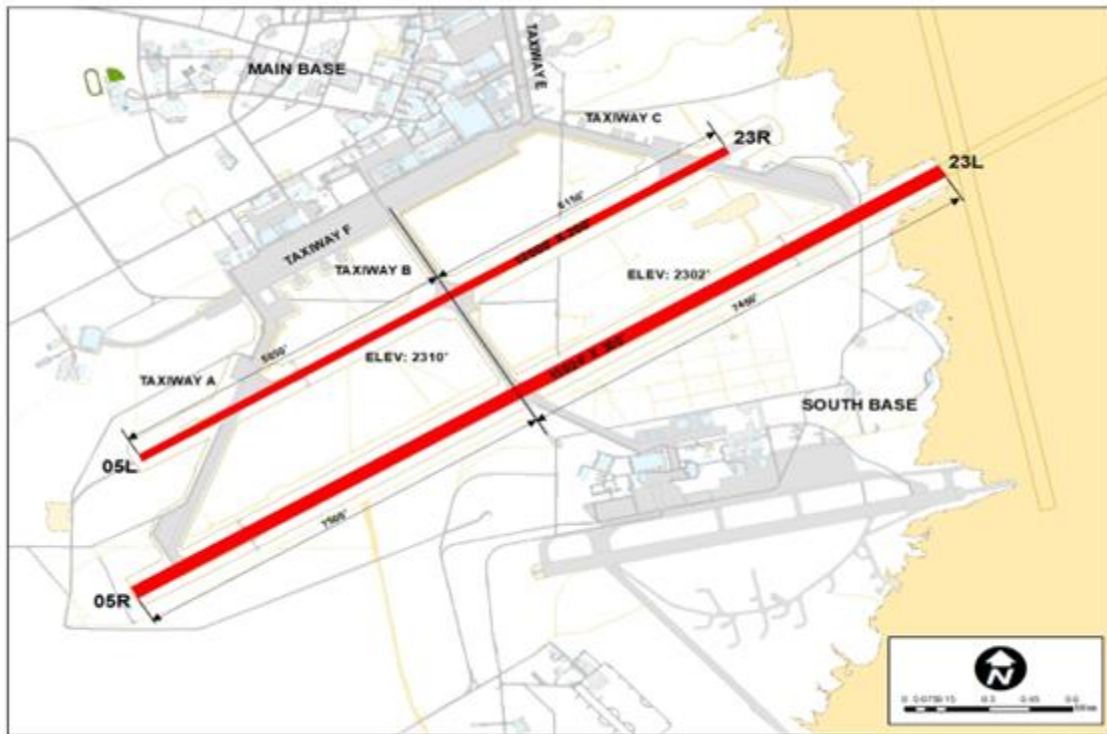
### 4.4. Reduced Same Runway Separation (RSRS) Procedures. Authorized for Runway 05R/23L and 5L/23R (reference AFMC Supplement 13-204v3 [Tables A7.1 and Table A7.2](#)).

4.4.1. Procedures may be used only between AFMC aircraft, aircraft assigned to Armstrong Flight Research Facility and other aircraft specified in AFMAN 13-204v3 AFMC SUP 1.

4.4.2. Temporary assigned aircraft supporting flight testing or other non-AFMC missions are not authorized unless covered by a LOA.

4.4.3. If more than one fighter/trainer aircraft are in the pattern, all fighter/trainer type aircraft should assume RSRS operations are in effect and after landing, clear to the exit side (cold side) of the runway when speed and conditions permit.

### 4.5. Intersection Departures. Initiate intersection departure request with Ground upon initial contact. Intersection departures are not authorized from taxiway B for jet fighter, trainer, or attack aircraft. See [Table 2.3](#) for all distances. Aero Club will be expected to execute intersection departures to the maximum extent possible.

**Figure 4.1. Main Base Intersection Departures.**

**4.6. Standard VFR Departure Procedures.** All aircraft on a Pancho or Sage clearance will contact SPORT on Muroc Common prior to takeoff for an area briefing and must depart the Class D to the northwest (Runway 23) or maintain Runway heading (Runway 05) until in contact with SPORT. Deviations must be coordinated with Tower.

4.6.1. Unless otherwise instructed by Tower:

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

4.6.1.2. 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.

4.6.1.3. 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.

4.6.2. All aircraft will use Tower primary Ultra High Frequency (UHF) frequency 318.1 (if suitably equipped) unless a test mission frequency has been pre-coordinated.

4.6.3. Avoid overflying Small Arms Range below 1,000 ft AGL. The Small Arms Range Master is responsible for spotting aircraft and calling “knock it off” in the event an aircraft is in close enough proximity to be a safety concern. See [figure 4.2](#). Small Arms Range.

**Figure 4.2. Small Arms Range.**



4.6.4. South Base Arrivals and Departures. These are 'local-only' procedures not recognized by the FAA. Do not file these procedures on official flight plans.

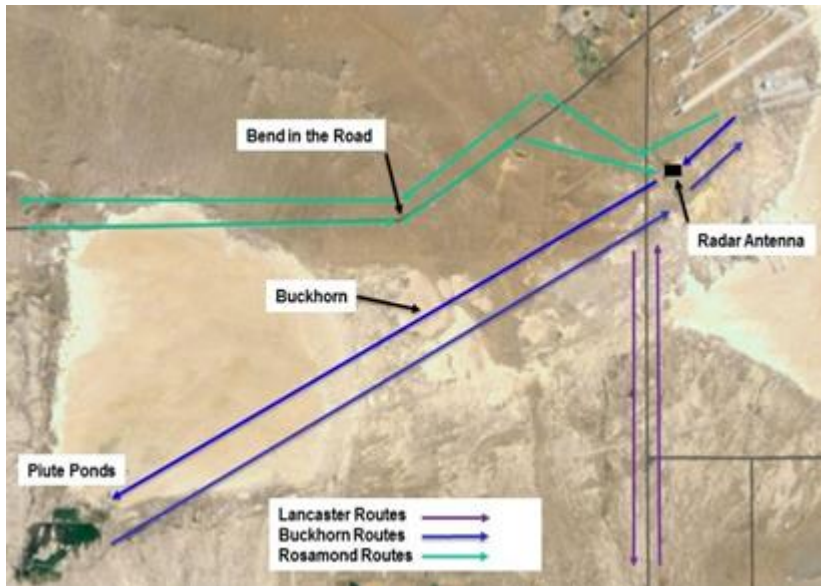
Table 4.4. South Base Departure.

<b>Departure</b>	<b>Altitude (ft MSL)</b>	<b>Procedures</b>
<b>Buckhorn</b>	3300'	Departures from either Main or South Base will fly over the radar antenna, then proceed outbound overflying Buckhorn. Contact SPORT over Buckhorn.
<b>Lancaster</b>	3300'	Departures will fly over the radar antenna to proceed outbound within 1/4 NM west of Lancaster Blvd until Avenue E (last major east/west surface street). Contact SPORT/Joshua over the Sled Tracks or when directed by Tower.
<b>Rosamond</b>	3300'	Depart at 235 heading at 3300' MSL. Crossing Lancaster Blvd, turn right heading 275 to intercept Rosamond Blvd, then maintain 1/4 NM north of Rosamond Blvd. Contact SPORT abeam golf course. Be alert for model airplanes North sUAS Area of on Rosamond Dry Lakebed.

Table 4.5. South Base Arrival.

<b>Arrival</b>	<b>Altitude (ft MSL)</b>	<b>Procedures</b>
<b>Buckhorn</b>	3,300'	Contact SPORT/JOSHUA 1 NM west of Piute Ponds at 3,300' MSL. When cleared by SPORT/JOSHUA, proceed inbound and contact Tower or switch to CTAF. Fly southeast of Buckhorn at 3300' MSL toward south of the radar antenna, then transition to applicable runway pattern.
<b>Lancaster</b>	3300'	Remain south of Avenue E (last major east/west surface street prior to turning northbound on 120th St) until cleared by SPORT, JOSHUA or Tower. When cleared, proceed north paralleling Lancaster Blvd 1/4 NM to the east. Contact Tower or CTAF when instructed or when passing the Sled Tracks. Abeam the radar antenna, transition to applicable runway pattern.
<b>Rosamond</b>	3,300'	Contact SPORT/JOSHUA 1 NM east of Rosamond. When cleared by SPORT/JOSHUA, proceed inbound (east) directly over Rosamond Blvd. Be alert for Buckhorn arrivals/departures. Contact Tower or CTAF at the bend-in-the-road and continue to track directly over Rosamond Blvd until 1/2 mile east of the Rod and Gun Club/Small Arms Range. After passing Small Arms Range, turn right heading 095 to the radar antenna for transition to applicable runway pattern, maintaining 3300' MSL.

**Figure 4.3. Light Aircraft Arrivals South Base.**



#### 4.6.4.1. South Base Restrictions.

4.6.4.1.1. Buckhorn routes are preferred over Rosamond routes when Tower is open.

4.6.4.1.2. When the Alpha Corridor is active, Tower will coordinate with SPORT prior to approving Buckhorn and Lancaster arrival/departures.

4.6.4.1.3. Tower approval (when open) is required prior to crossing Runway 05/23 extended centerline. Cross at least 3 NM from the approach end of Runway 05.

4.6.4.2. Departure Procedures. Contact Ground 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 transmits Main Base wind, respective North/South Base runway in use, altimeter, known traffic, and issues reporting points (when required). Tower (when open) provides advisory services only. The runway environment is not visible from the Tower therefore crews are responsible for providing separation from other aircraft.

## Chapter 5

### IFR PROCEDURES

**5.1. Radar Traffic Patterns.** Edwards AFB does not have radar traffic patterns.

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

**5.3. Local Departure Procedures.** Restricted Areas R-2515 and R-2508 are VFR work areas. Aircrew that wish to depart Edwards AFB under IFR must reference the R-2508 Users Guide (<https://www.edwards.af.mil/Portals/50/R2508%20USERS%20BRIEF%2001-04-23.pdf>).

**5.4. IFR Clearances.**

5.4.1. When open, SPORT will issue the appropriate IFR clearance and/or departure instructions based on planned departure route on 354.0 or 123.2 Muroc Common. Ground will issue clearances when SPORT is closed.

**5.5. Ingress/Egress Fixes.** There are 13 FAA published ingress/egress fixes established around the perimeter of R-2508, as listed below. Aircrew departing R-2508 on an IFR clearance must reference *R-2508 Users Guide* for procedures.

**Table 5.1. Ingress/Egress Fixes.**

- 5.5.1. DAGGS
- 5.5.2. CHADS
- 5.5.3. EWALD
- 5.5.4. FAANG
- 5.5.5. HAMBO
- 5.5.6. HEINY
- 5.5.7. JENID
- 5.5.8. KIOTE
- 5.5.9. MITEL
- 5.5.10. ROMOF
- 5.5.11. SWOOP
- 5.5.12. ROSIE
- 5.5.13. TUCKY

**5.6. Radar Vector to Initial Procedures.** SPORT does not provide radar vectors to initial.

## Chapter 6

### EMERGENCY PROCEDURES

**6.1. Operation of Primary Crash Alarm Systems (PCAS)/Secondary Crash Net (SCN).** The PCAS and SCN are for dissemination of emergency/exercise information only. The PCAS is activated by the Tower and notifies AMOPS, Fire Department and emergency services, the Flight Surgeon, and the Command Post. The SCN is activated by AMOPS, or by the Command Post (CP) when the airfield is closed. SCN organizations consist of the following:

- 6.1.1. Wing
- 6.1.2. Operations Group
- 6.1.3. Fire Department
- 6.1.4. Security Forces
- 6.1.5. Flight Surgeon
- 6.1.6. Flight Safety
- 6.1.7. Crash Recovery
- 6.1.8. Emergency Management
- 6.1.9. Maintenance Operations Center
- 6.1.10. Explosive Ordnance
- 6.1.11. Command Post
- 6.1.12. Weather

### **6.2. PCAS/SCN Operational Checks.**

- 6.2.1. PCAS. Tower will check the PCAS daily, when open, between 0800L and 0815L.
- 6.2.2. PCAS agencies will respond when queried indicating the reception quality of the circuit followed by their operating initials. PCAS agencies will remain on the line until tower directs agencies to "SECURE THE NET".
- 6.2.3. AMOPS will check the SCN immediately after the PCAS check. Procedures are identical to those used during the PCAS check.
- 6.2.4. Alternate SCN. The CP will check the system on the first duty-day of the month. Testing will be immediately after the SCN test. Procedures are identical to the SCN.

### **6.3. Emergency Response Procedures.**

- 6.3.1. Tower will activate the PCAS and relay all known information.
- 6.3.2. Real-Time Schedulers (CONFORM) will notify the organization having operational control of the aircraft, SOF and FOA.
- 6.3.3. FOA will determine if the emergency warrants activation of the Incident Response Team.

6.3.4. As needed, SOF will arrange for chase aircraft, emergency air refueling, provide technical support, and ensure the airfield and airspace response will meet the needs of the emergency.

6.3.5. In the event of an emergency the PIC works with the Incident Commander (IC), however final authority for the aircraft always rests with the PIC.

6.3.6. Tower/AMOPS will use the Ramp/Crash FM Nets to communicate with emergency vehicles once they are deployed to standby positions. Fire Department will contact Tower on the Crash Net only. Other agencies use the Ramp Net to accomplish coordination and relay follow-up information. Tower will broadcast on all Ground frequencies when emergency aircraft is next-to-land.

6.3.7. All vehicles must yield to firefighting vehicles and equipment. The position of non-firefighting vehicles, when stopped, must not impede firefighting vehicles. All non-fire vehicles must remain behind the incident commander unless cleared by the incident commander.

6.3.8. Vehicles not providing emergency response will maintain a safe distance (200ft?) from the aircraft unless directed otherwise by the incident commander.

6.3.9. After landing, pilots can expect frequency assignment to Tower's discrete frequency (353.6) for direct communications with the incident commander. Pilots who require a single-frequency approach will be assigned Tower's discrete frequency when requested.

6.3.10. AMOPS will immediately respond to all In Flight Emergencies (IFE)/Ground Emergencies (GE) and hold short of the respective approach end of the intended landing Runway for the IFE. AMOPS will comply with ATC instructions and complete the Foreign Object Damage (FOD) check as required.

6.3.11. The SOF will coordinate the with the appropriate squadron flight operations supervisor to determine if a FOD check is warranted. If the emergency does not increase the chance of FOD on the runway, the SOF may waive the FOD check. If waived, Tower may elect to complete the FOD check provided it will not interfere with normal pattern operations.

6.3.12. Emergencies such as catastrophic engine failure, landing gear, hydraulic, structural and brake system problems, known or suspected tire damage and bird strikes may require a FOD check immediately after the suspect aircraft lands, unless the SOF elects to delay the check to preclude the creation of additional emergencies or unsafe situations.

6.3.13. The incident commander has final authority on emergency termination and will notify Tower of emergency termination via the Crash Net.

**6.4. Stores Jettison Area Procedures.** Aircrews should jettison on the range being worked. Non-explosive stores can be jettisoned on the Precision Impact Range Area (PIRA), in Areas 1, 2, 3, or as coordinated. As a last resort, jettison explosive stores on Target PB13. See *412 TW In-Flight Guide* for details.

6.4.1. Area 1. A triangular area northeast of Runway 05/23 centered on EDW 237/2.5. Jettison heading is 180° or 360° Magnetic at or below 3,300' MSL when able. Area 1 coordinates are 34.987/-117.8023, 34.96846/-117.7631 and 34.95867/-117.7802.

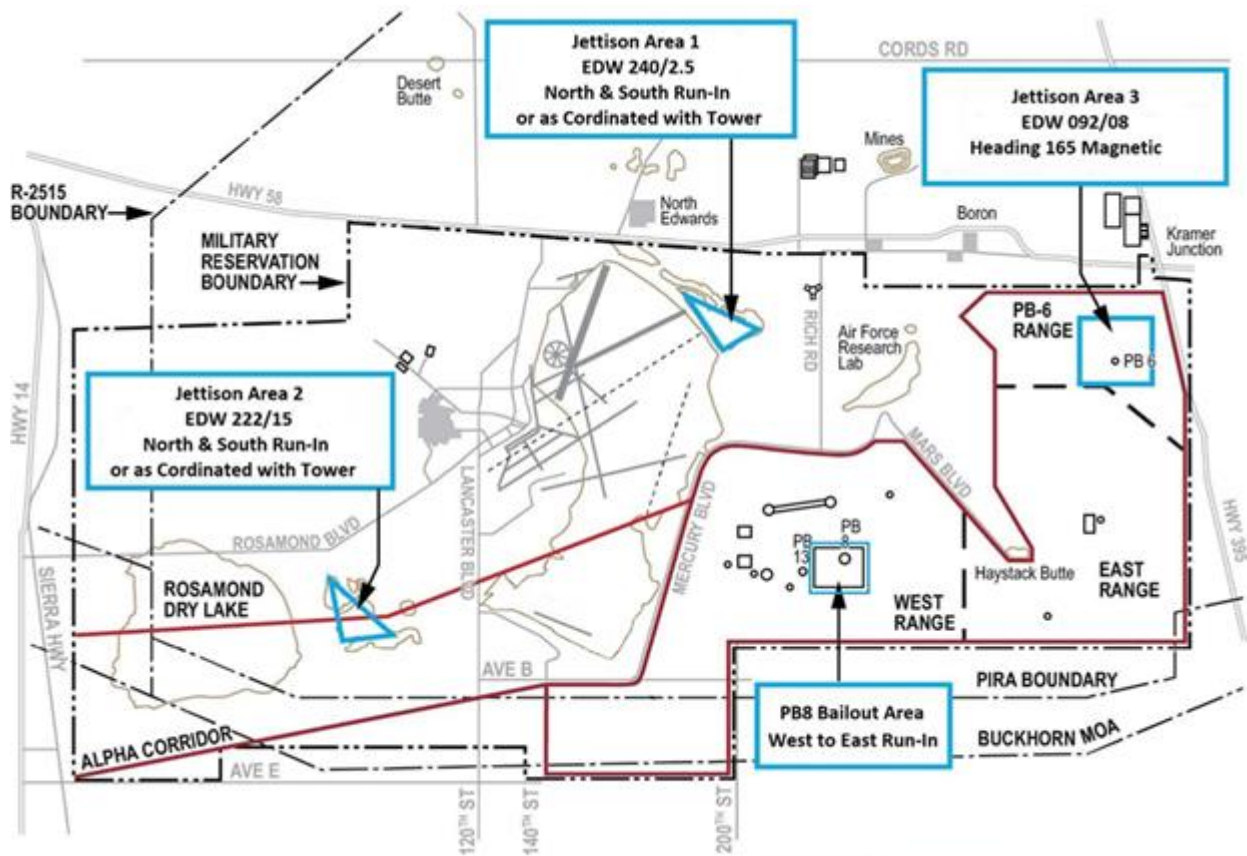
6.4.2. Area 2. A triangular area southwest of Runway 05/23 centered on the EDW 219/15. Jettison heading is 150° or 330° Magnetic at or below 3,300' MSL when able. Area 2 coordinates are 34.85645/-117.9985, 34.83152/-117.9593 and 34.82768/-117.9909.

6.4.3. Area 3. A rectangular area in the northeast corner of the east range centered on the EDW 089/8. Jettison heading is 165° Magnetic between 5,000'-6000' MSL. Power lines to the east parallel jettison heading. Jettison west of power lines. Use Area 3 when aircraft flight path after jettison is in doubt. If possible, contact SPORT or Tower before jettison. Continue heading 165° Magnetic, reduce throttles to idle and eject if necessary.

6.4.4. Inform SPORT or Tower of intent to jettison. If requested, SPORT may provide radar vectors to the area, traffic advisories and advise when entering and leaving the area.

6.4.5. If possible, overfly the area before jettisoning to ensure it is clear of personnel and vehicles.

**Figure 6.1. Jettison/Bailout Areas.**



**6.5. Fuel Dumping.** Do not dump fuel in the Class D.

**6.6. Emergency Aircraft Arresting System Procedures.**

6.6.1. Civil Engineering will certify the arresting systems weekdays from 0600L-1600L and perform an inspection prior to any planned engagement.

6.6.2. The departure-end cable will remain raised (operational) unless removal (non-operational) is required for an emergency or planned event. The approach-end cable will only be raised for an emergency (pilot request) or scheduled event. The barrier will be removed during extended closures.

6.6.3. Tower will advise aircraft, SPORT, JOSHUA and AMOPS of runway changes. Each rigging and de-rigging takes 30 minutes. Each consecutive engagement (same cable) will require 15-20 minutes for re-certification.

6.6.4. After an emergency engagement, transient alert (TA) will provide a tug to disengage the aircraft from the cable and tow the aircraft from the runway. For all other planned engagements, the owning organization will provide tug support due to the distance from TA. TA is responsible for removing all transient aircraft.

**6.7. Hot Brake Area and Procedures.** 23 or 05 Hammerheads, see [Attachment 2](#). Align the aircraft into the wind.

6.7.1. If exiting at Twy B, stop on Twy B for emergency response. If past the designated hot brake area, 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.

6.7.2. If in the parking area, declare a ground emergency and (if possible) taxi to an uncongested area.

6.7.3. If the aircraft will vent fuel upon shutdown, wait until fire equipment is in place before shutdown (conditions permitting).

6.7.4. All vehicles will remain at least 300' from hot brakes, unless cleared by the incident commander.

**6.8. Abandonment of Aircraft. CONTROLLED BAILOUT PROCEDURES.** Controlled bailouts will be over the PIRA. Obtain safety chase if possible. Complete checklist items. Plan ejection conditions to meet flight manual requirements and to maximize the potential that the aircraft impacts beyond Mercury Blvd and within the PIRA. When situation permits, align for a West to East Run-in aiming for PB-8 (See [Figure 6.1](#)). Prior to ejection, reduce throttles to idle.

**6.9. Personnel/Crash Locator Beacon Signal/Emergency Locator Transmitter (ELT) response procedures.**

6.9.1. Tower will notify SPORT, JOSHUA and AMOPS when an ELT signal is received or terminated. AMOPS will contact MOC. CP will notify when AMOPS is closed.

6.9.2. If notified, Aircrew Flight Equipment (AFE) will search for the ELT, deactivate, and report termination to AMOPS or CP.

6.9.3. Planned ELT/Survival Radio Tests. ELT testing is authorized during the first 5-minutes of each hour. Advise AMOPS and CP of test time and location. Do not key the transmitter for more than three audible sweeps.

**6.10. Evacuation of AO Facilities.**

6.10.1. Control Tower. Tower personnel will evacuate when there is actual or suspected structural damage to the Tower, when the surface wind velocity reaches a sustained speed of 80 mph (70 knots) or gusts up to 100 mph (87 knots), or when otherwise directed. If the tower is evacuated, activate PCAS for notification.

6.10.2. Airfield Management. AMOPS will evacuate Bldg 1202 as conditions require.

**6.11. Alternate Facility Procedures.** The alternate facility for Airfield Management is bldg. 1727 (ATC Tower). See AMOPS checklists for procedures. Tower does not have an alternate location. In the event Tower has an evacuation aircraft will be instructed to contact SPORT or Joshua Approach for holding or divert as required.

**6.12. Other Emergency Procedures.**

6.12.1. Hydrazine (H-70) Areas. 23/05 Hammerheads (primary) or Twy B (alternate). When an aircraft with an unscheduled emergency power unit (EPU) activation lands, or an aircraft EPU has activated on the ground, has a leak and/or leak contamination, declare a ground emergency. If a leak or contamination is found after landing, declare an emergency. An airstart mission (scheduled activation) does not require an in-flight emergency (IFE) declaration. See EAFBI 21-209 and *412 TW Viper Guide* for detailed procedures.

6.12.2. After landing, Tower will advise the crew of departure end wind conditions. For Twy D provide Runway 23 approach end winds.

6.12.3. Aircraft with an activated EPU can recover at 05/23 hammerheads or Dry Lakebed Runways at Twy D. Twy B should only be used if the departure end hammerhead has on-going activities.

## Chapter 7

### FLIGHT PLANNING PROCEDURES

**7.1. Flight Plan Filing.** Filed flight plans are not required for local aircraft that will not depart R-2508 airspace. Additionally, flight plans are not required for aircraft departing Edwards for Palmdale, Fox Field or Victorville Airports. Other than to these locations, Tower will not provide clearance to aircraft without flight plans. Aircraft departing R-2508 must file flight plans. See R-2508 *User Handbook*

(<https://www.edwards.af.mil/Portals/50/R2508%20USERS%20BRIEF%2001-04-23.pdf>)

PICs may file flight plans with AMOPS, their squadron operations desks, or through electronic means. If filing flight plans electronically or through squadron operations desks, operations desks are required to contact AMOPS to initiate any necessary aircraft search and rescue procedures for aircraft.

7.1.1. Filed flight plans must be maintained by the filing organization for a period of 12 months, in accordance with applicable record management instructions.

7.1.2. PICs must amend, cancel, or refile flight plans if changes are made. PICs must contact Tower with changes or cancellations to flight plans that are within 30-minutes of the proposed departure time.

7.1.3. When filing flight plans through AMOPS:

7.1.3.1. Department of Defense (DD) Form 1801, *International Flight Plan* is required for military aircraft. Civil aircraft may use Federal Aviation Administration (FAA) Form 7233-1, *Flight Plan*.

7.1.3.2. PICs must include “participant” or “non-participant” as the first item in the remarks section of the flight plan as defined in the *R-2508 Users Guide* (<https://www.edwards.af.mil/Portals/50/R2508%20USERS%20BRIEF%2001-04-23.pdf>)

7.1.3.3. Flight plans may be emailed to AMOPS, [S53D74@us.af.mil](mailto:S53D74@us.af.mil). PICs are responsible confirming receipt and successful filing. PICs will be directed to Pilot-to-Dispatch (372.2).

7.1.3.4. When the Tower is closed, Aero Club can file, open, and close flight plans with the servicing Flight Service Station or through electronic means.

## Chapter 8

### MISCELLANEOUS PROCEDURES

**8.1. Airfield Operations Board (AOB) Membership.** The AOB will meet as required, but no less than once per year. The AOB is chaired by the OG/CC or designated representative. AOB membership is as follows:

- 8.1.1. 412 OG/CC or CD.
- 8.1.2. 412 OG/OGV.
- 8.1.3. 412 MSG/CC or CD.
- 8.1.4. 412 CEG or CD.
- 8.1.5. 412 CES/CL.
- 8.1.6. Flight Safety.
- 8.1.7. Palmdale Plant 42.
- 8.1.8. 412 OSS/CC or DO.
- 8.1.9. Airfield Operations.
- 8.1.10. Airfield Manager.
- 8.1.11. Tower Chief Controller.
- 8.1.12. Base Weather.
- 8.1.13. RAWs.
- 8.1.14. FAA TRACON "JOSHUA".
- 8.1.15. SPORT.
- 8.1.16. Aero Club Manager.
- 8.1.17. Representatives from all assigned and tenant flying organizations.
  - 8.1.17.1. Annual review items will be determined as needed by the Airfield Operations Flight Commander.

**8.2. NOTAM Procedures.** AMOPS publishes NOTAMs pertaining to EAFB airfield. R-2515 Airspace Management publishes NOTAMs pertaining to airspace. Tower is the NOTAM monitoring facility. EAFB NOTAMs may be viewed on at <https://www.notams.faa.gov/>.

**8.3. Flight Information Publication (FLIP) Accounts.** AMOPS maintains a limited number of hard-copy FLIPs, and users are encouraged to obtain their FLIPs electronically. Flying units that require paper products must establish and maintain their own accounts. To make changes to information published in FLIPs, contact AMOPS.

**8.4. Prior Permission Requested (PPR) Procedures.** All non-Edwards assigned aircraft must have a PPR issued by AMOPS prior to landing at Edwards.

- 8.4.1. All non-Edwards assigned aircraft must have one of the following to operate at EAFB:
  - 8.4.1.1. Be 'sponsored' by an on-base organization.

8.4.1.2. An approved letter or memorandum of understanding on file (MOU).

8.4.1.3. An approved 'statement of work'. **Note:** 412 OSS/OSA will forward all 'orphaned' requests to 412 OSS/DO for guidance.

8.4.2. PPRs will not be issued until PICs receive an R-2508 and/or R-2515 airspace briefing.

8.4.3. PPRs will be requested 24 hours in advance and not more than 5 days in advance. Deviations require Airfield Manager coordination and approval.

8.4.4. PPRs will not be issued to civil aircraft operators without a Civil Aircraft Landing Permit (CALP) number on file with AMOPS, IAW AFI 10-1001.

8.4.5. 412 TW assigned, tenant flying units and Aero Club owned aircraft are considered "home station" and do not require PPRs.

8.4.6. Civil-owned aircraft used by the Test Pilot School (TPS) require a PPR for initial EAFB arrival. After initial arrival, operations no longer require a PPR until the aircraft departs permanently.

**8.5. AirEvac Notification and Response Procedures.** EAFB has no emergency hospital services. Emergency responders will coordinate with Tower for real-time de-confliction.

**8.6. Unscheduled/Unauthorized 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 CALP or a PPR number and/or lands without an ATC clearance or previous agreement. Unscheduled aircraft landings include unscheduled aircraft that declared an in-flight emergency and were subsequently given permission to land. Tower will notify the CP of unscheduled aircraft arrivals; the CP will notify the 412 OG/CC.

**8.7. Distinguished Visitor (DV) Notification Procedures.** AMOPS will coordinate with CP, and Protocol for handling of visiting DVs with a DV Code of 6 or higher.

**8.8. Dangerous/Hazardous Cargo.** The designated dangerous/hazardous cargo areas are the 05/23 hammerhead or arm/de-arm areas (see [Chapter 6](#)).

**8.9. Night Vision Device (NVD) Operations.** Tower and AMOPS personnel are not authorized use of NVDs.

8.9.1. For NVD flight operations within the Class D, aircrews will coordinate with Tower 24-hours prior to flight. AMOPS will issue a NOTAM. Crews will notify the Tower prior to and upon completion of NVD operations.

8.9.1.1. Airfield lighting priority will be given to non-NVD aircraft. When requested, Tower will adjust lighting settings and advise crew prior to making changes. Tower will inform crews when non-NVD aircraft are 15-flying miles from the airfield.

8.9.1.2. Aircraft conducting NVD operations will terminate NVD operations or exit the Class D upon notification of inbound non-NVD aircraft. All taxi operations will be conducted with lights on unless pre-coordinated.

**8.10. Local Aircraft Priorities.** Tower provides air traffic control services to aircraft on a “first-come, first serve” basis as circumstances warrant, and by applying the priorities in the order listed in **Table 8.1**. This listing does not supersede the Operational Priorities listed in FAA Order JO 7110.65.

**Table 8.1. Traffic Priorities.**

<b>1</b>	Declared Emergencies
<b>2</b>	Medical Evacuation or Civilian Air Ambulance
<b>3</b>	Search and Rescue
<b>4</b>	Flight Check
<b>5</b>	Priority ALPHA
<b>6</b>	Maintenance / Functional / Operational Check Flights
<b>7</b>	“Experimental” or “Unproven” aircraft / “First Flight” aircraft
<b>8</b>	Full-Stops
<b>9</b>	Departures
<b>10</b>	Touch-and-Go / Low Approach
<b>11</b>	All Other Traffic

8.10.1. Priority ALPHA Designation. “Priority ALPHA” is a test-specific priority used only by EAFB assigned test aircraft. Priority ALPHA means the test mission will fail if mission experiences traffic handling delays or restrictions. All Priority ALPHA missions must be thoroughly pre-coordinated with all affected ATC agencies as far in advance as possible. The following are examples of Priority Alpha test missions:

8.10.1.1. Tests when gross weight, center of gravity, runway condition, etc. are factors critical to successful mission completion and/or data collection, such as performance landings or refused takeoff testing.

8.10.1.2. Tests that do not have any time, performance, or fuel margins.

8.10.1.3. Takeoff or landing when aircrews are wearing pressure suits.

8.10.1.4. Missions that require a time critical intercept or tanker rendezvous.

8.10.1.5. Test missions with a critical range time.

8.10.2. Departures. Notify Ground of required takeoff time upon request for taxi instructions (Example: "EDWARDS GROUND, COBRA 17, PRIORITY ALPHA FOR A ONE FOUR THREE THREE ZULU SCHEDULED DEPARTURE"). Update any changes to required takeoff time as soon as possible.

8.10.3. 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, PRIORITY ALPHA STRAIGHT IN, TOUCH-AND-GO, STAY WITH TOWER.”)

### **8.11. Lost Communications.**

8.11.1. SPORT/JOSHUA/Tower may declare an emergency when two-way communication cannot be established with airborne, single aircraft (no wingman/chase).

8.11.2. Fixed Wing crews will:

8.11.2.1. Set transponder to 7600 and follow radio failure procedures in the 412 TW In-Flight Guide.

8.11.2.2. During visual meteorological conditions (VMC), overfly EAFB at or above 6,000' MSL to determine landing direction. Enter initial at 3,300' MSL, rocking wings during daylight or flashing landing lights at night and break at departure end. Observe Tower for light gun signals, make calls in the blind.

8.11.2.3. During instrument meteorological conditions (IMC), proceed to the initial approach fix for any published approach to Runway 23L, execute one turn in holding and commence approach. If Runway 05R is the active runway, execute the approach to Runway 23L and circle to land Runway 05R. Observe Tower for light gun signals, make calls in the blind.

8.11.3. Aero Club:

8.11.3.1. Set transponder to 7600 and overfly Buckhorn (from the west) or Sled Tracks (from the south) for south Rogers lakebed at 4800' MSL.

8.11.3.2. Over south Rogers Lakebed turn northbound. Overfly runways 23L/05R and 23R/05L over taxiway Bravo to determine landing direction while rocking wings.

8.11.3.3. Once north of runways 23R/05L descend to 3,300' MSL pattern altitude and enter the left/right downwind.

8.11.3.4. Once on final observe Tower for light gun signals, make calls in the blind.

8.11.4. Jammed Communications. If an airborne aircraft encounters unexpected radio frequency interference or jamming, gather as much identifying information as possible that can be used to assist in identifying the source. Report the details to Joshua Control and/or SPORT, so they can track these incidents to identify possible trends. After landing, report the details to the Edwards Frequency Spectrum Manager at 661-277-4756 or via their org box at [412cs.spectrum.management@us.af.mil](mailto:412cs.spectrum.management@us.af.mil).

**8.12. Standard Climb-Out Instructions.** EAFB does not have a standard climb-out. Climb-out instructions are issued by Tower.

**8.13. Opposite Direction Take-Offs and Landings.** Opposite direction traffic will be conducted on a case-by-case basis when the Tower radar display is out-of-service and is not authorized when SPORT is closed. All coordination must be IAW AFMAN 13-204v3.

8.13.1. The Tower Fly-By Line is not considered opposite direction traffic during Rwy 05R operations but is for Rwy 05L operations.

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

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

8.13.2.1.1. Arrival and 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.

8.13.2.1.2. Arrival and departure - the departing aircraft is airborne and has turned on a diverging course prior to the arriving aircraft reaching 10 flying-miles from the runway.

8.13.2.2. VFR aircraft.

8.13.2.2.1. Arrival and arrival - the succeeding arrival is Buckhorn Lakebed (5 miles) for Rwy 05 or East Lakebed Shore (5 miles) for Rwy 23 and the preceding opposite direction arriving aircraft has crossed the landing threshold for a full-stop.

8.13.2.2.2. Arrival and departure - the succeeding arrival is Buckhorn Lakebed (5 miles) for Rwy 05 or East Lakebed Shore (5 miles) for Rwy 23 and the preceding departure has been issued a turn to avoid conflict.

8.13.2.3. Tower will advise SPORT when an aircraft is taxiing for an opposite direction departure and will request approval for the opposite direction departure prior to issuing takeoff clearance (e.g., SPORT TOWER, APREQ (approval request) SKULL99, T-38, OPPOSITE DIRECTION DEPARTURE RUNWAY 5R).

**8.14. Breakout/Go Around/Missed Approach Procedures.** Comply with published missed approach procedures or as directed by Tower/JOSHUA.

**8.15. Civilian Aircraft Operations.** Civil aircraft must have a PPR and CALP on file with AMOPS to land at Edwards AFB.

**8.16. Civil Use of Military Air Traffic Control Landing Systems.** Not permitted.

**8.17. Aero Club Operations.** See Aero Club Letter of Agreement.

**8.18. Airfield Snow Removal Operations.** See Edwards AFBI 32-1001, Snow and Ice Control Plan for specific responsibilities.

**8.19. Bird/Wildlife Aircraft Strike Hazard (BASH) and Bird Watch Conditions.**

8.19.1. Bird Watch Conditions (BWC). Visual sightings by aircrew, Tower, Aero Club, or maintenance personnel may result in increasing/decreasing the BWC as directed by the SOF, AM, USDA, Tower Watch Supervisor, or 412 TW/SEF. Decreasing the BWC should be coordinated with the OG/CC (or representative) to ensure proper risk management for flight operations and return to lower BWC. Decreasing or increasing the BWC does not change the local BASH Phase. Listed below are standard USAF BWC definitions. The announced BWC will remain in effect until any identified concentration of birds can be dispersed. Bird Watch Conditions are:

8.19.1.1. **SEVERE.** Bird/Wildlife activity on or immediately above the active runway, or in the overhead pattern, approach corridor or departure corridor representing a high potential for strikes. Supervisors and aircrews must thoroughly evaluate mission needs before conducting operations in areas under this condition.

8.19.1.2. **MODERATE.** Bird/Wildlife activity near the active runway or other specific location representing increased potential for strikes. The BWC moderate requires increased vigilance by all agencies and supervisors and caution by aircrews.

8.19.1.3. **LOW.** Bird/Wildlife activity on and around the airfield representing low potential for strikes.

8.19.1.4. There will be one BWC for all runways at Edwards AFB. Changes in BWC on Main Base will automatically include North Base, South Base, and lakebed runways.

8.19.2. BASH Phases I and II are defined in Annex B of the 412th TW 91-212V1 *BASH Plan*. Phase II will normally be implemented during the Fall (15 Sep to 15 Nov) and Spring (1 Mar to 30 Apr) migration seasons but may remain active for the entire winter. The implementation dates are based on actual significant migratory bird activity only, not calendar date alone. The 412 OG/CC is the approval authority for implementing and terminating Phase II upon notification from 412 CEG/CEV and AM that migratory bird populations have increased or decreased significantly. AM will provide official notification to flying units of the start and termination of Phase II by issuing a local NOTAM to be maintained during the entire Phase II period.

8.19.2.1. Any time the BWC is **MODERATE** the following will apply:

8.19.2.1.1. All aircraft takeoffs (includes transient, NASA and Aero Club) require coordination with the SOF (or AM in the absence of a SOF) after AM/Operations has visually surveyed the runways or airfield environment for significant wildlife activity. The Tower, in coordination with AM, will advise aircraft of the anticipated delay, if known, for bird dispersal or a return to BWC **LOW**.

8.19.2.1.2. Restrict number and minimum altitude of visual or instrument approaches to meet minimum requirements (i.e. full stop unless mission will be affected) and authorize early turnout and/or deletion of the 3,300 feet MSL restriction until departure end.

8.19.2.1.3. Close Tower fly-by line.

8.19.2.1.4. Airborne aircraft may divert, hold or full stop. Aircraft commanders should assess the risk by considering fuel status, weather, bird/wildlife location, etc., when making this decision.

8.19.2.1.5. During BASH Phase II periods, accomplish one approach to a full stop unless mission needs warrant additional approaches and sufficient fuel exists to divert if BWC changes to **SEVERE**.

8.19.2.2. Any time the Edwards AFB BWC is **SEVERE** the following will apply:

8.19.2.2.1. Discontinue all takeoffs.

8.19.2.2.2. SOF/Tower will close airfield to all flying operations except emergencies. (Local flying operations will be terminated, airborne aircraft will hold awaiting a lower BWC or divert if unable to land).

8.19.2.2.3. Discontinue non-emergency arrivals, approaches, and landings. Arrivals, approaches, and landings in BWC **SEVERE** require approval by OG/CC or FOA and will be limited to one full stop.

8.19.2.2.4. **EXCEPTION:** Helicopters have the unique capability to depart or arrive from any direction. During BWC **SEVERE** unit commanders will consider delaying departures until the bird hazard has decreased. Helicopters may take off after coordinating with the SOF or Tower personnel to ensure their departure routing will avoid any concentrations of birds. Helicopters arriving during BWC **SEVERE** should coordinate with the SOF or Tower personnel to ensure arrival routing will avoid any concentrations of birds. Multiple approaches will not be conducted when the BWC is **SEVERE**.

8.19.2.3. When the Edwards BWC is **MODERATE** or **SEVERE** all aircraft will be issued the appropriate BWC by ATC. If the condition persists, it will also be broadcast on ATIS.

8.19.3. During Phase II, the following restrictions apply in addition to the above BWC restrictions:

8.19.3.1. For all aircraft (including transient, NASA and Aero Club) departures, during the one hour before to one hour after sunrise and sunset and/or any other designated BASH window, the SOF (in the absence of the SOF then AM) will approve the takeoff after AM has visually surveyed the runways/airfield environment for significant bird activity NET 20 minutes prior to the first takeoff window.

8.19.3.2. Close Tower fly-by line. **Note:** For further information on BASH, see 412th TW 91-212V1 BASH Plan.

**8.20. Supervisor of Flying (SOF) Operations.** The SOF primarily performs SOF duties from their unit. The SOF position is maintained in the Tower as an alternate duty location. When reporting on-duty, the SOF will contact the watch supervisor (WS) and provide their name, a duty phone number, and their operating location. The WS then forwards the SOF phone located in the Tower to the provided duty phone number. If the SOF is not on-duty when a pilot requests SOF assistance, Tower will contact CP to notify the unit responsible for SOF duty. See AFMCI 11-401.

**8.21. Airfield Maintenance.** All airfield maintenance (e.g., sweeper operations, vegetation removal, general pavement repairs, etc.) and other construction projects performed on the airfield by either military, civilian, or contractor personnel must be pre-coordinated with 412 OSS/OSA.

8.21.1. **Airfield Photography.** Airfield Management personnel are authorized to take photographs on the airfield in execution of their official duties, all others see EAFB Plan 31.

**8.22. Tactical Arrival/Departure Procedures.** See [Table 4.1](#) for tactical arrivals. EAFB has no tactical departures.

**8.23. Lost or Overdue Aircraft.** The ROC is responsible for notifying AMOPS when an aircraft within the EAFB scheduling system has exceeded its ETA by 30-minutes.

**8.24. Dry Lakebed Operations.** Rogers Dry Lakebed is included in the KEDW Controlled Movement Area. Tower must grant permission for entrance onto the dry lakebed surface from any paved or unpaved surface. Rogers Dry Lakebed operations are conducted in accordance with local directives and authorized as follows:"

8.24.1. Tower may instruct vehicles to proceed directly to an area on Rogers Dry Lakebed Complex without stating specific approval to cross each dry lakebed runway. If tower issues no specific restrictions, vehicles are authorized to cross all dry lakebed runways along their route.

8.24.2. Aircraft typically taxi to and from the lakebed using the transitions at Twy D and Pad 18. Additional access located on NASA Ramp (Gated), North Base, and main base RUNWAY 05R extension.

8.24.3. Takeoffs. Aircraft may takeoff from dry lakebed runways only with 412 OG/CC approval. Exception: C-12, see [paragraph 8.24.7](#).

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

8.24.4. Landings. EAFB assigned aircraft are authorized Day VMC dry lakebed landings, other aircraft operators require OG/CC approval. Night lakebed operations require OG/CC approval.

8.24.5. Dry Lakebed Obstructions. Obstructions or hazardous surface features may exist anywhere on the dry lakebed beyond runway edge markings and on other than Green Runways.

8.24.6. All planned dry lakebed usage must be scheduled.

**Table 8.2. Dry 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 and low approaches	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.
<p>Note 1: Landing on a “Yellow” condition runway may cause a “Red” condition for an extended period of time due to lakebed damage attributed to the landing.</p> <p>Note 2: When landing on other than a “green” condition runway or dry lakebed runways that are not clearly visible from the Tower, pilots should expect “LANDING WILL BE AT YOUR OWN RISK.”</p>		

8.24.7. FOA can authorize the use of sectioned dry lakebed runways, when no “Green” condition runway is acceptable.

8.24.7.1. C-12s/C-172 Austere Operations. Locally assigned C-12/C-172 operations may deviate from standard dry lakebed operations as follows:

8.24.7.2. Stop-and-go takeoffs are authorized. On approach the PIC will determine the amount of back taxi (if any) that is required to ensure all obstacles are cleared and runway remaining exceeds the greater of 4,000' computed Accel After Liftoff to 50' (Accel Go), or Accel Stop computed without reverse plus 500'.

8.24.7.3. On dry lakebed operations oriented towards the main base, no takeoffs will be initiated past the intersection with Dry Lakebed Runway 15/33.

**8.25. Drop Zone (DZ) Procedures.** See **Fig 8.1**. When Housing, Rick, or Wings DZ is active, Tower Fly-by Line, North Re-Entry, and SFO patterns to the north are not authorized. The Tower may approve south turnouts for SFO and South Re-entry ground track for Tower Fly-by Line. When Runway 23 is in use, Tower will direct departures to fly runway heading and contact SPORT.

8.25.1. AFTC Housing DZ. The Housing DZ is located north of base housing approximately 3.5 miles south of Hwy 58. It includes an avoidance area radius of 1.5 miles, or 2.5 miles for High Altitude/High Opening, from the DZ center and 500' above the drop altitude when active. Housing Drop Zone aircraft will depart Class D climbing to jump altitude on SPORT/Mission frequency. SPORT will advise aircraft to report "inbound to Housing DZ" and advise aircraft to contact Tower when aircraft reports inbound to HDZ (no need for SPORT inbound notification to Tower). SPORT will treat HDZ avoidance area as exclusive use airspace upon frequency change to Tower and until all jumpers are on the ground. Upon contact with the aircraft inbound to HDZ, Tower will direct RUNWAY 23 departures to fly runway heading and contact SPORT. Tower will not authorize HDZ aircraft course reversal or climb out of previously vacated altitudes without coordination with SPORT. The jump aircraft will provide tower with "1 MINUTE TO DROP," "JUMPERS AWAY," AND "JUMPERS ON THE GROUND" calls. Tower will advise SPORT when all jumpers are on the ground. When the Housing DZ is active, Tower Fly-by Line, North Re-entry, and SFO patterns to the North are not authorized. The Tower may approve south turnouts for SFO and Tower Fly-by Line. Test Pilot School syllabus sorties have priority over jump operations at the Housing DZ. The West Spin Area and Housing DZ will not be active simultaneously.

8.25.2. School House DZ. The School House 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 Lakebed. **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 1-1.5-mile avoidance area is protected surface to 500' above the active altitude.

8.25.3. Rick/Wings DZ. The Rick DZ is located at the Fitness Center track. The Wings Field DZ is located at Wings Field. Both DZs have a radius of 1 mile from the DZ center. The jump aircraft will remain on tower frequency for the operation and provide tower with "1-MINUTE TO DROP", "JUMPERS AWAY", AND "JUMPERS ON THE GROUND" calls. Rick/Wings DZ does not preclude use of West/Dry Lakebed Spin. When Rick or Wings Field DZs are active: No north downwind or early turn outs Runway 23, no operations to Dry Lakebed Runway 6/24 or 5/23. Maximum altitudes for Rick and Wings DZs are 14,000 ft MSL.

**Figure 8.1. Edwards Drop-Zones (DZs).**

**8.26. SPIN Areas.** See **Fig 8.2**. North/South/East/West and Lakebed spin areas are 5 NMs in diameter, and normally extend from 11,000 - 45,000' MSL except for the lakebed spin area which extends from 6,000 - 45,000' MSL. All spin areas are exclusive use airspace.

8.26.1. The Mercury Spin Area is depicted in **Figure 8.2** and is defined as follows:

8.26.1.1. The northern boundary is a west-east line that is 5.8 miles south of Cords Road (35 0' 2.000" N 117 37' 0.000" W, 35 0' 0.00" N/117 32' 37.469" W).

8.26.1.2. 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).

8.26.1.3. 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.

## 8.26.2. Procedures:

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

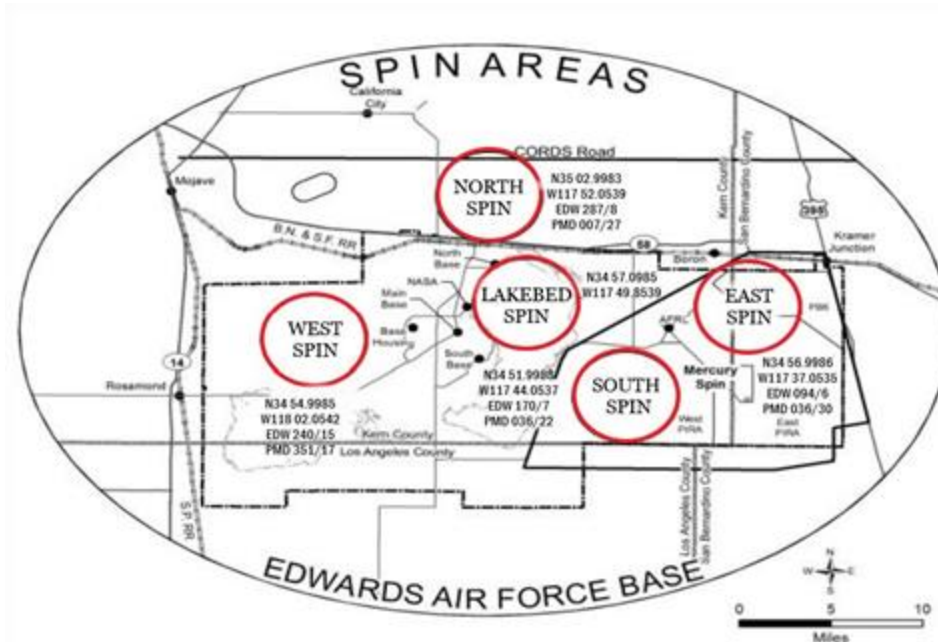
8.26.2.2. Aircraft will avoid active spin areas but may operate unrestricted below the lowest active altitude.

8.26.2.3. Tower and SPORT will announce the area “HOT” on common frequencies.

8.26.2.4. The Mercury Spin Area will not be used simultaneously with active East/South Spin areas.

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

**Figure 8.2. Spin Areas.**



**8.27. Engine Test Lab/Hush House.** See [Figure 8.3](#). The Engine Test Lab (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' AGL within a 500' radius.

**Figure 8.3. Engine Test Lab & Hush House Locations.**

**8.28. Uncontrolled Airfield Operations (UAO) refers to operations while the control tower and airfield are closed.** The following procedures are designed to allow aircraft to arrive and depart Edwards AFB when the airfield is closed. Requirements during UAO outside of normal airfield hours:

8.28.1. Uncontrolled Airfield Operations.

8.28.1.1. With 412 OG/CC approval in writing, UAO can be conducted by:

8.28.1.2. Edwards AFB assigned aircraft scheduled via CSE and/or a flight plan on file with Los Angeles Air Route Traffic Control Center or Flight Service Station.

8.28.1.3. Operators with a current Civil Aircraft Landing Permit (CALP) for Edwards and permanent Edwards Prior Permission Required (PPR).

8.28.1.4. Aircraft supporting 412 TW and its partner organizations, with a PPR.

8.28.1.5. Edwards Aero Club aircraft are approved for UAO. The Aero Club SOP will outline all procedures and any restrictions for Aero Club operators.

8.28.2. UAO will only take place if Edwards AFB weather is at or above VFR conditions.

8.28.3. UAO will only take place on Main Base Runways 05/23. Heavy aircraft should primarily use 05R/23L but can use 05L/23R if the outside runway is unavailable.

8.28.4. UAO are not authorized if work is taking place on the runway or within Controlled Movement Area (CMA), (e.g., barrier work, airfield lighting, aircraft tows, airfield construction projects).

- 8.28.5. UAO participants will taxi directly and only to assigned parking spot.
- 8.28.6. A maximum of two Edwards AFB assigned aircraft can be in the pattern or taxiing on the ground at one time.
- 8.28.7. No vehicles will be allowed in the CMA without VHF CTAF radio capabilities.
- 8.28.8. During an aircraft emergency, all UAO are suspended until after the emergency has been terminated.
- 8.28.9. APPROVAL: Users requesting UAO will contact Airfield Management (AM) at least 72 hours prior to each UAO operation. AMOPS will then coordinate:
- 8.28.9.1. With 412 OG/CC for approval in writing for each UAO.
  - 8.28.9.2. UAO will be conducted on common traffic advisory frequency (CTAF) VHF 120.7. There are no approved UHF CTAF frequencies for UAO.
  - 8.28.9.3. AMOPS will notify R-2515 Airspace Management Office via email (dates/times) ([412OSS.OSO.R-2515AirspaceMgr@us.af.mil](mailto:412OSS.OSO.R-2515AirspaceMgr@us.af.mil)).
  - 8.28.9.4. AMOPS will notify the Real-Time Scheduling Office via phone (dates/times) (COMM: 661-277-3940 / DSN 527-3940).
  - 8.28.9.5. Following coordination, AMOPS will then relay approved operating hours and parking assignments to the requesting user.
  - 8.28.9.6. AMOPS will publish a NOTAM and will relay the following to aircrew for completion prior to date of UAO:
    - 8.28.9.6.1. If transitioning R-2508, schedule and obtain required briefing (661-277-2508).
    - 8.28.9.6.2. Obtain the required R-2515 airspace briefing (<https://www.edwards.af.mil/About/R-2515-Airspace/>).
- 8.28.10. FLYING OPERATIONS: Landing aircraft have priority over departing aircraft. Pilots assumes all risks and will not land or depart until they have verified that the preceding aircraft have cleared the runway.
- 8.28.11. PATTERNS: Pilots will adhere to pattern procedures outlined in Table 4.1 of the EAFBI 13-204. Additionally, pilots will follow radio procedures for CTAF as described in the Aeronautical Information Manual (AIM) and other related Federal Aviation Administration (FAA) regulations. Military aircraft will make one landing to a full stop and are not authorized to conduct additional training or “touch-and-goes”.
- 8.28.12. UAO DEPARTURES PROCEDURES: Aircraft conducting UAO are responsible for separation between themselves and other aircraft, ground vehicles, facilities, and equipment. Aircraft can depart no earlier than one hour after official sunrise.
- 8.28.12.1. Prior to engine start, the pilot will call “engine start” on the CTAF VHF 120.7.
  - 8.28.12.2. Prior to taxi, the pilot will make a call to notify all of taxi intentions on the CTAF VHF 120.7. Pilots shall taxi in the most direct route to and from the runway consistent with safety and taxi restrictions.

8.28.12.3. Prior to taking the runway, the pilot will make a CTAF radio transmission to notify all personnel and other aircraft of their intentions, prior to taxiing onto the runway for departure.

8.28.12.4. Prior to take off roll, the pilot will make a call to notify all that the aircraft is departing and the aircraft's intended climb-out instructions.

8.28.12.5. Once airborne, the aircraft will immediately depart Edwards' patterns and exit R-2515 immediately unless there is an approved mission within R-2515.

8.28.13. UAO ARRIVAL PROCEDURES: Pilots conducting UAO assumes all risks and are responsible for verifying the runway is clear of obstructions prior to landing. Pilots will also ensure their aircraft has proper separation between themselves, other aircraft, ground vehicles, facilities, and equipment. Aircraft must arrive no later than one hour prior to official sunset.

8.28.13.1. The pilot will make positive radio contact with Joshua Approach for appropriate clearances and to provide prior notification of their arrival intentions.

8.28.13.2. Inbound traffic will transmit landing intentions on CTAF at least 10 miles out, five miles out, during the low approach, on short final, base turn and when departing the runway.

8.28.13.3. Prior to landing on any runway, the pilot will make a low approach at or above 500' AGL to that runway. This serves as an indicator for anyone on the runway to exit immediately and will allow the pilot to verify they are landing to a runway cleared of personnel, vehicles and obstructions.

8.28.13.4. After landing, the aircraft will immediately clear and call off the runway on CTAF.

8.28.13.5. Aircrews will make radio calls on CTAF to ensure all ground traffic are aware of the aircraft's movement intentions.

8.28.14. AIRCRAFT EMERGENCIES DURING UAO PROCEDURES:

8.28.14.1. Aircrew will declare Ground/Inflight Emergencies (GE/IFE) with Command Post (CONFORM) via CTAF VHF 120.7.

8.28.14.2. Command Post will activate the secondary crash net and make a broadcast over CTAF announcing the IFE/GE for overall situational awareness. **EXAMPLE:** *"ATTENTION ALL PERSONNEL, AIRCRAFT/EMERGENCY INBOUND. EXIT RUNWAY TWO THREE LEFT AND TWO THREE RIGHT IMMEDIATELY AND REMAIN OFF UNTIL FURTHER NOTICE."*

8.28.14.3. If able, pilot/operator will announce intentions and landing runway at 10 miles, five miles, turning base and on short final on CTAF.

8.28.14.4. Fire Chief/On-Scene Commander will monitor and communicate with inflight emergency (IFE) aircraft via the CTAF.

8.28.14.5. All vehicles responding to the emergency will not proceed on the runway until directed by the Fire Chief/On-Scene Commander.

8.28.14.6. On-Scene Commander will announce over the Land Mobile Radio (LMR) frequency and will notify 412 TW/CP when the emergency is terminated.

8.28.14.7. 412 TW/CP will activate secondary to terminate IFE.

8.28.14.8. All aircraft involved in reportable incidents, mishaps, or emergencies will notify their unit supervisor and the 412 TW Safety Office upon landing.

## Chapter 9

### UNMANNED AERIAL SYSTEM OPERATIONS PROCEDURES

**9.1. Overview.** This chapter establishes the additional instructional guidance for conducting Unmanned Aircraft System (UAS) operations for Edwards AFB. Instructions in this chapter augment instructions contained in other chapters of this instruction. UAS operators must abide by the overall guidance contained in this instruction – not solely this chapter. These procedures affect sUAS operating within the Edwards Class D.

9.1.1. Determining UAS maturity level is complex and unique to each UAV. The flexibility the 412 TW can provide a customer wanting to test/operate a UAS within R-2515 depends on many factors. The 412 TW Range Safety Office has created a survey that will be provided to the customer when first contact is made with the 412 TW for testing or operations. This will help safety personnel determine the potential range safety risk, containment requirements, or FTS requirements if containment can't be assured to avoid long delays to the customer's schedule. The system maturity definitions provided in section 14.3.1 are normally required only for large and immature UAVs. For smaller UAVs < 55 lbs. the most important mitigation is the ability to contain the UAV within the specified range safety boundary. The sooner the range safety survey can be provided will help in the development of appropriate range safety mitigations.

9.1.2. The procedures in this instruction apply to locally assigned UAS/UAS test programs, NASA/NASA sponsored UAS programs and UAS operations transiting R-2515.

### 9.2. Definitions.

9.2.1. 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.

9.2.2. 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.

9.2.3. 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.

9.2.4. UAS pilot: Individual directly responsible for the UAS's flight path.

9.2.5. 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.

9.2.6. Non-Cooperative traffic: Aircraft not in direct communication with ATC or MRU controllers and/or not squawking a Mode 3 beacon code.

### 9.3. Coordination and Relationship to Test Package.

9.3.1. 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 412 TW 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. The following are the maturity level definitions and typical exit criteria. These exit criteria may be modified by the 412 TW SRB based on any unique circumstances or limitations of the individual UAS system.

9.3.1.1. Unproven: The overall aircraft or any individual safety-of-flight related system is untested.

9.3.1.1.1. TYPICAL EXIT CRITERIA: Five consecutive takeoff approach and landing cycles over 5 separate test periods without a safety-of-flight critical failure or serious deviation from planned parameters. Aircraft has demonstrated it is controllable in the operating envelope for planned maneuvers with no hazardous characteristics.

9.3.1.2. Experimental: The aircraft is in active developmental flight test. Basic flight envelope and handling qualities testing is complete (note that experimental in this sense does not denote "X" aircraft such as the X-45).

9.3.1.2.1. TYPICAL EXIT CRITERIA: Baseline developmental test program is complete. In addition, the system will need to demonstrate a minimum of 30 consecutive successful takeoff approaches and landing cycles during a minimum of 15 separate test periods to show a reliability of 0.9 with a 0.95 confidence level. Aircraft failure modes are tested and well understood.

9.3.1.3. Provisional: The aircraft has completed baseline airframe developmental testing, though operational testing may be ongoing.

9.3.1.3.1. TYPICAL EXIT CRITERIA: Aircraft has reached Initial Operating Capability.

9.3.1.4. Mature: The aircraft has been declared operational. UAS programs will 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.

9.3.2. Requests for unpublished exclusive use airspace for UAS operations within R-2515 will be coordinated at least 14 days in advance through R-2515 Airspace Management.

9.3.3. UAS operations on Rosamond/Rogers lakebeds when tower and SPORT are closed require prior approval from 412 OG/CC.

9.3.4. Additional mitigation procedures will be communicated to ATC (JOSHUA), SPORT, Tower and other aircrews as required through FCIFs, NOTAMs or LOAs.

9.3.5. 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.

**9.4. Type Designation.** The 412 TW 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.

9.4.1. 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).

9.4.2. 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.

9.4.3. 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).

9.4.4. 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).

9.4.5. 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).

## **9.5. Airport Environment.**

9.5.1. 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.

9.5.2. Group 4 and 5 UAS operators will ensure ATC (Tower/SPORT/JOSHUA) has current procedures for all departures, arrivals, go-arounds, tower/radar patterns and contingency operations (lost link, engine failure, loss of radar altimeter, etc.). ATC determines what products are suitable to meet their needs. These standard procedures will be maintained on file by ATC. Deviation requests from these standard procedures must be coordinated with ATC and AMOPS 72-hours prior to requested mission. Group 1-3 UAS require segregated airspace for operation. Segregated airspace is scheduled through R-2515 Airspace Management office 661-277-2515 at least 72-hours in advance. Procedures must visually and/or textually provide route and altitude information. Special handling requests and or mission requirements that dictate a specific approach or departure will be coordinated directly with Tower NLT the day prior to the mission. Additionally, upon initial taxi request and departure clearance request, UAS operators will state their direction of turn on departure.

9.5.3. Tower will request release from SPORT on all UAS aircraft departures that have the potential to leave Class D airspace and state the direction of turn (e.g., REQUEST RELEASE (CALLSIGN), LEFT/RIGHT TURN ON DEPARTURE). Release request is not required for UAS aircraft that will remain in the North Base UAS Work Area, UAS Corridor or North Base UAS Extension Area if that airspace has already been coordinated as active. Release request is not required for UAS aircraft that will remain in the North Base UAS Work Area, UAS Work Corridor or North Base UAS Extension Area if that airspace has already been coordinated as active.

9.5.4. Tower will immediately notify SPORT/JOSHUA of go-around, lost link, or other contingency procedure that have the potential leave Class D airspace.

9.5.5. Bubble Airspace (BA) cannot be maintained within Class D airspace. Group 4 and 5 UAS may be sequenced with manned aircraft. Tower will sequence manned aircraft with unmanned aircraft based on known traffic and procedures. If exclusive-use airspace is needed, the Class D will be sanitized of other operations. Coordination to sanitize Class D operations will occur at least 72-hours in advance.

9.5.6. Tower will not instruct UAS pilots to visually follow another aircraft. Exception: a UAS flying with a chase aircraft providing see and avoid functions.

9.5.7. Use of visual separation between UAS aircraft and manned aircraft is not authorized (manned aircraft may be instructed to follow unmanned aircraft). Tower will provide positive control instructions to ensure appropriate landing sequence and Runway separation.

9.5.8. To the maximum extent possible, UAS pilots will work with scheduling to de-conflict tower pattern work with other aircraft operations. The tower watch supervisor is the final approval authority for UAS operations in the Class Delta. Approval will be based on current/projected flying operations. South Base traffic patterns are not authorized during main base UAS tower traffic patterns.

9.5.9. 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.

9.5.10. 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.

## **9.6. Ground Hazard Mitigation.**

9.6.1. Test programs will use the ground hazard mitigation procedures described below as necessary and as specified by the Safety Board.

9.6.2. Sanitized Ground Footprint (FTS): 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.

9.6.3. 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.

9.6.4. 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.

9.6.5. 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.

9.6.6. 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.

## **9.7. Airfield Conflict Avoidance.**

9.7.1. Test programs will use the airfield conflict avoidance procedures described below as necessary and as specified by the Safety Board.

9.7.2. Sanitized Taxi Route (ST): Taxi route from engine start location to runway is sanitized of all non-participant aircraft, ground vehicles and personnel.

9.7.3. Ground Chase Vehicle (GC): Primary purpose is to monitor UAS ground operations/taxi for conflicts with aircraft, personnel, and structures. The Safety Ground Chase vehicle (typically, callsign “Hawkeye” is used for RQ-4 ground chase) will advise the UAS pilot of all traffic conflicts and recommend or direct a course of action as appropriate.

9.7.4. Lakebed Takeoff (LBT): UAS takeoff restricted to approved/coordinated lakebed surfaces only. (Specify planned lakebed(s)).

9.7.5. Lakebed Landing (LBL): UAS landing restricted to approved/coordinated lakebed surfaces only (specify planned lakebed(s)).

**Table 9.1. UAS Mitigation Matrix.**

	Type 1	Type 2	Type 3	Type 4	Type 5
Mature		BA <sup>2</sup>	BA TA	BA TA	EUA or BA/CA TA
Provisional	BA	BA	BA TA	BA TA	EUA or BA/CA TA
Experimental	BA FLG FTS	BA FLG FTS	BA FLG FTS GC	BA/CA FLG FTS GC	EUA FLG FTS GC
Unproven	EUA or BA/CA <sup>3</sup> FS TE/LE/RC or LBT/LBL/ RC  FTSST	EUA or BA/CA <sup>3</sup> FS TE/LE/RC or LBT/LBL/RC  FTS ST	EUA or BA/CA <sup>3</sup> FS TE/LE/RC or LBT/LBL/R C  FTS	EUA FS TE/LE/RC or LBT/LBL/R C  FTS GC ST	EUA FS TE/LE/RC or LBT/LBL/ RC  FTS GC ST

**Note 1:** ‘/’ 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.

**Note 2:** A Chase aircraft can always be used in lieu of the BA requirement for see and avoid.

**Note 3:** In the unproven category the intent is to use the chase aircraft until an altitude where the chase aircraft is unable to perform the see and avoid function then the BA would be enforced.

Flight Termination System (FTS): ROAs with a hazard footprint that can always be contained within R-2515 airspace land boundaries without endangering range assets, populated areas, or sensitive areas may not require an FTS. This determination will be made as part of the 412 TW or Armstrong Flight Research Center (AFRC) safety review process. If so required, the ROA will be equipped with a 412 TW SETR or AFRC approved FTS. An FTS meeting the requirements of Range Commander's Council Standards 319 and 323 is desired, however deviations from these standards will be considered on a case-by-case basis. Detailed requirements for FTS certification, testing, and approval are contained within appropriate Range Safety documents.

**9.8. Lost Link Procedures.** UAS pilots will forward mission lost link profiles to the Tower no later than 72-hours prior to each flight if the tower will be open. Lost link profiles published in any official Air Force publications are exempt.

9.8.1. Tower will not activate the PCAS or request rescue service for lost link UAS aircraft unless the pilot/operator declares an emergency and requests immediate rescue service. An UAS pilot may declare an emergency via voice communication or by squawking “7400” and following pre-coordinated lost link procedures. A RQ-4 may declare an emergency by squawking “7600” and following pre-coordinated lost link procedures.

9.8.2. Notify ATC immediately of the following (if applicable): Time of lost link, last known position, altitude, direction of flight, confirmed execution of lost link, confirmed visual contact of UAS.

**9.9. Chase Vehicles.** 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.

9.9.1. Departures. Chase vehicles are automatically cleared onto the runway when their assigned aircraft is cleared onto the runway. Chase vehicles will exit the runway at the next available taxiway or as directed by Tower.

9.9.2. Arrivals. Chase vehicles will contact Tower while holding short of the runway at the approach end in a position to conduct a “run in” on the landing aircraft. Tower acknowledgement of the chase vehicle’s position constitutes automatic clearance onto the Runway to “join the formation” after landing clearance is given to the RQ-4 and the RQ-4 has passed the runway threshold.

9.9.3. 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.

**9.10. Operations to Unlighted Runways.** UAS with infrared (IR) cameras or autonomous takeoff and landing capabilities are authorized to depart and land at EAFB without the use of runway lighting aids. A UAS without IR cameras or 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. Note: Arrivals/departures from dry lakebed runways require prior approval from 412 OG/CC.

**9.11. Exclusive use North Base UAS Work Areas. (See Attachment 11)**

9.11.1. UAS Work Corridor. The UAS Work Corridor will 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.

9.11.2. North Base UAS Work Area. This area extends from the surface to 10,000 feet MSL. Tower will coordinate transfer control of the North Base UAS Work Area to SPORT as required.

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

9.11.2.2. The UAS mission will maintain 2-way radio communications with Tower/SPORT.

9.11.2.3. When active, Dry Lakebed SPIN Area along with IFR instrument approaches to EDW main base are not authorized.

9.11.2.4. The UAS Project Manager w coordinate with North Base, EWG (DSN: 527-7610) to de-conflict operations.

9.11.2.5. When active, Tower will not approve dry lakebed operations on Runways 5/23, 12L/30R, 12R/30L, 15/33, 18/36, 06/24, Tower Fly-By Line pattern (straight-in or left base Tower Fly-By Line pattern may be flown), North re-entries, and Hwy 58 arrival/departures until UAS aircraft are above 4,800 MSL.

9.11.2.6. When active below 4,800 MSL, all aircraft in the tower pattern will remain on or south of the Tower Fly-By Line.

9.11.3. North Base UAS Extension Area. See [Attachment 11](#).

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

9.11.3.2. When active, Tower will not approve Dry Lakebed Operations on Dry Lakebed Runways 5/23, 12L/30R, 12R/30L, 15/33, 18/36 and 06/24; Tower Fly-By Line pattern (straight-in or left base Tower Fly-By Line pattern may be flown); North Re-entries; or HWY 58 arrival/departures. Tower may allow these operations to continue once UAS aircraft are above 4,800' MSL in the North Base UAS Work Area.

9.11.3.3. When active, all arriving aircraft in Class D airspace will remain on or south of the Tower Fly-By Line.

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

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

9.11.3.6. The UAS mission will maintain 2-way radio communications with Tower.

9.11.3.7. If departing Runway 05L/R and the North Base UAS Work Area is active, avoid this airspace by not turning North until East Lake Shore.

9.11.4. Rosamond North UAS Area. UAS flight is restricted to 500' AGL. Crews will avoid the area when active.

9.11.5. Rosamond South UAS Area. Located on Rosamond Dry Lakebed with flight operations approved to 3,000' AGL under the following conditions:

9.11.5.1. Contact tower prior to commencing operations and when operations have been terminated. Use of a Land Mobile Radio is required for communications with the Tower.

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

9.11.5.3. When Runway 05 or the Alpha Corridor is active, no flight activity is allowed. The Buckhorn and the modified Rosamond departure/arrival procedures are closed.

9.11.6. Forbes UAS Work Area. This area encompasses 34-59-0.62N/117-52-50.76W, 34-57-36.512N/117-52-50.768W, 34-57-5.365N/117-52-55.619W, 34-56-48.063N/117-53-9.674W, 34-56-48.10N/117-53-51.70W, 34-57-15.60N/117-53-45.30W, 34-57-8.70N/117-54-53W, 34-57-40.842N/117-54-52.715W, 34-59-0.62N/117-53-19.34W. Extends from the surface to 500' AGL/3,100' MSL. See [Attachment 13](#) for a depiction.

9.11.7. Sopp Road UAS work area. This area encompasses 34-53-36.98N/118-0-40.68W, 34-53-58.44N/118-5-40.00W, 34-58-5.00N/118-5-40.00W, 34-58-26N/118-00-36W, 34-58-4.49N/117-59-3.85W. Extends from the surface to 500' AGL/3,800' MSL. See [Attachment 13](#) for a depiction.

## 9.12. Small Unmanned Aerial System (sUAS) Operations (Military).

9.12.1. Military sUAS operating locations are defined by the sUAS Class D Grid Map and sUAS Airfield Complex Maps at [Attachment 11](#). Edwards Class D airspace is divided into a lat/long based grid map creating rectangular divisions, referred to as segments. The Airfield Complex is divided into smaller segments based off ramps, taxiways and runways. These segments exclude the already established exclusive use UAS work areas in [Chapter 9](#). sUAS operators within EDW Class D will maintain 2-way radio communication with Tower.

9.12.2. Plans for sUAS to operate within the Airfield Complex maps or between Dry Lakebed Runway 5/23 and the extended centerline of Main Base Runway 23L will coordinate with AMOPS at least 24-hours prior to planned operations.

9.12.3. Ground Operator will coordinate all sUAS operations with Tower. Tower will approve operations based on pending and existing traffic and has the authority to instruct the sUAS operation to “knock it off” or land if at any time safety to manned aircraft operations may be compromised. Tower may choose to have the sUAS on Tower VHF/UHF frequency for real-time de-confliction.

9.12.4. Requirements for Operations within Class D:

9.12.4.1. Inside airfield complex.

9.12.4.1.1. sUAS operations within the Airfield Complex must be approved by the OG. Coordinate requests through AMOPS no later than 72-hours prior to beginning operations.

9.12.4.1.2. sUAS operators are required to coordinate real-time Tower approval before operations begin. sUAS operators will provide callsign, location, and state their request. Example “EDWARDS GROUND, HELLCAT1, AIRFIELD SEGMENT Y3, REQUESTING 100' FOR APPROXIMATELY 1 HOUR”.

9.12.4.2. Outside airfield complex.

9.12.4.2.1. sUAS operations outside the Airfield Complex, at 100' AGL and below, or 50' above a structure (whichever is higher), are required to notify Tower when operations begin and end. sUAS operators will provide callsign, location, altitude and expected duration of flight. Example “EDWARDS GROUND, HELLCAT1, SEGMENT 5D, BELOW 100', FOR APPROXIMATELY 1-HOUR”

9.12.4.2.2. sUAS operations outside the Airfield Complex, above 100' AGL are required to coordinate real-time Tower approval before operations begin. sUAS operators will provide callsign, location, and state their request. Example "EDWARDS GROUND, HELLCAT1, RAMP 11, REQUESTING UP TO 300' FOR APPROXIMATELY 1-HOUR" *Note: Emerging Technologies (ET) ITF will provide 412 OSS/OSA with a CONOP prior to commencing sUAS operations which satisfies the requirement for OG/CC approval. Deviations from the CONOP will be coordinated through the SOF for OG/CC approval.*

#### 9.12.5. sUAS Operator Responsibilities.

9.12.5.1. Coordinate, obtain approval (if required), and notify Tower of operations in accordance with [paragraph 9.11.5.1](#).

9.12.5.2. Maintain separation from non-participating aircraft, personnel and vehicles. sUAS operators will operate under the presumption that all other aircraft have the right-of-way over sUAS, unless specifically coordinated otherwise real-time with ATC.

#### 9.12.6. Tower Responsibilities.

9.12.6.1. Provide manned aircraft with an advisory notification of sUAS operations in progress when in the controller's judgement the proximity warrants it.

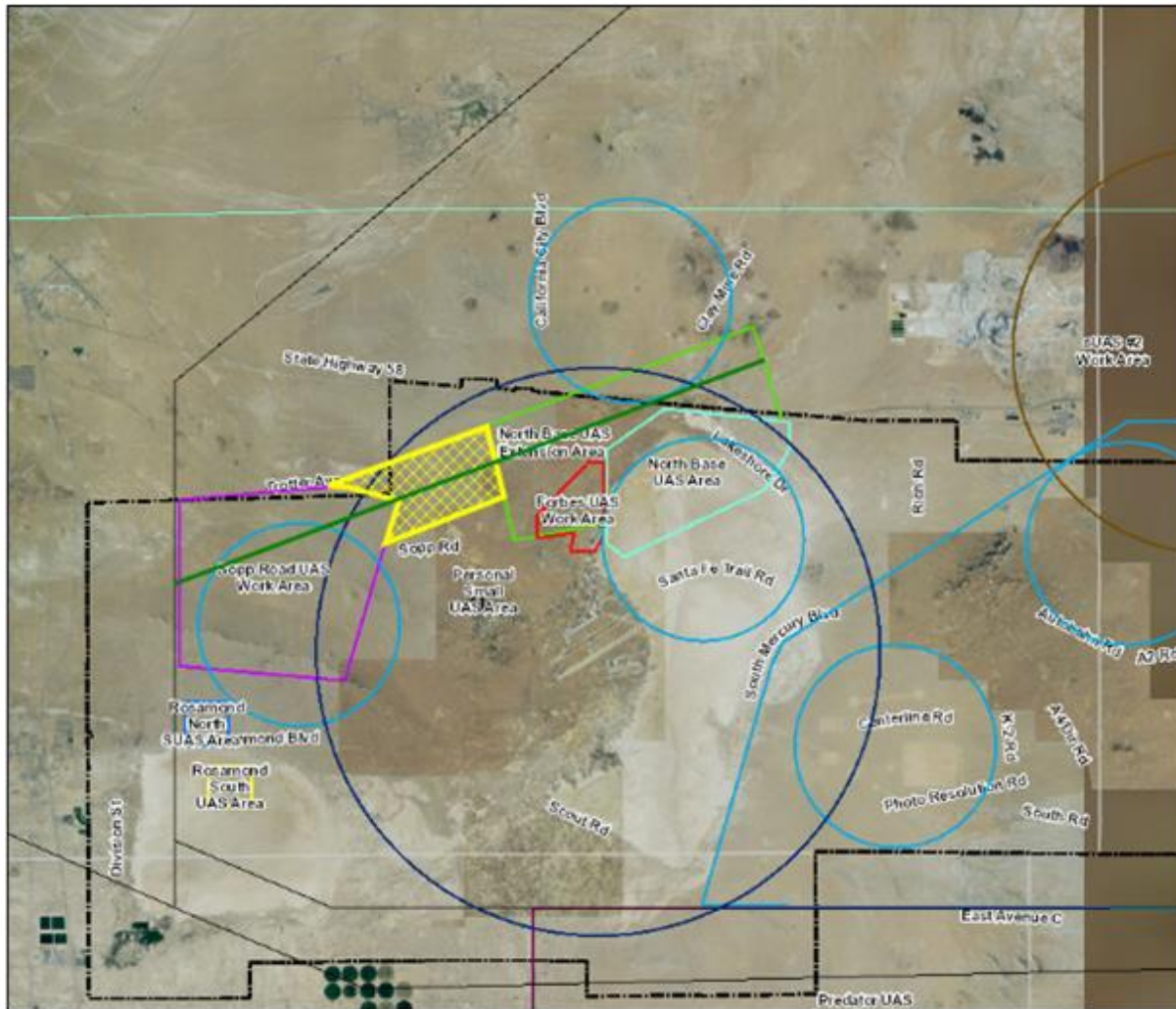
9.12.6.2. Provide sUAS operators advisory notifications, traffic permitting.

9.12.6.3. Emergency Recall of Airspace: Tower will have the ability to call "knock-it-off" at any time during sUAS operations. sUAS operators will safely land aircraft and standby for further ATC instruction.

**9.13. ET CTF sUAS Exclusive Use Operations Area. Figure 9.1.** depicts the ET-CTF sUAS Operations Area. When the Class D is active, the ET-ITF sUAS area is considered active from surface to 200' AGL. sUAS operators are required to notify Tower when operations begin and end. Tower has the authority to instruct the sUAS to land if at any time safety to manned aircraft operations may be compromised. When the Class D is not active, the ET-ITF sUAS Operations Area must be scheduled IAW EAFBI 11-115. Additionally, when the Class D is not active, sUAS operators must ensure a NOTAM is published. No later than 1 Sep, ET-ITF will forward annual utilization data to the R-2515 Airspace Management Office.

**9.14. Maia Bridge.** ET-CTF is the only authorized user. Authorized during daytime VFR conditions only. Must be scheduled IAW EAFBI 11-115 and during non-peak 412 TW flying, e.g., early mornings, evenings, holidays, down days, or weekends. Not authorized for simultaneously use with the Warney Corridor. The airspace combines with other UAS areas to create an 18-mile corridor, 2 miles wide. This area encompasses 34°58'21.72"N, 118°1'38.81"W; to 34°59'54.31"N, 117°56'23.84"W; to 34°58'11"N, 117°55'52.79"W; to 34°57'4.87"N, 117°59'25.43"W; to 34°58'4.49"N, 117°59'3.85"W; to 34°58'26"N, 118°0'36"W to the point of beginning. Can be activated from 500' - 18,000' AGL. When used, SOPP Road, NB UAS Area, and NB UAS Extension must also be scheduled. ET-ITF must notify the R-2515 Airspace Office so a DROTAM can be issued for SOPP Road, NB WAS Area, and NB UAS Extension. Prior to use, review the R-2515 Airspace Handbook, it discusses all requirements that must be met because of the Maia Bridge close proximity to adjacent airspaces.

Figure 9.1. ET-CTF sUAS Operations Areas.



**Figure 9.2. ET CTF Exclusive use Operations Area.**



**9.14.1. Coordinates:**

9.14.1.1. North: W117° 51' 41" / N 34° 59' 17"

9.14.1.2. East: W117° 51' 24" / N34° 59' 04"

9.14.1.3. South: W117° 51' 52" / N34° 58' 40"

9.14.1.4. West: W117° 52' 09" / N34° 58' 54"

**9.15. Small Unmanned Aerial System (sUAS) Operations (Civilian).** Commercial sUAS activity is not authorized on DoD installations. Civilian requests will coordinate with R-2515 to establish a Letter of Agreement and Hold Harmless Agreement prior to operations being permitted.

**9.16. Additional Requirements.** Individual flying units will pre-coordinate any additional operational requirements with AMOPS at least 14-days prior to the planned operation to ensure proper training and coordination.

## Chapter 10

### MUNITIONS PROCEDURES

#### 10.1. General Definitions.

10.1.1. Arm/De-arm. The areas at the approach and departure end of each runway for the purpose of end of runway (EOR) and pre-flight checks. May also be referred to as "Hammerhead."

10.1.2. Forward Firing Munitions. A munitions item propelled forward from an aircraft or propelled from the aircraft after separation (e.g., guns, rockets, missiles, etc.).

10.1.3. Hot Guns. An aircraft gun system not mechanically made safe.

10.1.4. Hot Gun and Forward Firing Munitions Line. The directional aircraft parking location in which an aircraft loaded with gun ammunition and/or forward firing munitions must be positioned during arming and de-arming in the hammerheads. The Hot Gun/Forward Firing Munitions Line for EAFB is 050° magnetic heading at the 23 Hammerhead and 230° magnetic heading at the 05 Hammerhead. Additional forward firing locations are located at Pads 14 and 15 and Ramps 7 and 8.

10.1.5. Gun Jam. An aircraft gun system that malfunctioned during firing.

10.1.6. Hung Munitions. Any item attached to the aircraft for the purpose of dropping or firing which has malfunctioned or failed to release.

10.1.7. Inert Munitions. Munitions with inert filler and no live explosives, spotting charges or motors (e.g., cement filled bombs, dummy missiles, etc.).

10.1.8. Live Munitions. Munitions with explosive fillers capable of producing a high-order detonation.

10.1.9. 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.).

10.1.10. Unexpended Munitions. Remaining munitions where no platform release was attempted.

10.1.11. Combat Aircraft Parking Area (CAPA). Areas for loading of live munitions HD 1.1 – 1.4.

10.1.12. Aircraft Explosives Cargo Parking Area (AECPA). Areas sited for loading of munitions in shipping configuration.

#### 10.2. Munitions Loaded Aircraft.

10.2.1. Deviations from these procedures are 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.

10.2.2. Aircraft loaded or being loaded and/or 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:

10.2.2.1. Aircraft to be loaded and/or downloaded with gun ordnance (to include 30MM or less) will be positioned in the parking locations as shown in [Figure 10.1](#) thru 10.3.

**Figure 10.1. Ramp 8 Compound (Bldg. 1820) spots 8-5 and 8-6 ONLY.**



Figure 10.2. Ramp 7 Compound (Bldg 1635) Spots 7-1 and 7-2 ONLY.



**Figure 10.3. Ramp 1 Shadow spots O-5 and O-6 20° off center line ONLY.**



10.2.2.2. All other hazard division munitions not previously discussed (HD 1.1 – 1.3) will be loaded and/or downloaded at the respective CAPA areas.

10.2.2.3. All munitions safety pins will remain installed until aircraft goes through an EOR inspection at the approved arm/de-arm areas.

### **10.3. Ground Operations Involving Munitions.**

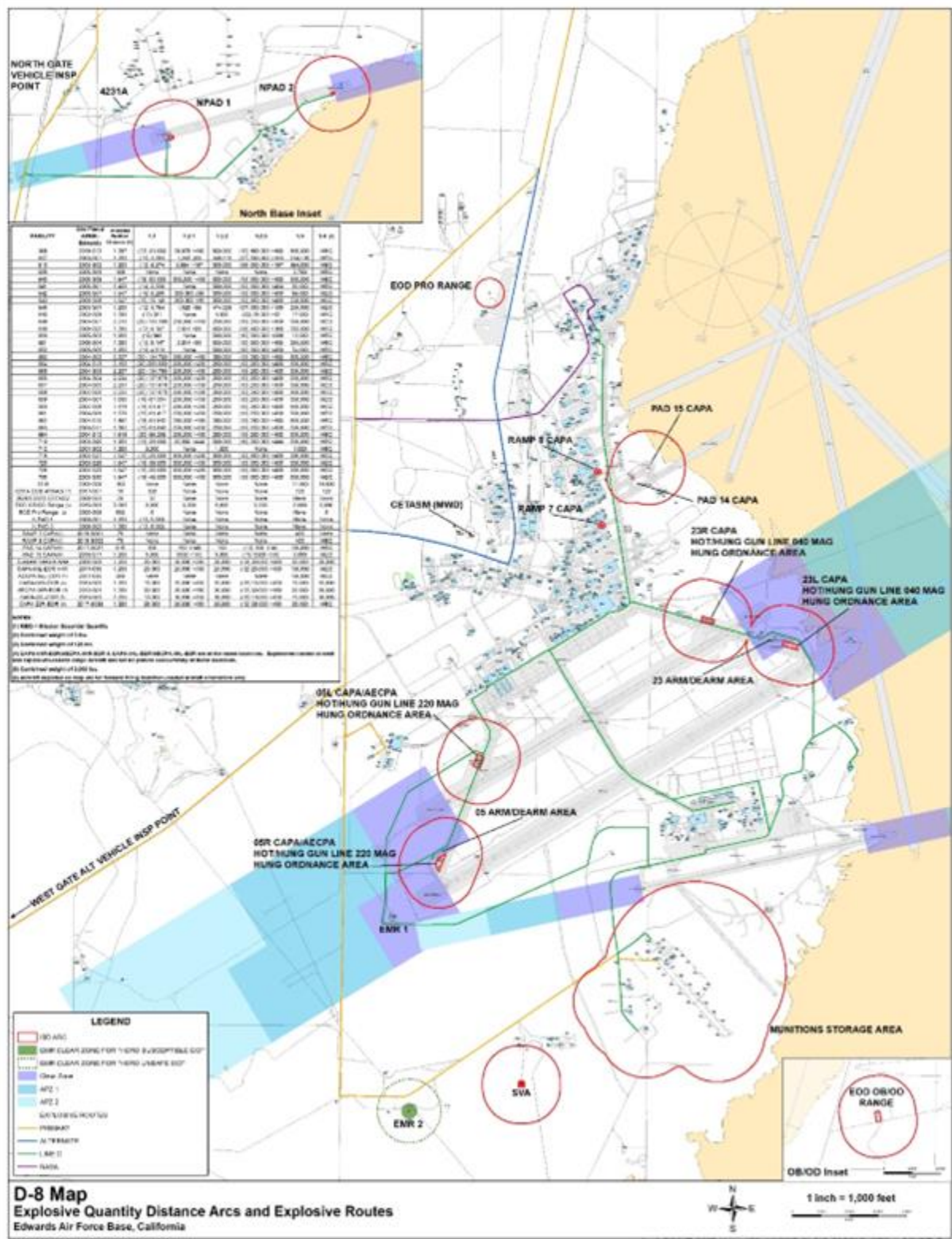
10.3.1. The arming/de-arming of aircraft with live munitions will be accomplished at the 23 or 05 Hammerhead arm/de-arm locations unless approved alternate locations have been granted by 412 TW/SEW and the WWM. (**Figure 10.4.**). Collectively, these areas will be referred to as Arm/De-arm Areas. Aircraft with forward firing munitions or hot guns must park heading 050° on 23 Hammerhead and 230° when using 05 Hammerhead. Fifth generation aircraft in which the weapons systems may be electrically made safe, either by ground switch or aircrew SMS inputs, and weapons bay doors are closed, the aircraft is not required to arm/de-arm in the runway arm/de-arm areas. These aircraft may be armed/de-armed in the designated aircraft parking location.

10.3.2. The arm/de-arm area are not authorized for concurrent operations of AECPA and CAPA operations. In the event of aircraft being actively loaded on either arm/de-arm location/CAPA, the opposite arm/de-arm will be used. Arm/De-arm can be accomplished if explosive loaded aircraft are present and active operations have ceased.

10.3.3. For legacy fighter aircraft loaded with inert and training munitions in which ejector impulse cartridges are installed (including chaff/flares) or have gravity drop weapons loaded arm/de-arm the aircraft in the runway arm/de-arm areas.

10.3.4. If an aircraft has been armed with forward firing ordnance (rockets, missiles, gun, etc.) and then must taxi an extensive distance for take-off the crew will taxi as far as practical 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 practical from personnel and equipment. For example, if armed in 23 Hammerhead and a Runway 05R takeoff is required, advise ground control and request back-taxi down Runway 23R to enter Runway 05R at Twy A.

Figure 10.4. Arm De Arm Load Unload Areas.



#### **10.4. In-Flight Operations Involving Munitions.**

10.4.1. 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 dry lakebed runways when carrying munitions or returning from missions expending munitions.

10.4.2. Make a straight-in approach to landing when carrying external expendable ordnance.

10.4.3. 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:

10.4.3.1. External fuel and tanks.

10.4.3.2. 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).

10.4.3.3. Forward firing missiles if no attempt has been made to fire.

10.4.3.4. Unexpended BDU-33s.

10.4.3.5. Captive Carry Munitions.

10.4.4. If hung flares are suspected, return using hung munitions procedures and shut down the aircraft in the respective arm/de-arm area.

**10.5. After Landing Procedures.** All aircraft that required munitions arming prior to flight will go through de-arm after landing.

**10.6. Diverted Munitions Loaded Aircraft.** Tower will notify AMOPS of any known, non-emergency aircraft diversions into EAFB, which are carrying munitions. AMOPS will notify agencies as required. Forward type, quantity of munitions and stations loaded when provided by the pilot.

#### **10.7. Unexpended Munitions Landing Procedures.**

10.7.1. Land from a straight-in approach except when pre-coordinated with MOC.

10.7.2. All aircraft with forward firing ordnance will go through arm/de-arm and park nose heading 230° when parked on 05 Hammerhead and 050° when parked on 23 Hammerhead, see [Figure 10.4](#).

10.7.3. Unless weapons load crews are pre-briefed the time and location (de-arm area or alternate de-arm area) of recovery de-arming, inform CONFORM (UHF 304.0) of arrival time.

10.7.4. 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 safe process is completed.

10.7.5. Aircraft with live munitions loaded internally will taxi to an approved de-arm area for the munition type loaded. Ensure switches are “Off/Safe/Normal” and weapon bay doors are closed until the weapons load crew arrives and safe process is completed.

10.7.6. For transient aircraft with unknown live munitions, park the aircraft in the 23 or 05 Hammerhead Hot Gun/Forward Firing Munitions Line until the type of munitions can be determined.

10.7.7. If munitions safety pin/devices cannot be installed, the munitions are hung. Stop safe process and call weapons/EOD immediately. Follow hung munitions procedures ([Chapter 6](#)).

10.7.8. After safe process, taxi to the appropriate parking/downloading area.

**10.8. 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. Aircraft operating under an approved test and safety plan (which outline use of control rooms, TM, etc.) that determine through TM, the munition is not hung will not be required to declare an IFE. However, the pilot will inform maintenance on RTB and declare a Ground Emergency upon landing, return to the de-arm area, and follow hung munitions procedures.

10.8.1. If batteries were squibbed, notification will be made to identify possible thermal hazards to ground crew.

**10.9. Hung Munitions Ground Procedures.** Includes flares and jammed guns.

10.9.1. MOC notifies applicable weapons loading personnel to respond to the designated end of the runway. No personnel will approach aircraft until approved by Fire Chief.

10.9.2. Once on the Hot Gun/Forward Firing Munitions 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.

10.9.3. Aircraft with jammed guns will use either the 23 or 05 Hammerheads Hot Gun/Forward Firing Munitions Line. Weapons loading crew chief will ensure all armament switches are OFF/Safe/Normal and have the aircraft shut down.

10.9.4. 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 direct with the Command Post. The weapons/EOD team chief evacuates all nonessential personnel. EOD safes the hung munitions. When safe, weapons/EOD informs the aircrew and releases the aircraft to the weapons load crew or contractor loading personnel.

10.9.5. When safe, 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.

10.9.6. Weapons loading personnel or EOD personnel will remove hung flares at either 23 or 05 Arm/De-arm Area. The weapons loading crew chief will ensure all armament switches are Off, Safe or Normal and have aircraft shut down.

**10.10. Hung Munitions Landing Procedures.** Includes flares and jammed guns.

10.10.1. Aircraft will land using a straight-in approach. The primary recovery runway (winds permitting) for hung free-fall ordnance is Runway 23L/R. The primary recovery runway (winds permitting) for forward-firing ordnance is Runway 05R/L. Declare an emergency for all hung munitions.

10.10.1.1. If landing on Runway 23 with forward firing ordnance, aircraft 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 de-arm area (heading 050°) 23 Hammerhead. Alternatively, aircraft with forward firing ordnance may proceed to the 05 Hammerhead.

10.10.2. Notify Tower of the type of hung munitions. CONFORM notifies EOD when an emergency is declared. MOC notifies weapons loading personnel to respond to the designated de-arm area.

10.10.3. Aircraft with hung munitions or flares will taxi to the safest de-arm on either the 23 or 05 Hammerheads. Ensure switches are "Off/Safe/Normal" and shut down the aircraft. Aircraft with internal hung munitions will keep weapons bay doors closed through taxi and during shut down. Aircraft with jammed guns and forward firing munitions will use the Hot Gun/forward Firing Munitions Line heading 050 for 23 hammerhead or heading 230 for 05 Hammerhead.

10.10.4. Once on the Hot Gun/Forward Firing Munitions Line or applicable arm/de-arm area, ensure all switches are "Off/Safe/Normal" and raise both hands in full view of weapons loading personnel.

10.10.5. 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 through CONFORM (Command Post). During safe process, weapons/ EOD will inform the aircrew and releases the aircraft to the weapons load crew or contractor loading personnel. If weapons personnel cannot safe the munitions, the aircraft will shut down for EOD response.

## **10.11. Towing Aerial Targets.**

10.11.1. General. Air-to-air operations may be conducted at Point Mugu, Mojave B2 North Range or Nellis AFB. When scheduled to use Point 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.

10.11.2. Responsibilities. The tow aircraft commander is responsible for the safe conduct of the mission, and will:

10.11.2.1. 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.

10.11.2.2. Ensure target reel-out or deployment is done over the gunnery range or over the PIRA.

10.11.2.3. Avoid populated areas when carrying or towing targets to or from the range. Cross all major highways as nearly perpendicular as practical. Flights to Point Mugu may be made VFR for this purpose.

10.11.2.4. 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.

### 10.11.3. Aerial Gunnery Tow System (AGTS-36) Targets:

10.11.3.1. Make a straight-in, normal landing configuration approach/landing if the target fails to deploy.

10.11.3.2. Return deployed AGTS targets to EAFB if they are stable and structurally sound enough for the return trip.

10.11.3.3. 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.

## 10.12. Target Drag Off and Landing.

10.12.1. Primary tow target drag-off area is to any lakebed runway as cleared by Tower. Coordinate with Tower prior to beginning the approach.

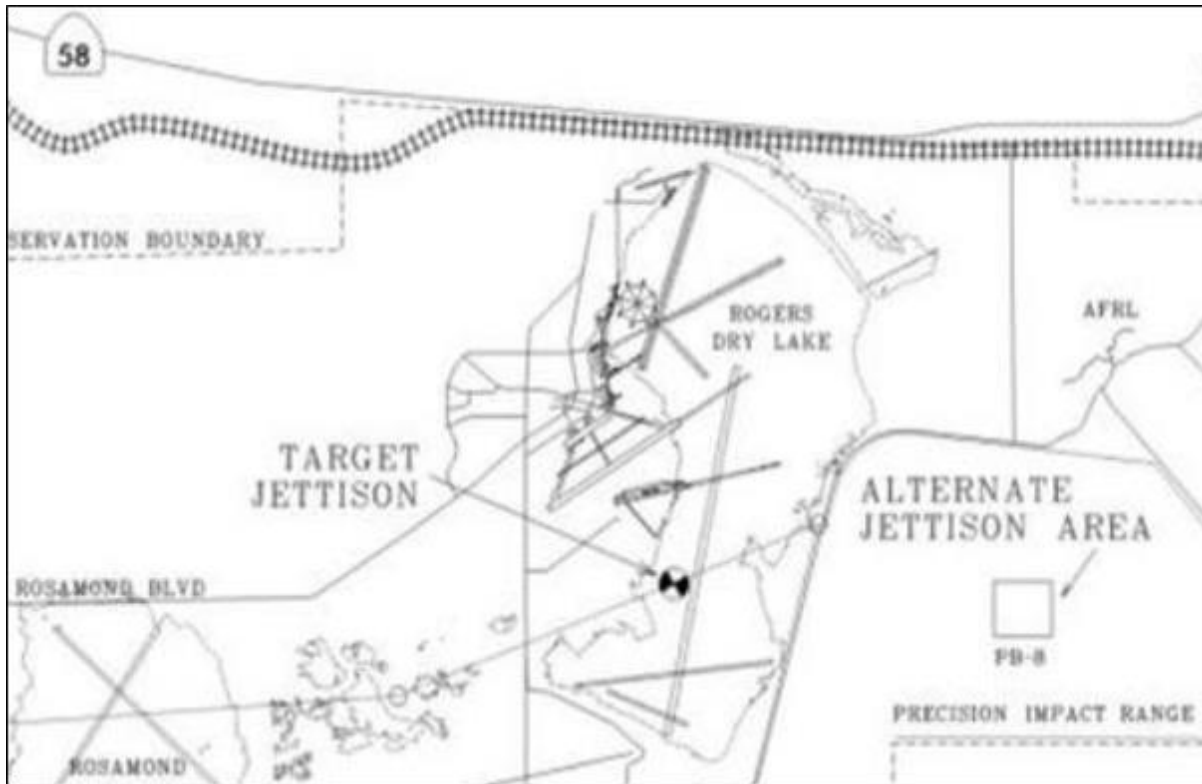
10.12.2. A recommended technique for target drag-off is to approach the drag-off point at 250 KIAS in a 5° to 10° dive. Level-off by 200' AGL. The target will usually impact within 1,000' of the level-off point. Be aware several hundred feet of cable may remain attached to the tow aircraft after drag-off.

10.12.3. If landing with a deployed target or with trailing cable, the tow pilot will inform CONFORM. The following procedures will apply:

10.12.3.1. Make a straight-in approach and land on a suitable dry lakebed runway. After landing, hold position until maintenance removes remaining cable.

10.12.3.2. If dry lakebed runways are unusable, make a straight-in landing on Runway 23L. 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 Dry Lakebed.

Figure 10.5. Target Drag-Off.



RYAN A. SANFORD, Colonel, USAF  
Commander, 412th Operations Group

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

- AFPD 11-2, *Aircrew Operations*, 31 January 2019.
- AFI 10-1001, *Civil Landing Permits*, 23 August 2018.
- AFI 11-2FT V3, *Flight Test Operations Procedures*, 1 March 2017.
- AFI 11-202 V3, *General Flight Rules*, 10 January 2022.
- AFI 11-208, *Department of Defense Notice to Airman (NOTAM) System*, 03 February 2018.
- AFMAN 11-214, *Air Operations Rules and Procedures*, 29 November 2022.
- DAFMAN 11-401, *Aviation Management*, 13 June 2023.
- DAFMAN 13-201, *Airspace Management*, 10 December 2020.
- AFMAN 13-204V3, *Air Traffic Control*, 26 June 2023.
- AFMAN 13-212V1, *Range Planning and Operations*, 14 March 2023.
- DAFMAN 13-217, *Drop Zone, Landing Zone, and Helicopter Landing Zone Operations*, 22 April 2021.
- DAFI 21-101, *Aircraft and Equipment Maintenance Management*, 20 December 2023.
- AFMAN 32-1040, *Civil Engineer Airfield Infrastructure Systems*, 23 August 2019.
- Appendix 19 to EAFB PLAN 31, *Anti-Hijacking and Unauthorized Movement of Aircraft*, 11 January 2012.
- 412 TW 91-212V1, *Bird/Wildlife Aircraft Strike Hazard Plan*, 1 June 2022.
- Edwards AFB *Integrated Defense Plan 31-1*, 16 November 2018.
- Appendix 16 to Annex C to EAFB PLAN 31, *Flight Line Photography*, 11 January 2012.
- AM Operating Instruction (OI) 13-01, *Airfield Management Operations Instruction*, 29 September 2014.
- Tower OI 13-2, *Control Tower Management*, 18 August 2016.
- AFI 21-101\_AFMC\_EAFBSUP, *Aircraft/Equipment Maintenance Management*, 5 January 2022.
- FAA Order JO 7110.65, *Air Traffic Control*, 12 October 2017.
- FAA Order JO 7610.4, *Special Operations*, IC 2, 01 September 2017.
- (UFC) 3-260-01, *Airfield and Heliport Planning and Design*, Feb 2019.

***Adopted Forms***

- DD Form 175, *Military Flight Plan*
- DD Form 1801, *International Flight Plan*, DoD
- FAA Form 7233-1, *Flight Plan*

AF Form 3616, *Daily Record of Facility Operations*

AFTO Form 781, *Arms Aircrew/Mission Flight Data Plan Document*

DD Form 1748-1, *Joint Airdrop Inspection Record (CDS/CEP/LCLA)*

DD Form 1748-2, *Airdrop Malfunction Report (Personnel-Cargo)*

### ***Abbreviations and Acronyms***

**AC**—Aircraft Commander

**AF**—Air Force

**AFB**—Air Force Base

**AFI**—Air Force Instruction

**AFMC**—Air Force Material Command

**AFRC**—Armstrong Flight Research Center

**AFRL**—Air Force Research Laboratory

**AFTC**—Air Force Test Center

**AGTS**—Aerial Gunnery Tow System

**AGL**—Above Ground Level

**AMOPS**—Airfield Management Operations

**AOB**—Airfield Operations Board

**ATCAA**—Air Traffic Control Assigned Airspace

**ATIS**—Automatic Terminal Information Service

**BA**—Airspace Bubble

**BAK**—Barrier Arresting Kit

**BASH**—Bird/Wildlife Aircraft Strike Hazard

**CA**—Chase Aircraft

**CALP**—Civil Aircraft Landing Permit

**C2**—Command and Control

**CC**—Commander

**CCB**—Complex Control Board

**CMA**—Controlled Movement Area

**CONFORM**—Callsign Command Post/MOC

**CP**—Command Post

**CSE**—Center Scheduling Enterprise

**CTF**—Combined Test Force

**DAGRAG**—Dual air-to-ground Range  
**DME**—Distance Measuring Equipment  
**DO**—Operations Officer  
**DoD**—Department of Defense  
**DSN**—Defense Switching Network  
**DZ**—Drop Zone  
**E**—**East**—EAFB—Edwards Air Force Base  
**EDW**—Edwards Air Force Base (VORTAC)  
**ELT**—Emergency Locator Transmitter  
**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  
**FAA**—Federal Aviation Administration  
**FCIF**—Flight Crew Information File  
**Figure**—Figure  
**FLG**—Limited Ground Footprint  
**FLIP**—Flight Information Publication  
**FLTS**—Flight Test Squadron  
**Fm**—Form  
**FOA**—Flight Operations Authority (412 OG/CC or as delegated)  
**FS**—Sanitized Ground Footprint  
**FTS**—Flight Termination System  
**GC**—Ground Chase Vehicle  
**Hwy**—Highway  
**I**—**Instruction**—IAW—In Accordance With  
**IFE**—In-flight Emergency  
**IFR**—Instrument Flight Rules  
**ILS**—Instrument Landing System  
**IMC**—Instrument Meteorological Conditions

**JPPB**—Joint Policy and Planning Board  
**JOSHUA**—Callsign FAA TRACON  
**KIAS**—Knots Indicated Airspeed  
**L**—**Local**—**LBL**—Lakebed Landing  
**LBT**—Lakebed Takeoff  
**LE**—Landing Exclusion Zone  
**LOA**—Letter of Agreement  
**LOC**—Localizer  
**MOA**—Military Operations Area  
**MOC**—Maintenance Operations Center  
**MOU**—Memoranda of Understanding  
**mph**—Miles per hour  
**MRU**—Military Radar Unit  
**MSL**—Mean Sea Level  
**NASA**—National Aeronautics & Space Administration  
**NE**—Northeast  
**NGA**—National Geospatial-Intelligence Agency  
**NM**—Nautical Mile  
**NORDO**—No Radio  
**NOTAM**—Notice to Airmen  
**NVD**—Night Vision Device  
**NW**—Northwest  
**OPR**—Office of Primary Responsibility  
**PB**—Precision Bomb Target  
**PCAS**—Primary Crash Alarm System  
**PIC**—Pilot in Command  
**PIRA**—Precision Impact Range Area  
**PMD**—Palmdale VORTAC  
**PPR**—Prior Permission Required  
**RC**—Road Closure  
**RSC**—Runway Surface Condition  
**RTB**—Return to Base

**S—South—SB—South Base**

**SCN—Secondary Crash Net**

**SE—Southeast**

**SFC—Surface**

**SFO—Simulated Flameout**

**SOF—Supervisor of Flying**

**SPORT—Callsign AFTC Military Radar Unit**

**SRB—Safety Review Board**

**ST—Sanitized Taxi Route**

**SW—Southwest**

**SUP—Supplement**

**TA—Traffic Avoidance**

**TAF—Technical Assistance Frequency**

**TACAN—Tactical Air Navigation**

**TE—Takeoff Exclusion Zone**

**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**

**VFR—Visual Flight Rules**

**VHF—Very High Frequency**

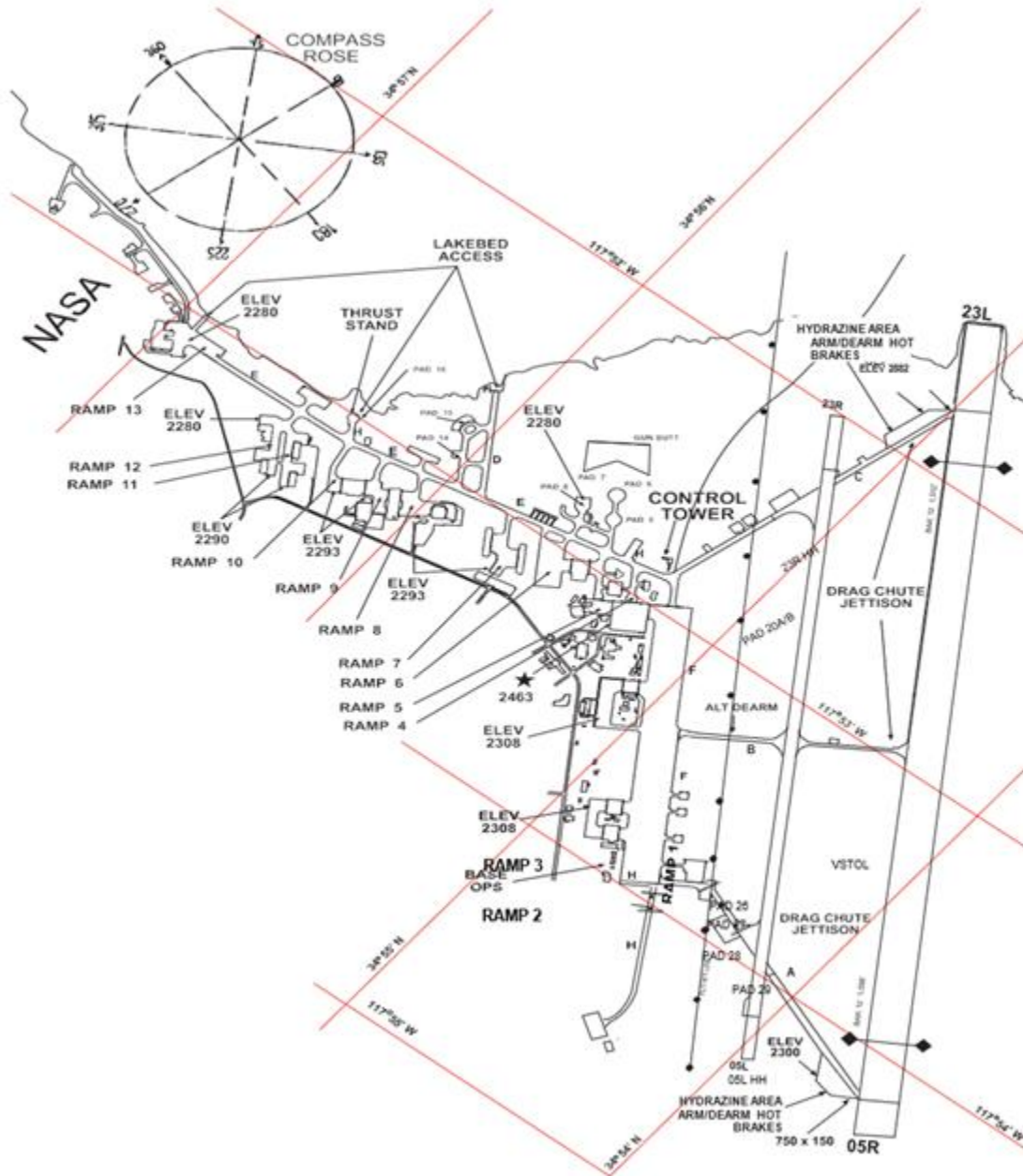
**VMC—Visual Meteorological Conditions**

**VORTAC—VHF Omni—directional Range/Tactical Air Navigation**

**W—West**

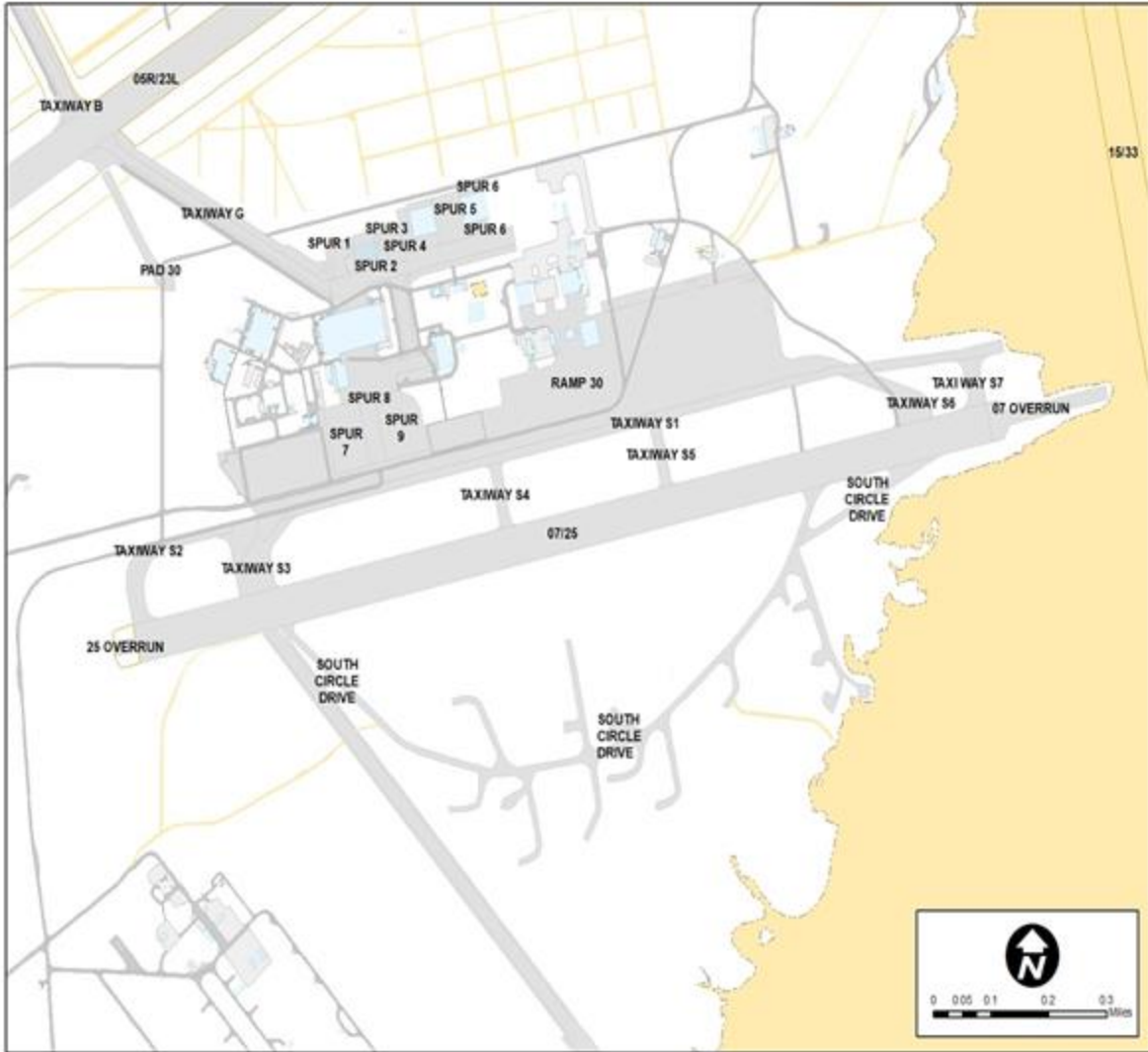
Attachment 2  
MAIN BASE DIAGRAM

Figure A2.1. Main Base Diagram.



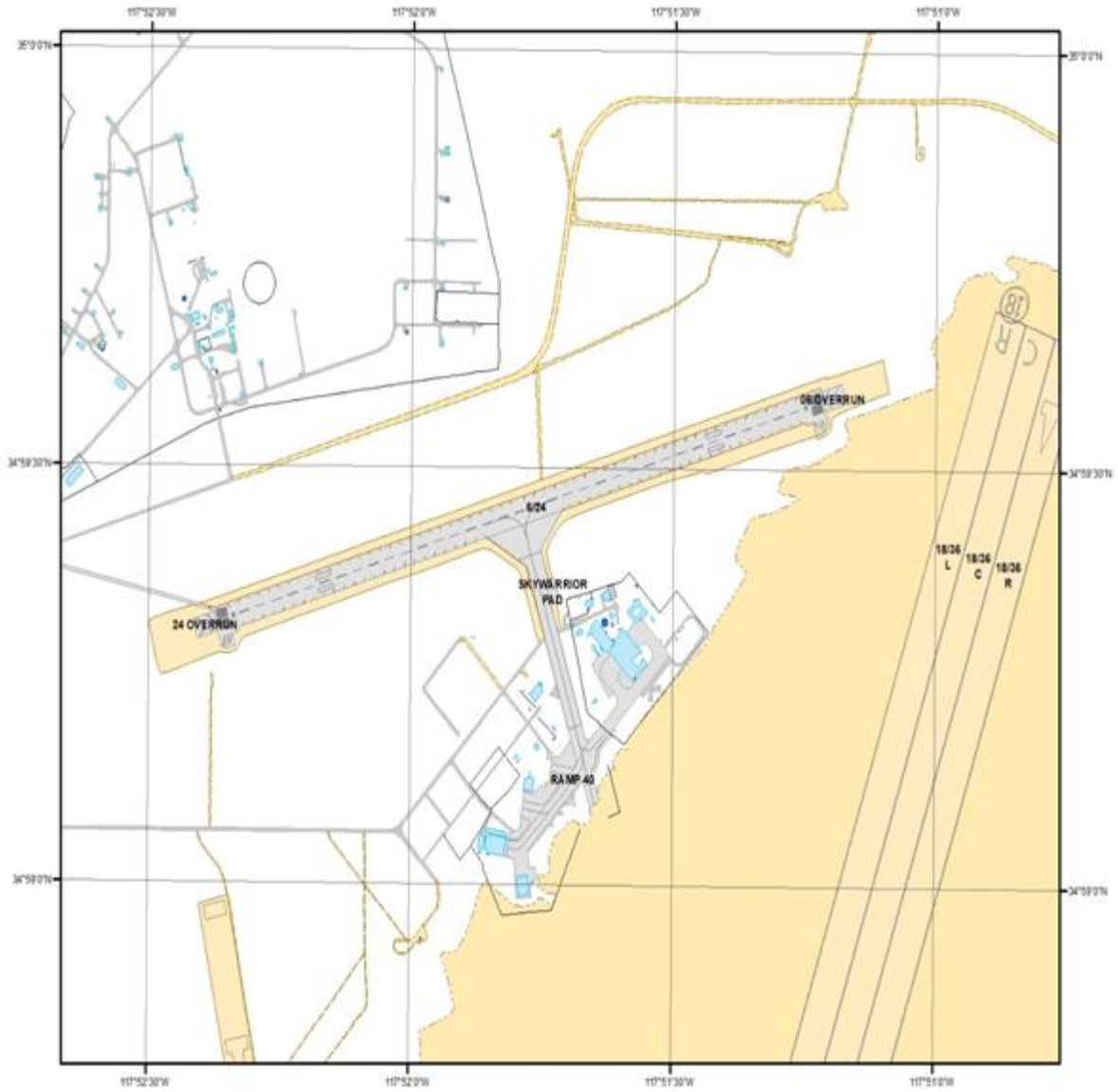
Attachment 3  
SOUTH BASE DIAGRAM

Figure A3.1. South Base Diagram.



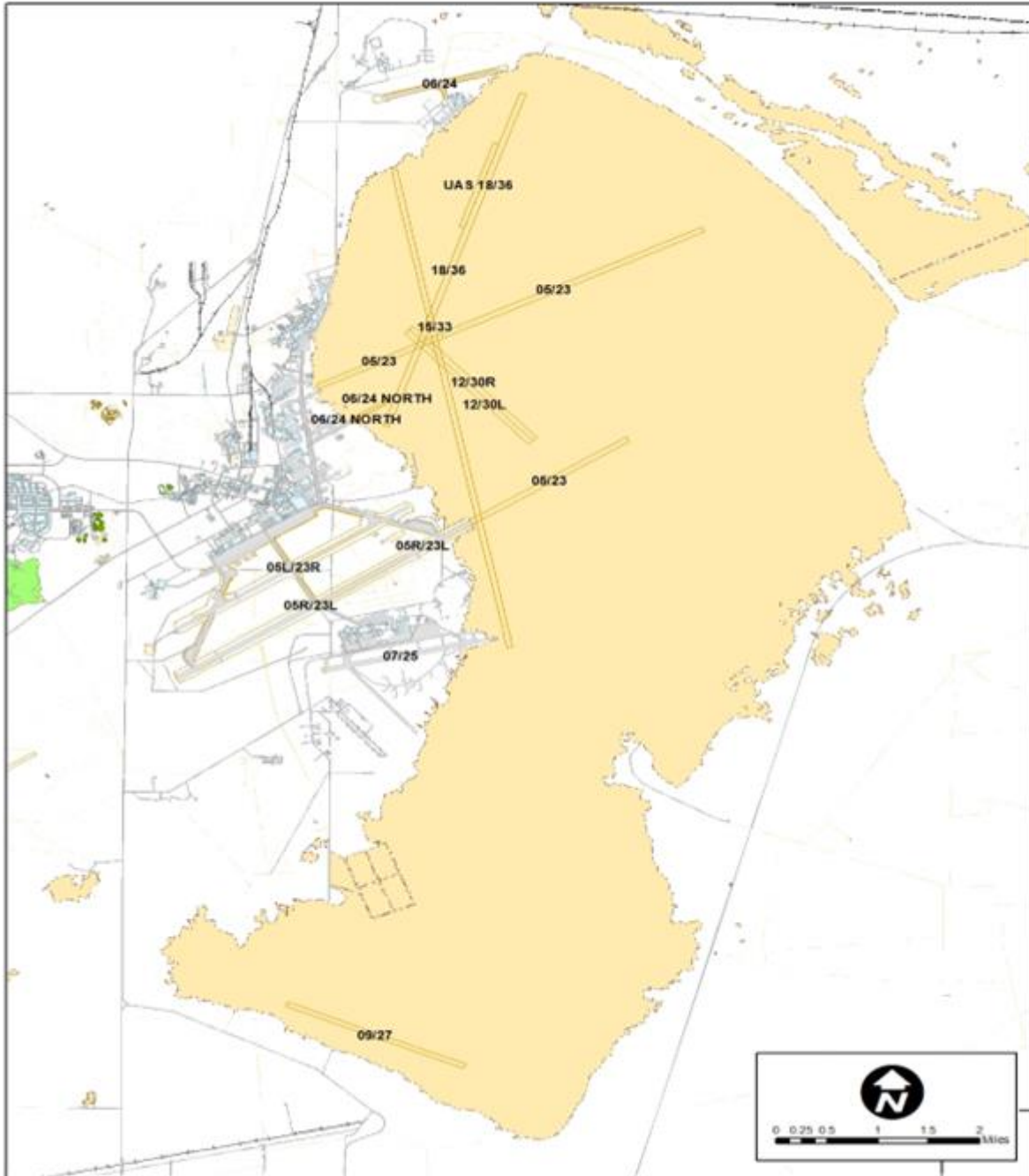
### Attachment 4 NORTH BASE DIAGRAM

Figure A4.1. North Base Diagram.



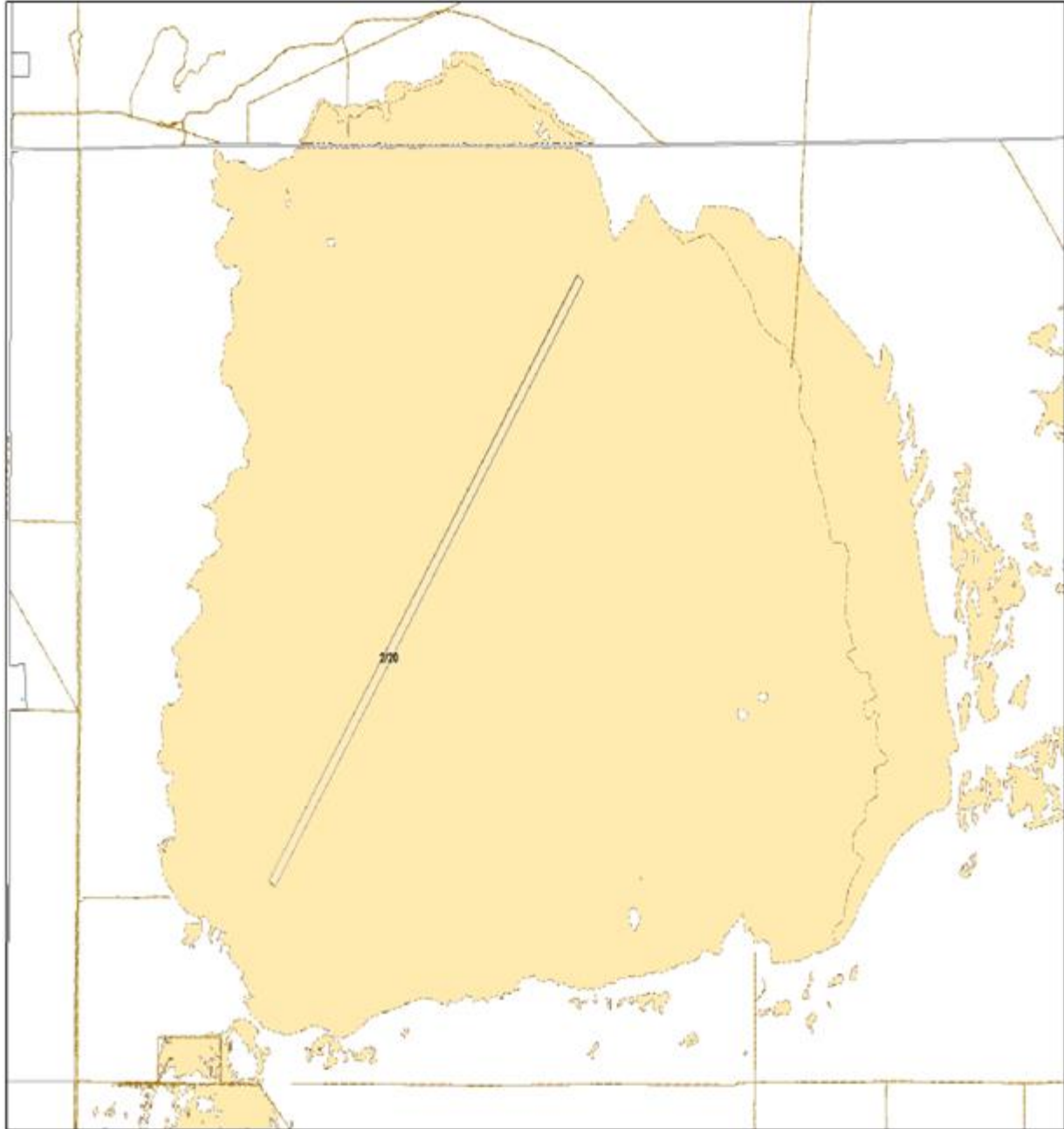
Attachment 5  
ROGERS DRY LAKEBEDS

Figure A5.1. Rogers Dry Lakebeds.



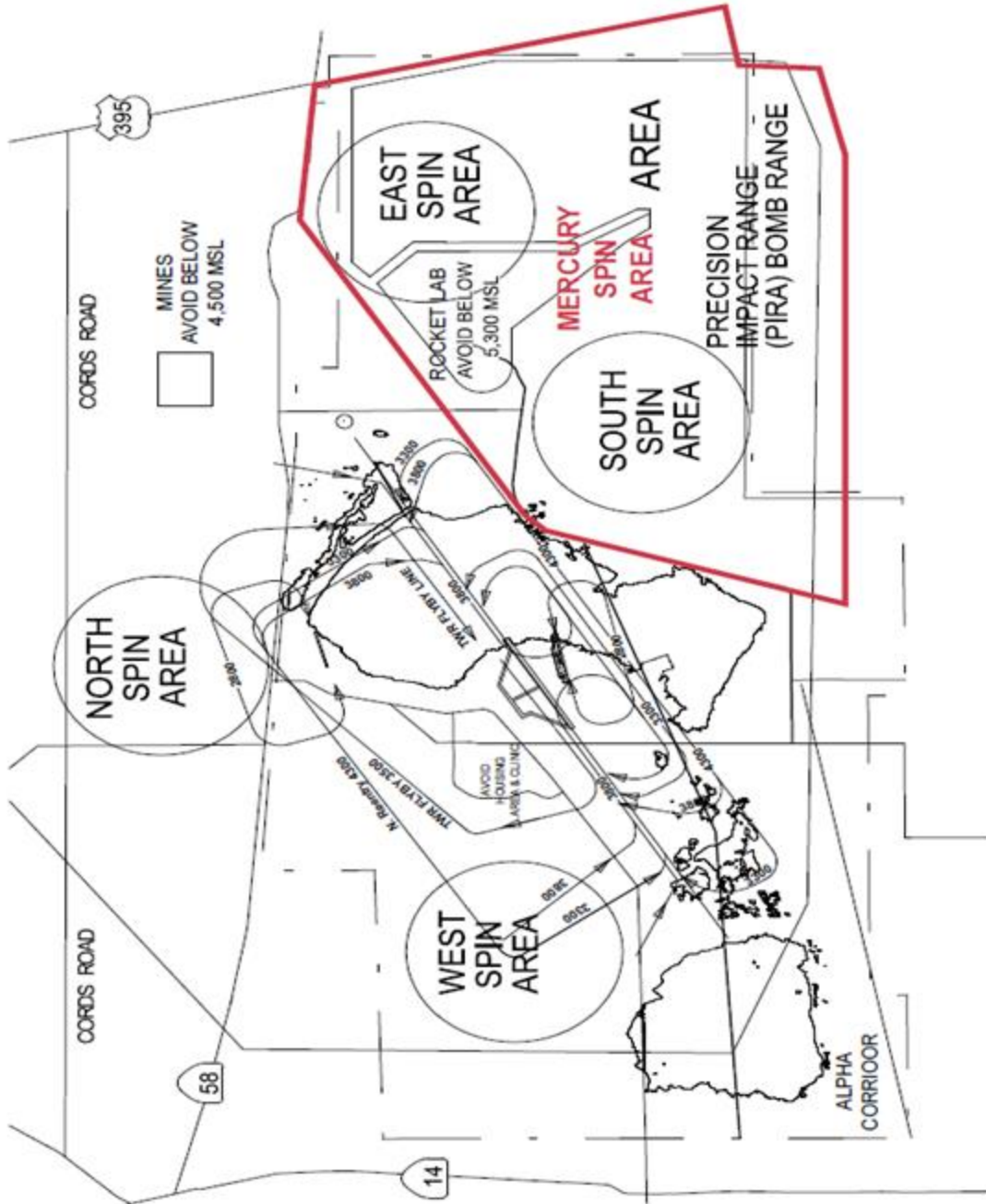
Attachment 6  
ROSAMOND DRY LAKEBED

Figure A6.1. Rosamond Dry Lakebed.



Attachment 7  
TRAFFIC PATTERNS

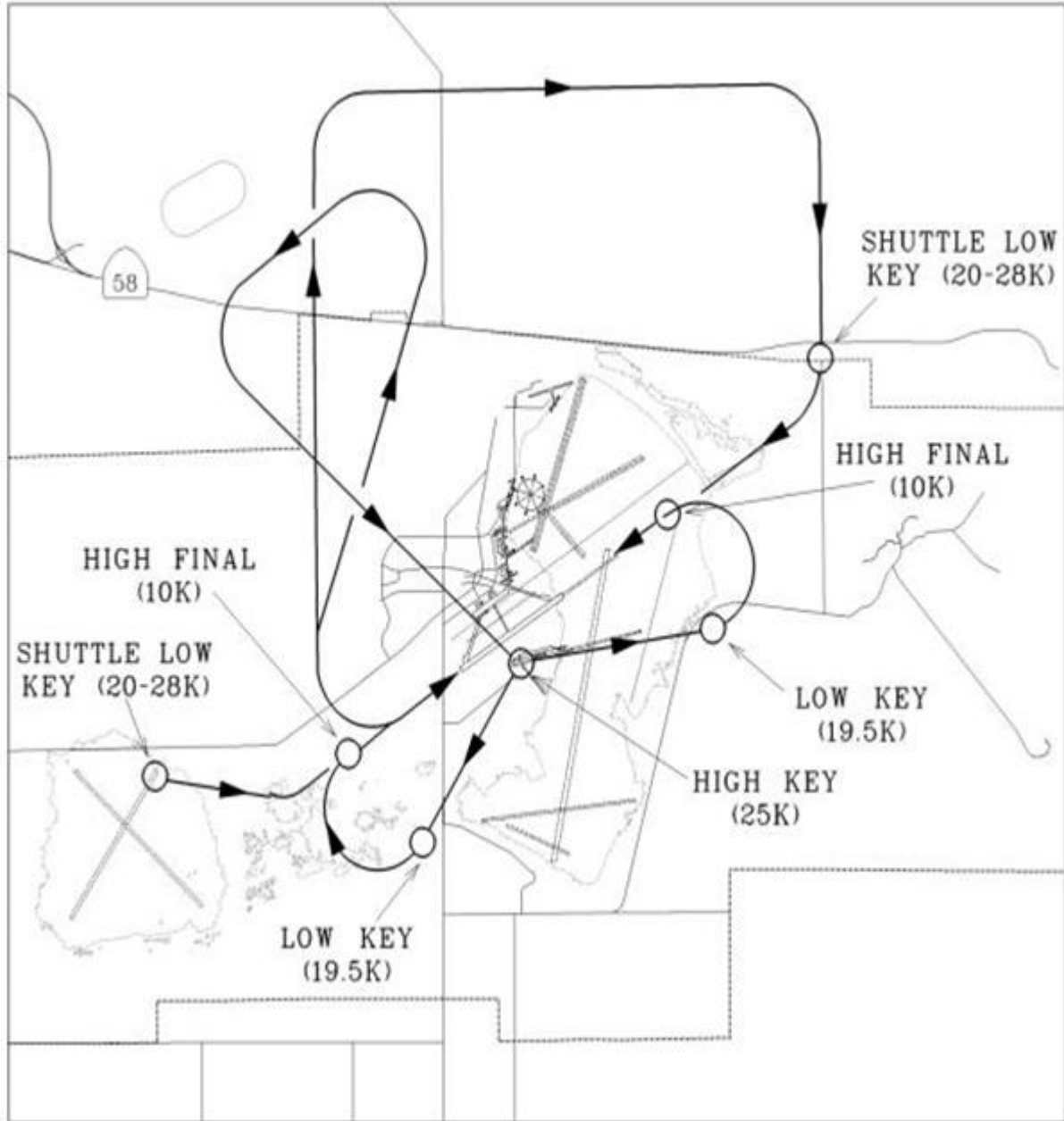
Figure A7.1. Traffic Patterns.



Attachment 8

LIFTING BODY & SHUTTLE APPROACHES

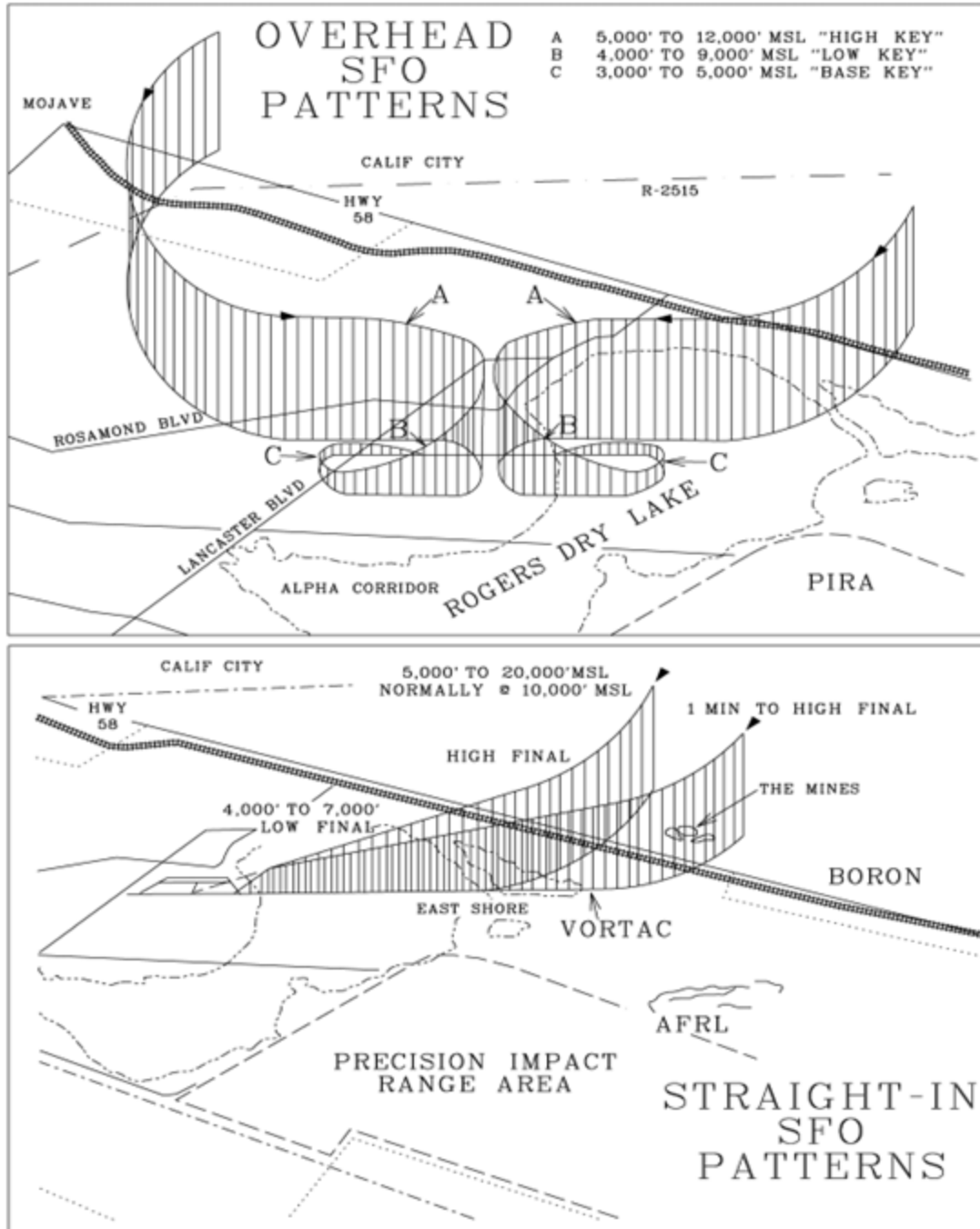
Figure A8.1. Lifting Body & Shuttle Approaches.



Attachment 9

SIMULATED FLAME-OUT (SFO) PATTERNS

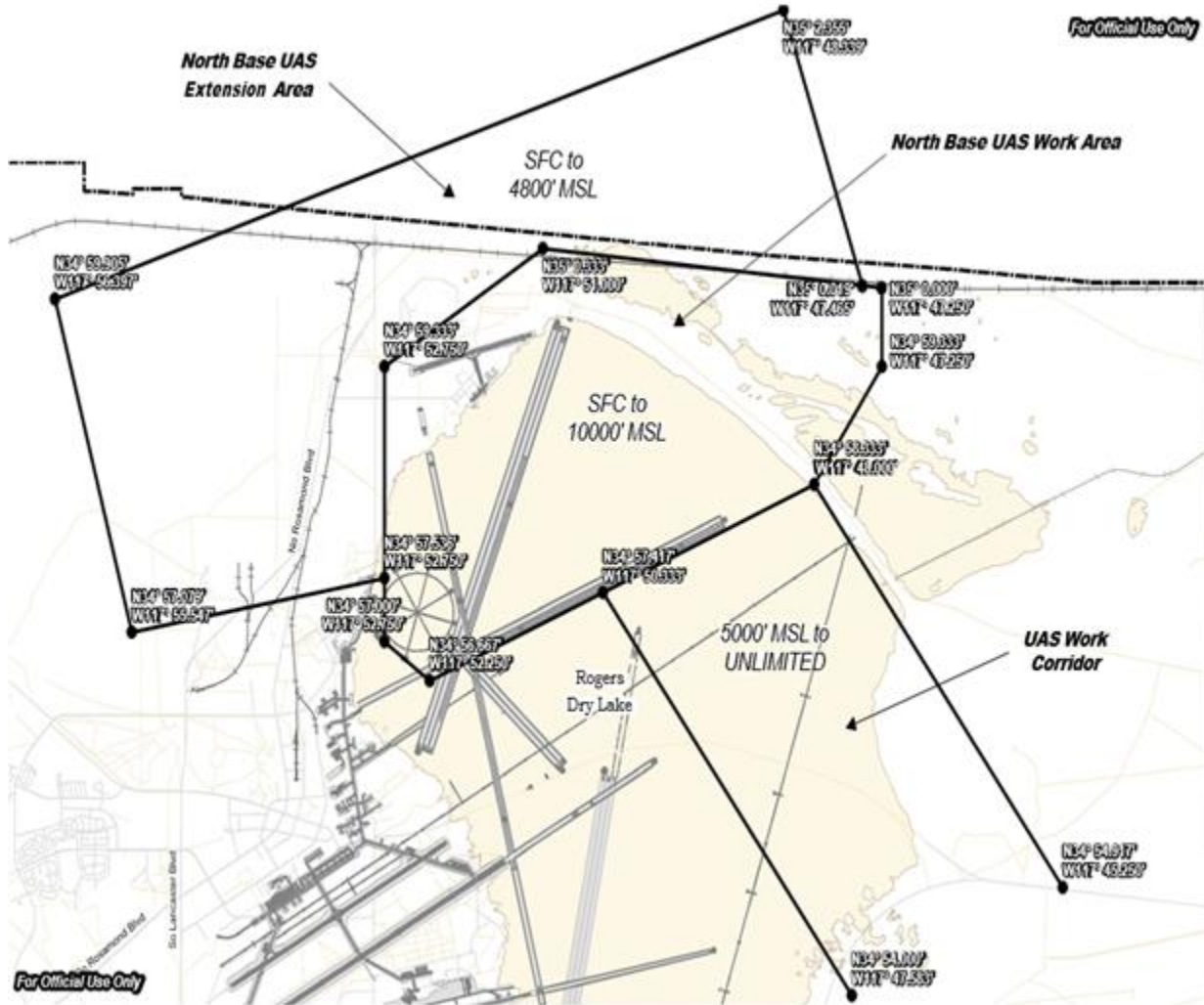
Figure A9.1. Simulated Flame-Out (SFO) Patterns.



Attachment 10

NORTH BASE UAS WORK AREA AND UAS WORK CORRIDOR/NORTH BASE UAS EXTENSION AREA

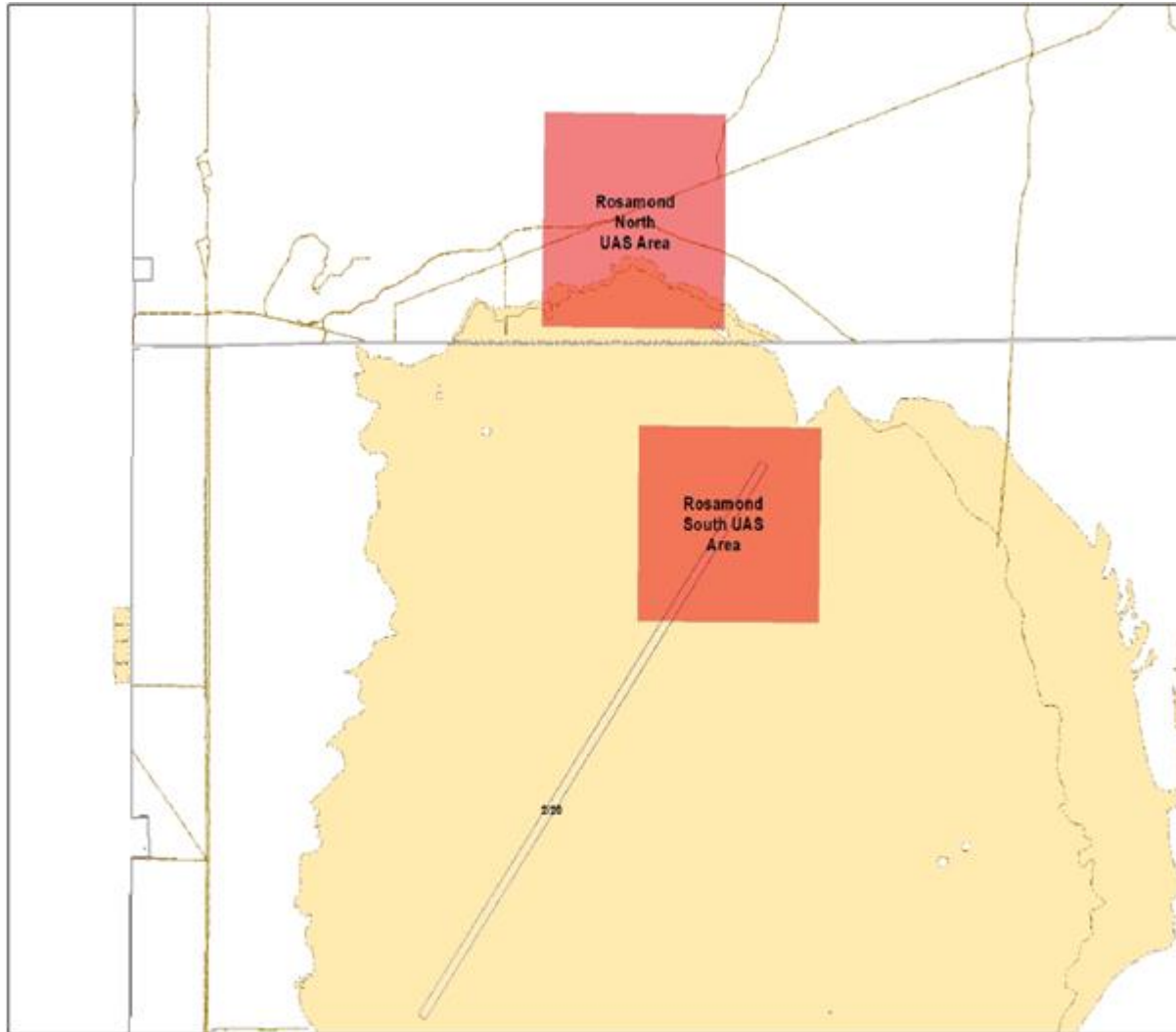
Figure A10.1. North Base UAS Work Area and UAS Work Corridor/North Base UAS Extension Area.



Attachment 11

ROSAMOND NORTH AND SOUTH UAS AREAS (ROSAMOND DRY LAKEBED)

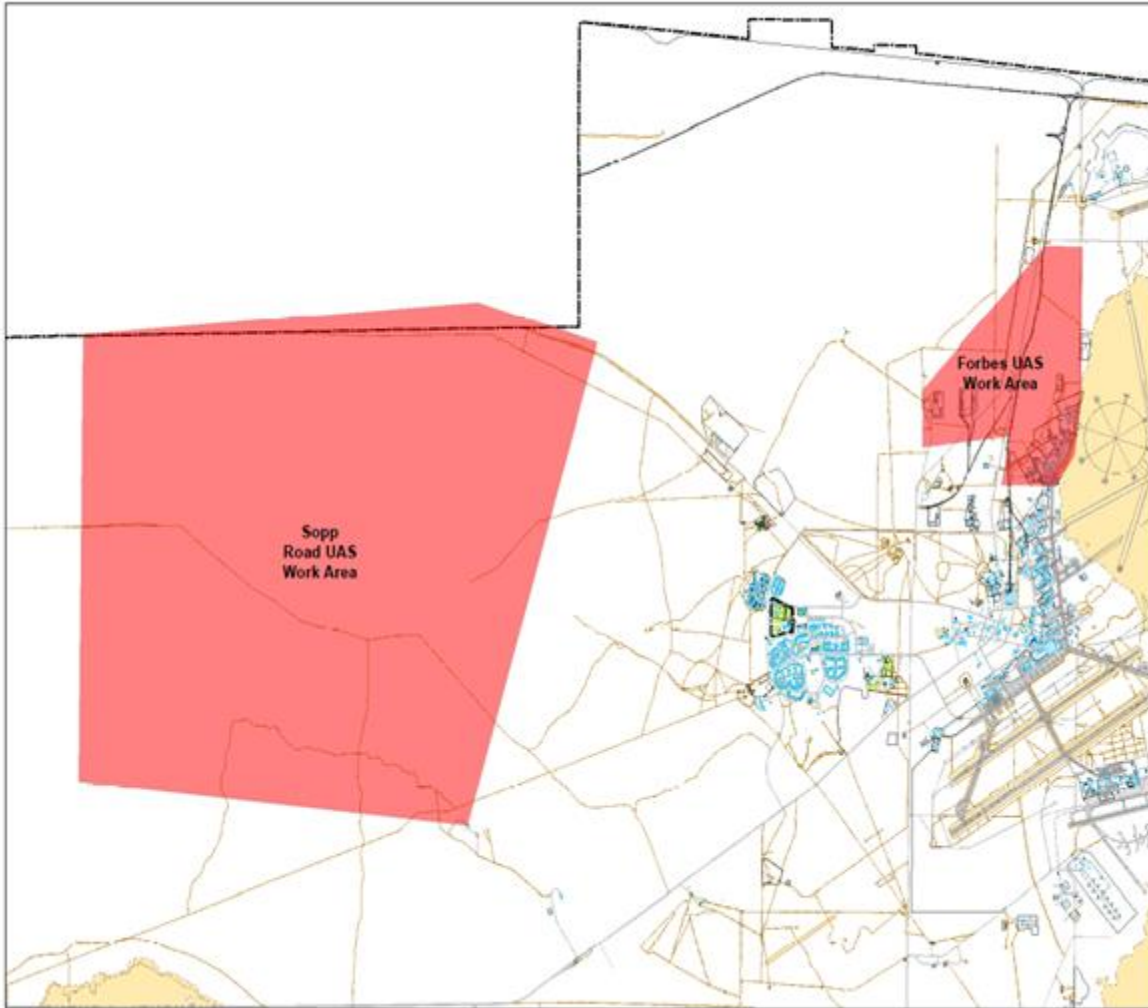
Figure A11.1. Rosamond North and South UAS Areas (Rosamond Dry Lakebed).



Attachment 12

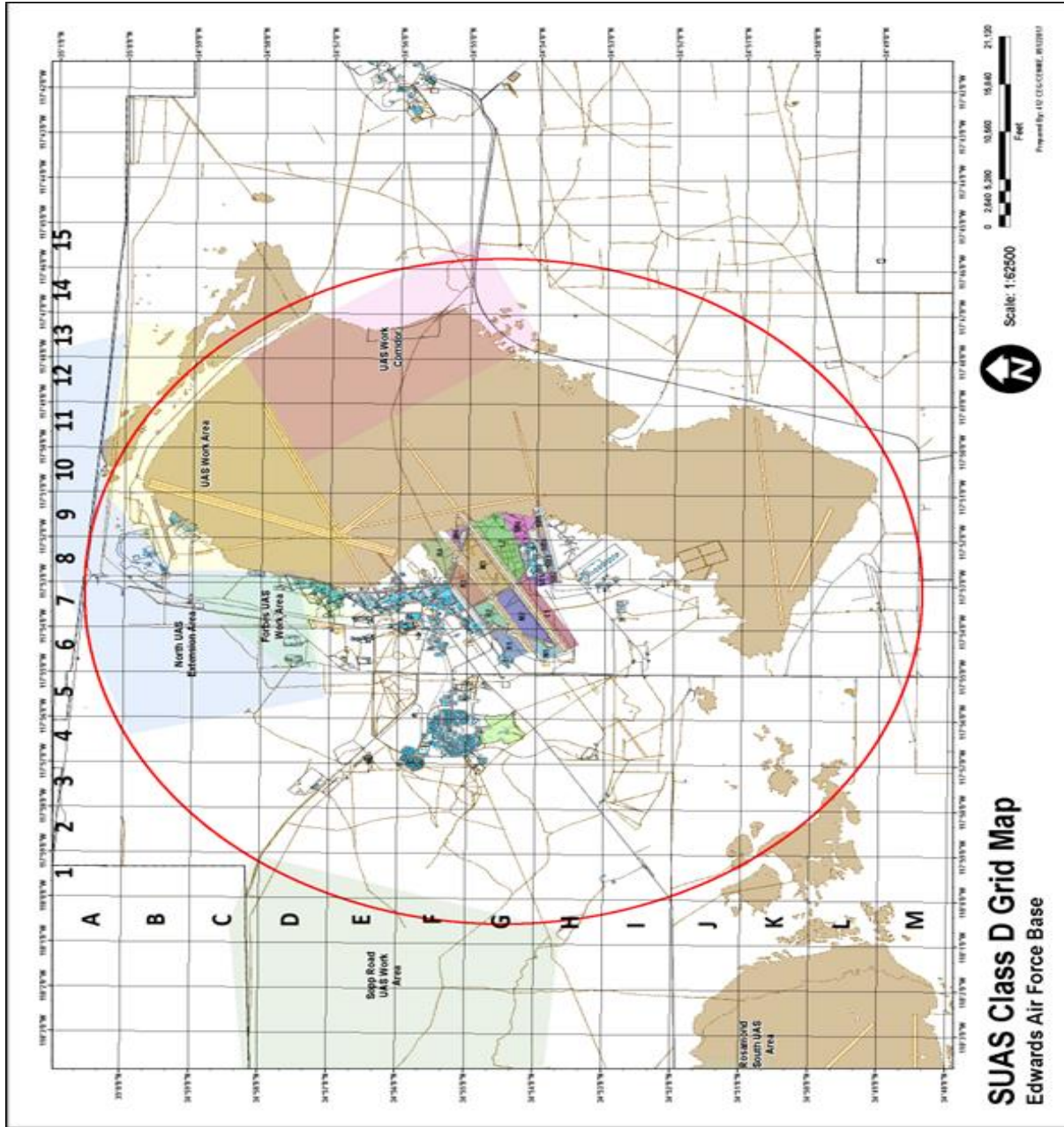
FORBES AND SOPP ROAD UAS WORK AREAS

Figure A12.1. Forbes and Sopp Road UAS Work Areas.



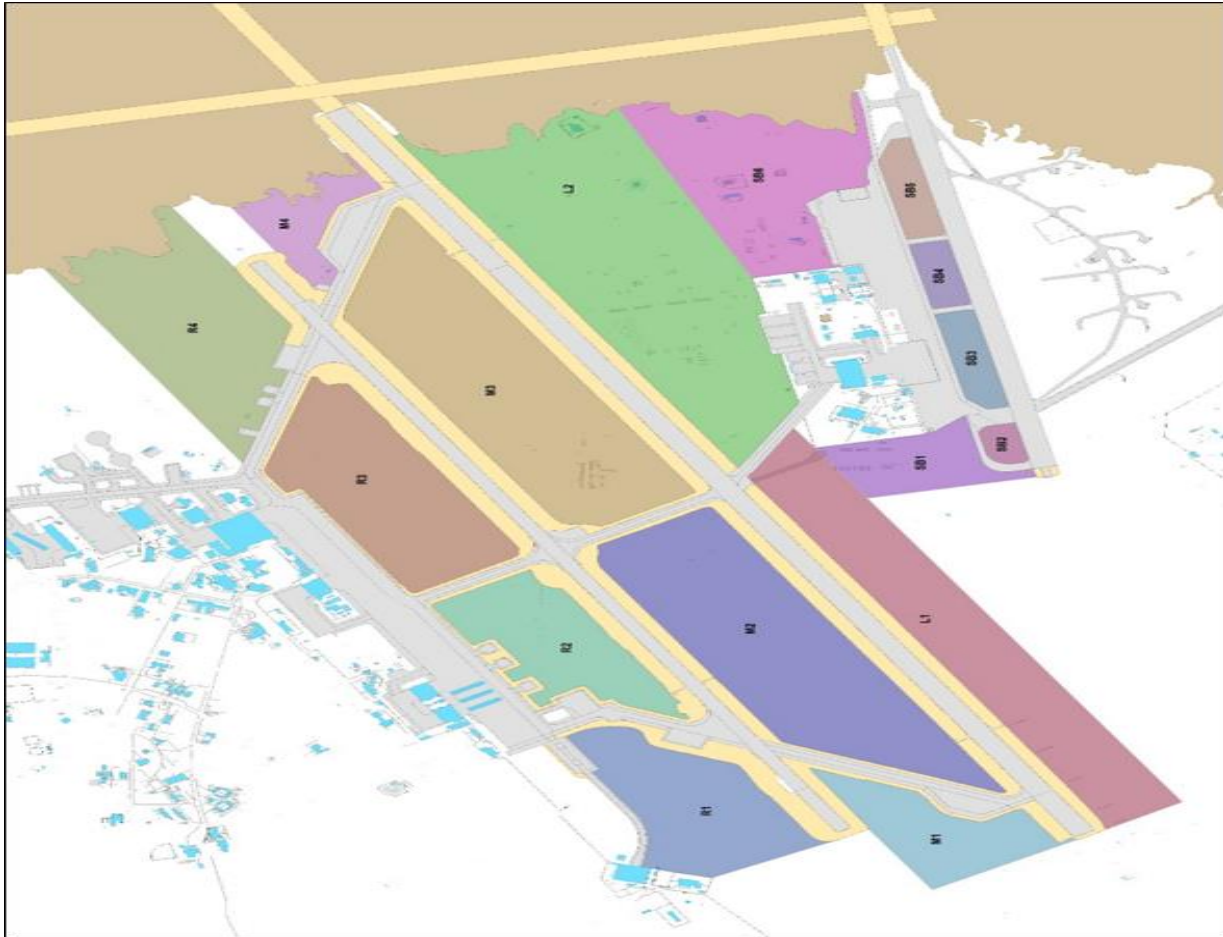
Attachment 13  
SUAS CLASS D GRID MAP

Figure A13.1. sUAS Class D Grid Map.



Attachment 14  
UAS AIRFIELD COMPLEX

Figure A14.1. UAS Airfield Complex.



**Attachment 15****AIRSTART.**

**A15.1. F-16 Air Start Procedures.** F-16 accomplish airborne engine shutdown 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.

A15.1.1. PIC will ensure the sortie is scheduled in CSE as an air start mission. As a minimum, contact the MOC, SOF, Tower, and SPORT via landline to brief the mission before departure to include land time and recovery location. If land time changes Tower will ensure the ROC is notified prior to landing. PIC will utilize a discrete frequency throughout the mission.

A15.1.2. Shutdowns originate in the vicinity of the Boron Mines (Runway 23L) or Rosamond Dry Lakebed (Runway 05R) from an altitude of FL200 to FL250. Standard pattern is a racetrack west of the field. In the event the engine does not restart, the maneuver will terminate in either a straight-in or overhead Flame Out approach to Runway 05R/23L (primary) or a green Lakebed Runway (secondary).

A15.1.3. 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.

A15.1.4. Tower will terminate full-stop and touch-and-go landings (low approaches authorized) and departures once the Tower has approved shutdown ("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.

A15.1.5. 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 shut down 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.

A15.1.6. An IFE will not be declared for scheduled EPU activation unless a subsequent leak is detected.