

SOUTHWEST TACTICAL TRAINING RANGE (SWTTR)

USERS' GUIDE



NAVSEA

NAVAL SURFACE WARFARE CENTER

CORONA DIVISION

RANGE SYSTEMS ENGINEERING DEPARTMENT (RS-23) YUMA, ARIZONA

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Purpose: This Users' Guide provides information for operations, ordnance and aircrews concerning the capabilities of the Southwest Tactical Training Range (SWTTR) and procedures for scheduling training missions/events.

Mission: The mission of SWTTR is to provide mission coordination, real-time instrumentation and communication for exercise control and ground control intercepts, Link-16, tactical employment of surface to air threats, weapons scoring, moving land targets and debriefing products for military aviation units operating throughout the United States of America.

1. **General.** SWTTR consists of the following independent systems:
 - 1.1. Tactical Combat Training System
 - 1.2. Tactical Data Link; Link-16
 - 1.3. Ground Tracking System
 - 1.4. Rotary Wing Tracking System
 - 1.5. Identification Friend or Foe (IFF) Radar Tracking and Display System. IFF Radar feeds from the Federal Aviation Administration (FAA) allow Mode III radar coverage of all targets within 300 NM of Marine Corp Air Station (MCAS) Yuma and MCAS Miramar
 - 1.6. Moving Land Targets
 - 1.7. Weapons Impact Scoring System
 - 1.8. Electronic Warfare
 - 1.9. Communications

2. Usage Requirements

2.1. Training Area Coverages. The SWTTR coverage area includes all training airspace in and between the W291 in the West, the R2301 in the East and as far north as the R2501 (29 Palms) and R2503 (Camp Pendleton). There are limitations for High Activity Tracking due to Line of Sight. TCTS and IFF Mode III Radar tracks can be combined so that all participants can be tracked for real time control and recorded for debriefs. Appendix 1 depicts training ranges supported by SWTTR in the western Arizona and southern California region.

2.1.1. SWTTR operational facilities are located at MCAS Yuma, MCAS Miramar and NAF El Centro, CA.

2.2. Scheduling.

2.2.1. Operating Hours. Normal business hours for SWTTR are Monday through Thursday 0800-2000 and Friday 0800-1600. Weekend operations are scheduled on an "as required" basis with government approval. Late nights and other times may also be requested to support operations outside of normal operating hours by scheduling at least 48 hours prior (two business days).

2.2.2. Scheduling. SWTTR does not schedule or control any of the Prohibited, Restricted, Warning Areas or ranges.

2.2.2.1 Range scheduling is done through the Range Facility Management Support System (RFMSS) for the MCAS Yuma Range Complex and for NAF El Centro, CA.

2.2.2.2 Exclusive use P area of W-291 is scheduled through MAG-11 aboard MCAS Miramar. Contact MAG-11 at commercial 858-577-1350 / DSN 267-1350.

2.2.2.3 Support Request. TCTS/EW support request form (Appendix 6 / 7) should be submitted to SWTTR Operations by email swttr.fct@navy.mil. Support requests can be obtained by contacting a SWTTR Mission Coordinator in Yuma at commercial 928-269-2905 ext. 5742 / DSN 269-2905 ext. 5742 or Miramar

commercial 858-577-6116 / DSN 267-6116.

2.2.3. Detailed System Capabilities. Additional information regarding the SWTTR range support systems is available upon request. Contact by emailing swttr.fct@navy.mil or calling the Operations Director in Yuma at commercial 928-269-2831 ext. 2181 / DSN 269-2831 ext. 2181 or the Operations Director in Miramar at commercial 858-577-2612 / DSN 269-2612.

2.3. Mission Planning. SWTTR Mission Coordinators are available to assist aircrews in the mission planning process. The Operations Officers should contact SWTTR Mission Coordinators prior to unit arrival regarding deployment planning and any anticipated system limitations or requirements that could impact training. The Mission Coordinators are the points of contact for daily mission and debrief requirements. Support will include TCTS line-up, pod requirements, frequency coordination (Appendix 5), check-in procedures, scheduling EW assets, evaluation of EW mission effectiveness and providing debriefing products.

2.4. Security/Access Control. Users must submit a visit request to SMO Code 64267YA via JPAS in accordance with DOD 5520.22M for all personnel requiring access to the TCTS/EW facilities aboard MCAS Yuma and MCAS Miramar. Send visit requests as early as possible to ensure that personnel are on the TCTS/EW access list prior to arrival. Personnel not listed on the authorizes access list must be escorted in order to be admitted into building (Bldg.) 508 in Yuma or Bldg. 8745 in Miramar. All personnel must have a secret security clearance verified in JPAS for live missions or mission debriefs.

- 2.4.1 Visit Requests must include the following information:
- Full Name, Rank/Rate/Grade, Title, Citizenship
 - Date, time and duration (requests may specify duration of up to 1 year)
 - Purpose of visit
 - Security clearance level; if clearance has any restrictions please indicate this on the request.
 - Points of contact and telephone number of the requester.

NOTE: Users requesting access for Foreign Nationals must comply with Chapter 10, Section 5 of DOD 5520.22M.

3. Tactical Combat Training System (TCTS)

3.1. TCTS is an advanced air combat training system which provides high fidelity Time Space Position Information (TSPI) data and real time weapons simulations for up to 72 high activity and/or 120 low activity participants employing Global Positioning System (GPS) technology.

NOTE: Presently, there are no air to air weapons simulations available for live real-time assessments in the USN/USMC P5 TCTS fleet wide. To help mitigate, the Joint Anti-Air Modeling (JAAM) application is available for debriefing post-mission weapons effectiveness; system support available upon request.

- 3.2. TCTS interfaces with EW systems and other alternate track sources to deliver information to the Joint Display System (JDS) located in Bldg. 508 at MCAS Yuma and Bldg. 8745 at MCAS Miramar. The JDS provides real-time TCTS mission control, tracking and debriefs for air-combat training missions in a PC based Windows environment. JDS debriefs are available at the SWTTR facilities or via an available Yuma/Miramar laptop for debriefing at the organization's facility. SWTTR TCTS is linked to both the Yuma and Miramar facilities and is capable of providing both tracking and audio of missions for real-time live view. Additionally, recorded debriefings are available for any mission on a supported range in either facility.
- 3.3. SWTTR radio communications inside the W291 is unobstructed by terrain. Within the R2301 and R2507 communications can be affected by terrain and must be coordinated prior to flight execution. SWTTR communication capabilities consist of UHF, High-VHF, AM, and FM (Appendix 5).
- 3.4. SWTTR TCTS facilities can be specifically tailored to support a multitude of Live Exercise Control scenarios to include: Marine Division Tactics Course (MDTC), Joint Command Post, TAOC/TACC/DASC, Missile Shoots, Red/Blue Operations (Ops), Large Force Exercises (LFE), etc. Operators/evaluators can view Link-16, IFF radar, TCTS, and ground tracks simultaneously while communicating via multiple UHF/VHF radios and DSN or commercial telephones from dedicated workstations in SWTTR/Miramar Live Operations rooms. SIPR connectivity is available at MCAS Yuma if training scenarios require Classified MIRC. MCAS Yuma Bldg. 508 and MCAS Miramar Bldg. 8745 TCTS are equipped with additional enhancements to provide aircrews with a full range of debriefing tools. Each large screen debriefing theater has a complete range of video playback machines and monitors available so that aircrews may simultaneously review Heads-Up Display (HUD) tapes and TCTS/GTS/RTS/Link-16 data.
- 3.5. TCTS Pod Support. All local TCTS pod pick-up/return procedures are based on pod availability. Pods may be dropped off near your squadron spaces on the flight line with prior coordination with the SWTTR POD personnel. SWTTR personnel will issue pods to squadron personnel on a temporary loan basis. Loading and pod/aircraft checks of the pods are the responsibility of the utilizing unit; however if requested, SWTTR personnel may accompany the pods and offer technical advice as required/needed.
- 3.6. Local squadrons may request pods for deployments and exercises to be issued for extended periods of time. However, they must be returned to the SWTTR pod shop periodically for maintenance and testing.
- 3.7. Deployed units (or their Host Squadrons) are required to load pods for deployed aircraft. SWTTR personnel will coordinate delivery of pods to deployed units and provide "technical assistance" when coordinated in advance. It is the responsibility of the deployed squadron to provide any special interface hardware/cables required by their aircraft.

4. Tactical Data Link (TDL) Link-16

- 4.1. SWTTR provides a persistent Network Time Reference (NTR) for Link 16 Operations. Currently operating under the USMU0007B change2 Network Description Document (NDD) and in accordance with the Chairman of the Joint Chiefs of Staff Manual (CJCSM 6120.01E).
- 4.2. Network Entry procedures are established within a designated OPTASKLINK during large scale operations or exercises. During standard daily operations at SWTTR, the assigned Joint Interface Control Officer (JICO) is the primary point of contact that will provide specific details to include platform specific initialization files, crypto key information, designated JTIDS Unit addresses and track block assignments if applicable.
- 4.3. LINK-16 SCHEDULING. Due to Time Slot Duty Factor and crypto key material availability constraints, prior planning is necessary in order to operate within mandated FAA regulations. Please contact the SWTTR LINK-16 specialist at (928) 269-2905 ext-2138 or email swttr.fct@navy.mil for Link-16 coordination and specific network entry procedures/instructions.
- 4.4. Link-16 is recordable at both MCAS Yuma and MCAS Miramar.

5. Ground Tracking System (GTS)

- 5.1. GTS is a TSPI system for ground operated vehicles and personnel to allow the accurate tracking throughout the YUMA AOR.
- 5.2. The system requires the installation of the GTS kit which is available through the Yuma SRSMS office.
- 5.3. The GTS is able to facilitate aircraft platforms when/where RTS is not available.
- 5.4. In order to provide tracking data, SWTTR Operations must receive the GTS serial number with the associated unit or call-sign (individual, vehicle, or aircraft).

6. Rotary Wing Tracking System (RTS)

- 6.1. RTS is a TSPI system for rotary wing and assault support aircraft to allow accurate tracking of these aircraft throughout the Yuma AOR.
- 6.2. RTS is currently available for use during WTI classes on selected aircraft; type, model and Series (TMS).
- 6.3. The system requires installation of RTS kits available from Yuma Pod Shop.
- 6.4. In order to provide tracking data, SWTTR Operations must receive the Airborne Tracking Element (ATE) serial number and the associated aircraft "Buno" number.

7. Electronic Warfare Systems (EW)

- 7.1. EW systems provide a realistic threat environment in which aircrews are able to conduct training in detecting, identifying, targeting and maneuvering to counter hostile EW threats. This includes

acquisition and threat radar systems as well as non-radar threat systems. The Mission Coordinator uses inputs from the TCTS pods and or IFF MODE III to control the overall training scenario and assign threat systems for engagement, either directly or in conjunction with a unit Range Training Officer (RTO).

7.1.1. Range integration. The level of range integration defines a system's capability to be monitored, controlled and recorded during a mission and/or engagement. Systems are categorized as integrated, partially integrated or autonomous.

7.1.1.1. Integrated systems are connected to the JDS via data link and are able to receive and transmit high fidelity tracking information, targeting and engagement data as well as communications to the Mission Coordinator.

7.1.1.2. Partially Integrated systems are generally not connected to the threat operating system network and are not capable of receiving or transmitting tracking information. They may receive targeting data from the Mission Coordinator in the form of Bearing, Range, Altitude (BRA) calls.

7.1.1.3. Autonomous systems are not connected to the threat operating systems network and are not capable of being recorded for playback/debrief by the Mission Coordinator. These systems do not receive targeting data and may or may not have voice communications with the Mission Coordinator.

7.1.2. Man-Portable Air Defense System (MANPADS) Infrared (IR). The MANPADS IR system replicates a shoulder-fired Surface to Air Missile (SAM) and utilizes an active heat-seeker head. When the trained operator directs the launcher at the target, under appropriate conditions, a "lock-on" occurs, a launch is indicated and the event is scored as successful or unsuccessful. These realistic indications are viewed on the monitor of the MANPADS electronics and recorded to multiple media types for debriefing capabilities.

8. Surface Range Scoring and Monitoring System (SRSMS)

8.1. Weapons Impact Scoring Set (WISS) is available for air to ground delivery of inert ordnance on Cactus West/Yodaville Urban Training Complex (UTC) Yuma and Shade Tree (Target 101), Inky Barley (Target 68) and Loom Lobby (Target 103) at El Centro. These ranges offer a wide variety of training opportunities for all military activities. The Ranges at Yuma and El Centro are similar in many respects, however scheduling requirements and training capabilities are not identical. The WISS is an electro-optical computer scoring system designed to measure the impact location with respect to target center. It provides real time scores for air-to-ground delivery of inert bombs and rockets. The scores are passed to the pilot via UHF radio and are available upon request via a printed copy of the scoring/munition impacts immediately after the flight. The WISS ranges have night lighting available upon request.

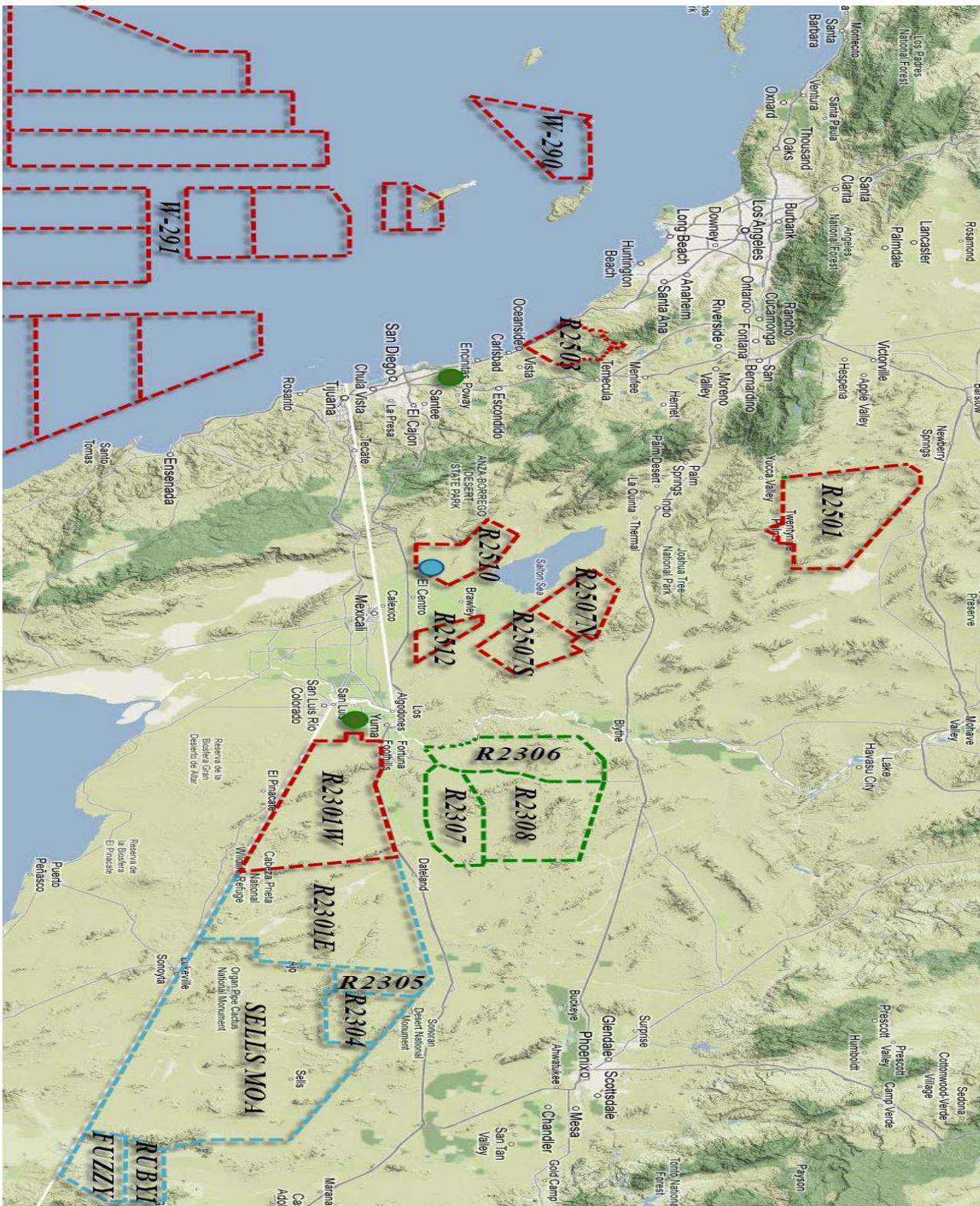
- 8.2. Improved Remote Strafe Scoring System (IRSSS) is an air-to-ground gunnery scoring system that provides real time scores for .30 cal., .50 cal., 20mm, 25mm and 30mm aircraft weapons. The targets consist of a ring of tires on a dirt berm. Scores are passed to the pilot via UHF radio and are available in printed copy upon request. The Yuma targets consist of two acoustically scored strafing berms located one nautical mile southeast of Cactus West. El Centro has one acoustically scored strafing berm at each target. Authorized ammunition usages are established by MCAS Yuma Range Control.
- 8.3. Moving Land Target (MLT) is a remote controlled vehicle capable of towing a target sled in the Yodaville UTC, there are two tracks in the target complex. Both Fixed Wing (Appendix 8) and Rotary Wing (Appendix 9) aircraft are authorized to utilize the track located in the Yodaville complex while Rotary Wing aircraft are the only aircraft authorized to utilize the east oval track located approximately 1000 meters east of the Yodaville UTC.
- 8.3.1. The MLT may be engaged with inert ordnance only. Fixed wing aircraft may employ inert bombs/rockets and strafe. Rotary wing aircraft may employ inert rockets and strafe.
- 8.3.2. Laser designation with the MLT is authorized in accordance with StaO 3710.6.

NOTE: El Centro MLT is located in R2510 and will become active / available in Calendar Year (CY) 2016.

- 8.4. FACS FACSDINST 3120.1J and MCAS Yuma Station Order (StaO) 3710.6 contain extensive details on capabilities and requirements for utilizing these ranges. Range scheduling is done through MAG-11 aboard Miramar for the W-291 P areas and thru the Range Facility Management Support System (RFMSS) for the MCAS Yuma Range Complex.

Appendix 1

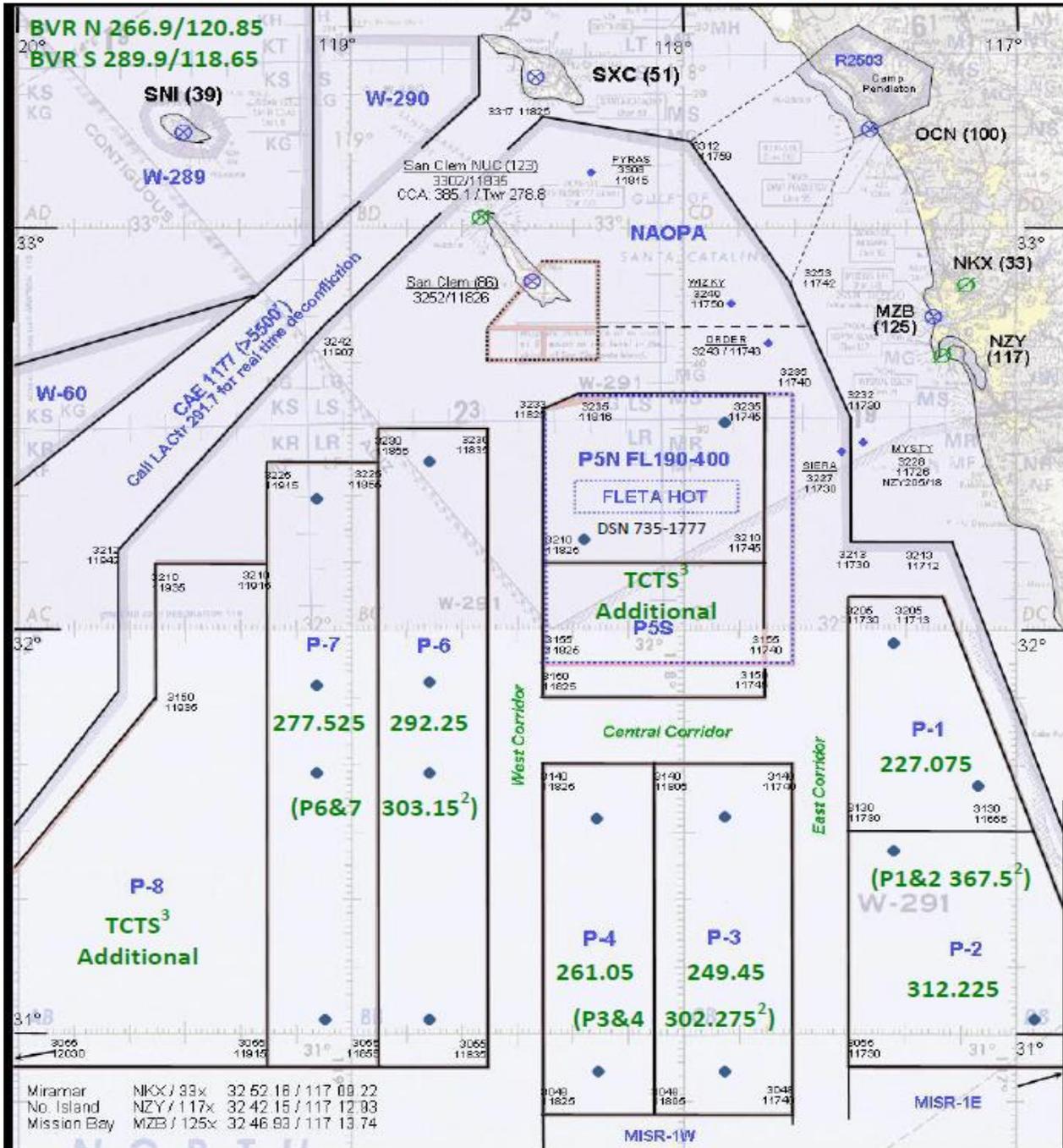
SWTTR Area of Responsibility



Appendix 2

W-291

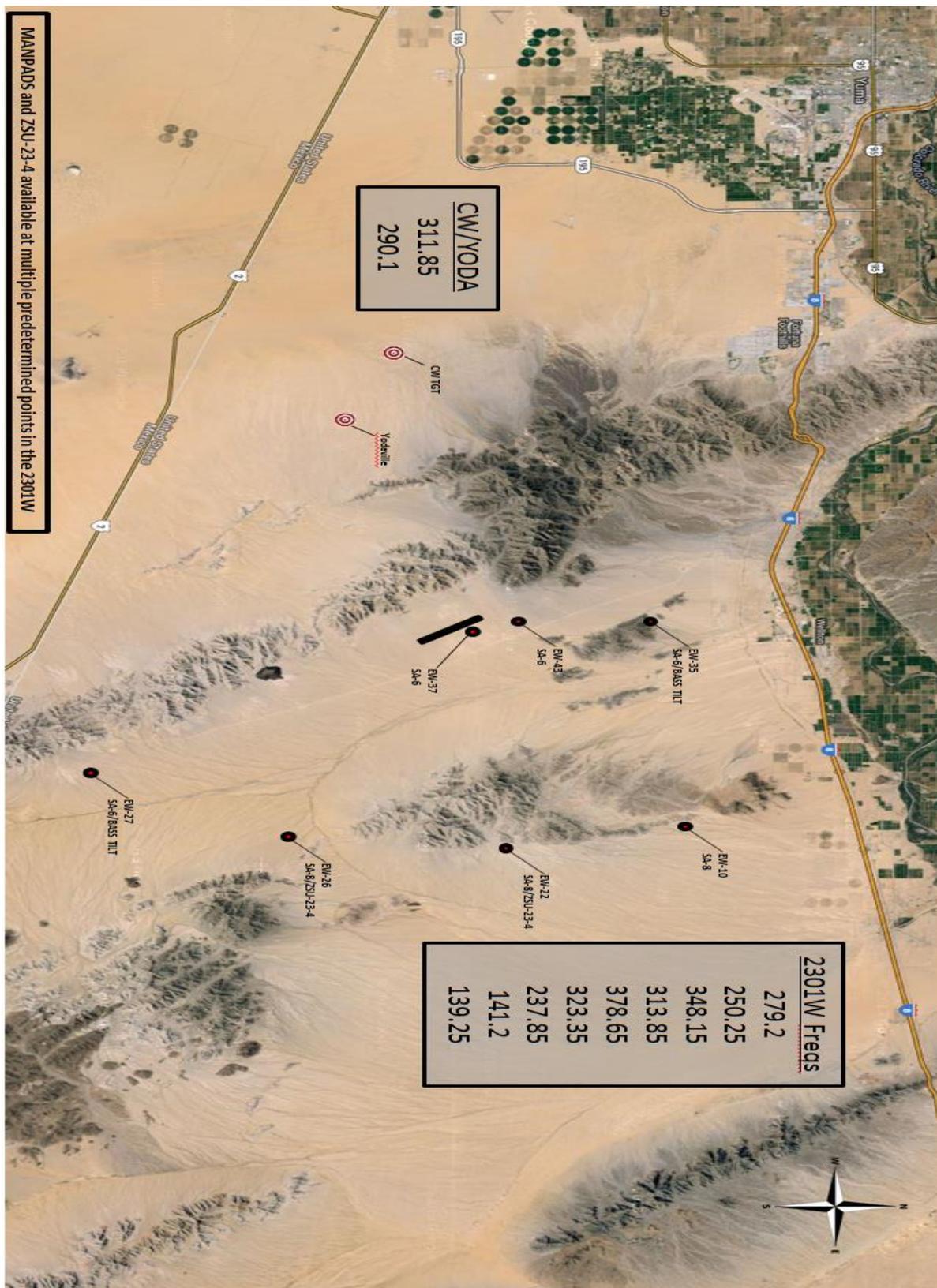
TCTS Standard Operational Frequencies¹



Additional TCTS frequencies³: 229.775, 313.675 & 374.15

Appendix 3

R2301W TCTS Operational Frequencies



Appendix 4

Threat Coordinates & Notes

THREAT COORDINATES AND NOTES					
SITE	THREATS	NOTES:	LAT/LONG	MGRS	ELEV
EW10	SA-8	2,4,5	N 32° 36' 27" / W 113° 58' 46"	12S TB 20393 11695	573
EW22	SA-8 ZSU-23-4	1,5	N 32° 31' 23" / W 113° 57' 01"	12S TB 22872 02252	808
EW26	SA-8 ZSU-23-4	1,5	N 32° 24' 52" / W 113° 58' 12"	12S TA 20683 90257	812
EW27	SA-6 BASS TILT	1,5	N 32° 18' 50" / W 114° 01' 24"	11S QR 80254 79122	874
EW30	SA-8//ZSU-23-4	3,5	N 32° 30' 06" / W 114° 09' 11"	11S QR 67481 99616	786
EW33	SA-3/S-60/SF	3,5	N 32° 31' 06" / W 114° 09' 58"	11S QS 66205 01432	773
EW35	SA-6 BASS TILT	1,5	N 32° 35' 27" / W 114° 09' 58"	11S QS 65991 09473	444
EW37	SA-6	3,5	N 32° 30' 06" / W 114° 09' 11"	11S QR 67481 99616	761
EW43	SA-6	2,4,5	N 32° 31' 43" / W 114° 09' 03"	11S QS 67610 02610	573
	ZSU-23-4	2,4,5	Pre Approved Sites in R2301W/E, R2501/07/10/12		
	SA-16 & SA-18	4,5	Pre Approved Sites in R2301W/E, R2501/07/10/12		
NOTES: <ol style="list-style-type: none"> 1. Simulator requiring a P-5 Pod, controlled from a SWTTR TCTS Facility 2. Manned simulator not requiring a P-5 pod. TCTS pod required for Fixed Wing Aircraft. 3. Unmanned (requiring TCTS pod) or manned (TCTS pod only required for Fixed Wing Aircraft) 4. Mobile system capable of operating in preapproved sites throughout the southwest ranges 5. For system description and nomenclature see SWTTR "CLASSIFIED" Users Manual. 					
UNCLASSIFIED//FOUO					

Appendix 5

SOUTHWEST TACTICAL TRAINING RANGE OPERATIONAL COMMUNICATION PLAN AND STANDARD OPERATING PROCEDURES

STANDARD OPERATIONAL FREQUENCIES IN ASSOCIATED AIRSPACE:

- 1) SWTTR Admin (TCTS and Link-16): 342.775
Callsigns: “Hassle Base” (Yuma Ops), “Star Gate” (Link-16), “Hollywood” (Miramar Ops)
- 2) “Yuma Range” Check-In: 276.0
- 3) R2301W High: 279.2 (Area Cm R2301W High) / 250.25 / 348.15 / 139.25
- 4) R2301W Low: 378.65 (Area Cm R2301W Low) / 323.35 / 237.85 / 141.2
 - A. Mohawk Valley/R2301W Low: 378.65
 - B. Welton (TACTS) Valley/R2301W Low: 323.35*
** Note: Use only when training is concurrent with separate training in the Mohawk Valley.*
- 5) Cactus West Airspace: 311.85 (Area Cm Cactus West) / 290.1
 - A. Cactus West Target: 311.85
 - B. Yodaville UTC: 290.1
- 6) R2507 N&S combined Airspace: 271.6* (Area Cm R2507) / 281.35 / 339.95 / 313.65 / 143.175 / 148.9125
 - A. R2507N: 271.6 (Area Cm) / 339.95 / 143.175 (*Use if only the R2507N is scheduled.*)
 - B. R2507S: 281.35 (Area Cm) / 313.675 / 148.9125 (*Use if only the R2507S is scheduled.*)
- 7) R2510 Airspace: 283.2 (Area Cm) / 306.75 / 277.2 / 120.375
 - A. Shade Tree Target - 283.2 (Area Cm); *Note: Weapon scoring is also on this frequency.*
 - B. Loom Lobby Target - 306.75; *Note: Weapon scoring is also on this frequency.*
- 8) R2512 Airspace: 264.7 (Area Cm) / 277.2 / 120.375
 - A. Inky Barley Targets - 264.7; *Note: Weapon scoring is also on this frequency.*
 - B. Kitty Baggage Target - 277.2; *Note: There is NO weapon scoring at this target.*
- 9) When using SWTTR assets and/or facilities AND flying in airspace that does not have assigned frequencies such as the Kane East MOA, Quail MOA, R2301E and R2306/08, coordinate with SWTTR to use the following frequencies: 313.85 or 365.85.
- 10) W-291
 - A. “Beaver” Check in/out:
 - North: 266.9 / 120.85
 - South: 289.9 / 118.65
 - B. Papa 1 – 227.075 (TCTS Cm) / 367.5*
 - C. Papa 2 – 312.225 (TCTS Cm) / 367.5*
Note: 367.5 is a third available frequency when operating in the Papa 1 & 2 or as a second available frequency when operating in either the Papa 1 or Papa 2.
 - D. Papa 3 – 249.45 (TCTS Cm) / 302.275*
 - E. Papa 4 – 261.05 (TCTS Cm) / 302.275*
Note: 302.275 is a third available frequency when operating in the Papa 3 & 4 or as a second available frequency when operating in either the Papa 3 or Papa 4.
 - F. Papa 6 – 292.25 (TCTS Cm) / 303.15*
 - G. Papa 7 – 277.525 (TCTS Cm) / 303.15*
Note: 303.15 is a third available frequency when operating in the Papa 6 & 7 or as a second available frequency when operating in either the P6 or P7.
 - H. Additional W291 TCTS frequencies: 229.775 / 313.675 / 374.15

Appendix 6

FW JET TCTS/EW Request

Date(s):	
Sqd/call sign/# a/c:	
Airspace:	
TOS(s):	(Zulu)
Mission:	(Air-to-Gnd or GTR etc. w/ T&R codes)
Link-16:	(Location/Net)
Adversaries:	
MLT:	(Requested track/ordnance (LGTR/Strafe))
EW SAM Threat System(s):	Include threat/location (from Chart) and TOS. Include a game plan and engagement order of threat systems (if more than one system). Finally, include actual TOS for threat system if different from TOS for airspace.
EW Brief:	(Time and place/method)
Debrief time/location:	(Time and place, include debrief products)
Comm/Frequencies:	See Appendix 5
GCI:	Include the location of GCI (Yuma or Miramar).
RTO:	Include the location of RTO (Yuma or Miramar).
POC:	POC to include e-mail and phone number.
Comments:	Any additional remarks pertinent to the mission.

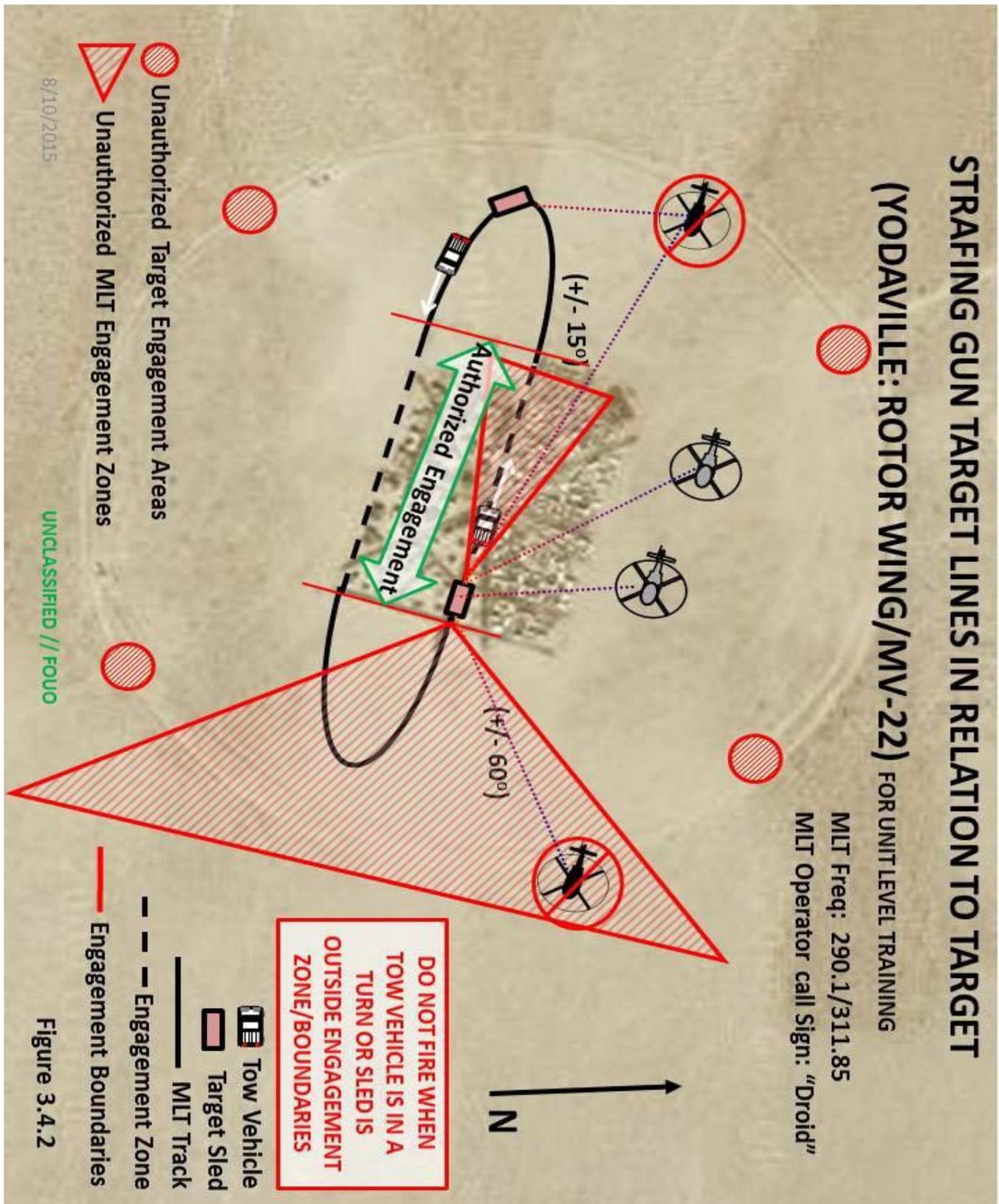
Appendix 7

Assault Support / EW Request

Date(s):	
Sqdrn / Callsign / # A/C:	
Airspace:	
TOS(s):	(Zulu)
Mission w/TR codes:	(Air-to-Gnd or GTR etc. w/ T&R codes)
MLT:	(Requested track/ordnance (LGTR/Strafe))
EW Threat System:	Include threat/location (from Chart) and TOS. Include a game plan and engagement order of threat systems (if more than one system). Finally, include actual TOS for threat system if different from TOS for airspace.
EW Brief:	(Time and place/method)
EW Debrief:	(Time and place, include debrief products)
Comm/Frequencies:	See Appendix 5
RTO:	Include the location of RTO (Yuma or Miramar). Note: Requesting squadron will need to provide
POC:	POC to include e-mail and phone number.
Comments:	Any additional remarks pertinent to the mission.

Appendix 9

Rotor Wing/MV-22 MLT Yodaville UTC



Appendix 10

Acronyms & Abbreviations

A/C	Aircraft
AOR	Area of Responsibility
ATE	Airborne Tracking Element
BRA	Bearing, Range & Altitude
DASC	Direct Air Support Center
EW	Electronic Warfare
FW	Fixed Wing
JAAM	Joint Anti-Air Modeling
JDS	Joint Display System
GCI	Ground Control Intercept
GPS	Global Positioning System
GTS	Ground Tracking System
HUD	Heads-Up Display
IRSSS	Improved Remote Strafe Scoring System
IFF	Identification of Friend or Foe
JPAS	Joint Personnel Adjudication System
MAG	Marine Air Group
MANPADS	Man-Portable Air Defense System
MCAS	Marine Corps Air Station
MDTC	Marine Division Tactics Course
MIRC	Military Internet Relay Chat
MLT	Moving Land Target
NAVSEA	Naval Surface Warfare Center
NAF	Naval Air Facility
POC	Point of Contact
RFMSS	Range Facility Management Support System
RTO	Range Training Officer
RTS	Rotary Wing Tracking System
SAM	Surface-to-Air Missile
SRSMS	Surface Range Scoring and Monitoring System
StaO	Station Order
SWTTR	Southwest Tactical Training Range
TACC	Tactical Air Control Center
TAOC	Tactical Air Operations Center
TCTS	Tactical Combat Training System
TDL	Tactical Data Link
TMS	Type, Model, Series
TOS	Time-on-Station
TSPI	Time Space Position Information
UTC	Urban Training Complex
UHF	Ultrahigh Frequency
VHF	Very High Frequency
WISS	Weapons Impact Scoring Set
WTI	Weapons & Tactics Instructor Course

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