

**BY ORDER OF THE COMMANDER
301ST FIGHTER WING**

**301ST FIGHTER WING MANUAL
13-212**



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Space, Missile, Command and Control

RANGE PLANNING AND OPERATIONS

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This 301st Fighter Wing (301FW) Manual extends the guidance of Air Force Manual (AFMAN) 13-212 Volume 1, Range Planning and Operations, 14 March 2023. This instruction is applicable to all military, civilian and contractor personnel utilizing the Falcon Bombing Range (FAL) and the Fort Sill Quanah Range (QRA). Waiver authority is delegated to the Range Operating Authority (ROA). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Department of the Air Force (DAF) Form 847, Recommendation for Change of Publication; route DAF Form 847s from the recommending office through the 301FW Publications/Forms Managers (301 CF/SCOK) to Higher Headquarters as necessary. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Instruction (AFI) 33-322, Records Management and Information Governance Program, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located in Air Force Records Information Management System (AFRIMS) at the Air Force (AF) Portal: <https://afirms.cce.af.mil/>. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

SUMMARY OF CHANGES

Changes to document contents include realignment with AFMAN 13-212 Volume 1; updates and/or changes to several supporting documents, references, and acronyms; aligned graphics with fonts consistent with the document; updates to several target arrays, especially T-4 and the laser training area; included the new mailing and delivery address of the range; changed the range

infrastructure to include the new Operations and Tower facilities; added new R-5601G low-level route procedures and floor; aligned Washita and Sheppard 1 MOA airspace scheduling with the Fort Sill procedures and added a new attachment depicting the joint MOA and restricted areas; changed the minimum vectoring altitude for the Fort Sill area; added a pop-up pattern graphic; added RCO duty period procedures and restrictions; removal of the northern WISS towers and sensors; clarification of the Triple-Check for coordinate-dependent munitions such as J-DAM; added 25mm to strafe procedures; included F-35 and contract CAS in the restrictions attachments; corrected communications, removed fax number, and realigned units.

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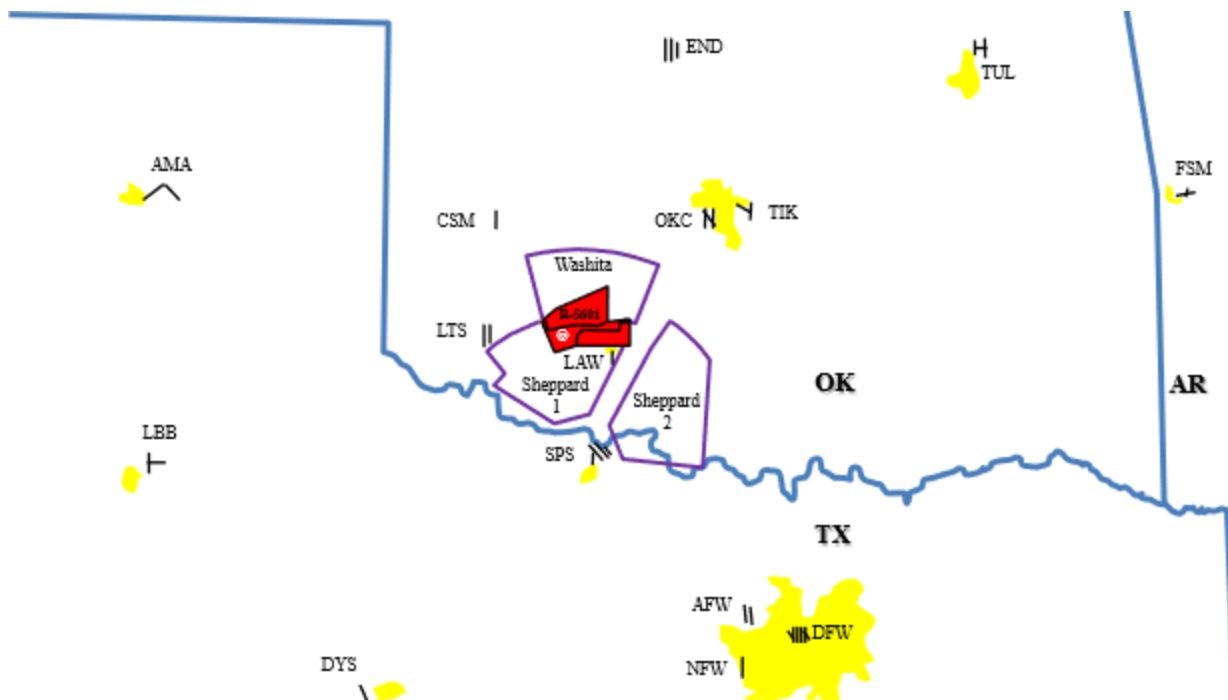
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Chapter 1

RESPONSIBILITIES AND SCHEDULING

1.1. General. The contents of this chapter are governed by paragraph 2.9.16 of AFMAN 13-212 Volume 1 and provide supplemental information for the conduct of operations on Falcon Range, a primary training range (PTR). The Commander, 301st Operations Group (301 OG) is responsible for operational control of Falcon Range. The 301st Operations Group Commander (301 OG/CC) monitors range flying and ground support operations to ensure effectiveness and safety. All personnel will comply with this chapter when operating aircraft or performing ground duties within the confines of Falcon Range. The range lies within R-5601 and is part of the Fort Sill range complex in southwest Oklahoma. The US Army Fires Center of Excellence maintains control and scheduling of the ground space and is the scheduling and controlling agency for the R-5601 airspace. Refer to [Figure 1.1](#) for local area depiction.

Figure 1.1. Falcon Range Local Area.



1.1.1. The Range Operating Authority (ROA) is the 301st Operations Support Squadron Commander (301 OSS/CC). The ROA is responsible for the funding and long-range planning of the range, in addition to the duties prescribed in AFMAN 13-212 Volume 1, Chapter 2.

1.1.2. The Range Operations Officer (ROO) is responsible for the safe and successful completion of missions flown on Falcon Range and the supervision of management, planning and maintenance. The ROO has authority over all ground operations and support functions on the range. The ROO will also be a fully-qualified Range Control Officer.

1.1.3. The Range Control Officer (RCO) is directly responsible for all range operations and air/ground safety during range operations.

1.2. Scheduling. The range scheduler is responsible for determining range availability and submitting requests through the Range Facility Management Support System (RFMSS) at Fort Sill. The ROO, or RCO in the absence of the ROO, resolves conflicts in range utilization with all users.

1.2.1. Units will schedule range periods and request changes through Falcon Range at DSN 639-6300, commercial (580) 442-6300. An alternate phone number is (580) 442-2043. Range scheduling requests should be submitted by the 15th of the month (or first workday after the 15th if weekends or holidays preclude accepting requests on the 15th) for the following month's flying schedule (e.g. March 15th for April schedule). Requests for night or weekend flying activities must be scheduled at least two weeks in advance to ensure airspace and personnel are properly scheduled. Falcon Range can accept short notice requests, subject to range availability. Requests received after the 15th of the month will be scheduled if range time is still available at the requested time. Late arrivals and/or cancellations must be coordinated with Falcon Range as soon as possible. Priority (in order) shall be given to real-world contingency (deployment/AEF) training (deploying within 120 days), higher headquarters-directed exercises (such as ORIs), the host unit (301st FW/457th FS), secondary users as defined by the Inter-Service Support Agreement, and finally to casual users. Requests of equal priority will be considered in order of receipt. The scheduler and ROO will resolve time conflicts in a fair and equitable manner based on priorities. The scheduler will then provide a copy of the monthly schedule to all users.

1.2.2. Special events, such as expending heavyweight inert ordnance or utilizing laser operations, require coordination prior to range time. Users will contact Falcon Range as soon as possible with these and other special requests.

1.2.3. Users will relay the planned lineup and events to Falcon Range to facilitate efficient management and setup of the range events and to verify weather and pyro status. This should be accomplished at least one hour before arrival, if feasible. Information should include, but is not limited to, call sign, number and type of aircraft, pilot numbers (if applicable), weapons delivery events, and targets.

1.2.4. Falcon Range mailing addresses are listed below in [Table 1.1](#).

Table 1.1. Falcon Range Mailing Address.

Small (Mailer) Packages and Letters	Falcon Range PO Box 620 Cache, OK 73527		Large Packages (Non-Freight)	Falcon Range 601 S. 8 th St. Box 620 Cache, OK 73527 * (“Box”, not “PO Box”)
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1.2.5. The physical address of the range gate is identified in [Table 1.2](#).

Table 1.2. Physical Address of the Range Gate.

2021 NW Post Oak Road
 Indianahoma, OK 73552
 GPS: N 34.638352, W 98.685531 (N34°38'18.2020", W 98°41'07.9747")
 MGRS: 14S ND 28820 32988

1.2.6. Cancellations and scheduling efficiency. Units canceling their range time will do so as soon as they find out about the cancellation. This allows other users the range time if needed, the ARTCC to release the airspace if required, and allows maintenance on the range.

1.2.6.1. Users will accurately forecast and schedule their needs. For example, units should not schedule 90-minute range periods while intending to only utilize the last 10 minutes as a matter of scheduling convenience.

1.3. Maintenance. Range maintenance documentation is maintained at Falcon Range. The ROA is responsible for obtaining support from outside sources for projects beyond the capability of the Falcon Range detachment. Falcon Range scheduling will notify users of expected closures at least 30 days in advance, if feasible.

1.4. Decontamination/Disposal. The ROA is responsible for scheduling range residue removal. The range contractor is responsible for the execution of the de-militarization, removal, and disposal of range residue.

1.5. Reports. The weapons scoring systems generate hard-copy score sheets. The completed forms will be forwarded to the appropriate unit using the agreed media.

1.5.1. Falcon Range personnel will compile and submit the Range Resources Utilization Data Reports monthly to the ROA, which will forward this data through channels to HQ AFRC/A3.

1.6. Command and Control. Command and control is exercised through Fort Sill. The RCO receives control of the range and R-5601C/D/E/F and R-5601G if scheduled from Fort Sill Range Control [(580) 442-2994 or -2008, DSN 639-XXXX] prior to the first range period. The RCO returns control to Fort Sill during periods of administrative downtime and at the end of the day.

1.7. Support Agreements. Copies of support agreements are kept on file at the 301st OG. The Resource Management Office at Fort Sill is responsible for the initiation and coordination of support agreements with tenant users.

1.8. Firefighting. Fires will be serviced by the Fort Sill Fire Department in accordance with the current support agreement. RCOs will report all fires to Fort Sill Range Control at (580) 442-2994/-2008. Only the Fort Sill Fire Chief can determine if a fire is minor or not. When practical, a Falcon Range RCO or contract employee will accompany the Fire Department down-range for orientation and safety.

1.8.1. Fort Sill Range Control will provide the specific pyrotechnic restriction status (“Pyro Status”) daily or more often if conditions change. Range Control may require cessation of operations due to increased fire danger. This may be a result of high winds, dry weather conditions, over-tasked Fort Sill or local firefighting equipment, or warnings issued by the National Weather Service. In the event of such conditions, the Fort Sill Fire Chief will issue a series of alerts through Range Control. The RCO may exercise discretion and add restrictions, such as restricting or denying some munitions and/or targets, when local conditions may preclude safe weapons employment. The standard Fort Sill pyrotechnic restrictions are Green, Amber, Red, and Black.

1.8.1.1. Green: All ammunition cleared for use may be expended.

1.8.1.2. Amber: Partial restrictions apply; all ordnance must remain within the impact area. Use extreme caution when employing IRCM flares.

1.8.1.3. Red: No pyrotechnics may be used. This is often referred to as a “RED PYRO” alert. No white phosphorous, illumination, smoke, or tracer ammunition may be employed. EOD detonations are prohibited. No visual threat simulators such as AAA pyrotechnics will be fired. Only cold-charge training munitions, training munitions with the spotting charge removed in accordance with T.O. 11A3-3-7, inert weapons or TP ammunition may be expended. Countermeasure flares may only be employed above 1000’ AGL / 2500’ MSL (or higher if required to ensure burn-out before ground impact). Dry attacks may still be conducted, and there are no restrictions on the use of lasers.

1.8.1.4. Black: No releases of any sort. The combination of humidity, available fuel, and winds raises an extreme danger of range fires, and a spark from a metal-on-metal or metal-on-rock hit may cause an out-of-control range fire. Dry attacks may still be conducted, and there are no restrictions on the use of lasers. Countermeasure flares may only be employed above 1000’ AGL / 2500’ MSL (or higher if required to ensure burn-out before ground impact).

1.9. Recommended Changes. Recommendations for change to this instruction will be submitted on a DAF Form 847, Recommendation for Change of Publication to the 301st Operations Support Squadron, at 1700 Tuskegee Airman Drive, NAS JRB Fort Worth, TX 76127-6200.

Chapter 2

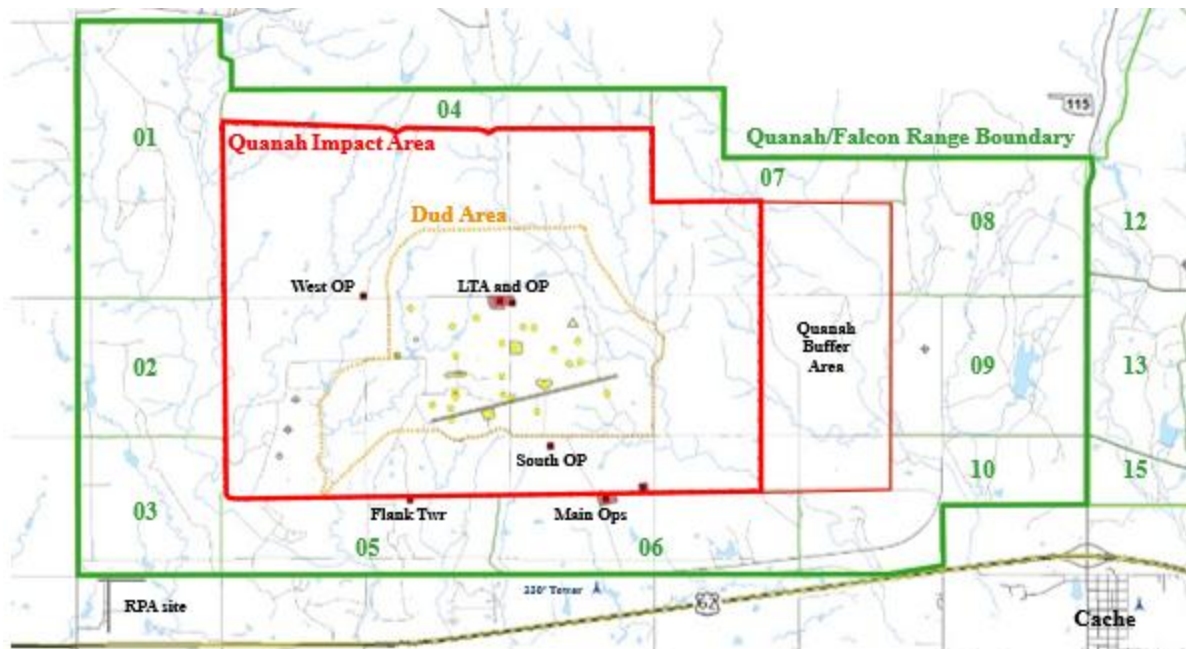
RANGE DESCRIPTION AND INFORMATION

2.1. General. Falcon Range is a Class A (manned) conventional and tactics range approved for both day and night weapons delivery. The range is located on the Fort Sill Military Reservation with the Quanah Range at N34° 39.4' W98° 42.6', SPS (CH 74) 343°/041 NM. The range impact area lies entirely within the Fort Sill Quanah Range Impact Area (QRA) and is within the 14S ND grid zone and square (MGRS and USNG). The mean target area elevation is 1400 feet MSL. Normal hours of operation are 0730-1800 CST/CDT Monday-Friday. Operations outside these periods require prior coordination. Refer to [paragraph 1.2](#) for details.

2.1.1. Range Layout. Falcon Range is a single range consisting of a conventional bomb circle, tactical target arrays, laser targets, and multiple mobile tactical targets. Infrared (IR) targets are available with prior coordination and approval. Ground and airborne laser designator use is approved. See [Attachment 5, Falcon Range Target Layout Diagram](#).

2.1.2. The Target Area is defined by the Fort Sill Quanah Range Dud Area. The Hazard Area is defined by the Fort Sill Quanah Range Impact Area. Ten adjacent ground training areas surrounding the impact area complete the Quanah Range maneuver space. The Quanah Buffer Area (QBA) consists of a rectangular 1200-acre area on the east side of the impact area and can be scheduled for either ground maneuver units or as an overflow area for certain weapons deliveries. Simultaneous use of the buffer area is prohibited. Under normal scheduling the QBA is unoccupied. Refer to [Figure 2.1., GIS Overlay](#) for a depiction of the range boundary, training areas 01 through 10, the impact, buffer and dud areas.

Figure 2.1. GIS Overlay.



2.2. Weather. Falcon Range possesses weather observation and reporting equipment. This provides immediate weather reporting capability to include ceiling and visibility, type of obscuration, lightning data, surface winds, and precipitation. It does not report upper level winds. Falcon Range cannot provide official forecasts and/or observations but can relay existing conditions and out-the-window observations. Pilots should contact their official weather facility for relevant nearby forecast information.

2.3. Scoring. Bomb impacts are optically plotted and scored by computer using the Weapons Impact Scoring Set (WISS). When the computer system is not working or uninstalled, bomb impacts are mechanically plotted by optical triangulation and scored by computer, on a limited number of targets. WISS allows digital and tape playback for verification and replots, and a score for each weapon during multiple releases, if the impact is within the camera field of view. WISS also allows video recordings for viewing later. Aircrews who want to have a visual record of their deliveries can coordinate with the RCO for a video backup, which can be sent to the user in various digital formats.

2.3.1. Accuracy. Nominal scoring accuracy is 1.5 meters. Bombs plotted three meters or less (computed deliveries) or five meters or less (manual deliveries) are scored as a “bull” or “shack”. Scoring accuracy decreases as a function of target distance from the main and flank towers. The targets on range are either point or area. Most targets are of the point variety, but some, such as some of the T-2 and T-9 targets, T-3SE, T-5NW, T-7C, and T-17 are area targets. Linear targets such as aircraft will have similar scoring, but on a smaller scale. Hits are based on the center of the target, so a hit on a building or bridge may visually be a direct hit but still score as a close miss (7 meters, for example).

2.3.2. RCOs transmit scores using distance/clock position (“7 [meters] at 2 [o’clock]”) based on the briefed attack heading. Inform the RCO if the attack heading varies from the standard 080° run-in; weapons scores will be adjusted.

2.3.3. Each scorable target can be scored day or night. Night missions require hot charges (e.g. Mk-4) since scoring requires a visible flash within the camera field of view. Cold charges or inert weapons will not be visible at night. Coordinate desired targets with the RCO prior to complex missions or deliveries to prevent confusion. Certain wind or visibility conditions may limit the effectiveness of the scoring system due to target obscuration. Additionally, wet conditions in the target area may preclude accurate daytime scoring of inert munitions and “duster” training rounds.

2.3.4. WISS can score only one target area/complex at a time. If multiple target arrays are attacked, scoring is only available for one, unless the target arrays/complexes are serviced by the same cameras. Multiple targets can be scored with a combination of WISS and manual scoring with prior coordination.

2.3.5. If the WISS is not available, a manual scoring system can be employed. Because it requires multiple personnel in a location not normally manned, it requires at least a one hour lead time. Users will be notified of WISS outages and the restrictions that are required to properly score weapons impacts. Only single releases can be scored on a reduced number of target arrays and specific targets inside the array.

2.4. Target Arrays. The conventional target is T-1. Target arrays T-2 through T-25 are tactical targets located throughout the range complex. Refer to Attachments **4 through 9** for target area details, run-in headings, authorized ordnance, etc.

2.4.1. Target Array 1 (T-1), Conventional Bomb Circle. The bomb circle is an outlined graded circle of 91 meters (300 feet) radius. It has two concentric circles of white tires at 23 meters (75 feet) and 45 meters (150 feet) radius. The center of the circle has a clearly identifiable target for aiming reference (usually a small POL tank, but also may be a salvaged vehicle, commo box, or stack of tires.) The target is painted to contrast with the surrounding area. The DPI is the center of the aiming reference. WISS scoring is available on this target. Additionally, there are three white aim points (highly visible markers) located 12 o'clock from the target on a 080° bearing at 1000, 1500, and 2000 feet. These are used only for aim-off distance reference.

2.4.2. Tactical Target Arrays: Several target sites are available for tactics training, employing sub-scale or inert munitions or for TGP attacks. Several of these targets are not visible from the control towers, resulting in the inability to provide attack results and/or weapons deliveries scores. When identified, dimensions are east-west by north-south. Target descriptions in this instruction may change due to target change-out as a result of damage, or due to target area upgrades. Changes will be made available on the range web pages as range NOTAMs.

2.4.2.1. Target Array 2 (T-2), North Ramp. The North Ramp is a graded east-west rectangle approximately 100 x 85 meters. This target array has numerous major DPIs in a circular configuration. T-2W, T-2NW and T-2C1 are armored targets. T-2N and T-2NE are buildings oriented east-west. T-2E1, T-2E2 and T-2E3 are vehicles. T-2S is a rocket launcher and T-2SE is a radar/communications van. T-2C is a small shack in the center of the array with several barrels and a vehicle immediately adjacent, and T-2SW is a mortar pit on the southwest corner of the array. Several full-sized mannequins and personnel simulators complete the array. This target array is suitable for inert heavyweight deliveries. WISS scoring is available on this target array. Care must be exercised so as not to drop on the LTA 500 meters north. Refer to **Attachment 6, Target Array Details**, for details.

2.4.2.2. Target Array 3 (T-3), East Ramp. The East Ramp is a graded rectangle 85 x 70 meters. This target array has four individual DPIs, including an SA-8 inside a revetment (T-3NW), a fighter aircraft inside a revetment (T-3NE), an aircraft hangar constructed of Sea-Land containers with an aircraft inside (T-3SE) and a security detail vehicle/BMP-2 (T-3SW). WISS scoring is available on this target array. Refer to **Attachment 6, Target Array Details**, for a detailed target array diagram.

2.4.2.3. Target Array 4 (T-4), POL Site. This target array is comprised of several POL tanks, buildings, and vehicles. A road connects the site to the runway on the north side, and two roads connect to an adjacent north-south road on the east side of the array. Two catwalks connect four buildings/pump houses, and several tanks and buildings are connected to others with railroad ties simulating above-ground pipes. The proximity of this array to the South OP negates its use as a kinetic target if the OP is occupied. WISS scoring is available on the targets. Refer to **Attachment 6** for a detailed target array diagram.

2.4.2.4. Target Array 5 (T-5), West Ramp. The West Ramp array resembles a dispersed, revetted alert aircraft parking and munitions holding area. The approximate dimensions of this target are 120 x 100 meters. This ramp has five individual DPIs, consisting of two alert aircraft (T-5E and T-5W), a fuel truck (T-5S), plus a hangar with an aircraft inside (T-5NW). An aircraft on the taxiway (T-5NE) completes the array. WISS scoring is available on this target array. Refer to the run-in restrictions for this target. Refer to [Attachment 6](#) for a detailed target array diagram.

2.4.2.5. Target Array 6 (T-6), Howitzer Row and POL. This target array consists of nine separate DPIs. The western howitzers (T-6W1, T-6W2, and T-6W3) are comprised of three self-propelled howitzers at the west end of an east-west graded area of approximately 225 x 30 meters. An ammo support site (T-6A) and a small support building (T-6B) are located east of the howitzers. The POL site (T-6C) is three POL tanks sited vertically in the middle of the array. T-6D is a single SAM located immediately north of T-6C. T-6E is an APC providing security at the east end of the array. A single SA-13 target (T-6N) is located 90 meters northeast of T-6C. WISS scoring is available on this target array. Refer to [Attachment 6](#) for a detailed target array diagram.

2.4.2.6. Target Array 7 (T-7), Base Operations. The Base Operations array is inside an irregular graded area approximately 90 x 90 meters. This target has five individual DPIs, consisting of a building 13 meters high constructed of Sea-Land containers (T-7C), a visual simulation of a ZU-23-2 on the second story of the building on the northwest side (T-7C AAA), a Jeep (T-7NW), a base ops/FOLLOW ME truck (T-7NE), and a small helicopter (T-7SE). WISS scoring of T-7C is from the center of the building; it is possible to hit the building and still receive a score of 7-10 meters. It is not a point target. Refer to [Attachment 6](#) for a detailed target array diagram. NO STRAFE OR HEAVYWEIGHT ORDNANCE IS ALLOWED.

2.4.2.7. Target Array 8 (T-8), Armored Vehicles. This target array has two individual sets of DPIs, consisting of armored vehicle assembly areas. Scoring is not available; T-8N and T-8S are scored to Hit or Miss only. The DPI areas are separated by 350 meters north-south.

2.4.2.8. Target Array 9 (T-9), Village. This target array consists of numerous small buildings and vehicle targets which represent an insurgent camp or village. The actual DPI must be identified for accurate scoring. Some of the buildings are constructed of Sea-Land containers and are linear targets. WISS scoring is from the center of each structure or target. Refer to [Attachment 6](#) for a detailed target array diagram.

2.4.2.9. Target Array 10 (T-10), Helicopter. This single helicopter target and support truck is not visible from the range control towers and cannot be scored.

2.4.2.10. Target Array 11 (T-11), Vehicles. This cluster of four vehicles is not visible from the range control towers and cannot be scored. T-11W consists of two vehicles near a pond. No airborne laser designators are authorized on T-11W due to the close proximity of the pond. T-11NE consists of a technical truck with a ZPU-4 AAA gun mounted in the bed, and T-11SE is a technical truck with a single-shot rocket launcher mounted in the bed and oriented to the southwest. Lasers are authorized on T-11NE and T-11SE.

2.4.2.11. Target Array 12 (T-12), Reinforced Bunker. This target is an earthen mound with a door and lumber abutments on the west side and a vent pipe on the top. This target array is suitable for inert heavyweight deliveries and can be WISS-scored. Care must be exercised so as not to drop on the LTA 500 meters north.

2.4.2.12. Target Array 13 (T-13), Runway. The runway on Falcon Range is 7400 feet (1.25 NM) long by 120 feet wide. It is oriented 070/250° and is covered with gravel to present the appearance of a real runway. Due to the linear design of this target, scoring is not available. The remote moving targets are normally operated on the runway.

2.4.2.13. Target Array 14 (T-14), Alert Aircraft. This target array is located on the west end of T-13 and is adjacent to the north and south side of the runway and replicates two aircraft (T-14N and T-14S) on strip alert. A small alert shack, T-14E, is located 10 meters northeast of T-14N. A second shack, T-14W, is located 15 meters southwest of T-14S. A maintenance truck is located adjacent to the cockpit of T-14S. This target array is located just south of T-15. Scoring is not available for these targets

2.4.2.14. Target Array 15 (T-15), AAA Site. T-15 is a standalone AAA gun site. It is visually modified to present a ZU-23-2 silhouette. This target is located immediately north of T-14 and is not scored.

2.4.2.15. Target Array 16 (T-16), Radar Site. Scoring is available for this radar van (T-16A) and support vehicle (T-16B). The TTR dish for the radar is on the west face of the target and points southwest. The DPis are the centers of the radar van and vehicle.

2.4.2.16. Target Array 17 (T-17), Bridge. This linear target is constructed from Sea-Land containers and is painted gray. It is approximately 200 feet in length. DPis are provided for the north, south, and center of the bridge and a single Jeep target located on the top of the bridge. Two vehicles are located on each approach to the bridge, and additional targets are located at the southern end of the bridge. WISS scoring is available on this target array. Scoring of the bridge is from the portions of the target designated, north, center or south sections; it is possible to hit the bridge and still receive a score of 7-10 meters. It is not a point target. The vehicles are considered point targets but because of their linear nature a hit may still not be scored as a direct hit. Additionally, because the Jeep is located atop the bridge (7 meters elevation) any long bombs may result in significant miss distances. **NO STRAFE OR HEAVYWEIGHT ORDNANCE IS ALLOWED.** Refer to [Attachment 6](#) for a detailed target array diagram.

2.4.2.17. Target Array 18 (T-18), ZSU-23-4. This is a single ZSU-23-4 viz-mod located east of T-7. It is at the base of a tree and is camouflaged. Scoring is available for this target. No airborne laser designators are authorized on this target due to the close proximity of a pond.

2.4.2.18. Target Array 19 (T-19), Downed Aircraft Target. This target simulates a downed counterinsurgency or forward air controller-type aircraft. It is a small aircraft located east of the LTA. WISS scoring is available, although the limits of the scoring system field of view may preclude significant misses from receiving a score. Only subscale munitions and rockets are authorized. **NO STRAFE OR HEAVYWEIGHT ORDNANCE IS ALLOWED.**

2.4.2.19. Target Array 20 (T-20), Construction Equipment. This target consists of a utility truck, a dump truck, and a backhoe in the process of building a fighting position. Scoring is not available.

2.4.2.20. Target Array 21 (T-21), 2 Tactical Vehicles. This target array consists of one viz-mod BM-21 rocket launcher truck and one supply truck. Scoring is not available.

2.4.2.21. Target Array 22 (T-22), 2 Tactical Vehicles. This target consists of two trucks, one dump truck and one utility truck with an integral AAA piece mounted on the rear. This target array follows a small creek and is adjacent to some vegetation. Scoring is not available.

2.4.2.22. Target Array 23 (T-23), 2 Tactical Vehicles. This target consists of two trucks, with the northern truck adjacent to a north-south embankment, and the southern truck within a revetment cut from the embankment. This tactically challenging target array is not visible from the range control towers. Scoring is not available.

2.4.2.23. Target Array 24 (T-24), 2 Tactical Vehicles. This target consists of two tactical vehicles immediately adjacent to the north side of a clump of trees. This target array challenges acquisition and identification and is not visible from the range control towers. Scoring is not available.

2.4.2.24. Target Array 25 (T-25), Convoy. This target depicts a tactical convoy consisting of several light trucks or technical vehicles. It is oriented north-south and is suitable for High Angle Strafe only.

2.4.2.25. AC-130 Target Array. This target array is placed inside a triangular firebreak with an east-west base and a vertex pointing north. This allows for proper identification of the target area. Several targets are placed inside the target array, including armored vehicles and simulated buildings. This is the only target array that can support AC-130 105mm training rounds. It can be engaged with strafe from other fixed wing aircraft and sidefire gunnery from helicopters/CV-22s as well. Bombs and rockets are prohibited. WISS scoring is available on this target array.

2.4.3. Mobile Vehicle(s). These are various mobile vehicles which can be placed at selected locations within the Falcon Range airspace, including a working replica of a SCUD missile system. These targets are for IR and TGP use only and will be at the user's request. The location of these targets will be random, unless a user has a specific location based on a scenario. The coordinates will be sent to users and will be in a format and accuracy based on the user's scenario. Because these are mobile targets, they may be outside the impact area. **DO NOT EXPEND ORDNANCE ON THESE TARGETS.**

2.4.4. No-Drop Targets. There are several no-drop targets inside the impact area but outside the Quanah Dud Area which can be used for dry tactical deliveries. Combat lasers can also be employed against these targets, but no actual ordnance of any kind may be employed. These targets include trucks, construction equipment, a pair of rotators, and an actual BRDM and MTLB. These targets are in a fixed location. Refer to the end of [Table A9.9](#) for details.

2.4.5. Moving Targets. To accommodate training objectives, the range can provide various moving targets in and out of the impact area.

2.4.5.1. Unmanned moving targets. The range possesses several unmanned vehicles which can be used for attacks with both lasers and training munitions. Generally, these use HMMWV or SUV-type vehicles. A GPS-guided vehicle is laser-only and can be used for combat laser designations only. Additional vehicles are command-guided, using a remote driver to operate the vehicle. In order to maintain footprint control and allow the vehicle an opportunity to turn around, the runway (T-13) is the target area of choice. For munitions employment, pilots can attack a towed target array which consists of a target in the shape of a truck towed 150-200 feet behind the tow vehicle. To preserve the tow vehicle for future use, aircrews must only attack the towed array, which is painted to contrast with the tow vehicle. Contact the range in advance to verify availability, since the vehicle is normally garaged and is not left on the range; at least 3 and up to 24 hours may be required. Inert and training munitions as well as 20mm, 25mm and 30mm strafe may be used.

2.4.5.2. Manned moving targets. Range personnel can operate range vehicles as needed to allow for dynamic tasking within dry (no-drop) scenarios. Additionally, the range can provide personnel to maneuver throughout the impact area as part of the scenario. Coordinate with the range at least one hour prior to ensure availability and to provide scenario inputs, if needed. Joint Terminal Attack Controller (JTAC) personnel can act as their own scenario inputs with the concurrence of the RCO but are restricted to gravel roadways and the LTA. No JTAC personnel are allowed into kinetic target arrays. Attacks will be dry with the flight verifying that no ordnance can be employed prior to commencing any attacks. No lasers may be employed at any time against manned targets unless designated as eye-safe by the 711th HPW/RHDO Optical Radiation Safety Office. Minimum altitudes and ranges will be in accordance with FAA and service directives.

2.4.6. Laser Training Area (LTA). This target area consists of a generic village-type target. Some buildings within the array are constructed of Sea-Land containers and plywood, while others are actual small shack buildings constructed of metal and wood. The area also includes various items associated with cultural buildups, including telephone poles, vehicles of various sizes and types, and a pair of top-down targets constructed of a large tire with high-contrast white gravel, simulating a manhole or hide-site. The scoring system support equipment is located in the middle of the LTA, and two 40' towers which house the laser sensors are located within the LTA. The western tower is guyed, with the wires marked by orange aerial marker balls. THIS TARGET AREA IS FOR LASER TRAINING ONLY and is not approved for any weapons deliveries. A number of targets can be scored using combat lasers. Refer to [Attachment 11](#) for details.

2.4.7. Offset Aim Points (Radar Reflectors). Three radar-reflective offset aim points (OAPs) are available. These reflectors are optimized for a 080° heading. The north OAP consists of 2 metal radar reflectors and is located 3091 meters north of T-1. The south OAP is located 1378 meters southeast of T-1. The west OAP is located 1423 meters south-southeast of T-1 and 617 meters west of the main tower. Refer to [Attachment 8, Manned Sites and OAPs](#), for coordinates.

2.5. Strafe Targets. Most tactical targets are available for high angle strafe (greater than 15° dive), employing 20mm, 25mm, and 30mm TP/TPT. Contact the RCO or refer to [Attachment 9](#) and [Attachment 10](#) for details. The low angle strafe targets are located 500 meters WSW of the bomb circle and consist of two strafe targets, oriented north-south mounted between telephone poles and separated by 40 meters. These targets are constructed of drag or cargo extraction parachutes or a similar visually recognizable target; generally, only one will be available. Low and high angle strafe passes are acoustically scored using the Improved Remote Strafe Scoring System (IRSSS). The scoring system requires a reset time after logging bullet impacts. Allow at least 30 seconds between aircraft on the same target or else the system may not accurately score the impacts. A foul line consisting of two rows of white-painted barrels with marking poles is located 2000 feet west of the strafe pits and is oriented north-south perpendicular to the run-in. A line of barrels leads into the strafe target area from west-to-east. Additionally, 25 meters south of the two low-angle strafe targets is a single high-angle strafe target that is also acoustically scored. It consists of a target on a five-foot high mound of soil. Contact the RCO with the type of ammunition being used. The run-in heading for both low angle strafe and high-angle strafe on the dedicated strafe targets is $080^\circ \pm 10^\circ$. See [Attachment 6](#) for diagrams.

2.5.1. The low-angle strafe targets will be closed if standing water accumulates in the strafe beds or if the strafe pits are frozen, as this increases the risk of ricochets and invalidates the weapons footprints. The strafe beds will be maintained in accordance with the schedule of AFMAN 13-212 Volume 1 Chapter 5, or as directed by the RCO based on assessment of the strafe bed conditions.

2.5.2. Low-angle strafe fouls are validated with a camera and recorder system. The RCO immediately observes the cease-fire ranges for strafe and records the cease fire range for later review.

2.6. Range Real Estate and Airspace Restrictions. Falcon Range is located on the Fort Sill Military Reservation. The air and ground space is part of the US Army Fires Center at Fort Sill, which is the scheduling agency. When the airspace has been activated by Fort Sill, the Falcon Range Control Officer controls only the airspace overlying Falcon Range (R-5601C/D/E/F), and R-5601G if scheduled. Do not enter the range without clearance from the Range Control Officer. Refer to [Figure 2.2., Local Airspace](#).

2.6.1. Fort Sill Artillery Areas. R-5601A/B/H/J (east of the Falcon Range impact area and east of highway 115) extends from surface to 40,000 feet. R-5602A/B overlie the A/B/H/J airspaces, from 40,000 to 60,000 feet. These restricted areas are not part of Falcon Range. R-5601A is often referred to as “East Range”, and R-5601B is often referred to as “West Range”. Do not penetrate this airspace without clearance from Fort Sill Approach Control, the JTAC (as coordinated prior to the range events), or through the Falcon Range RCO. R-5601A/B/H/J may be used for overflight in order to employ weapons and lasers from the east, with prior coordination at least one day prior. The airspace may not be available on a short-notice basis. If authorized to operate in R-5601A/B/H/J it is essential that altitude restrictions be followed precisely when surface fires such as artillery and small arms are employed below. Refer to [paragraph 2.7](#) for scheduling requirements.

2.6.1.1. R-5601H overlies the Fort Sill cantonment area from surface to 40,000 feet MSL. This small area fills in a hole in the restricted area and provides unmanned aerial vehicles airspace for operations from Henry Post AAF. Much of the area under R-5601H is densely populated and subject to populated area overflight restrictions. Prior permission for activation is required from Fort Sill Range Control.

2.6.1.2. R-5601J (north of the impact area) extends from 500 feet AGL to 24,000 feet MSL. Up to 40,000 feet MSL is available with one-day prior coordination. R-5601J connects the Washita MOA and R-5601G with the R-5601A/B (Fort Sill West Range), allowing increased maneuverability and tactical flexibility.

2.6.1.3. R-5602A and R-5602B are primarily used for above-the-horizon high-energy lasers. R-5602A overlies R-5601B/H/J and R-5602B overlies R-5601A. Prior permission for activation is required from Fort Sill Range Control.

2.6.2. Falcon Range. R-5601C/D/E/F overlay the Falcon Range Complex. R-5601G allows Washita MOA extended operations. See [Attachment 3, Restricted Area R-5601](#), for restricted area airspace boundaries.

2.6.2.1. R-5601C (defined generally as overlying the Falcon Range boundary) normally extends from surface to 24,000 feet MSL. Up to 40,000 feet MSL is available upon request. Users requiring the higher airspace must contact Falcon Range at least one day prior to the scheduled range period for this additional vertical airspace.

2.6.2.2. R-5601D (north and west of the impact area) extends from 500 feet AGL to 24,000 feet MSL. Up to 40,000 feet MSL is available with one-day prior coordination. Users requiring the higher airspace must contact Falcon Range at least one day prior to the scheduled range period for this additional vertical airspace. This area overlies the Wichita Mountains Wildlife Refuge. When practical, the minimum altitude when flying over the refuge is 3000 feet AGL / 5500 feet MSL.

2.6.2.3. R-5601E (south of the impact area) extends from 500 feet AGL to 6000 feet MSL. R-5601E lies underneath the Sheppard 1 MOA with a 2000-foot buffer which may also be used as a VFR transition corridor.

2.6.2.4. R-5601F (north and east of the impact area) extends from 500 feet AGL to 24,000 feet MSL. Up to 40,000 feet MSL is available with one-day prior coordination. R-5601F connects the Washita MOA with the R-5601C/D (Falcon Range), allowing increased maneuverability and tactical flexibility.

2.6.2.5. R-5601G (north and east of the impact area) is a large maneuvering area which allows laser employment into the Falcon Range and Fort Sill West Range impact areas and normally extends from 500 feet AGL to either 7000 or 7999 feet MSL. If the area is not used in conjunction with the Washita MOA above it, then the top is only 7000 feet MSL. If used in conjunction with Washita MOA, then the top extends to but does not include 8000 feet MSL. Additionally, the floor can be limited to 2500 feet AGL if used by low-level aircraft on published SR routes. This area is not available without prior coordination;

allow at least 24 hours for scheduling coordination, with one week as the recommended request lead-time. R-5601G connects the Washita MOA and the Falcon Range and West Range impact areas through R-5601F. This area overlies the Wichita Mountains Wildlife Refuge. When practical, the minimum altitude when flying over the refuge is 5500 feet MSL.

2.6.3. Sheppard AFB controls two adjacent MOAs:

2.6.3.1. The Sheppard 1 MOA, located directly south of Falcon Range, extends from 8000 feet MSL – FL220. Avoid this high-density student training area unless in contact with Sheppard Area Monitor (236.825) or if approved for use of Sheppard Areas 8 and 9.

2.6.3.2. The Washita MOA, located directly north of Falcon Range, extends from 8000 feet MSL – FL220, to FL260 if requested and approved. Avoid this high-density student training area unless in contact with Fort Worth Center (269.375), or unless scheduled and authorized to use it as part of a Falcon Range or Fort Sill scenario.

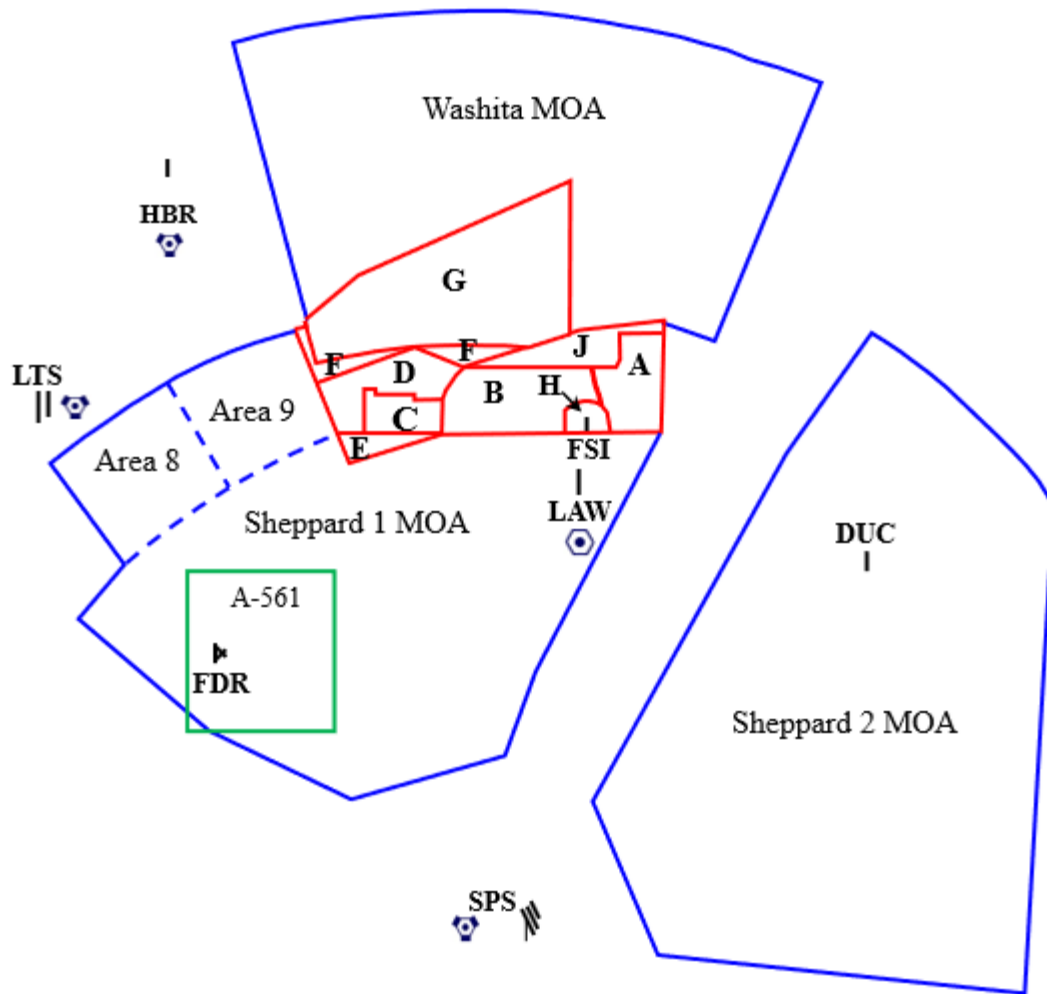
2.6.3.3. Sheppard Areas 8 and 9 are located in the extreme northwest part of the Sheppard 1 MOA. These sub-areas may be used in conjunction with R-5601 when Sheppard AFB has activated the MOA. The area is depicted in [Attachment 2](#) and is approximately 10 NM northwest/southeast by 20 NM northeast/southwest. This allows aircraft to operate within special use airspace during operations at Falcon Range from 10,000 feet MSL to FL220.

2.6.3.3.1. Sheppard Areas 8 and 9 may be authorized during times the Sheppard MOA is active. Contact Falcon Range to request the airspace, allowing at least 24 hours for coordination; any less likely will result in a denial of the airspace. When requested by Fort Sill Army Radar Approach Control (ARAC), the Altus Shelf (Areas 8 and 9 in Sheppard MOA 1, as depicted in [Attachment 2](#)) may be utilized by Fort Sill ARAC for air activities. The Fort Sill Air Traffic and/or Airspace Officer will coordinate with the 80th FTW Scheduling Office and the Sheppard Airspace Management Staff in advance of any operation in this airspace. Sheppard Radar Approach Control will protect that area 10,000 MSL and above until Fort Sill ARAC air activities have ended. Refer to [Attachment 4, MOA and Restricted Area Joint Use](#).

2.6.3.3.2. Sheppard training has priority within the airspace; if Sheppard is using the airspace for primary training it may not be available. If the airspace is allocated to allow operations with R-5601 then Sheppard AFB aircraft will be restricted from operating in Areas 8 and 9. The airspace can be recalled at any time for Sheppard AFB training.

2.6.3.3.3. Use the Falcon Range frequency for operations in Areas 8 and 9.

Figure 2.2. Local Airspace.



2.6.4. The Altus AFB visual and instrument patterns, oriented north/south, are situated east of Altus AFB. The Altus TRSA is approximately 10 NM west of the range boundary and extends 2700 feet MSL to 7500 feet MSL from 5 to 10 NM from the LTS VORTAC, and from 3500 to 7500 feet MSL from 10 to 15 NM from the VORTAC. Expect to see a variety of large transport aircraft in the patterns.

2.6.5. The terrain rises sharply to over 2500 feet MSL three miles north of the impact area in R-5601D.

2.6.6. There is a lighted tower with guy wires located two miles south of the range on the edge of the restricted area, located at N 34 38.400 W 098 41.510, elevation 1675' MSL / 330' AGL.

2.6.7. Do not overfly the main tower (80 feet AGL) or flank tower (85 feet AGL) below 500 feet AGL. Avoid hot attacks with final headings in the direction of manned sites.

2.6.8. An inactive airfield is immediately adjacent to the southwest part of R-5601C and underneath the western part of R-5601E. The site consists of a north-south runway 2200 feet in length, and an east west 1500-foot runway. If it is ever activated it can be used to launch and recover unmanned aerial vehicles.

2.7. Large-Scale Airspace Scheduling and Utilization. In order to accommodate large-force employment, heavy bomber missions or inertially-aided munitions, the entire R-5601 complex may be requested. Additionally, the Washita MOA and ATCAA to the north ([paragraph 2.6.3.2](#)) and the Sheppard 1 Areas 8 and 9 ([paragraph 2.6.3.3](#)) may be requested for maneuver. Missions may be flown as the sole operator in the MOA/ATCAA, or above another mission operating below. Adhere to all altitude blocks and restrictions issues by Fort Worth Center. Refer to [Attachment 4, MOA and Restricted Area Joint Use](#).

2.7.1. Request the use of the airspace through Falcon Range. Provide the number and type of aircraft, call-sign (if known), the weapons and/or lasers to be employed (if any), tactics and weapons delivery events, the requested airspace and altitudes, the date and time requested, and the flying unit and point(s) of contact.

2.7.2. Falcon Range will forward the request to the appropriate Fort Sill agency. Range Control will authorize the use of R-5601 A, B, H and J. The Fort Sill Air Traffic and/or Falcon Range will coordinate with the 80th FTW Scheduling Office, the Sheppard Airspace Management Staff and Fort Worth ARTCC for the use of Sheppard 1 and/or the Washita MOA and ATCAA.

2.7.3. Allow 72 hours for coordination of the Washita MOA and R-5601B/J. Requests made with less time may not be completed before the mission time. Note: USAF units should not utilize the Center Scheduling Enterprise (CSE) but instead request from the range directly.

2.7.4. Once approved for R-5601 operations, aircrews will be briefed on their minimum altitude. Do not violate this altitude, since direct and indirect fires, including live artillery, may be present underneath the floor of the airspace with an appropriate buffer.

2.8. Noise Abatement Restrictions. Aircrews using IR-105 / VR-104 / VR-1137 will avoid the town of Cooperton at N3452.0 W9852.0.

2.8.1. The Wichita Mountains Wildlife Refuge is located 3NM north of the impact area. Do not overfly the refuge below 3000 feet AGL / 5500 feet MSL.

2.8.2. Do not overfly the towns of Indianahoma or Cache below 3000 feet MSL.

2.8.3. Do not overfly at low altitude the two small farms 4.2 miles WNW of T-1, one mile west of Indianahoma Road, at N 34 40.7 W 98 46.4.

2.9. Communications. Falcon Range utilizes UHF, VHF, LMR, and telephonic communications equipment.

2.9.1. UHF. Falcon Range primary UHF frequency is 363.7; the secondary UHF frequency is 238.8. Additionally, a tertiary backup of 342.3 may be used with prior coordination.

2.9.2. VHF: Falcon Range has the capability to communicate / control utilizing VHF-AM frequency 141.85 (P) or 140.9 (S).

2.9.3. Secure communications: Falcon Range cannot monitor secure voice transmissions. Flying units will always monitor range operations frequencies in a non-secure mode. Air and ground units may operate in secure voice for administrative or coordination purposes but not for control, and only with coordination and authorization from the RCO.

2.9.4. LMR: Falcon Range utilizes a variety of Land Mobile Radios (LMR) for internal communication requirements and to support weapons scoring, moving target operations, laser designation, and threat simulators.

2.9.5. Telephone numbers are listed in **Table 2.1., Falcon Range Telephone List**, and range frequencies are depicted in **Table 2.2., Falcon Range Frequency Table**.

Table 2.1. Falcon Range Telephone List.

Falcon Range and Fort Sill Commercial	COMM (580) 442-XXXX
Falcon Range and Fort Sill DSN	639-XXXX
Falcon Range (VoIP)	(580) 442-6300 / 2043 / 5862
Falcon Range (Cache commercial line)	COMM (580) 429-8344
Falcon Range Tower (when manned)	X-6389 / 6397
OL-A, 3rd Weather Squadron (Fort Sill)	X-4000
Fort Sill Airfield Operations	X-5808 / 6160
Fort Sill EOD	X-8888 / 2313
Fort Sill Fire Dept	X-3255 / 4905 / 5911
Fort Sill Range Control	X-2008 / 2994 / 6191
Army Radar Approach Control (ARAC)	X-2004 / 2387
301 FW/CP, NAS JRB Fort Worth	(817) 782-6888/90/92

Table 2.2. Falcon Range Frequency Table.

Falcon Range Primary / Secondary / Tertiary	363.7 / 238.8 / 342.3
Falcon Range VHF Primary / Secondary	141.85 / 140.9
Fort Sill Ranges Close Air Support Control	356.5 / 344.5
Altus AFB Approach	257.725 / 125.1
Fort Sill (Henry Post) Approach	322.4 / 120.55
Henry Post AAF (Fort Sill) Tower (Normally closed)	229.4 / 124.95
Lawton – Fort Sill Regional Tower	257.8 / 119.9
Fort Worth Center – North (includes Washita MOA)	269.375 / 128.4
Fort Worth Center – South	350.35 / 126.45
Sheppard Area Monitor (MOAs)	236.825 / 124.85

2.10. Night Vision Device (NVD) and Night Operations. Falcon Range has full night capability. This includes NVD and target marking capability (both IR and visible light).

2.10.1. Range personnel have a variety of night vision devices (Generation III NVGs) and IR pointers. IR Pointers will be employed from the main and flank towers. If aircrews do not wish to use this service, they should coordinate it in advance, as it will be provided to all night missions.

2.10.1.1. The Warner Robins AFB depot (AFLCMC) provides service and exchange of NVGs used on-range.

2.10.2. Towers are marked with red obstruction lights for night identification, an infrared (covert) letter “M” oriented so as to appear correctly from west-to-east on the EW building north of the main tower. When manned, the towers will also display an infrared strobe light. To preclude NVD washout and halo effects the main tower red obstruction lights will be turned off unless the aircrews request otherwise.

2.10.3. The LTA towers are lighted with visible red strobes which have been filtered unless pilots request them to be off.

2.10.4. Standard target lighting is depicted in [Attachment 7](#). Additional targets can be lighted at the aircrew’s request with at least two hours’ prior coordination to allow setup. Targets can be illuminated with both covert (IR/NVD only) or overt (visible/unaided eye) lighting that is radio-controlled from the main tower. However, not all targets have good radio line-of-sight from the towers and some are in inaccessible areas. Contact Falcon Range for capabilities.

2.10.5. Range personnel will ensure cultural lighting around the operations area and the maintenance area is reduced or eliminated. This includes turning off outside lights, weather station obstruction lights, windsock lighting, and any other lights that may cause distraction. The lighting on the weapons residue storage area 450 meters east of the main tower will remain on during night operations.

2.10.6. There is some cultural lighting interference from the sparsely populated housing areas and US Highway 62 to the south, from the city of Lawton to the east, and from the Wildlife Refuge work center located adjacent to the northwest corner of the range complex.

2.11. Helicopter Operations. Helicopters may use the lighted helipad located 245 meters/800 feet NW of the main tower. The helipad is a square concrete slab 50'x50' (15m x 15m). The helipad has standard “H” markings, and is reinforced and stressed to support aircraft up to 40,000 lbs.

2.11.1. Eight lights provide night identification of the helipad. The lights are normally off; aircrews may request the lights to be turned on with prior coordination. If in contact with the RCO, allow approximately five minutes for the lights to be turned on. Similar coordination is required for the lights to be turned off. The helipad lights are not NVD-compatible.

2.11.2. A lighted windsock is located 110 meters/360 feet to the southeast of the helipad. Windsock lighting requires the same coordination as the helipad edge lighting. The windsock is on a photocell and is normally on after dark, except during scheduled night range missions, when it is turned off to preclude NVD interference.

2.11.3. Additional helicopter landing zones are located immediately south of the helipad at grid ND 28150 34000 (14S grid zone) and west of the main operations area at grid ND 28165 33780.

2.11.4. Helicopter crews may request landing at their discretion in clear areas free of ordnance with approval from the RCO. Use caution for 40-ft sensor towers in the LTA.

2.12. Area Overflight. Do not enter or overfly R-5601C/D/E/F/G without approval from the controlling agency. Contact the RCO on 363.7 for entry approval or Fort Sill Approach Control on 322.4 for clearance to over-fly the restricted airspace.

2.13. Weather Requirements.

2.13.1. Day weather requirements. Range weather will be at least 1500 feet AGL / 3 NM for level deliveries; 2000 feet AGL / 3 NM for climbing and diving deliveries; or 500 feet above the highest portion of the pattern to be flown. Service minima may be higher.

2.13.2. Night weather minimums are 3000 / 5 NM. Service minima may be higher.

2.13.3. Pilots will discontinue events and advise the RCO whenever weather prevents positive range or target identification throughout the pattern. Falcon Range Operations will also advise the users at Sheppard AFB and NAS JRB Fort Worth, as well as any other scheduled users, when surface winds on Falcon Range exceed 35 knots. Range winds are available from Falcon Range on request. Range operations will be suspended any time the RCO determines a hazard exists due to excessive winds. The strafe targets may be lowered if the winds are excessive in order to prevent wind damage and prolong their use.

2.14. Range Entry, Holding, and Departure.

2.14.1. Range Entry. Flights may enter Falcon Range under IFR or VFR. If not entering the range via the IR/VR route structure, file to the SPS (CH 74) 338°/040NM. Prior telephone coordination with the at RCO (580) 442-6300/2043 is encouraged to reduce the number of radio transmissions. See [Attachment 2, Aeronautical Chart](#), for information concerning Falcon Range environs.

2.14.1.1. VFR Entry. VFR entries may be made from any direction except east (from within R-5601B) unless authorized by Fort Sill Approach Control. Squawk Mode 3 4000 entering the range. Use caution for the Sheppard 1 and Washita MOAs (at or above 8000 feet MSL).

2.14.1.2. IFR Entry. When approaching the range under IFR, use Altus (257.725), Sheppard (269.025), or Fort Sill (322.4) Approach Control services. Contact the RCO upon canceling IFR. Squawk Mode 3 4000 entering the range.

2.14.1.2.1. The minimum vectoring altitude (MVA) for Fort Sill Approach Control south of Falcon Range is 3200 feet MSL. North of the range the MVA is 3700 feet MSL.

2.14.1.2.2. The minimum safe altitude within 15 NM of the T-1 target is 3000 feet MSL and is based on the two highest terrain features, Baker Peak (2480 feet elevation) located 10.5 NM northwest and Mount Scott (2464 feet elevation) located 9.9 NM northeast.

2.14.1.3. Military Training Route (MTR) Entry. Flights may enter Falcon Range via any of the numerous IR and VR routes that terminate near R-5601. Contact Falcon Range 2-5 minutes prior to entry. Enter the range from the northwest, west, or southwest for first-pass tactical deliveries.

2.14.2. Holding.

2.14.2.1. IMC Holding. Hold as directed by the controlling agency.

2.14.2.2. VMC Holding. There are no designated VFR holding areas. Hold outside restricted airspace southwest or northwest of the range. If required, contact Altus Approach 257.725 to avoid the Altus AFB Class C airspace. Avoid continuous overflight of inhabited areas at low altitude during extended holding.

2.14.2.3. Altitude separation. The RCO may allow altitude stacks when coordinated between flight leads and the tactics or events allow one flight to hold over another.

2.14.3. Range Departures.

2.14.3.1. VFR Departure. Remain VMC. Do not exit the range to the east.

2.14.3.2. North Departures. Climb above 5500 feet MSL but remain below the Washita MOA lower limit of 8000 feet MSL until in contact with Fort Worth Center (269.375).

2.14.3.3. South Departures. Low altitude: remain below the floor of the Sheppard 1 MOA (8000 feet MSL). Medium altitude: climb to 14,500 feet MSL and contact Sheppard Area Monitor (236.825 or 124.85) prior to departing range airspace. Use caution while transiting the Sheppard MOAs / student training areas.

2.14.3.4. West Departures. Avoid the Altus Class C airspace, contact Altus Approach on 125.1 or 257.725.

2.14.3.5. IFR Departure. Exit R-5601 VMC if possible. If unable to remain VMC, remain within R-5601 until receiving an IFR clearance either from Fort Sill, Sheppard AFB or Altus AFB Approach Controls or Fort Worth Center.

2.14.3.6. The Falcon RCO will coordinate IFR clearances/departures with Fort Sill Approach upon request.

2.15. Authorized Ordnance.

2.15.1. Training ordnance (practice sub-scale/full-scale inert heavyweight bombs up to 2000 lbs; 7.62mm, .50 cal., 20/25/30mm TP/TPT, and AC-130 105mm TP) is authorized for both day and night operations.

2.15.2. Full-scale inert heavyweight ordnance (inert MK-82, 83, 84, low/high drag and precision guidance variants) operations are approved but must be coordinated with the RCO prior to delivery to coordinate and confirm target selection. Targets T-2, T-8N, T-8S, T-12 and T-20 through T-24 are the Falcon Range heavyweight targets. Final attack heading restrictions are listed in [Attachment 10](#), and are derived from the joint Weapons Danger Zone (WDZ) Tool. The restrictions in [Attachment 10](#) are based on most aircraft and deliveries but are not all-inclusive. Aircrews will not be allowed to employ heavyweight inert weapons without contacting Falcon Range before their scheduled range time.

2.15.3. Rockets may be employed on all authorized targets except T-25 and the AC-130 target. White Phosphorous (WP) rockets may only be employed against T-1, T-2, T-6, T-8N, T-8S, T-9, T-12, T-17, and T-20 to T-22.

2.15.4. Aircraft-dispensed self-protection flares may be employed above 1000 feet AGL (2400 feet MSL). LUU-2, -4, and -19 illumination flares may be employed above 4500 feet AGL (with a 500-foot delay) but extreme caution must be used to ensure the flares land on the range. Higher delays will require higher minimum altitudes.

2.15.5. Training chaff is authorized in accordance with **AFMAN 11-214, Air Operations Rules and Procedures**. Prior coordination with Falcon Range is required. No combat chaff may be expended on Falcon Range at any time.

2.15.6. Live ordnance is not authorized.

2.16. Weapons Danger Zones. Weapons Danger Zones on Falcon Range are plotted for user aircraft and are maintained by the ROO and in the control tower. Most approved weapons delivery events for assigned users are depicted in **Attachment 10** and shows the most common aircraft and delivery combinations at Falcon Range. Other events may be performed at the discretion of the RCO after a weapons danger zone risk analysis has been performed.

2.16.1. Certain ordnance and delivery parameters combinations may present a risk to areas outside the impact area. These munitions may still be employed but require coordination to ensure the adjacent training areas and/or QBA are clear of ground personnel. Munitions affected include low- and high-drag full-scale inert ordnance employed from low-angle, low-altitude parameters, LGTR and GBU deliveries. The events affected are depicted in **Attachment 10 (notes)**. Contact Falcon Range to verify approved target/parameter pairings.

2.16.1.1. Training areas can be cleared in advance through Falcon Range scheduling up to 68 days in advance through the RFMSS scheduling program. However, Army ground training may still take priority.

2.16.1.2. If the training areas are occupied by ground personnel and equipment then the weapons deliveries may be restricted to specific targets, the parameters may be modified, or the events may be prohibited.

2.16.1.3. There are three surveyed Observation Points (OPs) within the impact area which may be used for live-drop close air support control. Use of the OPs allows for controlled risk assessment. If the risk exceeds authorized values approved by AR 385-63 (1:1 million) then the OP must either be vacated for the events, or the events are prohibited.

2.17. Minimums/Fouls. Delivery events and parameters, scoring criteria, spacing, fouls, foul penalties, and restrictions are IAW **AFMAN 11-214** and aircraft-specific operational guidance.

2.18. Range Procedures.

2.18.1. Radio Procedures. Upon initial radio contact, pass any changes to prior coordinated data. If the mission was not coordinated prior to arrival, pass delivery events and targets.

2.18.2. Basic (Conventional Box) Pattern. The basic pattern, day or night, is a rectangular pattern situated north of the target areas. Use left traffic for an east (080° magnetic) run-in and right traffic for a west (260° magnetic) run-in. Refer to **Attachment 10, Falcon Range Attack Axis Matrix**.

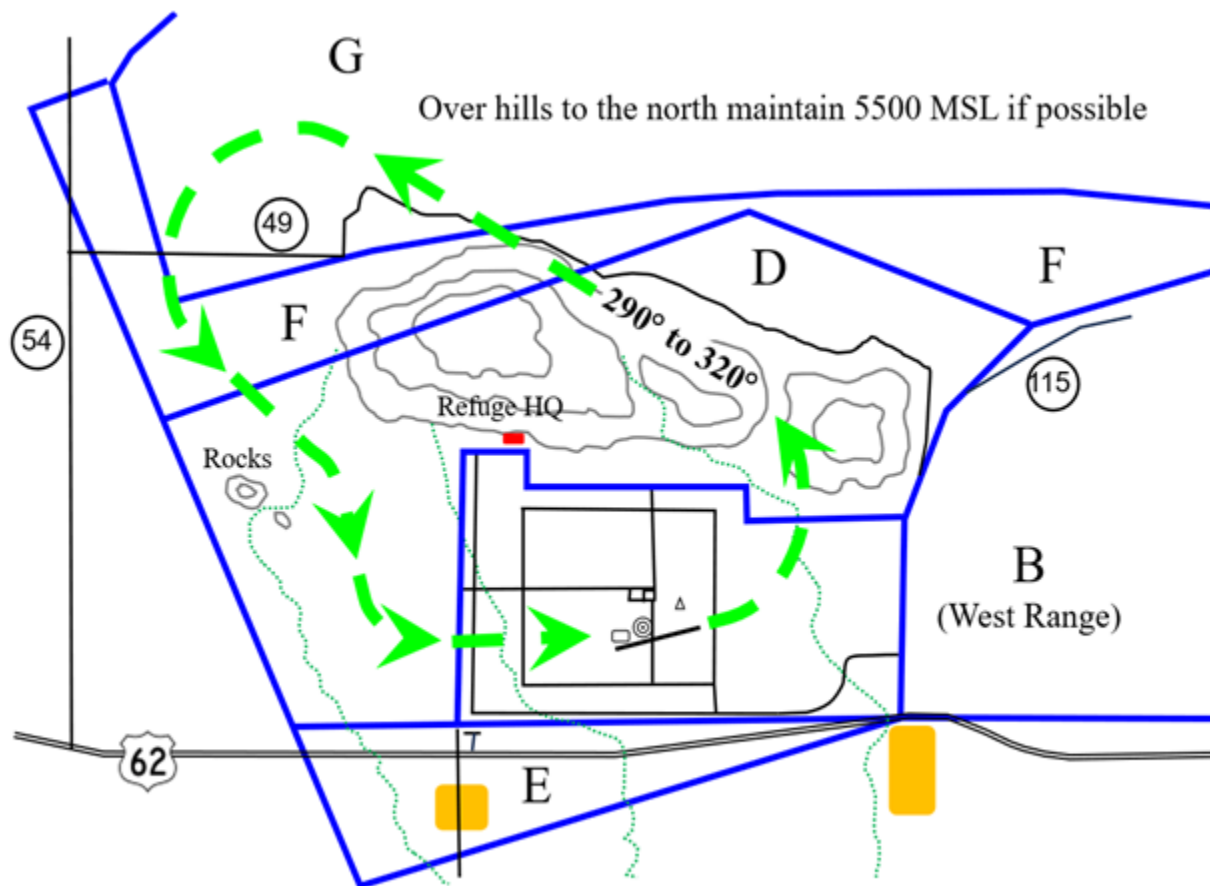
2.18.3. Tactical Delivery Pattern. The final tactical attack heading, day or night, varies with the selected target area, delivery parameters, and weapon. Refer to **Attachment 10, Falcon Range Attack Axis Matrix**. For dry attacks, remain within the restricted airspace, otherwise run-in headings are at the discretion of the flight lead/aircrew.

2.18.3.1. Fly the pop-up pattern from the western quadrant only. The final attack heading is generally west-to-east, with further restrictions and refinements to run-ins based on the ordnance being delivered. Recover with a left turn off-target to north, or if to the south to remain within R-5601E. Refer to [Figure 2.3.](#), **Pop-Up Pattern**.

2.18.3.2. The area east of OK Highway 115 can be used for tactical deliveries with prior coordination. Refer to [paragraph 2.6.1](#) for further information and scheduling procedures.

2.18.4. High Angle Strafe Pattern. The tactical targets' HAS final attack heading is generally 050° - 110° or 230° - 290° magnetic and may be flown from a basic or tactical pattern. Scored HAS is on a $080^{\circ} \pm 10^{\circ}$ heading (Strafe Target 3).

Figure 2.3. Pop-Up Patterns.



This is a suggested ground track. Remain within the R-5601 restricted area.

2.19. Arming Procedures, Forward Firing Ordnance (Rockets/Gun). Weapons systems may be active or armed prior to roll-in, but the final weapons delivery mode or sub-mode will not be selected (i.e. mode/sub-mode entry) or commanded (i.e. trigger selected) until the aircraft complies with attack axis restrictions and is pointed at the target, consistent with existing aircraft directives and safety.

2.19.1. In aircraft that are equipped with hands on throttle-and-stick (HOTAS) weapons mode selection, aircrews will ensure that they do not enter the weapons release mode or sub-mode until the final attack heading and will deselect the weapons release mode or sub-mode during recovery, unless aircraft-specific guidance requires deselection after recovery.

2.19.2. Aircrews operating aircraft without HOTAS weapons modes will follow aircraft-specific or command guidance for the aircraft.

2.19.3. In the event of a gun malfunction or a hung rocket or misfire, after safely recovering the aircraft, the primary concern will be to keep all ordnance in the impact area. An immediate KNOCK-IT-OFF call will be made, the aircraft weapons system will be placed to SAFE and the aircrew will conduct the appropriate checklist procedure.

2.20. Turret and Side-Firing Ordnance. Aircrews will ensure that ordnance is only employed on approved targets in compliance with the firing headings in [Attachment 10](#) in this instruction. Aircraft with moveable guns will not point their guns at any manned site.

2.20.1. Immediately after any attack run machine guns will be cleared and placed on SAFE.

2.20.2. If communication is lost at any time between the pilot and the gunner, cease-fire immediately and clear and safe the gun.

2.20.3. In the event of a runaway gun, the gunner will immediately notify the pilot. The gunner will keep the gun pointed down range until the gun ceases to fire. Avoid areas known to be occupied by ground units/personnel.

2.21. Airdrops. There are no surveyed airlift or helicopter drop zones at Falcon Range. Units requesting airdrops will be directed to Fort Sill Range Control, DPTMS, for coordination and approval. R-5601A (East Range) has surveyed drop zones.

Chapter 3

ABNORMAL PROCEDURES

3.1. Armament System Malfunctions/Unintentional Release.

3.1.1. Aircrews will ensure that their systems are safe any time the aircraft is outside the restricted area. Additionally, aircraft will be armed only when consistent with service and command directives, regulations, or instructions to ensure munitions remain within the impact area only.

3.1.2. Armament Systems Malfunctions. System malfunctions will be handled IAW applicable command, aircraft, and unit operating procedures.

3.1.2.1. Inadvertent Releases (ordnance fired or released without pilot consent). Check armament switches safe and do not attempt further release in any mode. Immediately report inadvertent releases to the RCO.

3.1.2.2. Unintentional Releases (ordnance fired or released as a result of pilot error). Check armament switches safe and do not attempt further release in any mode until the determination is made that the release was unintentional and not inadvertent. The decision to continue to allow releases is solely the RCO's and will not be arbitrated.

3.1.2.3. Runaway Gun. Recover from delivery, keeping the aircraft pointed down range until the gun ceases to fire. If safety allows, attempt to keep the nose of the aircraft below the horizon until the gun ceases to fire. If possible, pull off to the north to avoid firing toward the populated areas to the south of the range.

3.1.2.4. Hung Ordnance. Prior to departing the range, safe all armament switches and recover IAW applicable command, aircraft, and unit regulations. Avoid populated areas while departing the range.

3.1.2.4.1. Gunship side-firing 105mm cannons that experience a hang-fire (round misfire in the breech) will follow applicable technical orders to extract the round. If it requires jettison overboard the aircrew will fly the aircraft on a magnetic heading between 030° and 090° at an airspeed and altitude consistent with safe operation and will release the round so it impacts near the T-2 target. If sensors are available to track the munition, attempt to mark the impact point and provide the RCO the impact coordinates. On-site EOD personnel will attempt to locate the round and dispose of it in accordance with UXO procedures.

3.1.2.5. Off-Range Release. Report any release, whether inadvertent or unintentional, which results in or is suspected to result in an impact outside the impact area to the RCO. Refer to [Attachment 3, Restricted Area R-5601](#), for impact area boundaries. The RCO will report the release to Range Control and prepare reports as directed by **Fort Sill Regulation 1-8**, with the reports forwarded to Range Control for Army action.

3.2. External Stores Jettison. For controlled jettison of external stores, including fuel tanks, suspension equipment, and practice ordnance, jettison on a 080° magnetic heading at an airspeed and altitude consistent with safe operation so that impact occurs near the Conventional Bomb Circle (T-1). Live munitions will not be jettisoned at Falcon Range unless an extreme emergency exists. Coordinate with the RCO for jettison of live munitions at Fort Sill's West Range (R-5601B).

3.3. Emergency/Abnormal Operating Procedures.

3.3.1. Emergency Airfields: Check current FLIP documents and NOTAMS for the status of facilities at emergency airfields. The airfields depicted in **Table 3.1., Emergency Divert Airfields**, have a usable runway length greater than 7000 feet and are listed in order of proximity to the range; Henry Post AAF is the closest available runway but is only 5000' in length with no arresting gear.

Table 3.1. Emergency Divert Airfields.

<u>AIRFIELD</u>	<u>ICAO</u>	<u>LAT LONG</u>	<u>TACAN</u>	<u>RWY & LENGTH</u>	<u>TWR</u>	<u>BRG RNG</u>
LAWTON REGIONAL	KLAW	N 3434.1 W 9825.0	31 (VOR)	17/35 (8600')	257.8 🕒	116°17 NM
ALTUS AFB	KLTS	N 3439.5 W 9916.0	35	17/35 (13,400')	255.6 🕒	264° 28 NM
SHEPPARD AFB	KSPS	N 3359.1 W 9829.5	45	15/33 (13,100')	279.525 🕒	165° 40 NM
CLINTON- SHERMAN	KCSM	N 3520.4 W 9912.0	37	17/35 (13,500')	256.9 🕒	323° 55 NM
WILL ROGERS	KOKC	N 3523.6 W 9736.0	88	17/35 (9800')	269.45	044° 70 NM
TINKER AFB	KTIK	N 3525.1 W 9723.4	105	17/35 (11,100')	289.6	047° 80 NM
HENRY POST AAF	KFSI	N 3439.0 W 9824.1	31 (VOR)	17/35 (5000')	229.4 🕒	087° 15 NM
🕒 Tower does not operate continuously.						

3.3.2. Controlled Bailout. The aircraft should be flown on a 045° heading between 2000' AGL (3500' MSL) and 4000' AGL (5500' MSL) between the flank tower and the west end of the runway. This ensures the aircraft crashes on U.S. Government property while minimizing risk to ground personnel. It also keeps the pilot(s) away from hazardous dud areas. If possible, coordinate with the RCO prior to bailout to allow any personnel on-range to clear the area. *Note: If aircraft or organizational procedures require a higher minimum altitude, then follow those prescribed procedures.*

3.3.3. Forced Landing. If an aircraft must make a forced landing within the impact area, aircrews must remain with the aircraft until range personnel can perform recovery operations, unless there is a risk of fire or explosion at the downed aircraft site. This is due to the high risk of unexploded ordnance in the area. If possible, establish radio contact with the RCO.

3.3.4. Radio/Electrical Failure. Two-way radio communication with Falcon Range is required to expend ordnance on the range. In the event of radio failure on UHF primary 363.7, attempt contact on UHF secondary 238.8, UHF 243.0, and finally VHF 141.85. Depart the range if contact with the RCO is not reestablished.

Chapter 4

RCO PROCEDURES

4.1. RCO Procedures. RCO responsibilities and performance standards are outlined in core personnel documents on file at Falcon Range.

4.1.1. The RCO will ensure that the airspace is opened prior to the start of the first range period. Fort Sill Range Control will provide the opening check-in codes and the pyro status. Fort Sill will also verify the Officer-In-Charge during check-in.

4.1.2. For hot range missions (actual ordnance and/or combat lasers) the RCO will ensure all personnel are out of the hazard area NLT 15 minutes prior to the scheduled range time, except for approved JTACs. This includes the use of rollcalls if verification is uncertain. The RCO will be in position NLT 20 minutes prior to the scheduled start of the range time. The RCO will also ensure all required positions are manned NLT 15 minutes prior to the scheduled start of the range time.

4.1.3. The RCO will ensure the Range Safety Pennant (Red Flag) is flying from the flagpole during times the airspace is active. The pennant will be lowered when the range ground and air spaces have been closed with Fort Sill.

4.1.4. Before the first missions the RCO will verify operation of all radios, the hot line to Fort Sill Approach Control, and the digital voice recorder. The RCO will also verify that a range check has been accomplished, that all personnel including visitors are accounted for, and the targets are of suitable condition, including any standing water which may preclude laser use.

4.1.5. At the conclusion of flying the RCO will verify that the airspace has been closed with Fort Sill Range Control.

4.1.5.1. The checkout with Fort Sill includes number and type of aircraft on-range, personnel, ordnance number and type to include DODIC codes, and any special comments. Fort Sill will provide checkout codes.

4.1.5.2. During scheduled extended periods of inactivity when the airspace is activated, the RCO should contact Fort Sill Approach Control to allow controlled through-flights of the range airspace by other aircraft.

4.1.6. The RCO Duty Period (RDP) begins when the RCO reports for duty and ends after the last control or range event. The RDP shall not exceed 12 hours without documented approval of the ROA. RCOs will not exceed 60 RDP hours in any consecutive 7-day period.

4.1.6.1. RCOs will not perform any duties involving aircraft operations:

4.1.6.1.1. Anytime the RCO has not obtained crew rest IAW [paragraph 4.1.6.2](#).

4.1.6.1.2. If impaired by alcohol or any prescribed narcotic to include the effects or after-effects.

4.1.6.1.3. Anytime a physical or psychological condition is suspected or known to be detrimental to the safe performance of RCO duties.

4.1.6.2. Crew rest is compulsory for RCOs prior to performing any duties involving aircraft operations and is a minimum of 12 non-duty hours before the RDP begins. Crew rest is free time and includes time for meals, transportation, and rest. This time must include an opportunity for at least 8 hours of uninterrupted sleep. The RCO crew rest period cannot begin until after the completion of official duties.

4.2. RCO Training. The ROA is responsible for the training of new RCOs. The ROO will maintain currency tracking and perform RCO quality control functions.

4.2.1. Written Examination. The ROA will administer a written, open-book examination on applicable instructions, regulations, topics, and issues. Passing score is 85 percent. The exam will consist of 50 randomly selected multiple-choice questions. The testing RCO is immediately decertified if the written examination is failed. If the RCO fails a second time, the RCO must re-accomplish the entire RCO training program. If the RCO fails a third time, the RCO will be dismissed from performing RCO duties.

4.2.2. On-Range Demonstration consists of day and night qualification. Day qualification is a prerequisite to night qualification. The RCO trainee will observe one mission before controlling the same type of mission. Mission types are basic surface attack (BSA), surface attack tactics (SAT) and close air support (CAS).

4.2.2.1. Day. Each upgrading RCO will observe a qualified RCO demonstrate proper methods and techniques for controlling aircraft during air-to-ground operations. After observing at least four flights conducting range operations, the upgrading RCO will control at least four flights (at least two 4-ships, if 4-ship flights frequently use the range) under the supervision of a qualified RCO. The ROA may reduce the requirements for highly qualified/previous RCOs.

4.2.2.2. Night. Each upgrading RCO must observe at least one night flight and control at least one night flight of both BSA/SAT and CAS missions under the supervision of a qualified RCO.

4.2.2.3. The ROA will maintain documentation of the training. The training folders will contain the certification letter signed by the OG/CC, training checklists, and individual mission grade sheets and training plan, as well as other certificates and supporting documentation.

4.3. Ordnance Delivery Clearance. There are no provisions for releasing ordnance on Falcon Range without radio contact with the Range Control Officer, i.e. Class B/C operations. The RCO may hand off final authority to other agencies IAW AFMAN 11-214 and JP 3-09.3. The RCO always retains abort authority.

4.4. Range Safety and Security.

4.4.1. Safety. The RCO may not have a clear view of each possible attack axis or delivery event. Current generation fighter aircraft, employing high altitude tactics, may be difficult to acquire visually. Pilots must positively identify targets prior to expending ordnance.

4.4.2. Do not point at or overfly manned sites during weapons delivery passes.

4.4.3. Heavyweight inert munitions delivered at shallow dive angles can travel as far as 3000 meters beyond the target after breaching. Some may change direction by as much as 30 degrees from the delivery heading. Pilots must adhere to run-in restrictions when employing heavyweight munitions, especially when using shallow delivery angles. Refer to [Attachment 10](#) for attack axis graphic displays.

4.4.4. Security. Shared-use policies contribute to occasional unauthorized range entry. The RCO will request a clearing pass whenever there is any doubt as to range security.

4.5. Visitor Procedures.

4.5.1. All visitors to the range, whether directly involved in operations (e.g. JTACs), supporting operations (e.g. UXO demilitarization) or observation will sign the visitor log and receive a safety briefing before proceeding down-range. Visitors to the range operations complex only will sign the log but are exempt from the range safety briefing. This safety briefing is valid for six months. Fort Sill-assigned range personnel and 301st FW RCOs are exempt from this paragraph.

4.5.2. In accordance with AFMAN 13-212 Volume 1 and **Army Regulation (AR) 385-63, Range Safety**, visitors not involved in the conduct of training operations will remain clear of the Hazard Area during weapons deliveries. Range personnel will always provide escort or surveillance of visitors, except for pre-briefed JTACs when performing mission-related duties, Fort Sill-assigned range personnel, and on-site subcontractors who have been briefed on their authorized locations. The RCO will verify that ordnance delivery patterns will not present any hazard to visitors/spectators. The Footprint Book must show better than one in one million risk analysis for the location of visitors. Restrict deliveries if required (change targets, assign run-in restrictions). If operations must be conducted which subject the visitors to greater than a one in one million risk of weapons effects, then the visitors will be relocated to the range pennant at the south boundary road in accordance with AR 385-63.

4.5.2.1. Time-critical or cost-prohibitive operations such as the installation or repair of infrastructure by outside agencies [contractors, vendors, engineers, etc] or deliveries of materiel may take precedence and require coordination with the aircrews to ensure safety. UXO destruction and relocation at the East Residue Area cannot be placed on hold due to time and funding constraints and may require the denial of certain delivery patterns or tactical events.

4.5.2.2. JTACs may conduct missions within the Hazard Area in accordance with AFMAN 11-214, AFMAN 13-212 Volume 1 and with the concurrence of Range Control. JTACs must be properly equipped in accordance with **AFMAN 10-3503 Volume 1, Joint Terminal Attack Controller (JTAC) Training Program** while inside the Hazard Area.

4.5.2.3. Refer to [Attachment 8, Manned Sites and OAPs](#), for a description of observation points and offset aim points.

4.5.3. The normal location for visitors to observe range operations is the main tower. Visitors will be briefed on the risk factors of range operations. Visitors who are not comfortable with the risk will be relocated to the range pennant at the south boundary road.

4.6. Bird Avoidance. Southwest Oklahoma lies within a migratory flyway for numerous bird species. These range from small birds to raptors and large waterfowl. The most active time for migratory bird activity is mid-fall and late winter/early spring. The range includes habitats suitable for large raptors such as hawks and vultures. These birds may be active at any time of the year. Vultures and sand hill cranes in particular pose a threat to low-level aircraft since they may congregate in groups at altitudes as high as 2000' AGL.

4.6.1. The RCO will report both the current radar or model risk as reported by **US AHAS** and actual visual sightings or non-sightings during initial check-in and during the range operations. Refer to **DAFI 91-212, Bird/Wildlife Strike Hazard (BASH) Management Program**.

4.7. Restricted Operations.

4.7.1. A “check-fire” ordered by Fort Sill Range Control curtails all activities on Falcon Range. The RCO will direct aircraft to hold “high and dry” until Fort Sill Range Control allows further activity on Falcon Range.

4.7.1.1. The RCO may allow dry operations with restrictions if allowed by the Fort Sill Fire Department during wildland firefighting operations. The Fire Chief has final authority over the range ground and air space.

4.7.2. The Falcon Range RCO may restrict, suspend, or curtail operations as required to ensure the safety of all personnel IAW **DAFI 91-202**.

Chapter 5

LASER OPERATIONS AND INERTIALLY-AIDED MUNITIONS

5.1. Coordination. Laser operations require prior coordination to allow public notification and security on the range. Cancellations should be made as soon as possible to preclude unnecessary activation of specialized range control procedures. Contact Falcon Range Control Officer at (580) 442-6300 or -2043 for approval of laser operations.

5.2. Approved Laser Systems. Falcon Range is certified by AFRL 711 HPW/RHDO for the safe use of most DOD fielded fixed-wing, rotary-wing, and man-portable laser systems. The most recent AFRL 711 HPW/RHDO Optical Radiation Safety Consultative Letter, Falcon Range Laser Safety Survey, is maintained at Falcon Range and at both the 301 OG and 301 MDS/SGPB, NAS Fort Worth JRB, TX 76127-6200. Contact the Falcon Range Control Officer for approval of laser operations and suitable laser, OP, and target combinations, which are published in the Consultative Letter. Tank-mounted systems were not evaluated and are not approved for use.

5.3. Laser Operations. Users requesting laser employment will contact the range prior to employment. This allows the range to be completely cleared and for ground personnel to don protective equipment. Short-notice requests may take up to 10 minutes to ensure all personnel are clear of the Laser Surface Danger Zone (LSDZ) and have protective equipment.

5.3.1. General. Ground personnel will wear approved laser eye protection which covers the laser wavelength with an optical density suitable for the laser employed. The RCO will announce before any laser activity the need to wear LEP before commencing laser operations. All personnel will leave the impact area unless actively involved in laser activity (i.e. JTACs performing laser operations). JTACs or similar operational personnel are responsible for providing their own LEP, and if none is available then laser operations are prohibited. Falcon Range has sufficient LEP only for permanent-party range personnel.

5.3.1.1. The RCO will not allow any lasers until complete accountability is established for all personnel. On-site personnel will check in with the RCO with their location and LEP status before the RCO allows laser activity.

5.3.1.2. Ground-based laser designators and rangefinders will not be fired above the horizon. Low-power markers may be fired above the horizon if approved by the Consultative Letter. The Green Beam Designator will not be used on Falcon Range.

5.3.1.3. Ground-based systems will not be fired against any target or on any azimuth that allows the escape of laser energy from the range boundaries at an unsafe power level. Since this cannot normally be determined without extensive research and simulation, only the approved firing point/target combinations will be used. Under no circumstances will ground-based designators be fired on any azimuth except toward the north due to the proximity of populated areas and OK Highway 115.

5.3.2. Aircraft Mounted Laser Systems. Authorized fixed-wing lasers may only be employed from within the R-5601 complex unless the laser is in an approved eye-safe mode. Lasers may be employed from any direction, anywhere within the confines of restricted airspace, and on any target except for T-11W and T-18, or other targets as directed by the RCO. The minimum safe lasing altitude varies with the type of laser system employed and the distance of the designator aircraft from the target. Refer to **Table 5.1., Airborne Laser Flight Profile Limitations.**

Table 5.1. Airborne Laser Flight Profile Limitations.

Ground Range to Target (NM)	Minimum Altitude (Feet AGL)	Minimum Altitude (Feet MSL)	Ground Range to Target (NM)	Minimum Altitude (Feet AGL)	Minimum Altitude (Feet MSL)
0.5	150	1550	6	2000	3400
1	300	1700	7	2400	3800
2	600	2000	8	2900	4300
3	900	2300	9	3400	4800
4	1300	2700	10	3800	5200
5	1750	3150	15	6100	7500

Note: This table utilizes a 5 mrad buffer angle, high-power designator and a baseline 1400 feet MSL target.

5.3.2.1. A depression angle of a minimum of 5° ensures that the LSDZ does not exceed allowable limits. The absolute minimum angle for airborne laser designation is 3° unless cleared following evaluation with the Laser Range Management software. Lasing will not be performed below 2000 feet AGL while crossing public highways or over-flight of housing areas and will not be performed below 3000 feet AGL / 5500 feet MSL over the Wichita Mountains Wildlife Refuge.

5.3.3. Man-Portable Laser Systems. Most DOD man-portable laser systems are approved for use at Falcon Range. There are several target and firing position combinations available. However, not all targets are accessible from all firing positions, and delivery restrictions further limit employment flexibility.

5.3.3.1. Falcon Range has a Ground Laser Target Designator (GLTD) which can be used to designate certain targets for laser-spot search tactics. Normally in the main tower, it can be fired from the flank tower as well. Contact the range at least 3 hours in advance to coordinate its use.

5.3.3.2. GLTD Employment. The range must be cleared prior to GLTD operations; no personnel are permitted inside the impact area during its operation. The operator of the GLTD will set up the GLTD and laser spot visual tracker combination on a secure tripod and control the targeting from inside the tower. The RCO will make a “laser hot” radio call and direct all personnel to wear LEP. Only then may the operator open the apertures (remove the protective covers) from the GLTD. The operator will ensure the GLTD and laser spot visual tracker are boresighted and make corrections. The operator then will test fire against T-4 to ensure boresight. At no time must the GLTD fire above the horizon. Only approved targets may be engaged, refer to the AFRL 711 HPW/RHDO Optical Radiation Safety Consultative Letter. When not firing, ensure the protective covers are reinstalled.

5.3.3.3. Verify the PRF code with any sensor(s) before firing the GLTD.

5.3.3.4. Falcon Range possesses two Infrared Zoom Laser Illuminator Designators (IZLIDs). These and any other markers will only be employed with the operator wearing both NVGs and LEP. Use extreme caution when firing an IZLID from the tower; ensure that the tower catwalk rails are not in the way of firing. From the main and flank tower, operators will use the turret with the IZLIDs.

5.3.3.4.1. Operators of the IZLID will keep the aperture covers on unless firing. As soon as the firing is completed, replace the cover. For the IZLID, ensure the key is installed before firing, otherwise the unit will not designate. Remove the key before transport after firing.

5.3.3.4.2. The IZLIDs are stored in the GSA safe. When taking a laser marker out of the safe, sign it out and indicate the time of return when finished. Spare batteries are kept in the tower. Only test the IZLID from the tower or OP, and always ensure the area downrange is safe. Treat any laser as a loaded weapon.

5.3.4. Approved Ordnance. Only inert GBU-10/12/16, GBU-54, AGR-20 rockets, and Laser Guided Training Rounds (LGTRs) may be employed at Falcon Range. No live munitions or any form of GBU-24, GBU-27 or GBU-28 may be employed at Falcon Range.

5.3.4.1. Restrictions. The WDZ for Laser Guided Bombs restricts delivery flexibility. Parameters and targets are restricted in both dive angle and attack heading. Off-range or out-of-impact-area impacts are a possibility unless the final attack restrictions are followed absolutely. Contact the Falcon Range RCO for weather back-up options. The restrictions for rockets, LGTRs and approved LGBs are listed in [Attachment 10](#).

5.3.5. Logging laser use. The RCO will document the laser use with the range laser log. This log will be compiled and maintained on the shared drive and is reported to both AFRC and Fort Sill Range Control annually. The log includes the number and type of aircraft, if any, as well as the type of laser, the targets engaged, the RCO and LSO, and the times on and off. It is maintained for a minimum of 5 years.

5.4. Laser Safety. The RCO will terminate all laser operations if unauthorized personnel are observed in the LSDZ, in the event of equipment malfunction, or anytime laser safety cannot be assured. Pilots must cease active laser operations anytime the intended target is lost from the field of view. Any laser incidents will be promptly reported in accordance with the 711th HPW reporting protocols. A copy of the incident checklist is kept in the RCO Quick Reference Checklist.

5.5. Laser Scoring. Three laser scoring systems are available. All three systems require prior notice for set-up.

5.5.1. The range has two Laser Spot Visual Recorder Systems (LSVRS) within the LTA which use a camera to score laser energy during day or night operations. The systems visually display laser energy as it hits a target within the camera field of view as a light spot and can be slewed to different targets. The aircrew only needs to fire a combat laser (1064 nm) at the desired target. Aircrews will also provide the specific DPI and expected LTL to allow the LSVRS operator to score the correct DPI. If the actual DPI name is not known, describe the target in relation to other targets (e.g. “third small building from the west in an east-west row”) to allow the proper scoring setup. Horizontal targets cannot be accurately scored. If the laser energy is not within the camera field of view, it cannot be scored. Additionally, the operator may reduce the scoring volume to preclude interference from affecting the score. If the spot is inside the field of view but not the scoring volume on the target, the spot will be visible, but no score will be displayed. The LSVRS can, at aircrew request, transmit a tone over the range frequency if the laser energy is within the designated scoring volume. The tone can also be disabled if requested.

5.5.1.1. Aircrews may request a copy of the displayed data, usually in an MPEG or AVI format. Contact the range before flight to coordinate an electronic or CD/DVD copy.

5.5.2. The LSVRS requires aircrews to designate specific targets within the LTA. The targets are approximately 1 meter square with a black outline around a white square, or a completely black square. The targets face their respective sensor and can only be scored on specific laser-to-target lines. Firing outside the LTL tolerance may still produce a score, but its accuracy may be degraded. Some targets require specific LTLs based not only on the sensor location, but on masking of the target. Refer to [Attachment 11](#) for details.

5.5.3. Falcon Range has a single Laser Evaluator System-Mobile (LES-M) that can be used to validate laser designation and ensure properly bore sighted targeting pods and laser designators. When a laser designator (combat mode, 1064 nm) illuminates the LES-M, it transmits a chopped tone over the range frequency. This gives aircrews immediate feedback regarding their laser systems. The tone is low-power and can be overridden by aircraft and RCO radios. The size of the footprint the laser produces is based on range and elevation from the laser to the target. At close range (inside of 1000 feet/300 meters slant range) side lobes may trigger the LES-M to transmit when the centroid of the laser spot is not exactly on the LES-M. For slant ranges of greater than 1000 feet the LES-M will not trigger unless the laser spot is centered within 3 feet (1 meter) of the LES-M. For the case where the designator is a long distance from the target (24,500 feet/7500 meters), the spot may be as large as 12 feet in diameter, depending on the designator. In this case, there is enough amplitude variation within the main beam that the box still scores accurately within the 3 foot / 1 meter radius.

5.5.3.1. The LES-M is mobile and can be placed on or near any targets. However, it makes that target a no-drop target with a 500-meter no-drop radius around the LES-M. For daily use it is located on a slightly raised platform within the LTA and is marked by four 4-foot/1.3-meter railroad ties painted white which surround the LES-M in a cross shape, oriented to the cardinal directions. It may also be placed on no-drop targets or on a vehicle parked adjacent to a no-drop when requested. The LES-M can be placed in the bed of a tactical vehicle, which gives aircrews a tactical target to observe.

5.5.3.2. The RCO will provide the coordinates of the LES-M, or flight leads can call ahead and ask for a specific target as part of a scenario. The LES-M requires a power supply (small generator) so plan accordingly. It will not be placed on-range unless requested. LES-M setup outside the LTA requires a minimum of two hours advance notice.

5.5.4. Falcon Range possesses an IR camera system that integrates a laser seeker. This laser seeker allows the viewing of a combat laser spot (1064 nanometers) under most conditions, although night allows better IR contrast. The RCO can assess the aircraft's targeting pod accuracy with this system. The system requires one hour for setup.

5.5.4.1. The laser spot visual tracker is usually in the main tower but can be placed in other locations. Because it is a manual system the location is manned, no munitions may be dropped nearby. If a target cannot be viewed from the operator's location, it cannot be scored. Additionally, if the aircraft is illuminating a target with vertical development, then the operator may not be able to view the laser spot if it is on the side of the target that is obscured.

5.6. Inertially Aided Munitions (IAMs):

5.6.1. Inertially aided munitions include the GBU-31(V)1 and GBU-31(V)3, GBU-32, and GBU-38 Joint Direct Attack Munitions (J-DAM), the GBU-39 Small Diameter Bomb, and the CBU-103, CBU-104, and CBU-105 Wind-Corrected Munitions Dispensers (WCMD), and newer terminally-updated IAMs such as Laser JDAMs (LDJAMs) and Dual-Mode Laser-Guided Bombs (DMLGBs).

5.6.2. The WDZs for IAMs dictate restricted deliveries at most Class A ranges. Unrestricted simulated weapons deliveries (dry-only) are authorized where there is no chance of an actual release using aircraft-specific dry practice procedures. Aircrews will ensure that no actual munitions are selected.

5.6.3. Actual IAM employment is authorized with the following restrictions:

5.6.3.1. Ordnance. Inert GBU-31/32/38/44/49/54/56 are the only authorized IAMs.

5.6.3.2. Targets. IAMs are only authorized on Target T-2. This controls weapons danger zones.

5.6.3.3. Weapons Parameters. Aircrews will set a minimum impact angle of 65° for the weapon, and will attack the target with no more than 10° offset from a direct attack (i.e. target displaced no more than 10° left or right of the flight path of the aircraft) at release. Parameters are critical due to the size of the impact area. Refer to [Table 5.2., J-DAM Weapons Parameters](#), for airspeeds and release ranges.

Table 5.2. J-DAM Weapons Parameters.

Aircraft/Weapons/Altitude	Release Angle	Release Altitude (MSL)	Release Airspeed (KTAS)	Release Heading	Release Range (NM) ❶
A-10 GBU-31/-38/-54 Low	0° to -5°	6500 – 10000	250 – 400	250°-270°	2.0 – 3.0
A-10 GBU-31/-38/-54 High	0° to -5°	10000 - 18000	250 – 400	250°-270°	2.0 – 3.5
B-52 GBU-31/-38/-54 Low	0° to -5°	6500 – 10000	400 - 550	250°-270°	3.0 – 4.0
B-52 GBU-31/-38/-54 Med	0° to -5°	10000 - 18000	400 - 550	250°-270°	3.0 – 5.0
B-52 GBU-31/-38/-54 High	0° to -5°	18000 – 25000	400 - 550	250°-270°	3.5 – 5.5
B-1 / F-16 / F-15E / F-35 GBU-31/-38/-54 Low	0° to -5°	6500 – 10000	400 - 600	250°-270°	3.5 – 4.5
B-1 / F-16 / F-15E / F-35 GBU-31/-38/-54 Med	0° to -5°	10000 – 18000	400 - 600	250°-270°	3.2 – 5.0
B-1 / F-16 / F-15E / F-35 GBU-31/-38/-54 High	0° to -5°	18000 – 25000	400 - 600	250°-270°	3.5 – 5.5
F/A-18 GBU-31/-32/-38/-54 Low	0° to -5°	6500 – 10000	400 - 600	250°-270°	3.5 – 4.5
F/A-18 GBU-31/-32/-38/-54 Med	0° to -5°	10000 – 18000	400 - 600	250°-270°	3.2 – 5.0
F/A-18 GBU-31/-32/-38/-54 High	0° to -5°	18000 – 25000	400 - 600	250°-270°	3.5 – 5.5
❶ Ranges are approximate, use for initial planning only. Weapons footprints may change with updated releases of the joint/DoD-approved WDZ Tool and take precedence over this table. Contact the range for the most current release parameters.					

5.6.3.4. **Airspace.** Actual J-DAM deliveries are restricted to employment from over R-5601B on a weapons attack heading of 250° to 270° (260° ± 10°). This requires at least 24 hours' prior coordination to ensure separation from artillery in R-5601B, and allows the temporary closure of OK Highway 115, the eastern border of Falcon Range. This closure is limited to 15 minutes, after which any traffic is cleared for up to ten minutes before resuming any closures. No attacks from the west are authorized due to the risk of an off-range impact outside of government property.

5.6.3.5. **Weapon Delivery Modes.** Weapons modes that utilize a preplanned coordinate as the target such as Continuously Computed Release Point (CCRP) and Bomb on Coordinate (BOC) modes are authorized. Reference aircraft specific procedures for limitations. Aircrew will pre-coordinate attacks and delivery modes with the RCO before takeoff.

5.6.4. Triple Check. Each aircraft will accomplish three independent safety checks before releasing a coordinate-dependent munition on Falcon Range IAW **AFMAN 11-214**. These checks must ensure accurate coordinates are loaded into the weapon memory prior to release.

5.6.4.1. The aircrew will confirm the accuracy of the aircraft navigation and weapon delivery systems IAW aircraft and service-specific publications and procedures.

5.6.4.2. Aircrew employing ordnance will ensure accurate receipt and entry of target coordinates and confirm they come from a valid target source, which includes preflight or in-flight entry of coordinates from target tables, mensurated coordinates from high-resolution imagery, targeting systems (including but not limited to targeting pods, heads-up display, onboard radar, or data linked points from other aircraft or ground sources) or JTAC or FAC(A) briefs. (Check #1)

5.6.4.3. Aircrew will use all means available to verify accuracy of target coordinates/elevation, and that the coordinates are within the anticipated target area. If equipped, each aircraft will also verify that the aircraft system is properly targeted through the use of targeting systems (targeting pods, or TGP, onboard high-resolution radar), or with other sensors including the heads-up display (HUD) or helmet-mounted systems, off-board verification such as Video Data Link (VDL) handshake with JTAC or a data link with another aircraft who verifies TGP track is on target. (Check #2).

5.6.4.4. Radio confirmation of the weapon memory coordinates to the RCO, JTAC or FAC(A) is a required safety check for all aircraft. The aircrew read the coordinates and target elevation for the weapon memory directly to the RCO, JTAC or FAC(A) who will validate them. Validation must be accomplished prior to final. (Check #3)

5.7. Directed-Energy Weapons. Directed-Energy Weapons will not be employed at Falcon Range.

Chapter 6

THREAT SIMULATION

6.1. Resources. Falcon Range provides visual and electronic threat simulators support upon request, consistent with available resources and pyro states. Call Falcon Range at (580) 442-6300 or -2043 for assistance.

6.2. Visual Threat Simulators. Falcon Range possesses one four-shot Smokey SAM LMU-24A/E launcher capable of firing GTR-18 Smokey SAM simulator (SSS) rockets. The launcher is portable and is mounted inside the bed of a white pickup truck shell. The launcher may be located at a variety of locations on the range depending upon user requirements. Falcon Range will then employ the system as directed by the flight lead. Note: Pyrotechnic simulators are subject to pyrotechnic and personnel availability; simulators may be completely unavailable.

6.2.1. All authorized SSS operators will receive initial and annual training to ensure proper handling and employment of SSS. At least two qualified personnel are required to operate the SSS launcher.

6.2.2. Coordination. The use of visual threat simulators requires prior coordination. Allow at least 60 minutes from notification to ready status for SSS draw from the storage site, transport, setup, and charge-up of the launcher systems.

6.2.3. Employment. Falcon Range personnel will employ visual threat simulators at the flight leader's discretion, from the location and at the distance and time requested so that the desired learning objective is obtained. If the flight lead does not brief a specific location, the RCO will direct a launch location consistent with the pyro status and clear of active targets.

6.2.4. Safety. Falcon Range personnel will establish a rocket launch site that will ensure a minimum of 2000 feet of vertical and lateral clearance from the flight's anticipated ground track. If the RCO or rocket launch personnel perceive that an aircraft might violate the 2000-foot clear zone, the launch effort will be aborted.

6.2.4.1. Ground personnel will observe all technical order procedures including minimum distance from the launcher (100 feet/30 meters) and will post any required signs when setting up the firing positions. Other personnel, including JTACs, will maintain a minimum of 2000 feet/600 meters from the launcher. Smoking and flame producing devices are prohibited within the storage area and within 50 feet of SSS, whether in or out of containers. The support vehicle will display a VS-17 marker panel during day operations and an IR strobe at night.

6.2.4.2. SSSs will not be employed when winds exceed 25 knots as reported by the range weather sensors. Personnel will not set up SSS any time lightning is forecast within 2 hours of firing. Personnel will immediately disassemble and return to storage any rockets and igniters if a lightning watch is issued. If a lightning warning is issued (within 5 miles) personnel will disconnect any electronic leads and terminate outdoor activities.

6.2.4.3. At least two Class A/B/C fire extinguishers will be readily available at the launch site. In the event of a fire or accident involving SSS, evacuate non-essential personnel to a minimum of 600 feet. Extinguish fires if possible without endangering personnel.

6.2.4.4. If a rocket misfires, personnel can continue launching other rockets to support the mission. This also confirms that launch control components are operating properly. After completion of launching rockets, attempt to fire any rockets that misfired. If the second attempt fails, the launch personnel will remove the enable plug and wait 30 minutes prior to approaching launcher.

6.3. Electronic Threat Simulators. Falcon Range employs threat emitter systems for electronic warfare (EW) training. For further information about the capabilities and availability of these EW simulators, and any newer systems acquired or fielded since this publication date, contact Falcon Range.

6.3.1. Coordination. The use of electronic simulators requires prior coordination. Schedule EW support at least one hour before employment, so range personnel can assemble and set up the simulator. Certain weather conditions, such as high winds and/or blowing dust, may require the emitters to be stowed.

6.3.2. Employment. Falcon Range personnel will employ EW at the flight leader's discretion, from the location and at the distance and time requested. Flight leaders should thoroughly brief the RCO so that desired effect is obtained. If the flight lead asks for the RCO's option, or does not indicate a specific location, then the flight members can expect a randomly chosen origin for the EW emissions.

6.3.3. Target acquisition. The threat emitters do not actually acquire an airborne target and track it; rather, the operator of an aimed emitter places the optical sight on the target and illuminates the aircraft while holding the sight on the target. If a static unaimed emitter is employed, then the threat system transmits blindly in either a specific azimuth or transmits through a range of azimuths as it rotates.

6.3.4. Termination. Falcon Range personnel will cease all training EW emissions any time the aircrew transmits "TERMINATE" or "KNOCK-IT-OFF".

6.4. Electronic Countermeasures. The use of combat electronic jamming in R-5601 is prohibited. Training chaff is authorized in accordance with **AFMAN 11-214**. Prior coordination with Falcon Range is required. No combat chaff may be expended in R-5601 at any time.

Chapter 7

CLOSE AIR SUPPORT TRAINING

7.1. Close Air Support Training. Falcon Range supports Close Air Support (CAS) and Forward Air Controller/Joint Terminal Attack Controller (FAC/JTAC) training. Falcon Range personnel are not instructors but do facilitate training and help ensure safety. **Note:** Do not confuse CAS training at Falcon Range and similar training on Fort Sill's West Range. Refer to [paragraph 7.2](#) for West Range information.

7.1.1. Facilities. To support CAS training, Falcon Range offers a combined briefing and training facility for TDY personnel. No overnight lodging facilities are available. Overnight operations within the adjacent training ranges (bivouac operations) require authorization and briefings from Fort Sill Range Control.

7.1.1.1. The range possesses a vault and locked steel containers available for overnight storage of some equipment, but the facilities are not certified for storage of highly-classified equipment or documents. Coordinate before arrival to determine storage requirements, and if necessary, Fort Sill may be able to provide a secure location. Vehicles and support equipment may be stored overnight or on weekends inside the range vehicle/equipment yard and if required underneath the vehicle parking structure.

7.1.2. Scheduling. See [paragraph 1.2](#) for general information. **Falcon Range does not schedule fighter/attack resources for CAS missions, only the range airspace.** Users must ensure there are no conflicts with West Range. Ground and air units that desire to conduct CAS training at Falcon Range must jointly coordinate their schedules with Falcon Range to avoid conflicts with other users. JTAC units cannot schedule the range, only flying units are authorized to do so.

7.1.3. Operations. Falcon Range will support CAS training at the requested level. Generally, the RCO will complete administrative actions (range clearance, special instructions, and restrictions) on the Falcon Range primary frequency, 363.7. If the JTAC requests a separate frequency, the RCO will then hand off the flight to the JTAC on Falcon Range secondary frequency, 238.8. This action separates administrative and combat training functions. If the target can be scored, the RCO will score each hot pass but will not transmit weapons scores unless requested. Scores will be forwarded to participating units as appropriate.

7.1.4. JTAC Locations. JTACs may use any of several locations to conduct their operations. These locations include either the Main or Flank Towers, and any location outside the impact area. JTACs may control weapons delivery sorties from within the impact area provided the following conditions are met:

7.1.4.1. The mission is dry (no ordnance, or if combat lasers are employed, the JTACs are located outside all laser hazard zones), or;

7.1.4.2. The Falcon Range RCO conducts a risk analysis using the weapons safety program and approves the proposed location, and;

7.1.4.2.1. The mission is conducted from the surveyed observation points.

7.1.4.2.2. The JTAC is no closer than 500 meters to the closest planned target.

- 7.1.4.2.3. The aircraft are employing munitions under the control of the JTAC. JTACs are prohibited from operating inside the impact area if aircraft are under RCO or flight lead control.
- 7.1.4.2.4. The pilot has visually confirmed the JTAC location.
- 7.1.4.2.5. The pilot does not point at or overfly the JTAC location during roll-in, track or recovery.
- 7.1.4.3. The Weapons Danger Zone Tool provides a detailed risk analysis for each combination of aircraft, weapon, target and parameters for approved attacks. If the determined values exceed the acceptable risk when an OP is occupied, then the JTAC and aircrews can opt to attack a different target or use different parameters. If this is not practical, then the ground party must move to another OP, or the attacks are prohibited.
- 7.1.4.4. If practical, an RCO-qualified member should accompany the JTAC. (Single RCO procedures, such as extended duty hours, may preclude this.)
- 7.1.4.5. The JTACs will positively mark their position with a recognizable means. Vehicles will be marked with a VS-21 panel or equivalent. Units which do not bring a panel can check one out from Falcon Range.
- 7.1.5. Surveyed JTAC observation points will have a small building nearby, with orange and white markings on top to provide a readily identifiable location.
- 7.1.6. Safety. Pilots, JTACs, and the RCO share the responsibility for conducting CAS operations safely. When personnel occupy locations within the impact area, every weapons delivery pass presents ground personnel with potential hazards. The RCO and JTAC must continually assess the risk level of these operations. JTACs and RCOs will abort questionable weapons delivery passes and will terminate CAS operations if/when any member's comfort level is exceeded.
- 7.1.6.1. The RCO generally has a better vantage point from which to view the aircraft, and has the ultimate responsibility for the safe conduct of the range operations. The RCO can abort any aircraft for safety reasons without the permission of the JTAC.

7.2. Fort Sill West Range. Fixed wing air operations at Fort Sill support training of personnel in formal artillery school courses, operational joint force training, and service unique continuation training. The applicable instruction is Fort Sill Regulation 385-1, available for download from the **Fort Sill website** in PDF format. Aircrews utilizing the Fort Sill West Range are required to review the regulation before operating within the range airspace. Content and changes to the Army regulation supersede this instruction. Aircrews are responsible for complying with the procedures outlined within the Army directives and all governing regulations. Bring conflicts to the attention of Fort Sill Range Control.

- 7.2.1. Scheduling. Units desiring to schedule range missions for unit level continuation training must realize that Army requirements for use of the range will have priority over aircrew training. To schedule unit level continuation training, contact Fort Sill Range Control. This agency will coordinate range times and locations with ground units and ARAC.
- 7.2.2. Target Area Information. The West Range Impact Area, (for aircraft usage), consists of three CAS target areas, CAS Box 1, CAS Box 2 and CAS Box 3. In addition, dry missions over the Fort Sill Garrison may be conducted in support of various joint training programs.

7.2.2.1. CAS Box 1 is the western target array, with the primary targets located at ND 444394 (N 34°41.750' W 098°30.939').

7.2.2.2. CAS Box 2 is the central target array, with the primary targets located at ND 474378 (N 34°40.865' W 098°28.979').

7.2.2.3. CAS Box 3 is an inert-only target array 1900 meters northeast of CAS Box 2, with the primary targets located at ND 492391 (N 34°41.544' W 098°27.798').

7.2.3. Authorized weapons. Fort Sill Regulation 385-1 provides detailed information on the weapons authorized on the West Range Impact Area. A variety of live, inert and training munitions may be employed on the targets.

7.2.4. Artillery missions may operate simultaneously with fixed-wing operations. Aircrews will adhere to airspace control area lateral and altitude limits if artillery is active when briefed by ARAC, the JTAC, or Range Control.

7.2.5. The approach corridors to Henry Post AAF are located within two NM of West Range. Use caution in the vicinity of Henry Post AAF.

7.2.6. Refer to **Attachment 12, Fort Sill Initial/Contact Points and Communication Grid**, for a list of initial and contact points and the radio frequencies used at Fort Sill.

7.3. Range Control. Fort Sill Range Control is the final approving authority for all operations within R-5601. Aircraft will cease operations and depart restricted airspace immediately upon request from Range Control.

ABEL RAMOS, Colonel, USAFR
Commander

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

NOTE *The user of this instruction is responsible for verifying the currency of the cited documents.*

FAA Order 7110.65(x), *Air Traffic Control*

AFPD 13-2, *Air Traffic, Airfield, Airspace and Range Management*, 2 January 2019

AFI 32-1015, *Integrated Installation Planning*, 29 July 2019

AFI 33-322, *Records Management and Information Governance Program*, 27 July 2021

AFI 48-139, *Laser and Optical Radiation Protection Program*, 29 September 2014

AFMAN 10-3503V1, *Joint Terminal Attack Controller Training Program*, 7 Nov 2023

AFMAN 11-MDS Series

AFMAN 11-202V3, *General Flight Rules*, 9 January 2022

AFMAN 11-214, *Air Operations Rules and Procedures*, 28 November 2022

AFMAN 13-212V1, *Range Planning and Operations*, 14 March 2023

AFTTP 3-2.5, *Multi-Service Brevity Codes*, 1 March 2023

AR 385-63, *Range Safety*, 25 May 2025 (*Incorporates MCO 3570.1D*)

DAFI 91-202, *US Air Force Mishap Prevention Program*, 11 March 2020

DAFI 91-212, *Bird/Wildlife Strike Hazard (BASH) Management Program*, 12 April 2023

DAFMAN 13-201, *Airspace Management*, 09 December 2020

DAFMAN 13-217, *Drop Zone, Landing Zone, Helicopter Landing Zone Operations*, 21 April 2021

DAFMAN 91-203, *Air Force Occupational Safety, Fire & Health Standards*, 22 March 2022

DAFMAN 91-224, *Ground Safety Investigation and Hazard Reporting*, 20 January 2022

Fort Sill Supplement 385-1, *Post Range Regulation*, 15 December 2022

Joint Publication 3-09.3, *Close Air Support*, 10 June 2019

Adopted Forms

DAF Form 847, *Recommendation for Change of Publication*, 15 April 2022

Abbreviations and Acronyms

AAA—Anti-Aircraft Artillery

AEF—Air and Space Expeditionary Force

AFI—Air Force Instruction

AFMAN—Air Force Manual
AFLCMC—Air Force Life Cycle Management Center
AFRC—Air Force Reserve Command
AGL—Above Ground Level
AHAS—Avian Hazard Advisory System
APC—Armored Personnel Carrier
ARAC—Army Radar Approach Control
ARTCC—Air Route Traffic Control Center
ATCAA—Air Traffic Control Assigned Airspace
ATIS—Automatic Terminal Information Service
BDU—Bomb, Dummy Unit
CAS—Close Air Support
CCRP—Continuously Computed Release Point
CDT—Central Daylight Time
Comm—Commercial (telephone)
CSE—Center Scheduling Enterprise
CST—Central Standard Time
DOD—Department of Defense
DODIC—Department of Defense Identification Code
DOL—Directorate of Logistics
DPI—Desired Point of Impact
EOD—Explosive Ordnance Disposal
EW—Electronic Warfare
FAA—Federal Aviation Administration
FAC—Forward Air Controller
FLIP—Flight Information Publication
FM—Frequency Modulation
GBU—Guided Bomb Unit
GIS—Geographic Information System
GLTD—Ground Laser Target Designator
HAS—High Angle Strafe
HOTAS—Hands on Throttle-and-Stick

IAM—Inertially Aided Munitions
IFR—Instrument Flight Rules
IMC—Instrument Meteorological Conditions
IR—Infrared
IRSSS—Improved Remote Strafe Scoring System
IZLID—Infrared Zoom Laser Illuminator Designator
J-DAM—Joint Direct Attack Munitions
JRB—Joint Reserve Base
JTAC—Joint Terminal Attack Controller
LAS—Low Angle Strafe
LES-M—Laser Evaluator System-Mobile
LGTR—Laser-Guided Training Round
LMR—Land-Mobile Radio
LOA—Letter of Agreement
LSDZ—Laser Surface Danger Zone
LSVRS—Laser Spot Video Recording System
LTA—Laser Training Area
LTL—Laser-to-Target Line
MANPAD—Man-Portable Air Defense
MGRS—Mercator Grid Reference System
MOA—Military Operating Area
MSA—Minimum Safe Altitude
MSL—Mean Sea Level
MTR—Military Training Route
MVA—Minimum Vectoring Altitude
NAS—Naval Air Station
NATOPS—Naval Air Training and Operating Procedures Standardization
NOTAM—Notice to Airmen
NVD—Night Vision Device
NVG—Night Vision Goggle
OAP—Offset Aim Point
OP—Observation Point

ORI—Operational Readiness Inspection
PDF—Portable Document Format
POL—Petroleum, Oils and Lubricants
PRF—Pulse Repetition Frequency
QBA—Quanah Buffer Area
RCO—Range Control Officer
RDP—RCO Duty Period
RFMSS—Range Facility Management Support System
ROA—Range Operating Authority
ROO—Range Operations Officer
RPA—Remotely Piloted Aircraft
SDO—Squadron Duty Officer
SOF—Supervisor of Flying
SSS—Smokey SAM Simulator (GTR-18)
TGP—Targeting Pod
TP—Training Projectile
TPT—Training Projectile - Tracer
TRSA—Terminal Radar Service Area
UHF—Ultra-High Frequency
USNG—United States National Grid
UTM—Universal Transverse Mercator
UXO—Unexploded Ordnance
VFR—Visual Flight Rules
VHF—Very High Frequency
VMC—Visual Meteorological Conditions
WDZ—Weapons Danger Zone
WGS—World Geodetic System
WISS—Weapons Impact Scoring Set
WP—White Phosphorus - Willie Pete

Terms

NOTE— The purpose of this glossary is to help the reader understand the terms used in this publication. It does not encompass all pertinent terms. Joint Publication 1-02, *DoD Dictionary of Military and Associated Terms*, and Air Force Doctrine Document 1-2, *Air Force Glossary*, contain standardized terms and definitions for DoD and USAF use.

Air Traffic Control Assigned Airspace (ATCAA)—Defined airspace normally within the Class A airspace (above 18,000 feet MSL) and established in accordance with FAA JO 7610.4(X) by a LOA with the ATC facility having responsibility for the airspace.

Class A Range—A manned range as defined in AFMAN 13-212 Volume 1, Range Planning and Operations, where a range control officer is present with two-way radio voice communication capability.

Class B Range—A manned or unmanned range with scoring capability, but no range control officer.

Comprehensive Range Plan (CRP)—The range commander's plan, approved by the MAJCOM, that establishes the vision with supporting goals and develops the strategy for attaining the vision through objectives and an implementation approach.

Essential Personnel—Those personnel on a range participating in a test, training or evaluation scenario involving the employment of ordnance (air/surface/sea) including Mission Essential Personnel and those personnel not required for ordnance employment including maneuver elements, opposition forces, instructors, evaluators, etc.

Explosive Ordnance Disposal (EOD) —The detection, identification, on-site evaluation, rendering safe, recovery, and final disposal of unexploded explosive ordnance. It may also include explosive ordnance that has become hazardous by damage or deterioration.

Guard—A radio frequency that is normally used for emergency transmissions and is continuously monitored. UHF band: 243.0 MHZ; VHF band: 121.5 MHZ.

Hazard Areas—The Hazard Area is a composite of all WDZs and surface danger zones (SDZs) for all authorized weapon delivery events against targets or DPIs approved for actual ordnance expenditures.

Impact Areas—The Impact Area is that area on a range immediately surrounding the target(s) or designated point(s) of impact approved for actual ordnance delivery.

Instrument Flight Rules (IFR)—Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

Instrument Meteorological Conditions (IMC)—Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling; less than minimums specified for visual meteorological conditions.

Joint Terminal Attack Controller (JTAC) —An individual qualified IAW JP3-09.3 to provide terminal control for the delivery of weapons by aircraft.

Military Operations Area (MOA)—Airspace designated for nonhazardous military activity, established outside the Class A airspace (below 18,000 feet MSL).

Military Training Route (MTR) —A low-level, high-speed training route established IAW criteria in FAA Joint Order 7610.4, Special Operations. MTRs are used by DoD to conduct low altitude navigation and tactical training, in instrument and visual weather conditions, below an altitude of 10,000 feet MSL and at airspeeds more than 250 KIAS. Routes are established as IFR routes (IR) or VFR routes (VR). The FAA has approval authority to implement IRs and the appropriate MAJCOM approves VR implementation. Environmental documentation is required for implementation IAW AFI 32-1015. VRs are processed through the FAA via the AFREP. MTRs are published in FLIP AP/1B and charted on FAA Sectionals and DoD Low IFR charts. AFREPs assign all route numbers.

Mission Essential Personnel—Those personnel on a range directly required for the employment of ordnance (air/surface/sea) in a test, training, or evaluation scenario. This may include JTACs, range control officers, scorers, and any other personnel identified as required.

Night Vision Device (NVD) —Any electro-optical device that is used to detect visible and infrared energy and provide a visible image. Night vision goggles, forward-looking infrared, thermal sights, and low-light level television are night vision devices.

Night Vision Goggles(s) (NVG) —An electro-optical image intensifying device that detects visible and near-infrared energy, intensifies the energy, and provides a visible image for night viewing. Night vision goggles can be either hand-held or helmet-mounted.

Notice to Airman (NOTAM)—A notice containing information concerning the establishment, condition, or change in any aeronautical facility, service, procedures, or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

Primary Training Range (PTR)—PTRs are established to accommodate training. They are not designed or structured to accommodate test and evaluation activities.

Remotely Piloted Aircraft (RPA)—An unmanned aircraft flown remotely from a ground or air control station. May also referred to as an unmanned aerial vehicle, or UAV.

Supervisor of Flying (SOF)—A rated officer authorized by the flying unit commander to monitor and supervise current flight operations.

Surface Danger Zones (SDZ) —The ground and airspace designated for vertical and lateral containment of a user-determined percentage of projectiles, fragments, debris, and components resulting from the firing, launching, or detonation of weapon systems including demolitions.

Visual Flight Rules (VFR)—Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

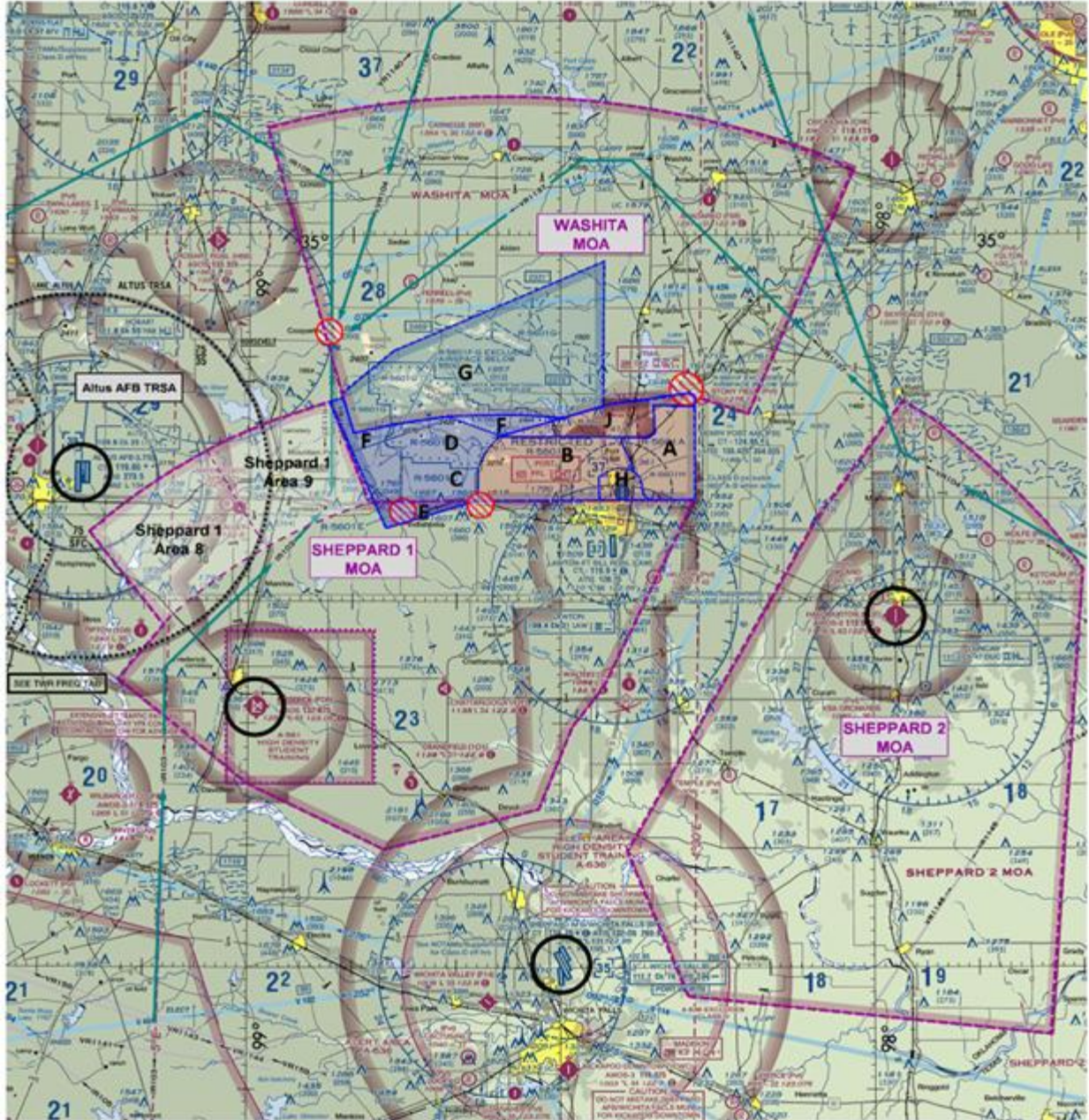
Visual Meteorological Conditions (VMC)—Weather conditions in which visual flight rules apply; expressed in terms of visibility, ceiling height, and aircraft clearance from clouds along the path of flight. When these criteria do not exist, instrument meteorological conditions prevail and instrument flight rules must be complied with.

Weapons Danger Zone (WDZ) —The ground and airspace for lateral and vertical containment of a user-determined percentage of projectiles, fragments, debris, and components resulting from the firing, launching, and/or detonation of aviation delivered ordnance. This three-dimensional zone accounts for weapon accuracy, failures, ricochets, and broaches (resurfacing) of a specific weapon/munitions type delivered by a specific aircraft type. Where software-selectable, this instruction requires 99.9999% containment (1:1,000,000 escapement) or better for all fires, whether SDZs, aviation-delivered gun ammunition, or all other aviation-delivered ordnance, in accordance with Fort Sill Regulation 385-1.

Attachment 2

AERONAUTICAL CHART: FALCON RANGE ENVIRONS

Figure A2.1. Aeronautical Chart.

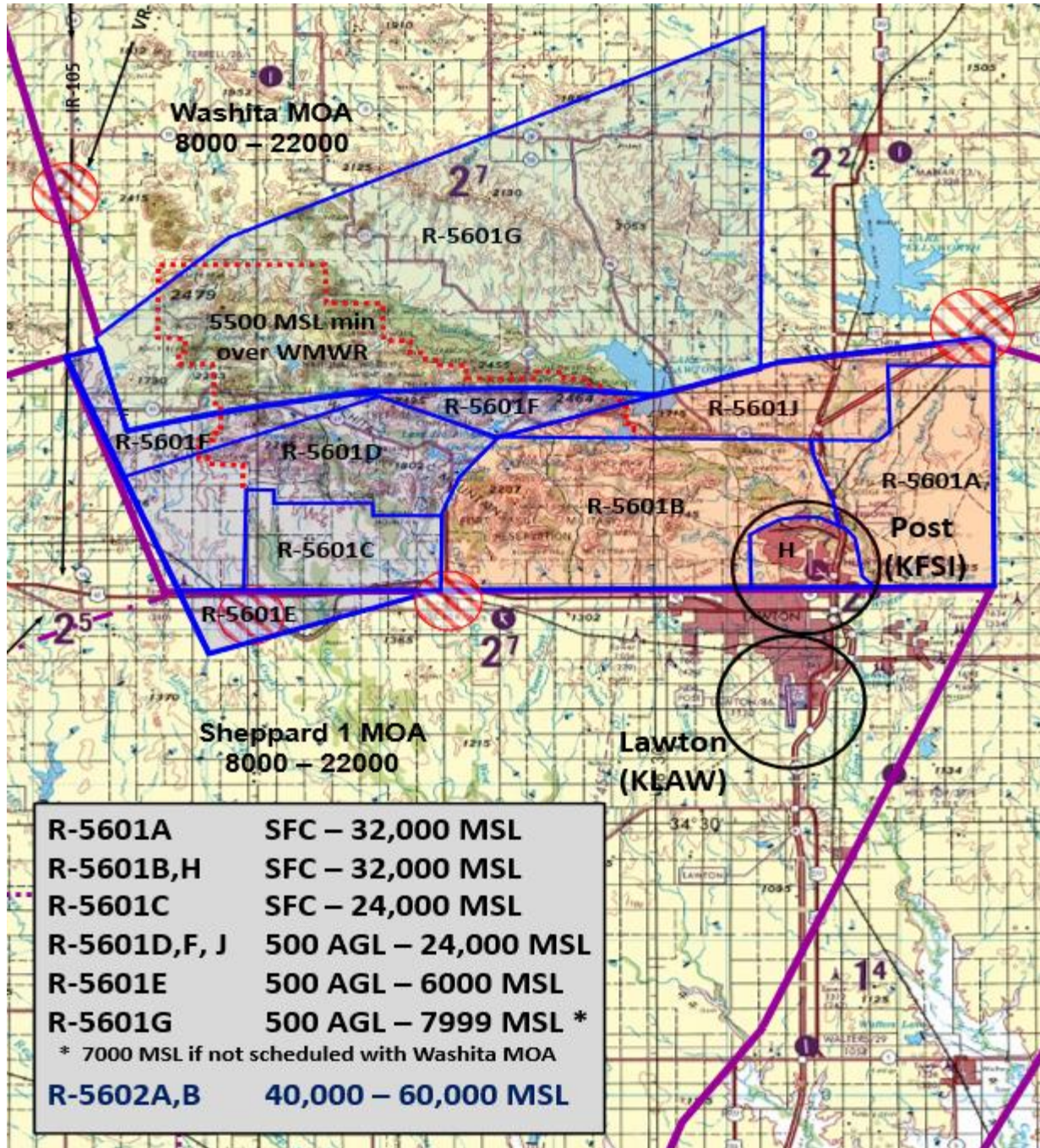


Source: FAA Raster Graphics, Dallas-Fort Worth Sectional Chart

Attachment 3

RESTRICTED AREA R-5601

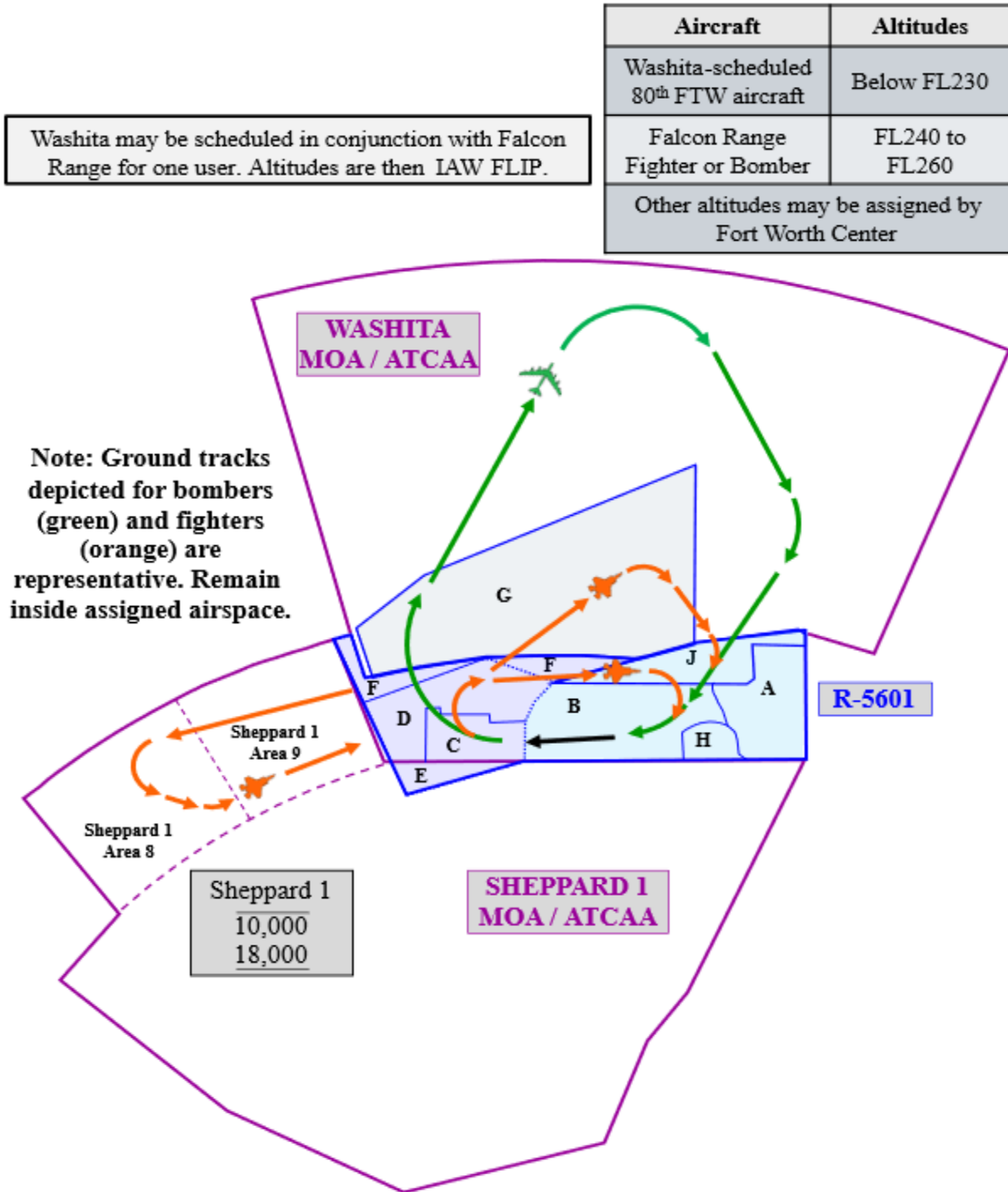
Figure A3.1. Restricted Area R-5601.



Attachment 4

MOA AND RESTRICTED AREA JOINT USE

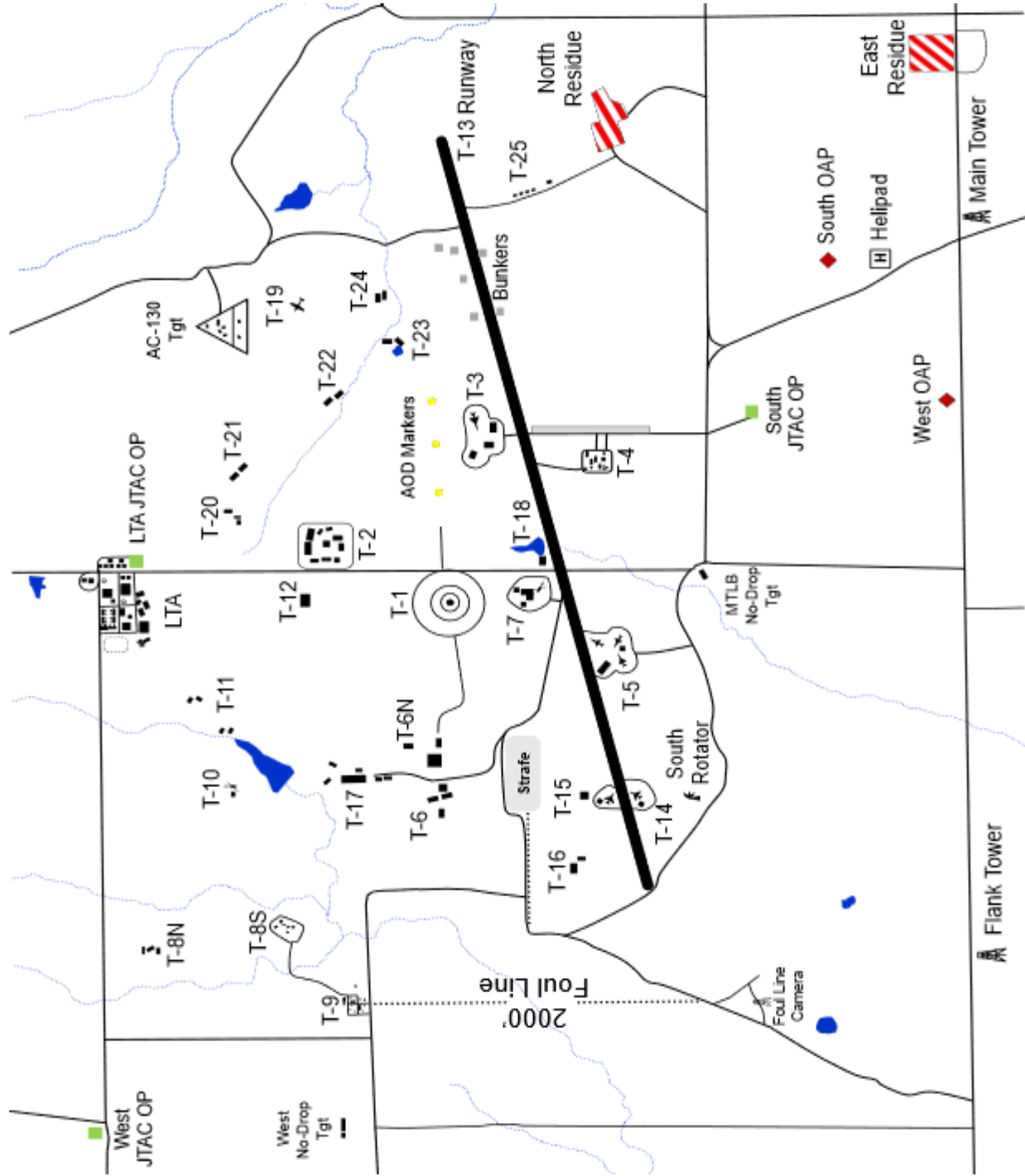
Figure A4.1. MOA and Restricted Area Joint Use.



Attachment 5

FALCON RANGE TARGET LAYOUT DIAGRAM

Figure A5.1. Target Layout/Overview.



Attachment 6

TARGET ARRAY DETAILS

Figure A6.1. Target Array Details.

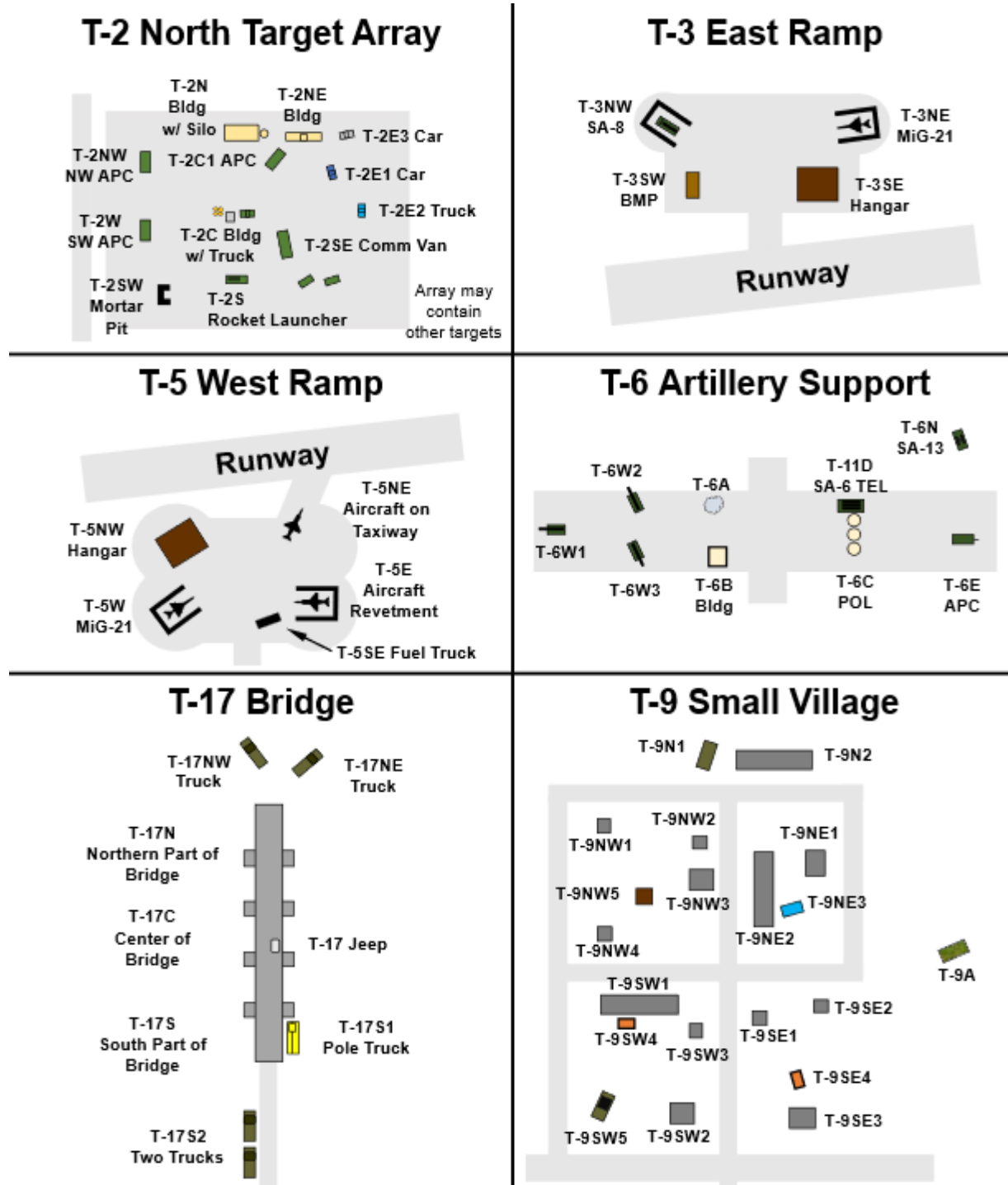
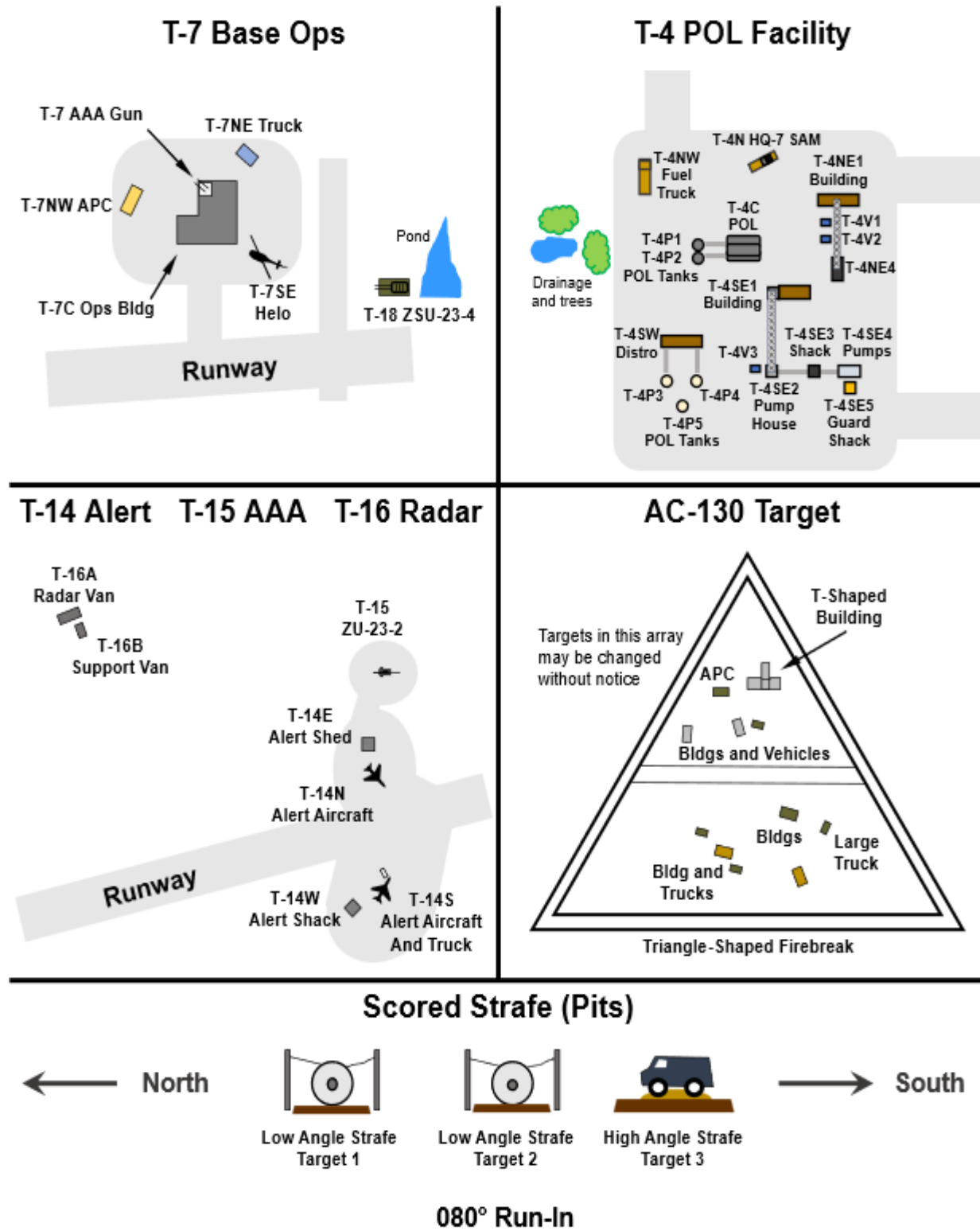


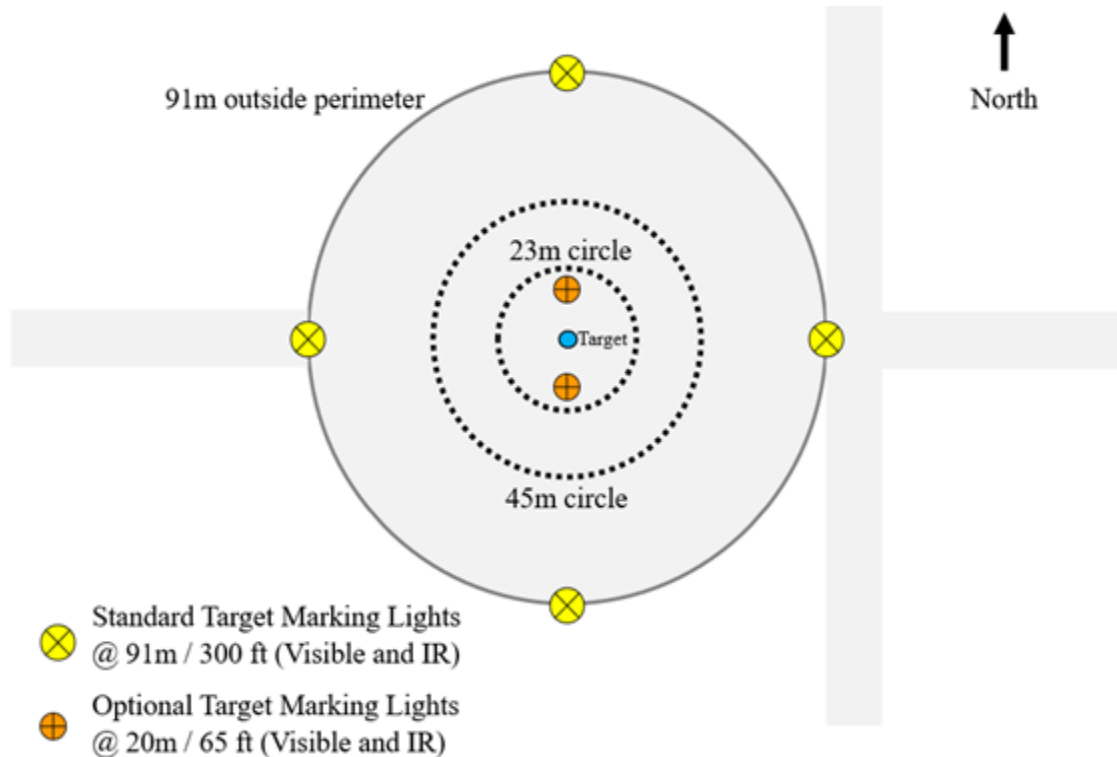
Figure A6.2. Target Array Details.



Attachment 7

FALCON RANGE NIGHT LIGHTING DETAILS

Figure A7.1. Night Lighting Details.



Standard lighting includes four remotely operated lights (visible and IR/ NVD-compatible) at approximately 91 meters/300 feet from the center target and oriented at the four cardinal directions.

Optional lighting adds 2 additional remotely operated lights oriented north and south at 20 meters/65 feet from the target. Optional lights are pre-coordinated and will not be available unless requested at least two hours prior to the range mission.

Standard lighting will be displayed on all night missions and will be illuminating the target when aircraft check in with Falcon Range. Aircrews may request the standard, optional (if coordinated and in-place), or all lights to be turned from visible to IR or to OFF, depending on scenario and training requirements.

Attachment 8

MANNED SITES AND OAPS

Table A8.1. Manned Sites and OAPs.

Manned Sites and OAPs	Description	Latitude	Longitude	MGRS (14S ND)	Elev. (Ft.)
Main Tower	Lighted 80' Tower and Administration Area.	N 34 38.788	W 098 41.535	28203 33882	1394
Flank Tower	Lighted 85' Tower 1 NM West of Main Tower.	N 34 38.769	W 098 42.914	26097 33840	1368
Range Residue Storage Area	Fenced area with large building 500 meters east of the Main Tower.	N 34 38.840	W 098 41.206	28705 33980	1370
LTA	Laser training area village "Royville" with numerous targets for lasers only.	N 34 40.009	W 098 42.262	27086 36136	1465
West JTAC OP	OP NW of T-8N and west of LTA by rubble pile. Marked by small building on west side.	N 34 40.070	W 098 43.247	25581 36243	1456
LTA JTAC OP	2-story OP in SE portion of LTA. Part of large east-west CONEX.	N 34 40.000	W 098 42.163	27237 36120	1466
South JTAC OP	OP NW of main operations. Marked by small building on SW side.	N 34 39.100	W 098 41.887	27663 34457	1424
Foul Line Camera Tower	Unlighted guyed 40' tower on the south end of the foul line. 620 meters NNW of the flank tower.	N 34 39.096	W 098 43.006	25955 34444	1377
NW WISS Score Tower	Unlighted tower with solar panels on south side.	N 34 41.121	W 098 43.430	25297 38185	1524
NE WISS Score Tower	Unlighted tower with solar panels on south side.	N 34 41.228	W 098 41.959	27542 38384	1529
OAP – 1	North Radar Reflector.	N 34 41.2019	W 098 41.9612	27539 38341	1545
OAP – 2	South Radar Reflector.	N 34 39.0113	W 098 41.6132	28082 34294	1401
OAP – 3	West Radar Reflector.	N 34 38.8154	W 098 41.9299	27599 33930	1397

Attachment 9

FALCON RANGE TARGET LIST

A9.1. WGS-84, derived from GIS survey imagery (5cm) March 2019 and November 2019, coordinates are for the center of all DPIs.

Table A9.1. Falcon Range Target List.

Target DPI	Description	Latitude (North)	Longitude (West)	Elev. (Ft)	Weapon	MGRS (14S ND)
T-1	91 meter radius conventional circle w/ inner 23/45 meter circles	N 34 39.5425	W 098 42.2452	1430	Sub-Scale	27114 35273
T-2C	Small building with barrels and pickup truck in center of target array	N 34 39.7168	W 098 42.1430	1444	Full-Scale	27269 35595
T-2C1	Wheeled APC in north-center of target array	N 34 39.7359	W 098 42.1339	1446	Full-Scale	27283 35631
T-2N	Stacked and vertically aligned building	N 34 39.7449	W 098 42.1422	1445	Full-Scale	27269 35647
T-2NE	East-west oriented 4m x 12m building	N 34 39.7393	W 098 42.1226	1446	Full-Scale	27300 35637
T-2E1	Car on east side of 100m x 85m rectangle	N 34 39.7279	W 098 42.1171	1443	Full-Scale	27308 35616
T-2E2	Truck on east side of 100m x 85m rectangle	N 34 39.7159	W 098 42.1085	1443	Full-Scale	27322 35594
T-2E3	Car on northeast side of 100m x 85m rectangle	N 34 39.7391	W 098 42.1103	1450	Full-Scale	27319 35637
T-2SE	Communications van on southeast corner of 100m x 85m rectangle	N 34 39.7029	W 098 42.1281	1443	Full-Scale	27292 35569
T-2S	Rocket Launcher on south side of 100m x 85m rectangle	N 34 39.6989	W 098 42.1419	1444	Full-Scale	27271 35562
T-2SW	Mortar pit on southwest corner of array	N 34 39.6958	W 098 42.1561	1443	Full-Scale	27249 35556
T-2W	N-S oriented APC on west side of 100 x 85 meter rectangle	N 34 39.7125	W 098 42.1656	1434	Full-Scale	27235 35587
T-2NW	N-S oriented APC on northwest side of 100 x 85 meter rectangle	N 34 39.7351	W 098 42.1656	1434	Full-Scale	27234 35629

Table A9.2. Falcon Range Target List.

Target DPI	Description	Latitude (North)	Longitude (West)	Elev. (Ft)	Weapon	MGRS (14S ND)
T-3NW	SA-8 missile system	N 34 39.5064	W 098 41.9695	1433	Sub- Scale	27535 35207
T-3NE	Revetted aircraft on east side of 70 x 80 meter rectangle	N 34 39.5017	W 098 41.8982	1437	Sub- Scale	27644 35199
T-3SE	Hangar on SE side of 70 x 80 meter rectangle	N 34 39.4755	W 098 41.9157	1435	Sub- Scale	27617 35149
T-3SW	Security detail BMP	N 34 39.4812	W 098 41.9540	1433	Sub- Scale	27559 35162
T-4C	POL site consisting of 3 horizontal tanks	N 34 39.3319	W 098 41.9835	1415	Sub- Scale	27515 34885
T-4NW	Fuel Truck	N 34 39.3406	W 098 41.9972	1415	Sub- Scale	27494 34901
T-4N	HQ-7 SAM	N 34 39.3406	W 098 41.9803	1418	Sub- Scale	27519 34905
T-4P1	North of 2 vertical tanks	N 34 39.3336	W 098 41.9900	1415	Sub- Scale	27505 34888
T-4P2	South of 2 vertical tanks	N 34 39.3314	W 098 41.9900	1415	Sub- Scale	27505 34884
T-4NE1	East-west building with catwalk to T-4NE2	N 34 39.3346	W 098 41.9645	1415	Sub- Scale	27544 34877
T-4NE2	Small N-S building with catwalk to T-4NE1	N 34 39.3276	W 098 41.9658	1415	Sub- Scale	27542 34887
T-4V1	Small cart, northern of 2	N 34 39.3330	W 098 41.9684	1415	Sub- Scale	27538 34887
T-4V2	Small cart, southern of 2	N 34 39.3308	W 098 41.9684	1415	Sub- Scale	27538 34883
T-4SW	Larger E-W building	N 34 39.3217	W 098 41.9920	1415	Sub- Scale	27502 34866
T-4P3	Western of 3 POL tanks	N 34 39.3147	W 098 41.9947	1415	Sub- Scale	27498 34853
T-4P4	Eastern of 3 POL tanks	N 34 39.3147	W 098 41.9901	1415	Sub- Scale	27505 34853
T-4P5	Southern of 3 POL tanks	N 34 39.3119	W 098 41.9921	1415	Sub- Scale	27502 34848

Table A9.3. Falcon Range Target List.

Target DPI	Description	Latitude (North)	Longitude (West)	Elev. (Ft)	Weapon	MGRS (14S ND)
T-4SE1	Larger E-W building with catwalk to T-4SE2	N 34 39.3244	W 098 41.9763	1415	Sub-Scale	27526 34871
T-4SE2	Square pump house with catwalk to T-4SE1	N 34 39.3184	W 098 41.9789	1415	Sub-Scale	27522 34860
T-4SE3	Square shack on above-ground pipeline	N 34 39.3184	W 098 41.9698	1415	Sub-Scale	27536 34860
T-4SE4	Pump house shack with pipeline to west	N 34 39.3189	W 098 41.9599	1415	Sub-Scale	27551 34861
T-4SE5	Guard shack 3m south of T-4SE4	N 34 39.3173	W 098 41.9593	1415	Sub-Scale	27552 34858
T-4V3	Small E-W oriented Jeep 5m west of T-4SE2	N 34 39.3184	W 098 41.9829	1415	Sub-Scale	27516 34860
T-5NW	Hangar on NW side of 120 x 100 meter rectangle	N 34 39.3205	W 098 42.3695	1410	Sub-Scale	26925 34862
T-5W	Aircraft w/ service equipment on west side T-5 array	N 34 39.2911	W 098 42.3568	1403	Sub-Scale	26945 34807
T-5S	Fuel truck on south side of ramp	N 34 39.2882	W 098 42.3343	1408	Sub-Scale	26979 34802
T-5E	Alert aircraft on east side of 120 x 100 meter rectangle	N 34 39.2962	W 098 42.3195	1405	Sub-Scale	27001 34817
T-5NE	Aircraft on northeast taxiway by runway	N 34 39.3324	W 098 42.3175	1406	Sub-Scale	27005 34884
T-6A	Ammunition support	N 34 39.5607	W 098 42.5918	1427	Sub-Scale	26584 35305
T-6B	Ammunition support structure (small building)	N 34 39.5517	W 098 42.5910	1428	Sub-Scale	26585 35288
T-6C	POL site consisting of 3 vertical tanks & pump house (west side)	N 34 39.5598	W 098 42.5501	1430	Sub-Scale	26648 35303
T-6D	SA-6/11 TEL located 5 meters north of T-6C	N 34 39.5619	W 098 42.5503	1429	Sub-Scale	26648 35307

Table A9.4. Falcon Range Target List.

Target DPI	Description	Latitude (North)	Longitude (West)	Elev. (Ft)	Weapon	MGRS (14S ND)
T-6E	Single APC oriented east-west	N 34 39.5579	W 098 42.5152	1429	Sub-Scale	26701 35300
T-6N	SA-13. Oriented north-south with TEL to the north.	N 34 39.5992	W 098 42.5173	1430	Sub-Scale	26698 35376
T-6W1	West howitzer in fighting position facing west	N 34 39.5519	W 098 42.6410	1427	Sub-Scale	26509 35288
T-6W2	North howitzer in fighting position facing northwest	N 34 39.5590	W 098 42.6139	1427	Sub-Scale	26550 35301
T-6W3	South howitzer in fighting position facing southeast	N 34 39.5490	W 098 42.6130	1427	Sub-Scale	26552 35283
T-7C	Base Operations building	N 34 39.4248	W 098 42.2318	1414	Sub-Scale	27135 35055
T-7C AAA	ZU-23-2 gun on 2 nd story of the NW corner of building.	N 34 39.4289	W 098 42.2301	1432	Sub-Scale	27137 35063
T-7NW	APC NW of Base Operations	N 34 39.4332	W 098 42.2572	1410	Sub-Scale	27096 35070
T-7NE	Base Ops "Follow Me" Truck	N 34 39.4433	W 098 42.2289	1409	Sub-Scale	27139 35089
T-7SE	Base Operations Helicopter located 25 meters SE of Base Ops	N 34 39.4084	W 098 42.2164	1411	Sub-Scale	27158 35025
T-8N	Two groups of armored and service vehicles.	N 34 39.9708	W 098 42.9099	1430	Full-Scale	26096 36061
T-8S	Arrays are separated by 400 meters north-south.	N 34 39.7771	W 098 42.8669	1410		26163 35703
T-9N1	Truck, oriented north-south, facing south	N 34 39.6929	W 098 43.0089	1417	Sub-Scale	25947 35547
T-9N2	Building, 4m x 13m, oriented east-west	N 34 39.6930	W 098 43.0026	1418	Sub-Scale	25956 35547

Table A9.5. Falcon Range Target List.

Target DPI	Description	Latitude (North)	Longitude (West)	Elev. (Ft)	Weapon	MGRS (14S ND)
T-9NW1	Shack, 2m x 2m	N 34 39.6849	W 098 43.0211	1417	Sub- Scale	25928 35532
T-9NW2	Shack, 2m x 2m	N 34 39.6847	W 098 43.0132	1417	Sub- Scale	25940 35532
T-9NW3	Small Building, 4m x 4m	N 34 39.6811	W 098 43.0127	1417	Sub- Scale	25941 35525
T-9NW4	Shack, 2m x 2m	N 34 39.6672	W 098 43.0215	1418	Sub- Scale	25927 35518
T-9NW5	10-meter Lookout Tower	N 34 39.6800	W 098 43.0177	1420	Sub- Scale	25933 35523
T-9NE1	Small Building, 4m x 4m	N 34 39.6823	W 098 42.9985	1418	Sub- Scale	25963 35527
T-9NE2	Building, 4m x 13m, oriented north-south	N 34 39.6809	W 098 43.0055	1416	Sub- Scale	25952 35525
T-9NE3	Small pickup truck adjacent to T-9NE2	N 34 39.6788	W 098 43.0028	1417	Sub- Scale	25957 35524
T-9SE1	Shack, 2m x 2m	N 34 39.6689	W 098 43.0052	1418	Sub- Scale	25952 35503
T-9SE2	Shack, 2m x 2m	N 34 39.6697	W 098 42.9989	1417	Sub- Scale	25962 35504
T-9SE3	Small Building, 4m x 4m	N 34 39.6633	W 098 42.9992	1417	Sub- Scale	25962 35497
T-9SE4	Small Vehicle, Oriented NW-SE	N 34 39.6655	W 098 43.0015	1418	Sub- Scale	25958 35492
T-9SW1	Building, 4m x 13m, oriented east-west	N 34 39.6720	W 098 43.0181	1416	Sub- Scale	25933 35508
T-9SW2	Small Building, 4m x 4m	N 34 39.6630	W 098 43.0132	1416	Sub- Scale	25940 35492
T-9SW3	Shack, 2m x 2m	N 34 39.6690	W 098 43.0120	1418	Sub- Scale	25942 35503
T-9SW4	Mini-Truck	N 34 39.6692	W 09843. 0008	1418	Sub- Scale	25949 35505

Table A9.6. Falcon Range Target List.

Target DPI	Description	Latitude (North)	Longitude (West)	Elev. (Ft)	Weapon	MGRS (14S ND)
T-9SW5	SA-9 SAM	N 34 39.6647	W 098 43.0212	1418	Sub- Scale	25928 35491
T-9A	APC located 20 meters east of the main array	N 34 39.6770	W 098 42.9773	1415	Sub- Scale	25995 35518
T-10	Helicopter and support vehicle	N 34 39.8529	W 098 42.6009	1437	Sub- Scale	26569 35845
T-11W	Miscellaneous vehicles	N 34 39.8755	W 098 42.4760	1434	Sub- Scale	26759 35887
T-11NE	Tech Truck with mounted AAA gun	N 34 39.9129	W 098 42.4294	1443	Sub- Scale	26830 35956
T-11SE	Truck with rocket launcher	N 34 39.9043	W 098 42.4281	1444	Sub- Scale	26832 35940
T-12	Reinforced earth bunker with door on west	N 34 39.7494	W 098 42.2416	1458	Full- Scale	27118 35655
T-13W	East-west runway oriented 07/25.	N 34 39.2510	W 098 42.7900	1391	Sub- Scale	26284 34732
T-13E	7400 feet long by 120 feet wide.	N 34 39.5580	W 098 41.3630	1395	GBU	28461 35306
T-14N	North Alert Ground Attack Aircraft	N 34 39.3087	W 098 42.6183	1403	Sub- Scale	26545 34839
T-14S	South Alert Ground Attack Aircraft	N 34 39.2723	W 098 42.6145	1395	Sub- Scale	26551 34771
T-14W	Alert Shack on south side of runway	N 34 39.2661	W 098 42.6296	1395	Sub- Scale	26528 34760
T-14E	Alert Shack on north side of runway	N 34 39.3221	W 098 42.6231	1405	Sub- Scale	26538 34864
T-15	23mm AAA Site. Oriented to the west.	N 34 39.3445	W 098 42.6161	1404	Sub- Scale	26548 34905
T-16A	Fire Can radar van with TTR dish on west face	N 34 39.3643	W 098 42.7525	1407	Sub- Scale	26340 34941
T-16B	Radar support vehicle (van)	N 34 39.3620	W 098 42.7491	1407	Sub- Scale	26345 34937
T-17N	North end of bridge	N 34 39.6937	W 098 42.5800	1440	Sub- Scale	26602 35550

Table A9.7. Falcon Range Target List.

Target DPI	Description	Latitude (North)	Longitude (West)	Elev. (Ft)	Weapon	MGRS (14S ND)
T-17C	Center of bridge and jeep on top	N 34 39.6742	W 098 42.5781	1440	Sub- Scale	26605 35514
T-17S	South end of bridge	N 34 39.6605	W 098 42.5786	1440	Sub- Scale	26604 35489
T-17S1	Pole truck adjacent to southeast bridge	N 34 39.6617	W 098 42.5747	1440	Sub- Scale	26610 35491
T-17S2	2 vehicles 20m south of bridge	N 34 39.6399	W 098 42.5771	1439	Sub- Scale	26606 35451
T-17NW	Truck 25m NW of bridge	N 34 39.7162	W 098 42.5860	1442	Sub- Scale	26592 35592
T-17NE	Truck 25m NE of bridge	N 34 39.7156	W 098 42.5742	1442	Sub- Scale	26610 35591
T-18	ZSU-23-4 by tree and pond	N 34 39.4058	W 098 42.1718	1410	Sub- Scale	27226 35020
T-19	Downed Aircraft Target	N 34 39.7606	W 098 41.6851	1442	Sub- Scale	27968 35678
T-20	3 construction equipment vehicles	N 34 39.8447	W 098 42.0899	1440	Full- Scale	27349 35832
T-21	2 supply trucks	N 34 39.8469	W 098 42.0066	1439	Full- Scale	27476 35836
T-22	Truck with AAA piece / dump truck	N 34 39.7060	W 098 41.8617	1417	Full- Scale	27698 35576
T-23	2 tactical vehicles within revetments	N 34 39.6186	W 098 41.7486	1404	Full- Scale	27872 35415
T-24	2 tactical vehicles adjacent to trees	N 34 39.6307	W 098 41.6689	1397	Full- Scale	27993 35438
T-25	Convoy	N 34 39.4169	W 098 41.4669	1410	20/25/30 mm	28303 35044
Strafe Target 1	North Low Angle Strafe target	N 34 39.4497	W 098 42.5833	1413	20/25/30 mm	26598 35099
Strafe Target 2	South Low Angle Strafe target	N 34 39.4276	W 098 42.5826	1413	20/25/30 mm	26599 35059
Strafe Target 3	Scored High Angle Strafe target	N 34 39.4152	W 098 42.5811	1413	20/25/30 mm	26601 35036

Table A9.8. Falcon Range Target List.

Target DPI	Description	Latitude	Longitude	Elev. (Ft)	Weapon	MGRS (14S ND)
AC-130 Target coordinates are ± 3 meters due to target movement and post-strike replacement						
AC-130 T-Bldg	T-shaped building with lookout tower	N 34 39.875	W 098 41.718	1440	AC-130 All strafe	27918 35890
AC-130 SW Bldg	Southwest target, single building	N 34 39.862	W 098 41.739	1438	AC-130 All strafe	27885 35866
AC-130 S Bldg	South building with adjacent truck	N 34 39.865	W 098 41.726	1440	AC-130 All strafe	27905 35872
AC-130 APC	Armored vehicle	N 34 39.874	W 098 41.730	1441	AC-130 All strafe	27899 35888
AC-130 Truck	Large truck	N 34 39.888	W 098 41.723	1445	AC-130 All strafe	27909 35914

Table A9.9. Falcon Range Target List (No-Drop).

No-Drop Targets	Description	Latitude	Longitude	Elev. (Ft)	MGRS (14S ND)	Notes
North No- Drop Target	1 truck, 1 BRDM by NW-SE road	N 34 40.4412	W 098 42.0410	1438	27421 36934	850 meters NE of LTA
South No- Drop Target	MTLB on SW corner of 3-way	N 34 39.1837	W 098 42.2007	1395	27184 34610	330 meters SE of T-5
West No- Drop Target	Rocket launcher and truck	N 34 39.6973	W 098 43.2462	1433	25584 35554	160 meters W of T-9
North Rotator	Rotating Radar Antenna	N 34 39.9821	W 098 42.3232	1481	26993 36086	SW part of LTA
South Rotator	Rotating Radar Antenna	N 34 39.1881	W 098 42.6219	1397	26540 34617	140 meters S of T-14
No-drop targets are designed for applied tactics (dry/simulated ordnance) and lasers only. No actual weapons of any kind may be employed against them.						

Attachment 10

FALCON RANGE ATTACK AXIS MATRIX

A10.1. The following tables contain general rules for weapons employment. WDZ Tool (footprint program) parameters and algorithms may change based on current weapons data. Updated releases of the joint/DoD-approved WDZ Tool may modify restrictions and take precedence over this attachment. Contact the range for the most current release parameters. If there are additional restrictions which read “**WDZ Restricted**”, then there may be significant aircraft/weapons/parameter restrictions, or closure of adjacent training areas may be required. Additionally, Note 3 addresses JTACs occupying one of the three on-range observation points (OPs). If Note 3 applies, then one or more OP must either be unoccupied or alternate targets with acceptable risk values must be used. In both cases the range must be contacted to coordinate weapons events.

Table A10.1. Aircraft: AC-130 (MC-130).

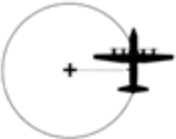

Target	Weapon	Release Angle	Release Alt. (AGL)	Firing Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-7, T-17, T-19, strafe pits	30mm	-5° to -45°	3000 to 15,000	Circling	4,6,7		Do not fire toward any manned sites or the LTA. Use JFIRE MSD for manned OP distances.
Only targets: AC-130 Target Array	105mm PGU-43 TP (Small amount of HE)	-5° to -45°	3000 to 15,000	Circling	3,4, 6,7		Do not fire toward any manned sites or the LTA. Use JFIRE MSD for manned OP distances.

Table A10.2. Aircraft: CV-22 / MV-22.



Target	Weapon	Release Angle	Release Alt. (AGL)	Firing Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-7, T-17, strafe pits	7.62mm Sidfire	-2° to -30°	100 to 1000	235° to 115° clockwise	3,4, 6,7		Do not fire toward any manned sites or the LTA. Minimum firing range 100 meters.
All except T-7, T-17, strafe pits	.50 cal Sidfire	-2° to -30°	100 to 1000	235° to 115° clockwise	3,4, 6,7,8		Do not fire toward any manned sites or the LTA. Minimum firing range 100 meters. WDZ restricted.

Table A10.3. Aircraft: A-10.

Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-25	Sub-scale	0° to -60°	300 to 15,000	215° to 125°	1,4,6		Pop-ups from west only.
All except T-25	Sub-scale Loft/Toss	-20° to +45°	300 to 10,000	035° to 125° 215° to 305°	1,2, 6,7		Pop-ups from west only.
All except T-25	2.75" Rockets (TP)	0 to -45° No loft	1000 to 15,000	050° to 110° 230° to 290°	3,4, 6,7		None.
T-1, T-2, T-6, T-8N, T-8S, T-12, T-17, T-20, T-21, T-22	2.75" Rockets (WP)	0 to -45° No loft	1000 to 15,000	050° to 110° 230° to 290°	3,4, 6,7		Targets EOD-restricted.
All except T-7, T-17, T-19	30mm	-15° to -60°	1500 to 10,000	050° to 110° 230° to 290°	3,4,6		WDZ restricted. Contact Range for details.
High Angle Strafe Target (Acoustic)	30mm High Angle Strafe	-15° to -60°	1500 to 10,000	070° to 090°	3,4,9		Only on the scored high angle strafe target.
Low Angle Strafe Targets (Acoustic)	30mm Low Angle Strafe	LAS 0° to -20°	75 to 2000	070° to 090°	3,4		Only on the scored low angle strafe targets.
Low Angle Strafe Targets (Acoustic)	30mm Long-Range/Two-Tgt Strafe	LRS TTS 0° to -20°	75 to 5000	070° to 090°	3,4		Only on the scored low angle strafe targets.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert Mk-82 High Drag	0 to -15°	500 to 2500	050° to 110° 230° to 290°	3,4, 5,6, 8,10		WDZ Restricted, Contact Range for details. Pop-ups from west only.

Table A10.4. Aircraft: A-10.

Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert Mk-82 Mk-84 Low Drag	0 to -30°	500 to 2500	050° to 110° 230° to 290°	3,4,5 6		WDZ Restricted, contact Range for details. Pop-ups from west only.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert Mk-82 Mk-84 Low Drag	-20° to -60°	1000 to 10,000	050° to 110° 230° to 290°	3,4,5, 6,7		None
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert GBU-10 System Level	0 to -15°	5000 to 15,000	050° to 110° 230° to 290°	3,4,5, 6,7		WDZ Restricted, contact Range for details.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert GBU-12 System Level	0 to -15°	5000 to 15,000	050° to 110° 230° to 290°	3,4,5, 6,7		WDZ Restricted, contact Range for details.

Table A10.5. Aircraft: F-16.

Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-25	Sub-scale	0° to -30°	300 to 3000	035° to 125° 215° to 305°	1,3, 4,6		Pop-ups from west only.
All except T-25	Sub-scale	0° to -60°	1500 to 15,000	035° to 125° 215° to 305°	1,2, 4,6		Pop-ups from west only.
All except T-25	Sub-scale Loft/Toss	0° to +45°	500 to 5000	035° to 125° 215° to 305°	1,2, 3,4, 6,7		Pop-ups from west only.
All except T-25	2.75" Rockets (TP)	0 to -30°	1000 to 15,000	050° to 110° 230° to 290°	2,3, 4,6,7		Pop-ups from west only.
T-1, T-2, T-6, T-8N, T-8S, T-9, T-12, T-17, T-20, T-21, T-22	2.75" Rockets (WP)	0 to -30°	1000 to 15,000	050° to 110° 230° to 290°	2,3, 4,6,7		Targets EOD-restricted. Pop-ups from west only.

Table A10.6. Aircraft: F-16.

Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
T-1, T-2, T-12, T-20 thru T-24	2.75" Rockets (TP and WP) Loft	0 to +45	500 to 5000	050° to 110°	2,3, 4,6,7		WP loft rounds restricted to T-1, T-2, T-12, T-20, T-21 and T-22 only.
T-1, T-2, T-3, T-6, T-7, T-8N, T-8S, T-9, T-12, T-19 thru T-24	AGR-20 Laser-Guided Rockets	-5° to -45°	5000 to 15,000	050° to 110° 230° to 290°	2,3, 4,6,7		WDZ Restricted, contact Range for details.
All except T-7, T-13, T-17, T-19.	20mm High Angle Strafe	-15° to -60°	1000 to 10,000	050° to 110° 230° to 290°	3,4, 6,8		T-5 target 050° - 090° west-to-east. WDZ restricted.
T-13 Moving Target	20mm High Angle Strafe	-15° to -60°	1000 to 10,000	020° to 050° 290° to 330°	3,4, 6,8		Requires advanced notice to ensure system is operational.
High Angle Strafe Target (Acoustic)	20mm High Angle Strafe	-15° to -60°	1000 to 10,000	070° to 090°	4, 9		Only on the scored high angle strafe target.
Low Angle Strafe Targets (Acoustic)	20mm Low Angle Strafe	0° to -20°	75 to 2000	070° to 090°	4		Only on the scored low angle strafe targets.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 AIR HD	0° to -30°	300 to 2000	060° to 100° 240° to 280°	2,3,4 5,6, 8,10		550 KTAS maximum release. Prior coordination required. Some prohibited targets. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 LD	0 to -15°	500 to 2000	065° to 095° 245° to 275°	2,3,4 5,6,8		550 KTAS maximum release. Prior coordination required. Some prohibited targets. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 LD	-5° to -30°	1000 to 5000	050° to 110° 230° to 290°	2,3,4 5,6,8		Prior coordination required. Some prohibited targets. WDZ restricted

Table A10.7. Aircraft: F-16.

Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 LD Loft/Toss	-5° to +45°	1000 to 5000	050° to 110° 230° to 290°	2,3,4 5,6, 7,8		Prior coordination required. Some prohibited targets. WDZ restricted
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 MK-84 LD	-15° to -60°	2000 to 15,000	050° to 110° 230° to 290°	2,3,4 5,6,8		Prior coordination required. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-84 AIR HD	0° to -30°	300 to 2500	065° to 095° 245° to 275°	2,3, 4,5, 6,8, 10		500 KTAS maximum release. Prior coordination required. Some prohibited targets. WDZ restricted
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-84 LD	0° to -15°	300 to 2000	065° to 095° 245° to 275°	2,3,4 5,6,8		500 KTAS maximum release. Prior coordination required. Some prohibited targets. WDZ restricted
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-84 LD	0° to -30°	1500 to 5000	060° to 100° 240° to 280°	2,3,4 5,6,8		Prior coordination required. Some prohibited targets. WDZ restricted
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-84 LD LAT/Loft	+5° to +45°	1000 to 5000	060° to 100° 240° to 280°	2,3, 4,5, 6,8		Prior coordination required. Some prohibited targets. WDZ restricted
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert GBU-10	0° to -30°	2000 to 25,000	060° to 100° 240° to 280°	3,4, 5,6, 7,8		Prior coordination required. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert GBU-12	0° to -30°	2000 to 25,000	060° to 100° 240° to 280°	3,4, 5,6, 7,8		Prior coordination required. WDZ restricted.
T-13 MVR	Inert GBU-12	0° to -30°	2000 to 5000	060° to 100° 240° to 280°	3,4, 5,6, 7,8		Prior coordination required. WDZ restricted.

Table A10.8. Aircraft: F/A-18.

Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-25	Sub-scale Mk-76	0 to -60°	300 to 15,000	035° to 125° 215° to 305°	1,2, 3,4,6		None
All except T-25	Sub-scale Mk-76 Loft/Toss	0 to +45°	500 to 5000	035° to 125° 215° to 305°	1,2, 3,4,6		None
All except T-25	Sub-scale BDU-48	0 to -30°	300 to 3000	035° to 125° 215° to 305°	1,2, 3,4,6		None
Low Angle Strafe Targets	20mm Low Angle Strafe	-1° to -20°	75 to 2500	070° to 090°	4		Only on low angle strafe targets.
High Angle Strafe Target (Acoustic)	20mm High Angle Strafe	-15° to -60°	500 to 10,000	070° to 090°	4, 9		Only on the scored high angle strafe target.
All except T-7, T-17, T-19	20mm High Angle Strafe	-15° to -60°	500 to 10,000	050° to 110° 230° to 290°	3,4, 6,8		T-5 target 050° - 090° west-to-east. WDZ restricted.
T-13 Moving Target	20mm High Angle Strafe	-15° to -60°	1000 to 10,000	020° to 050° 290° to 330°	3,4, 6,8		Requires 24 hours advanced notice to ensure system is operational. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	BDU-59 LGTR	0° to -30°	2000 to 25,000	060° to 100° 240° to 280°	3,4, 6,7,8		Prior coordination required. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert GBU-10 GBU-12 GBU-16	0 to -30°	2000 to 15,000	060° to 100° 240° to 280°	3,4, 5,6, 7,8		Prior coordination required. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert GBU-10 GBU-12 GBU-16	0 to -30°	15,000 to 25,000	065° to 095° 245° to 275°	3,4, 5,6, 7,8		Prior coordination required. WDZ restricted.

Table A10.9. Aircraft: F/A-18.

Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 Mk-83 AIR HD	0° to -30°	300 to 2000	060° to 100° 240° to 280°	2,3, 4,5, 6,8, 10		550 KTAS max. Prior coordination required. Some prohibited targets. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-84 AIR HD	0° to -30°	300 to 2000	060° to 100° 240° to 280°	2,3, 4,5, 6,8, 10		500 KTAS max. Prior coordination required. Some prohibited targets. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 Mk-83 LD	0° to -10°	500 to 2000	065° to 095° 245° to 275°	2,3, 4,5, 6,8		550 KTAS max. Prior coordination required. Some prohibited targets. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-84 LD	0° to -10°	500 to 2000	065° to 095° 245° to 275°	2,3, 4,5, 6,8		500 KTAS max. Prior coordination required. Some prohibited targets. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 Mk-83 Mk-84 LD	-5° to -30°	1000 to 5000	050° to 110° 230° to 290°	2,3, 4,5, 6,8		Prior coordination required. Some prohibited targets. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 LD LAT/Loft	-5° to +45°	1000 to 5000	050° to 110° 230° to 290°	2,3, 4,5, 6,8		Prior coordination required. Some prohibited targets. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-83 Mk-84 LD LAT/Loft	-5° to +45°	1000 to 5000	060° to 100° 240° to 280°	2,3, 4,5, 6,8		Prior coordination required. Some prohibited targets. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 Mk-83 Mk-84 LD	-20° to -60°	2000 to 15,000	050° to 110° 230° to 290°	2,3, 4,5, 6,8		Prior coordination required. WDZ restricted.

Table A10.10. Aircraft: F/A-18.

Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-25	2.75" Rockets (TP)	0 to -30°	1000 to 15,000	050° to 110° 230° to 290°	2,3, 4,6,7		Pop-ups from west only.
T-1, T-2, T-6, T-8N, T-8S, T-9, T-12, T-17, T-20, T-21, T-22	2.75" Rockets (WP)	0 to -30°	1000 to 15,000	050° to 110° 230° to 290°	2,3, 4,6,7		Targets EOD-restricted. Pop-ups from west only.
T-1, T-2, T-12, T-20 thru T-24	2.75" Rockets (TP / WP) Loft	0 to +45	500 to 5000	050° to 110°	2,3, 4,6,7		WP loft rounds restricted to T-1, T-2, T-12, T-21 and T-22 only.
All except T-4, T-25	5" Rockets (TP)	0 to -30°	1000 to 15,000	050° to 110° 230° to 290°	3,4, 6,7		Prohibited on T-4. WDZ restricted.

Table A10.11. Aircraft: F-35.

Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
Low Angle Strafe Targets	25mm	0 to -20°	75 to 2500	070° to 090°	4		Only on low angle strafe targets.
High Angle Strafe Target (Acoustic)	25mm	-15° to -60°	500 to 10,000	070° to 090°	4,9		Only on the scored high angle strafe target.
All except T-7, T-17, T-19	25mm	-15° to -60°	500 to 10,000	050° to 110° 230° to 290°	3,4,6, 8		Prior coordination required. Some prohibited targets. WDZ restricted.
T-13 Moving Target	25mm	-15° to -60°	1000 to 10,000	020° to 050° 290° to 330°	3,4,6, 8		Requires 24 hours advanced notice to ensure system is operational. WDZ restricted.

Table A10.12. Aircraft: F-35.




Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert GBU-12	0° to -30°	2000 to 5000	060° to 100° 240° to 280°	3,4,5, 6,7,8		Prior coordination required. WDZ restricted.
T-2, T-12, T-8N, T-8S, T-20 thru T-24	Inert GBU-12	0° to -30°	5000 to 20,000	065° to 095° 245° to 275°	3,4,5 6,7,8		Prior coordination required. WDZ restricted.
T-2, T-12, T-8N, T-8S, T-20 thru T-24	Inert GBU-49	0° to -30°	5000 to 23,500	245° to 275°	3,4,5 6,7,8		Prior coordination required. Some prohibited targets. WDZ restricted.

Table A10.13. Aircraft: B-1.






Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-25	Sub-scale System Level	0° to -5°	500 to 25,000	050° to 110° 230° to 290°	1,3, 4,6,7		Do not exceed 650 KTAS at release.
T-22, T-23, T-24	Inert MK-82 AIR HD Level	0° to -5°	300 to 3000	245° to 275°	3,5, 6,7, 8,10		Do not exceed 650 KTAS at release. WDZ restricted.
T-23, T-24	Inert MK-82 LD Level	0° to -5°	500 to 5000	245° to 275°	3,5, 6,7,8		Do not exceed 650 KTAS at release. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 MK-84 LD	0° to -5°	5000 to 25,000	065° to 095° 245° to 275°	1,5, 6,7		Do not exceed 650 KTAS at release. WDZ restricted.
T-2	Inert GBU-12 System Level	0° to -5°	10,000 to 16,500	245° to 275°	3,4, 5,6, 7,8		Prior coordination required. WDZ restricted.

Table A10.14. Aircraft: B-2.



Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 LD System Level	0° to -5°	500 - 5000	065° to 095° 245° to 275°	3,4, 5,6, 7,8		Prior coordination required. 500 KTAS max. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 MK-84 LD System Level	0° to -5°	5000 to 25,000	065° to 095° 245° to 275°	3,4, 5,6 7,8		None.

Table A10.15. Aircraft: B-52.






Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 AIR HD Low Level	0° to -5°	300 to 3000	065° to 095° 245° to 275°	3,4, 5,6, 8,10		550 KTAS max at release. Prior coordination required. Some prohibited targets. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert MK-82 LD Low Level	0° to -5°	500 to 5000	065° to 095° 245° to 275°	3,4, 5,6, 8,10		550 KTAS max at release. Prior coordination required. Some prohibited targets. WDZ restricted.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert Mk-82 Mk-84 LD	0° to -5°	5000 to 25,000	065° to 095° 245° to 275°	4,5, 6,7,8		Prior coordination required. 550 KTAS max at release.
T-2, T-8N, T-8S, T-12, T-20 thru T-24	Inert Mk-82 Mk-84 LD	0° to -5°	25,000 to 30,000 (MSL)	065° to 095° 245° to 275°	4,5, 6,7,8		Prior coordination required. 550 KTAS max at release.
T-2	Inert GBU-12	0° to -5°	5000 to 25,000	245° to 275°	3,4, 5,6, 7,8		Prior coordination (airspace) required. WDZ restricted.

Table A10.16. Aircraft: AH-64.




Target	Weapon	Release Angle	Release Alt. (AGL)	Firing Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-7, T-13, T-17, T-19, strafe pits	30mm	+5° to -30°	50 to 1000	050° to 110° 230° to 290°	3,4, 6,7,8		Prior coordination required. Maximum firing range 3 km. WDZ restricted.
T-13 Moving Target	30mm	+5° to -30°	50 to 1000	355° to 040°	3,4, 6,7,8		Prior coordination required. Maximum firing range 3 km. WDZ restricted.
All (including T-13) except T-18, T-19, T-25	2.75" Rockets	+10° to -30°	50 to 1000	050° to 110° 230° to 290°	3,4, 6,7,8		T-13 Moving Target can only be engaged from west-to-east with tail aspect only. WDZ restricted.

Table A10.17. Aircraft: MH-60 DAP.

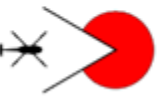
Target	Weapon	Release Angle	Release Alt. (AGL)	Firing Heading	Notes	Attack Axis Graphic	Additional Restrictions
T-1, T-2, T-3, T-6, T-8N, T-8S, T-9, T-20 thru T-24, T-25, AC-130 Target	30mm Fixed	-1° to -30°	50 to 1000	050° to 110°	3,4, 6,7,8		Prior coordination required. WDZ restricted.

Table A10.18. Aircraft: UH/MH-60 CH-47 UH-1 HH/MH-53 CH-146.


Target	Weapon	Release Angle	Release Alt. (AGL)	Firing Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-7, T-17, T-25, strafe pits	7.62mm Sidefire	-2° to -30°	50 to 1000	235° to 105° (350°±115°)	3,4, 6,8		Do not fire toward any manned sites or the LTA. WDZ restricted.

Table A10.19. Aircraft: RPAs (MQ-9).



Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
T-2	Inert GBU-12	0° to -5°	5000 to 20,000	050° to 110° 230° to 290°	3,4,7		None.
T-2	Inert GBU-38	0° to -5°	10,000 to 25,000	250° to 270° (Offset L/R ± 10°, or 0.25 NM)	3,4, 7,8		Requires closure of OK Hwy 115. Reserve R-5601B. Release range: 2.0 to 3.0 NM.

Table A10.20. Aircraft: OA-1K.



Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-7, T-13, T-17, T-19, strafe pits	.50 cal	-5° to -45°	200 to 5000	050° to 110° 230° to 290°	1,2, 3,4,6		Do not fire toward any manned sites or the LTA.
T-1, T-2, T-3, T-6, T-7, T-8N, T-8S, T-9, T-12, T-19 thru T-24	AGR-20 Laser-Guided Rockets	-5° to -45°	5000 to 15,000	050° to 110° 230° to 290°	2,3, 4,6,7		WDZ Restricted, contact Range for details.

Table A10.21. Contract CAS, Manual Deliveries (A90, BAC-167, IAR-823, OV-10, PC-9).







Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-25	Sub-scale	0° to -45°	500 to 10,000	035° to 125° 215° to 305°	1,2, 3,4,6		Pop-ups from west only.
All except T-7, T-13, T-17, T-19, strafe pits	7.62mm	-5° to -35°	100 to 4000	050° to 110° 230° to 290°	1,2, 3,4,6		Do not fire toward any manned sites or the LTA.
All except T-7, T-13, T-17, T-19, strafe pits	.50 cal	-5° to -45°	200 to 5000	050° to 110° 230° to 290°	1,2, 3,4,6		Do not fire toward any manned sites or the LTA.

Table A10.22. Contract CAS, Computed Deliveries (A-4, AT-38, AT-802, CF-5, Alpha Jet).

Target	Weapon	Release Angle	Release Alt. (AGL)	Run-In Heading	Notes	Attack Axis Graphic	Additional Restrictions
All except T-25	Sub-scale	0° to -45°	500 to 10,000	035° to 125° 215° to 305°	1,2, 3,4,6		Pop-ups from west only.
All except T-7, T-13, T-17, T-19, strafe pits	7.62mm	-5° to -35°	100 to 4000	050° to 110° 230° to 290°	1,2, 3,4,6		Do not fire toward any manned sites or the LTA.
All except T-7, T-13, T-17, T-19, strafe pits	.50 cal	-5° to -45°	200 to 5000	050° to 110° 230° to 290°	1,2, 3,4,6		Do not fire toward any manned sites or the LTA.

Notes:

1. Sub-scale munitions include BDU-33/MK-76, BDU-48, etc.
2. Low-altitude ingress and pop-up or fly-up is restricted to west-to-east (080°) run-in headings.
3. **Observation Points (OPs) for JTACs are affected by parameters. Alternate targets may be required, or OP may require vacating. Range Operations will provide additional requirements for employment.**
4. Do not over fly main or flank tower; do not release weapons when pointing at main or flank tower.
5. Heavyweight munitions, delivered from shallow dive angles, travel as far as 3000 meters and can change direction by as much as 30° after breaching.
6. These restrictions may be modified with the concurrence of Falcon Range after computing weapons footprints using the ACC-approved footprint program.
7. Ensure releases take place within the restricted airspace.
8. Some weapons events place the weapons danger zones outside the impact area. These events can still be performed but prior coordination (as much as 8 weeks) is required with Fort Sill in order to allow the events. Users must call the range in advance to ensure the adjacent training areas are clear.
9. High-angle strafe on the scored HAS target (Strafe Target 3) is restricted to 080° ± 10°.
10. High-drag munitions utilize flagger/failure modes for computation of footprints/WDZs.

Attachment 11

LASER TRAINING AREA SCORING TABLES

Figure A11.1. Laser Scoring Matrix.



Table A11.1. Laser Scoring Matrix.

Name	Description	Latitude/ Longitude	Elev.	MGRS	Scoring Sensor	Sensor LTL (1)
L-1	Laser Scoring Power Supply CONEXs	N 34 40.0227 W 098 42.2358	1465	27125 36160	None	N/A
L-2	East LSVRS Sensor Tower	N 34 40.0217 W 098 42.2438	1470	27114 36159	None	N/A
L-3	West LSVRS Sensor Tower	N 34 40.0013 W 098 42.3204	1452	26996 36120	None	N/A
LES-M	Laser Evaluator System	N 34 40.0234 W 098 42.2144	1472	27158 36161	Self	Any
Hospital	Rectangular Hospital	N 34 39.9792 W 098 42.2894	1469	27044 36069	None	Any

Factory	West Center Face	N 34 40.0060 W 098 42.2316	1470	27132 36129	LSVRS-1	090° ± 80°
Name	Description	Latitude/ Longitude	Elev.	MGRS	Scoring Sensor	Sensor LTL (1)
Factory	North Center Face	N 34 40.0125 W 098 42.2252	1470	27142 36141	LSVRS-2	170° ± 80°
Crane	Crane on East End of Factory	N 34 40.0051 W 098 42.2175	1467	27154 36128	None	N/A
Mosque	Mosque w/ Minarets	N 34 40.0311 W 098 42.2280	1469	27137 36176	None	N/A
JTAC OP	Orange and White OP	N 34 40.0016 W 098 42.1649	1466	27234 36121	None	N/A
B1	West Gen Purpose Bldg	N 34 40.0057 W 098 42.2968	1472	27033 36129	LSVRS-1	090° ± 80°
B1 Top	Top-Down Target on B1	N 34 40.0058 W 098 42.2941	1481	27037 36129	LSVRS-1	090° ± 80°
B2	Small East-West Oriented Bldg	N 34 40.0123 W 098 42.2811	1472	27057 36141	LSVRS-1	090° ± 80°
B3	East Gen Purpose Bldg	N 34 40.0121 W 098 42.2605	1469	27088 36141	LSVRS-1	090° ± 80°
B3 Top	Top-Down Target on B3	N 34 40.0122 W 098 42.2554	1470	27096 36141	LSVRS-2	Any
B4	Small Building with Awnings	N 34 39.9982 W 098 42.2902	1474	27043 36115	LSVRS-1 LSVRS-2	090° ± 80° 270° ± 80°
M1	Northwest Marketplace Building	N 34 40.0346 W 098 42.2942	1476	27037 36182	LSVRS-1	090° ± 80°
M2	Southwest Marketplace Building	N 34 40.0235 W 098 42.2958	1476	27034 36162	LSVRS-1	090° ± 80°
M2 Top	Top-Down Target on M2	N 34 40.0228 W 098 42.2942	1480	27037 36160	LSVRS-1	090° ± 80°
M3	North-Central Marketplace Building	N 34 40.0350 W 098 42.2804	1479	27058 36183	LSVRS-1	090° ± 80°
M4	South-Central Marketplace Building	N 34 40.0249 W 098 42.2796	1479	27058 36164	LSVRS-1	090° ± 80°

M5	Northeast Marketplace Building	N 34 40.0357 W 098 42.2668	1478	27078 36184	None	N/A
Name	Description	Latitude/ Longitude	Elev.	MGRS	Scoring Sensor	Sensor LTL (1)
M6	Southeast Marketplace Building	N 34 40.0246 W 098 42.2671	1478	27078 36164	LSVRS-1	090° ± 80°
M7	Northern of 4 North-South Shacks	N 34 40.0392 W 098 42.2566	1473	27094 36191	None	N/A
M8	North-Center of 4 North-South Shacks	N 34 40.0366 W 098 42.2566	1473	27094 36184	None	N/A
M9	South-Center of 4 North-South Shacks	N 34 40.0301 W 098 42.2560	1473	27095 36174	LSVRS-1	090° ± 80°
M10	Southern of 4 North-South Shacks	N 34 40.0254 W 098 42.2555	1473	27096 36165	LSVRS-1	090° ± 80°
M11	North of 2 East-West Shacks	N 34 40.0379 W 098 42.2422	1470	27116 36189	LSVRS-1	090° ± 80°
M12	South of 2 East-West Shacks	N 34 40.0354 W 098 42.2422	1470	27116 36184	LSVRS-1	090° ± 80°
S1	Northern of West Shanty Row	N 34 40.0415 W 098 42.1779	1470	27214 36195	LSVRS-2	090° ± 80°
S2	Shanty	N 34 40.0365 W 098 42.1778	1471	27214 36186	LSVRS-2	090° ± 80°
S3	Shanty	N 34 40.0302 W 098 42.1779	1471	27214 36174	LSVRS-2	090° ± 80°
S4	Shanty	N 34 40.0260 W 098 42.1770	1471	27216 36167	LSVRS-2	090° ± 80°
S5	Shanty	N 34 40.0213 W 098 42.1767	1472	27216 36158	LSVRS-2	090° ± 80°
S6	Shanty	N 34 40.0171 W 098 42.1748	1472	27219 36150	LSVRS-2	090° ± 80°
S7	Shanty	N 34 40.0126 W 098 42.1756	1473	27218 36142	LSVRS-2	090° ± 80°
S8	Shanty	N 34 40.0078 W 098 42.1754	1472	27218 36133	LSVRS-2	090° ± 80°

S9	Southern of West Shanty Row	N 34 40.0013 W 098 42.1751	1472	27218 36121	LSVRS-2	090° ± 80°
Name	Description	Latitude/ Longitude	Elev.	MGRS	Scoring Sensor	Sensor LTL (1)
S10	Northern of East Shanty Row	N 34 40.0423 W 098 42.1663	1474	27232 36197	None	N/A
S11	Shanty	N 34 40.0369 W 098 42.1663	1474	27232 36187	None	N/A
S12	Shanty	N 34 40.0336 W 098 42.1663	1472	27232 36181	None	N/A
S13	Northern L-Shaped Building	N 34 40.0266 W 098 42.1667	1466	27231 36168	None	N/A
S14	Shanty	N 34 40.0199 W 098 42.1637	1466	27236 36156	LSVRS-2	090° ± 80°
S15	Shanty	N 34 40.0152 W 098 42.1652	1466	27234 36147	LSVRS-2	090° ± 80°
S16	Southern of East Shanty Row	N 34 40.0098 W 098 42.1632	1463	27237 36137	LSVRS-2	090° ± 80°
S17	Southern L-Shaped Building	N 34 40.0068 W 098 42.1686	1470	27228 36131	None	N/A
S18	2-Story Shanty Bldg	N 34 39.9864 W 098 42.2755	1470	27065 36093	LSVRS-1 LSVRS-2	090° ± 80° 180° ± 80°
S19	1-Story Shanty	N 34 39.9809 W 098 42.2708	1469	27072 36083	LSVRS-1 LSVRS-2	090° ± 80° 180° ± 80°
S20	Larger 1-Story Bldg	N 34 39.9890 W 098 42.2601	1466	27089 36098	LSVRS-1 LSVRS-2	090° ± 80° 180° ± 80°
S21	1+2 Story Shanty	N 34 39.9837 W 098 42.2544	1465	27097 36088	LSVRS-1 LSVRS-2	090° ± 80° 180° ± 80°
S22	Long 1+2 Story Bldg	N 34 39.9892 W 098 42.2434	1466	27114 36098	LSVRS-1 LSVRS-2	090° ± 80° 180° ± 80°
P1	Red POL Tank Top	N 34 39.9804 W 098 42.2615	1469	27087 36082	LSVRS-1 LSVRS-2	090° ± 80° Any
H-1	NE Spider Hole	N 34 40.0283 W 098 42.2031	1476	27176 36171	LSVRS-2	Any
H-2	SW Spider Hole	N 34 40.0088 W 098 42.2435	1469	27114 36135	LSVRS-2	Any

Name	Description	Latitude/ Longitude	Elev.	MGRS	Scoring Sensor	Sensor LTL (1)
F1	NW Support Bldg	N 34 40.0110 W 098 42.2024	1466	27177 36139	LSVRS-2	090° ± 80°
F2	Center Support Bldg	N 34 40.0104 W 098 42.1971	1467	27185 36138	LSVRS-2	090° ± 80°
F3	SE Support Bldg	N 34 40.0066 W 098 42.1965	1466	27186 36131	LSVRS-2	090° ± 80°
E1	NW Shack	N 34 40.0353 W 098 42.1984	1465	27183 36184	LSVRS-2	090° ± 80°
E2	SE Shack	N 34 40.0337 W 098 42.1964	1465	27186 36181	LSVRS-2	090° ± 80°
G1	ZU-23-2 AAA Gun on Factory	N 34 40.0121 W 098 42.2301	1490	27134 36140	LSVRS-1 LSVRS-2	090° ± 80° Any
V1	North Vehicle (Service Cart)	N 34 40.0104 W 098 42.2337	1469	27129 36138	LSVRS-1 LSVRS-2	090° ± 80° 090° ± 80°
V2	Central Vehicle (Jeepster)	N 34 40.0067 W 098 42.2332	1470	27130 36131	LSVRS-1 LSVRS-2	090° ± 80° 180° ± 80°
V3	South Vehicle (Pickup Truck)	N 34 40.0008 W 098 42.2339	1471	27129 36120	LSVRS-1 LSVRS-2	090° ± 80° 180° ± 80°
V4	Small Auto by S22 Building	N 34 39.9879 W 098 42.2404	1474	27119 36096	LSVRS-2	180° ± 80°
V5	North Shanty Row – Blazer	N 34 40.0277 W 098 42.1776	1474	27214 36170	LSVRS-2	090° ± 80°
V6	Center Shanty Row - Truck	N 34 40.0195 W 098 42.1761	1474	27217 36155	LSVRS-2	090° ± 80°
V7	Truck With Trailer by B-1	N 34 40.0118 W 098 42.2932	1477	27038 36140	LSVRS-1	090° ± 80°
V8	South of Shanty Row -Technical	N 34 39.9858 W 098 42.1795	1462	27212 36092	LSVRS-2	Any
Name	Description	Latitude/ Longitude	Elev.	MGRS	Scoring Sensor	Sensor LTL (1)
N-1	Southwest Shack in Circle	N 34 40.0689 W 098 42.2268	1476	27139 36246	None	N/A
N-2	Northeast Shack in Circle	N 34 40.0710 W 098 42.2170	1476	27154 36250	None	N/A
N-3	Northern of 4 Shacks	N 34 40.0754 W 098 42.1995	1475	27181 36258	None	N/A

N-4	South-Central of 4 Shacks	N 34 40.0721 W 098 42.1995	1475	27181 36252	None	N/A
N-5	North-Central of 4 Shacks	N 34 40.0683 W 098 42.1993	1475	27182 36245	None	N/A
N-6	Southern of 4 Shacks	N 34 40.0645 W 098 42.1993	1475	27182 36238	None	N/A
Rotator	Rotating Radar Antenna	N 34 39.9821 W 098 42.3231	1481	26993 36086	None	N/A

Note (1). Laser-target line (LTL) is recommended for best scoring. LTL outside of recommended headings may still provide scoring but with slight to total degradation due to obstructions or sensor field-of-view limitations.

Attachment 12

FORT SILL INITIAL/CONTACT POINTS AND COMMUNICATION GRID

Table A12.1. Fort Sill Initial/Contact Points and Communications.

NAME	GRID (MGRS)	LAT/LONG	DESCRIPTION
CP Standpipe	ND 115323	N 34° 37.970' W 098° 52.470'	Standpipe SW of US 62 and OK 54 intersection
CP Lima (L)	ND 446476	N 34° 46.174' W 098° 30.757'	North end of Lake Lawtonka, IRW (CH 88) 226056
CP Romeo (R)	ND 356260	N 34° 34.510' W 098° 36.712'	SPS (CH 74) 350035
IP Bravo (B)	ND 271353	N 34° 39.543' W 098° 42.245'	Bomb circle on Falcon Range
IP Kilo (K)	ND 372405	N 34° 42.352' W 098° 35.627'	Ketch Lake
Point Sierra (S)	ND 467370	N 34° 40.435' W 098° 29.415'	Signal Mountain
Point Alpha (A)	ND 392340	N 34° 38.830' W 098° 34.335'	Two adjacent ponds
IP November (N)	ND 361376	N 34° 40.785' W 098° 36.355'	Small lake
Grid Zone Origin (14S ND, WGS 84) = N 34° 20.4782' / W 099° 00.0000'.			
ORGANIZATION		FREQUENCIES	
CAS Control Frequency (West Range)		356.5 (P) / 344.5 (S)	
Fort Sill Approach IFR Clearance/Service/ VFR Flight Following		322.4 / 120.55 (P) 290.375 / 118.6 (S)	
Lawton ATIS		120.75	
Fort Sill Range Control		34.50 (FM) / 38.50 (FM)	
Fort Sill ATIS		354.025 / 135.425	
Fort Sill METRO		306.5	
Falcon Range		363.7 (P) / 238.8 (S) / 342.3 (T)	
Altus Approach		257.725 / 125.1 (P) 350.35 Fort Worth Center (S)	
Fort Worth Center – North		269.375 / 128.4	
Fort Worth Center - South		350.35 / 133.5	