BY ORDER OF THE COMMANDER
EDWARDS AIR FORCE BASE

EDWARDS AIR FORCE BASE
INSTRUCTION 13-212

20 FEBRUARY 2026

Nuclear, Space, Missile, Command and Control

WEAPONS RANGE MANAGEMENT AIRCRAFT GUN HARMONIZATION RANGE

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RELEASABILITY: There are no releasability restrictions on this publication

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OPR: 412MXS/MXMAM

Certified by: 412MXS/CL (Mr. Dixon)

Supersedes: EDWARDSAFBI13-212, 23 February 2021

Pages: 18

This publication implements AFMAN 13-212V1, Range Planning and Operations and DESR6055.09_DAFMAN 91-201, Explosive Safety Standards. This instruction sets, procedures, provides criteria and outlines responsibilities to schedule, operate and maintain the Aircraft Gun Harmonization Range. It applies to all activities associated with this range whether in a management, user or supporting role. The directions and procedures in this instruction are intended to minimize the probability of damage or injury from a gun-related mishap occurrence and to ensure the safety of all personnel who may, by accident or intent, come within the vicinity of live-fire operations. This instruction will be used in conjunction with AFMAN 13-212V1, Range Planning and Operations and DESR6055.09_DAFMAN 91-201, Explosive Safety Standards, and all technical orders pertinent to the aircraft and equipment involved. This instruction does not apply to Air Force Reserve Command (AFRC) units. This instruction requires the collection and/or maintenance of information protected by the Privacy Act of 1974 authorized by Department of Defense (DoD) Instruction 5400.11, DoD Privacy and Civil Liberties Programs, 5 United States Code, Section 552a, as amended; 37 United States Code; Executive Order 9397, Numbering System for Federal Accounts Relating to Individual Persons, as amended; and AFPD 11-2; and authorized by Title 10, United States Code, Section 8013, Secretary of the Air Force, authorized by 49 USC, Section 445012(d), General Facilities and Personnel Authority and 32 CFR, Part 855, Civil Aircraft Use of United States Air Force Airfields. The Privacy Act System of Records Notice F010 AFXO A, F011 AF XO A, Civil Aircraft Landing Permit Case Files, Aviation Resource Management Systems; and SORN F036 AF PC V, Awards and Decorations covers required information and is available at **http://dpclo.defense.gov/Privacy/SORNs.aspx**. This instruction

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SUMMARY OF CHANGES

This document has been revised and must be completely reviewed. Changes include updating organizations, references and RCO training requirements.

1. General.

1.1. **Aircraft Harmonization Range.** Harmonization is the procedure used to orient the guns and fire control systems in aircraft. To achieve harmonization, the guns, sight and gun camera are precisely aligned by using a harmonization target.

1.2. **Inspection and Maintenance.** The range requires periodic inspections and recurring maintenance to ensure that a buildup of projectiles does not occur and changes in sand composition are immediately identified. Either situation can contribute to a high incidence of projectile ricochet. Facility inspection and maintenance rests with the ROO, 412th Maintenance Group(412 MXG) Plans, Programs & Operations Flight (MXO), Base Civil Engineer (412 TW/CE) with assistance from the Safety Office (412 TW/SE). The 412 MXG/MXF and 412 TW/CE are responsible for maintenance and repair in accordance with **Attachment 7**, Range Inspection and Maintenance Schedule.

2. Roles and Responsibilities.

2.1. **The Range Operations Officer (ROO).** The ROO is responsible for coordinating range maintenance and day-to-day operating activities.

2.2. **The Range Control Officer (RCO).** The RCO is responsible for range operations and safety. Because of the unique aspects and demands of the various aircraft and projects supported, the RCO is delegated complete authority over all range operations. If the RCO feels that any portion of the operation is unsafe, they can cancel a specific firing or the entire firing day.

2.3. **The Assistant RCO.** The Assistant RCO will assist and maintain visual contact with the RCO during the entire firing sequence.

2.4. **The 412th Maintenance Squadron (412 MXS) Director.** The 412 MXS Director will appoint RCOs and ROOs in writing.

2.5. **Range Layout.** A wooden protective facing to trap ricochets will be provided. Plywood 5/8 inch to 3/4 inch thick is recommended for this facing. The plywood will be replaced when more than 50 percent of the surface is shattered.

2.5.1. Dry-screened sand is used for absorbing bullets. If the sand is too wet, it will not close the bullet holes. If it is too fine, the sand will cake. Dry-screened sand must conform to the following US Standard Sieve:

Table 1. Dry screen sand conformance following US Standard Sieve.

US Standard Sieve Number	Percentage Passing Number	US Standard Sieve	Percentage Passing Number
4	100	30	35 to 75
8	95 to 100	40	25 to 55
10	80 to 100	50	15 to 35
16	60 to 100	100	2 to 15

2.5.2. The roof and sidewalls must be 12-inch-thick concrete or built to keep the sand dry and resistant to penetration equivalent to at least 12 inches of concrete.

2.5.3. The concrete slab must have tie down rings and markers so the aircraft may be tied down in proper position in relation to the target. Tie down serves two purposes during gunfire: it prevents aircraft movement with reference to the target and it keeps aircraft from being displaced from the aircraft jacks.

2.6. **Range Maintenance.** Annually and prior to all firings in accordance with **Attachment 7**, Range Inspection and Maintenance Schedule, the sand will be inspected to ensure it is dry and will prevent tunneling of the bullets. The wooden protective facing will also be inspected to ensure it is adequate to trap ricochets. The ROO will maintain a record of the number of rounds fired into the range on an EAFB Form 5470, Harmonization Range Worksheet. The sand should be screened after 100,000 rounds and replaced after 200,000 rounds. If the sand shows signs of pulverization or cratering (that is, the sand fails to absorb the bullet penetration and does not close the hole), it should be replaced, regardless of number of rounds that have been fired into it. When the RCO determines a need to screen or replace the sand or replace the wooden protective facing, the 412 TW/CE will be responsible for doing the work.

2.7. **RCO Qualification.** The RCO may be military or civilian. The RCO must be at least a 7-level or equivalent. As a minimum, RCOs must have prior knowledge and experience in the following areas:

2.7.1. Aircraft Armament Systems.

2.7.2. Ground and Explosive Safety.

2.7.3. Aircraft Familiarization.

2.8. **Assistant RCO Qualifications.** The assistant RCO may be military or civilian. The assistant RCO must be at least a 7-level or equivalent and must possess knowledge and experience in the same areas as an RCO. The assistant RCO may not assume any other responsibilities while they are performing the duties of assistant RCO. The assistant RCO can be trained on their duties on the day of the firing. At no time will the assistant RCO assume the duties of RCO unless they are trained for the position of RCO.

2.9. **Training.** To ensure the safety of all personnel directly involved in live-fire operations training will be given to all personnel selected to perform the duties of RCO. Academic training will consist of reading this instruction, the RCO Training Plan located in Tab 5 of the Gun Harmonization Log and the Gun Harmonization Range checklist. Hands-on training will be given during actual live-fire operation by a fully qualified RCO. The trainer will walk through the operation with the trainee following the guidelines outlined in the RCO Training Plan. Completion of academic training, hands-on training and successful evaluation of range operation by the fully qualified RCO is sufficient to qualify an individual. Training is documented within individual training records or myTraining. **Refresher training will be given annually and will** be a review of the academic portion only and documented within the Gun Harmonization Logbook, Tab 5.

2.10. **The Control Tower.** The Control Tower will protect the range clear zone by ensuring no vehicles enter the Lakebed north of Runway 23L/05R. Pilots will avoid the range clear zone when active. The range clear zone is defined as a cone, 2 SM from the aircraft to either edge of the abutment area, extending to an altitude of 5,000 feet above ground level (see **Attachment 2**). The Tower will broadcast on the ATIS and all tower frequencies when the gun range is active and inactive. The Tower will ensure any violation of the range clear zone, during

or immediately before firing periods, is immediately brought to the attention of the RCO. Once notified by the RCO that firing operations are over, the Tower will resume normal Lakebed and flying operations. The Tower will request dispatch of emergency response crews if required. NOTE: The flyby line and flyby tower, building 115, located at the edge of the lakebed between the range and the Hot Gun Line (23 end of the runway), is not included in the clear zone.

2.11. **The Requesting Agency will:**

2.11.1. Be responsible for policing the range and aircraft parking area upon termination of the operation.

2.11.2. Ensure that all personnel firing aircraft gun are fully qualified and have obtained all required Maintenance, Weapons Safety, Egress and Cockpit Familiarization Training.

2.11.3. Be responsible to provide targets as necessary.

2.11.4. Assist the RCO in ensuring that only the minimum essential personnel are present during harmonization operations.

2.11.5. Notify and coordinate with 412 MXS Mechanical Team at 661-277-4085 at least 30 calendar days in advance of planned operation date to allow time for proper range preparations.

2.12. **The RCO will:**

2.12.1. Enforce the elements of this instruction.

2.12.2. Retain final authority to approve or deny clearances to fire.

2.12.3. Use only those checklists authorized by the Technical Data Working Group.

2.13. The 412 TW/CE will:

2.13.1. Assist the ROO accompanied by 412 TW/SE, in performance of an annual inspection of the facility. Results of the inspection will be documented; scope of work will **be identified for** contractual/in-house accomplishment and work accomplishment will be scheduled in a time frame compatible with facility need and use.

2.13.2. Perform minor maintenance and repair (Civil Engineering Job Order type work) through in-house Civil Engineering resources on an as-needed basis through consensus of 412 TW/CE, 412 TW/SE and the ROO**.**

2.14. **The 412 MXG/MXO will:**

2.14.1. Draw up a maintenance type contract (regular or on-call) for the removal of projectiles and replacement of deteriorated sand (maximum 15 cubic yards). This contract will be funded by the 412th Test Wing via 412 MXG/MXO.

2.15. **The 412 MXS Mechanical Team Chief (Armament) or Mechanical Section Supervisor will:**

2.15.1. Ensure RCO training requirements are met.

2.15.2. Develop and carry out checklists to support range operations.

2.15.3. Develop and carry out range maintenance and enhancement plans with 412 MXG/MXO, 412 TW/CE and 412 TW/SE.

2.15.4. File EAFB Form 5470, Harmonization Range Worksheet, IAW AFI33-322, Records Disposition Schedule.

2.15.5. Inspect and certify range is safe for range operations and schedule required maintenance and repair.

2.15.6. Provide an individual to serve as RCO as required.

3. Procedures.

3.1. The Requesting Agency will:

3.1.1. Inform the ROO by letter of:

3.1.1.1. Aircraft type and serial number.

3.1.1.2. Objectives to be met (for example, harmonization under TO XX-XX~X-X, test of special device under Test Plan XX-X, etc.). NOTE: When other than standard USAF technical data is required to be used to support the operation, the local agency mandating the use of the data is responsible for having the material validated/verified by the Technical Data Working Group IAW AFI 21-101, Aircraft and Equipment Maintenance Management, Edwards AFB Sup.

3.1.1.3. Special criteria, procedures and limitations (for example, aircraft engine must be operating, telemetry must be obtained, gun camera required, etc.).

3.1.1.4. Time frames involved (i.e., date aircraft will be positioned, anticipated number of days on the range, etc.).

3.1.2. Arrange for the delivery and loading of ammunition (Target Practice (TP) Only) as specified by local instructions.

3.1.3. Set up aircraft and equipment in accordance with **Attachment 3** through **Attachment 6**.

3.1.4. Coordinate range requests through Plans and Scheduling (412 OSS/OSOS) for inclusion in the maintenance schedule.

3.1.5. Coordinate range request through 712 TSS/DRB for Job Order Number assignment as applicable.

3.2. **Before the Firing Day Inspection.** RCO will inspect the range before each day's firing then make the determination to screen or replace the sand and/or to replace the wooden protective facing. The 412 MXG/MXO and 412 TW/CE are responsible for maintenance and repairs as needed.

3.2.1. Inspect the sand to ensure it is dry and prevents tunneling of the bullets. The sand should close back around a hole when penetrated with a metal or wooden rod.

3.2.2. Inspect the wooden facing to ensure it is adequate to trap ricochets and not shot away.

3.3. **In addition to paragraph 3.2 above,** the range inspection prior to use will consist of the following checks, but is not limited to:

3.3.1. Projectiles accumulating on the surface of the sand in the abutment.

3.3.2. Sand slopes up to the top of the range and that no more than 3 feet of the back wall is visible.

3.3.3. Imbedded foreign objects in the impact area.

3.3.4. Excessive erosion of revetment.

3.3.5. Flag, flagpole and ropes on revetments are serviceable.

3.3.6. Target suspension ropes are hung and serviceable.

3.3.7. Have available, and in working order, a phone or radio for direct communication to the Maintenance Operations Center (MOC) and the Control Tower when required.

3.3.8. Warning signs are available at the firing area entry point and are serviceable.

3.3.9. No large objects, such as static aircraft, are forward of the firing aircraft tie down point.

3.3.10. Verify the overall safety of the range area.

3.4. **Safety Precautions.** Gun firing operations by their nature are inherently hazardous because of potential malfunctions, delayed ignition and explosion, fires, cook off and ricochets. Extreme caution must be exercised to ensure that personnel and ground equipment are clear of gunfire. The Gun Butt can only have 30 MM and lower gun system rounds fired into the Range. The following procedures are necessary for the safe operation of an aircraft gun harmonization range:

3.4.1. A pole displaying a red flag must be provided when test firing. The red flag is placed on a tall flagstaff in clear view of any entrance to the range. The flag dimension will be at least 18 feet long by 5.5 feet wide. A fully raised flag signifies that firing is scheduled or is in progress. At half-staff it signifies that the range is occupied but no firing is permitted. A flashing rotating red beacon light is required if the range is used at night.

3.4.2. Signs warning that gunfire is imminent will be posted at main entry point of approach to the range area and stored at the range area.

3.4.3. Aircraft safety precautions listed in the appropriate aircraft maintenance technical orders must be followed.

3.4.4. Firefighting equipment will be readily available. The minimum firefighting equipment is two 150-pound Halon 1211 extinguishers.

3.4.5. Direct communication will be maintained between the target area and aircraft. Firing only begins after the RCO has ensured that the target crew has cleared the area.

3.4.6. The airfield control tower will be notified by the RCO via phone or by radio through the MOC when gunfire is about to begin. Gunfire will not be initiated until cleared by the tower. Stop gunfire immediately upon discovering a hazardous condition.

3.4.7. The RCO will keep ultimate control over all personnel on the range. The RCO will ensure that only authorized personnel are allowed to remain in the range area during firing periods. A firing period begins with the arming of the gun system and ends when the gun has been safed. The assistant RCO must keep in telephone contact with Edwards Control Tower during all firing periods. Only the RCO may authorize personnel to proceed down-range from the gun. The RCO will terminate range operations whenever the RCO feels events or circumstances warrant.

3.4.7.1. During firing periods, RCO will not be assigned or assume any other duties (i.e., as monitor, harmonization team chief or fire the weapon, etc.) and utilize the Assistant RCO to assist them as required.

3.5. **Pre-firing Procedures.** Before commencing range operations:

3.5.1. The ROO will:

3.5.1.1. Review the inputs of the requesting agency before assigning an RCO to the operation.

3.5.1.2. Coordinatewith 412 TW/SE to determine Safety Review Board applicability.

3.5.1.3. Manage and coordinate range inspections as listed in **Attachment 7**.

3.5.2. The RCO will:

3.5.2.1. Review EAFB Form 5470 from previous firing to determine total number of rounds on the range.

3.5.2.2. Ensure that all calculations are complete.

3.5.2.3. Verify required range inspections completed and documented.

3.5.2.4. Notify fire department of intent to fire prior to firing and at the end of firing for the day. No standby truck or medical team is required.

3.5.2.5. Notify control tower that firing operations will be taking place prior to firing and at the end of firing for the day.

3.5.2.6. Ensure the aircraft is de-armed.

3.5.2.7. Bring and raise flag on revetment.

3.5.2.8. Post warning signs at firing area entry point.

3.5.2.9. Ensure that no equipment is present down range.

3.5.2.10. Ensure that no personnel are working behind range.

3.5.2.11. Ensure that the aircraft is grounded, jacked and tied down.

3.5.2.12. Boresight firing barrel to ensure that gun is centered on range.

3.5.2.13. Ensure that two Halon 1211 fire extinguishers are present.

3.5.2.14. Ensure all equipment is positioned (see **Attachment 3** through **Attachment 6** for example).

3.5.2.15. Perform pre-fire briefing to include but not limited to

3.5.2.15.1. Emergency procedures.

3.5.2.15.2. Hazard areas.

3.5.2.15.3. Sequence of operations.

3.5.2.15.4. Type and number of rounds to be fired.

3.5.2.15.5. Total number of personnel allowed on the range (only those directly involved in the firing or in the support of Aerospace Ground Equipment).

3.5.2.15.6. Obtain ambient temperature from MOC (see **para 3.7.3**.).

3.5.2.15.7. At end of each firing day complete one copy of EAFB Form 5470 and send to the ROO.

3.5.3. The assistant RCO will:

3.5.3.1. Assist the RCO with the pre-fire range inspection on the day of the firing.

3.5.3.2. Assist the RCO in correcting any discrepancies found on the pre-fire inspection.

3.5.3.3. Act as a second set of eyes and ears for the RCO and alert them to any potentially hazardous situations.

3.5.3.4. Maintain contact with the control tower from start of the arming cycle through completion of the firing cycle.

3.5.3.5. Assist the RCO in the post-firing inspection and retrieval of all equipment.

3.6. General safety considerations:

3.6.1. Cease operations if:

3.6.1.1. Any line of communication is broken (including aircraft commander to ground personnel).

3.6.1.2. Any member of the firing team observes an unsafe condition.

3.6.1.3. Any unauthorized vehicle or person enters the firing area (from the warning signs forward).

3.6.1.4. Directed to do so by the control tower.

3.6.1.5. Any member of the team feels unsure about any aspect of the operation.

3.7. **Special Situations.**

3.7.1. Hang fire. If a hang fire is encountered, all personnel will remain clear of the gun area and follow the actions stipulated in the RCO's checklist.

3.7.2. Cook off. If a gun system jams during firing or rounds otherwise remain inside the gun housing, it is possible for a cook-off to occur. Allow a minimum of 5 minutes to elapse after completion of a firing sequence before the possibility of a cook-off is considered abated. The RCO will make the decision if how much more time will be required if an exceptionally long burst has been fired or if the ambient temperature exceeds 90 degrees Fahrenheit.

3.7.3. Gun System Jam. Ammunition may be ruptured, and significant damage may result to the gun or gun system. This can result in a cook-off or other unexpected ammunition detonation. If a “jam” occurs while rounds remain in the firing cam path of the gun, follow the directions for “cook off.” Also follow checklist procedures in EAFBI 13-204, Flying and Airfield Operations, paragraph 10.9.., Hung Munitions Ground Procedures (Including flares and jammed guns). In all instances, cease all operations, call MOC and request assistance from the 412 MXS Mechanical Element (Armament) Section, 277-4085.

THOMAS M. TAUER,Colonel, USAF
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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

AFI 33-322, *Records Management and Information Governance Program,* 23 March 2020

DESR6055.09_DAFMAN 91-201, *Explosive Safety Standards,* 28 May 2020

DESR6055.09) DAFMAN 91-201_AFMC SUP_AFMCGM2025-01 *Explosive Safety Standards,* 9March 2025

EDWARDSAFBI 13-204, *Flying and Airfield Operations,* 28 June 2024

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

EDWARDSAFB Form 5470, *Harmonization Range Worksheet*

Abbreviations and Acronyms

MOC—Maintenance Operations Center

RCO—Range Control Officer

ROO—Range Operation Officer

Terms

Assistant RCO—Although assistant RCOs are not mentioned directly in any instruction, it is necessary to have one. Due to the conditions around the firing aircraft, RCOs are unable to continually monitor the actions of all personnel involved in the firing operation.

Range Operation Officer—For matters of safety, the ROO will be subordinate to the RCO during range operations. The ROO can be certified as an RCO. The ROO will normally be the Chief of the Mechanical Team (Armament) within the 412th Maintenance

Squadron (412 MXS).

Boresight Method—The boresight method is normally done on a 1,000-inch range (the distance between aircraft and target), using a boresight target. The guns are aligned with the target by adjusting them while sighting through the gun bore with a breech boresight tool. The sight and gun camera are then adjusted until aligned with this target. The boresight method is used after repair or replacement of certain gun components outlined in the equipment technical order.

Cook Off—A round of ammunition that may or may not receive a firing impulse, but fires as result of the heat buildup within the gun housing.

Gunfire Method—The gunfire method may be used to verify the bore sighting. This method is done on firing ranges that vary from 305 meters (1,000 feet) to 683 meters (2,240 feet). The range must have an aircraft tie down slab placed at the selected distance from the firing abutment. The target is placed in the firing abutment and positioned in correct relationship to the secured aircraft. The sight head and gun camera are adjusted during the harmonization to align the sight line and camera to view the target index. The guns are then fired and adjusted to obtain the maximum number of hits in the desired dispersion area, as indicated on the target.

Gun System Jam—A "jam" is a mechanical difficulty within the gun or the gun system where the movement of ammunition is precluded; it normally occurs when ammunition does not accomplish the clearing cycle within the gun.

Hang Fire—A round of ammunition that received a firing impulse, either electronically or mechanically, but did not fire.

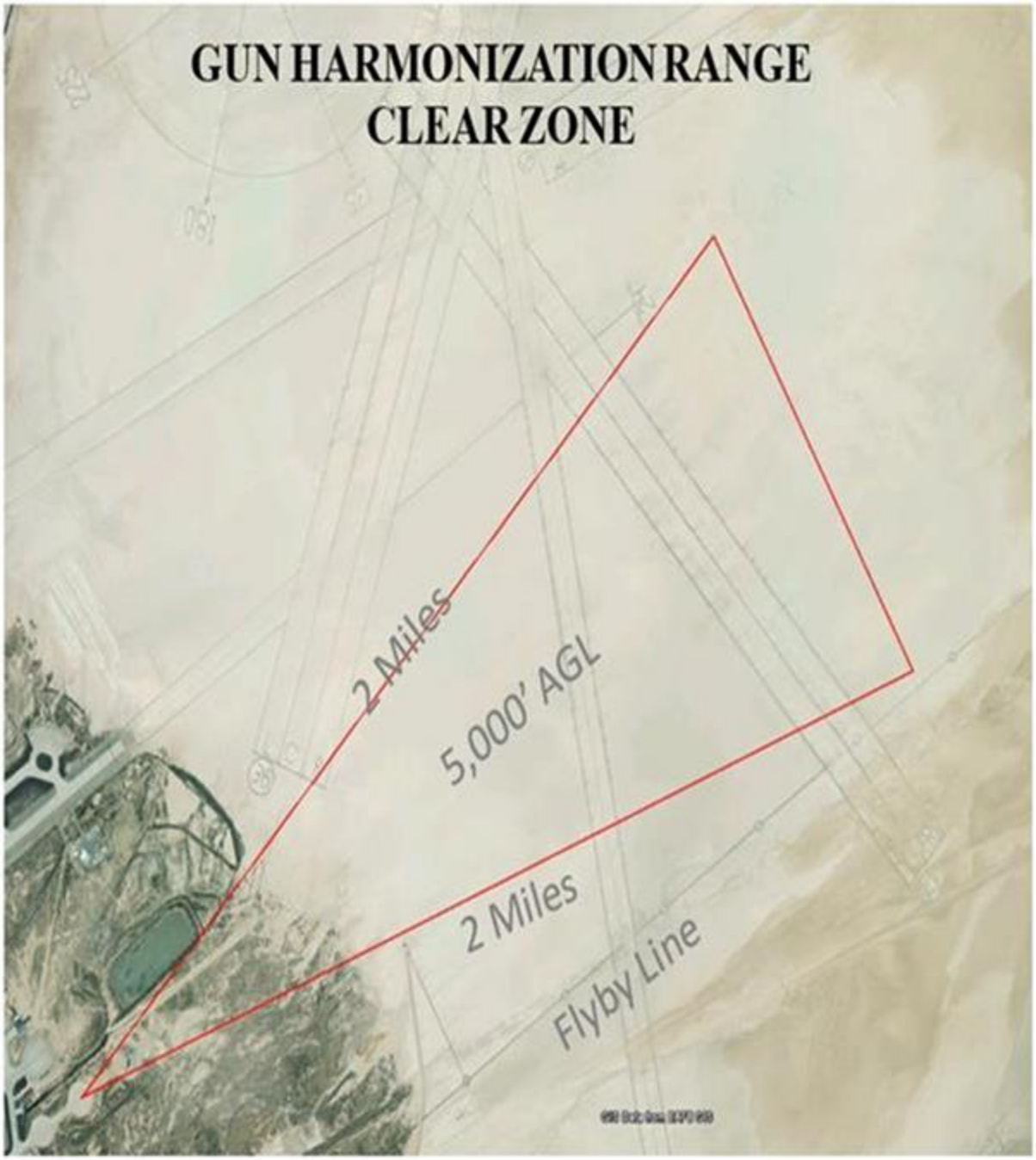
Range—For the purpose of this instruction, the term range will indicate the Edwards Aircraft Gun Harmonization Range.

Range Control Officer—The RCO is a representative of the 412th Test Wing Commander for all range operations.

Attachment 2

HARMONIZATION RANGE CLEAR ZONE

Figure A2.1. Harmonization Range Clear Zone.



Attachment 3

F-16 LIVE-FIRE DIAGRAM

A3.1. NOTE. Use attachments for applicable MDS live-fire operations. Follow these general guidelines when positioning equipment and personnel.

Figure A3.1. F-16 Live Fire Diagram.

1. Position equipment as far as possible from the aircraft.
2. Position equipment on the side of the aircraft opposite the gun.
3. Position -60 plane of rotation parallel to the aircraft.
4. Ensure that all personnel remain outside the gun danger zone unless their duties require them to be there.
5. Position one fire bottle on either side of the aircraft.
6. Ensure that aircraft crew chief can observe all personnel that are obscured from the RCO's and assistant RCO's field of view (he/she remains in constant voice contact with the RCO during the firing cycle).

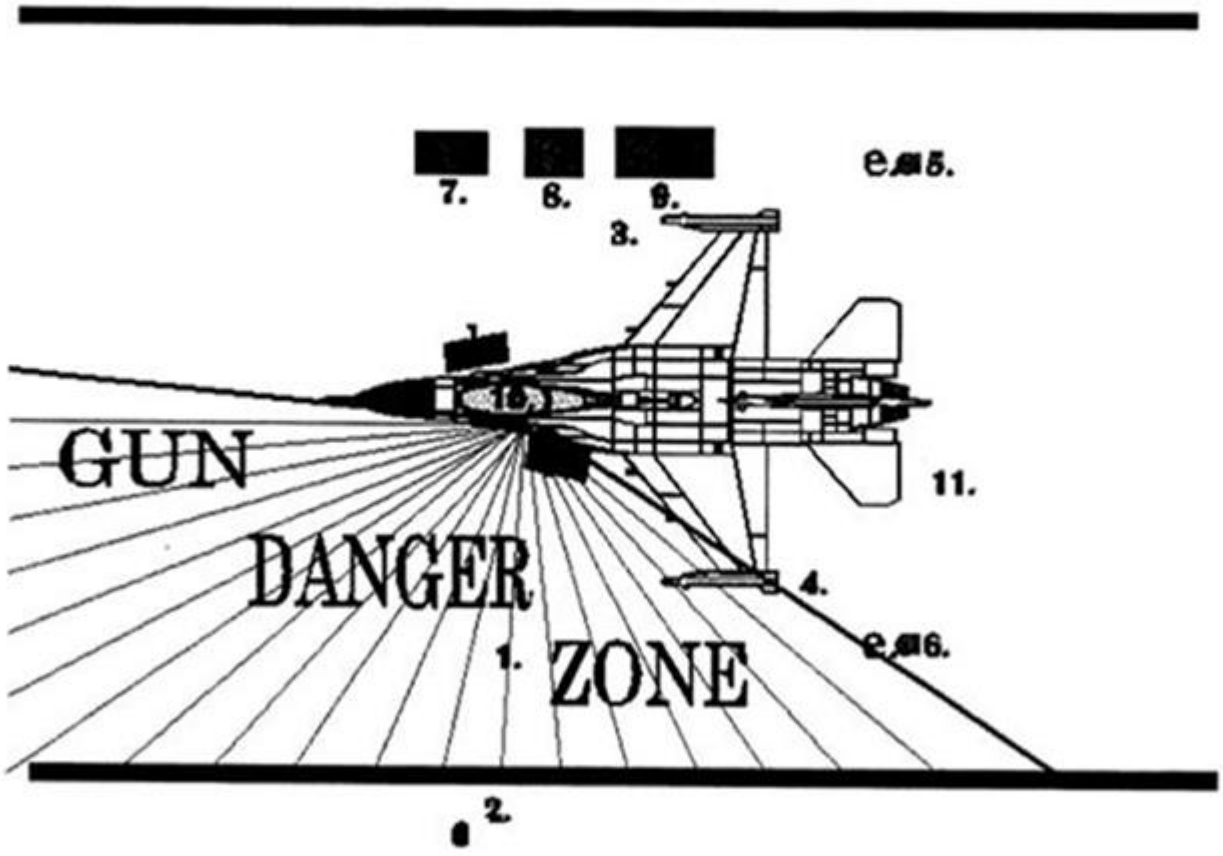


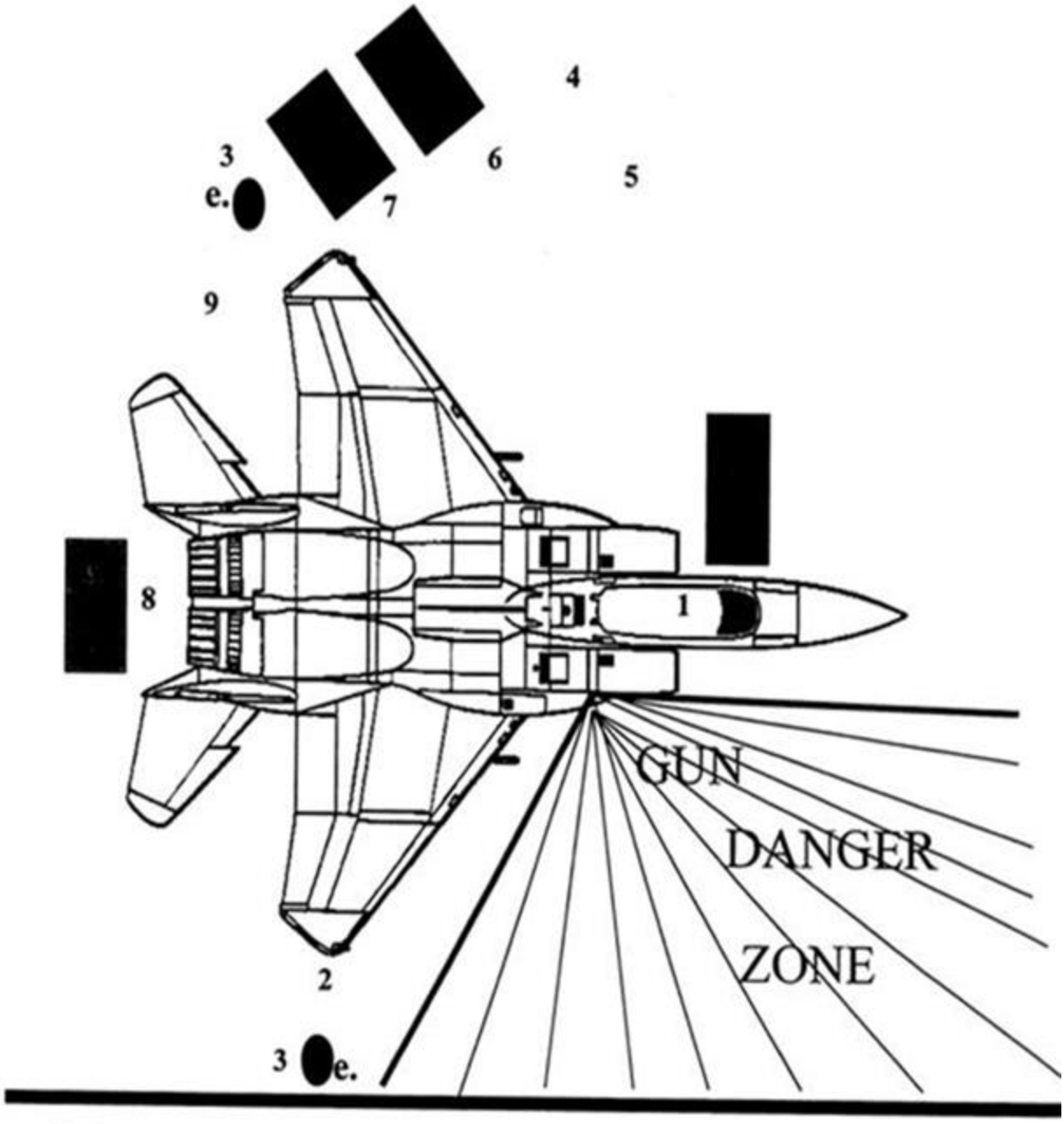
Fig 1 - 1

Equipment: a. -60 b. C-10 c. Hyd. Mule d. B-4 stand e. Fire Bottle.
Personnel: 1. RCO 2. Asst. RCO 3. Crew Chief 4. Load Team Chief 5, 6. Fire guard 7. -60 monitor 8. C-10 monitor 9. Hyd. Mule monitor 10. Trigger person 11. Project Representative.

Attachment 4

F-15 LIVE-FIRE DIAGRAM.

Figure A4.1. F-15 Live Fire Diagram.

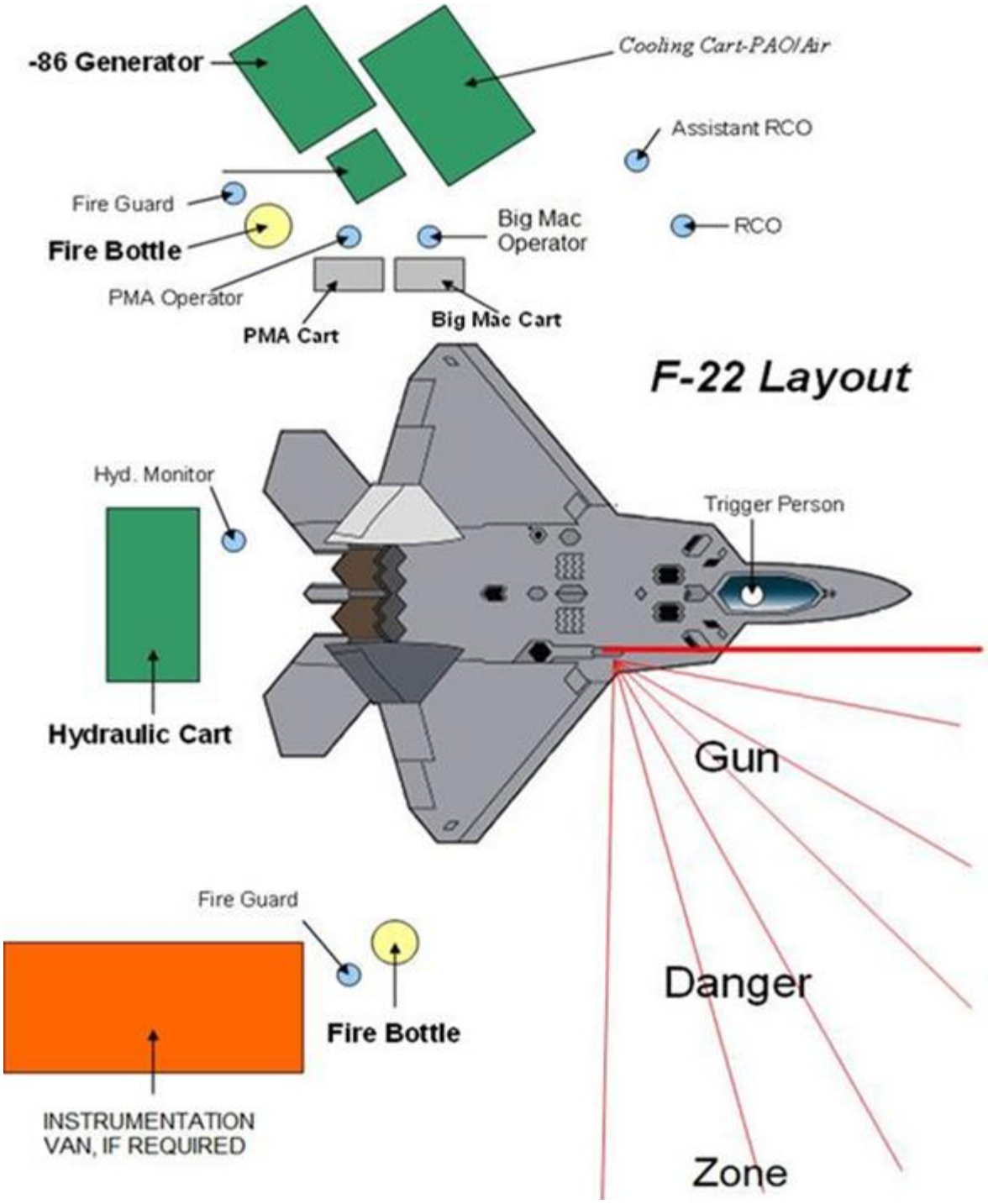


Equipment: a. –60 b. –10 c. Hyd Mule d. B-4 Stand e. Fire Bottles
Personnel: 1. Trigger person 2. Load Team Member 3. Fire Guards 4. Asst RCO 5. RCO 6. –60 monitor 7. –10 monitor 8. Hyd Mule monitor 9. Project Representative

Attachment 5

F-22 LIVE-FIRE DIAGRAM

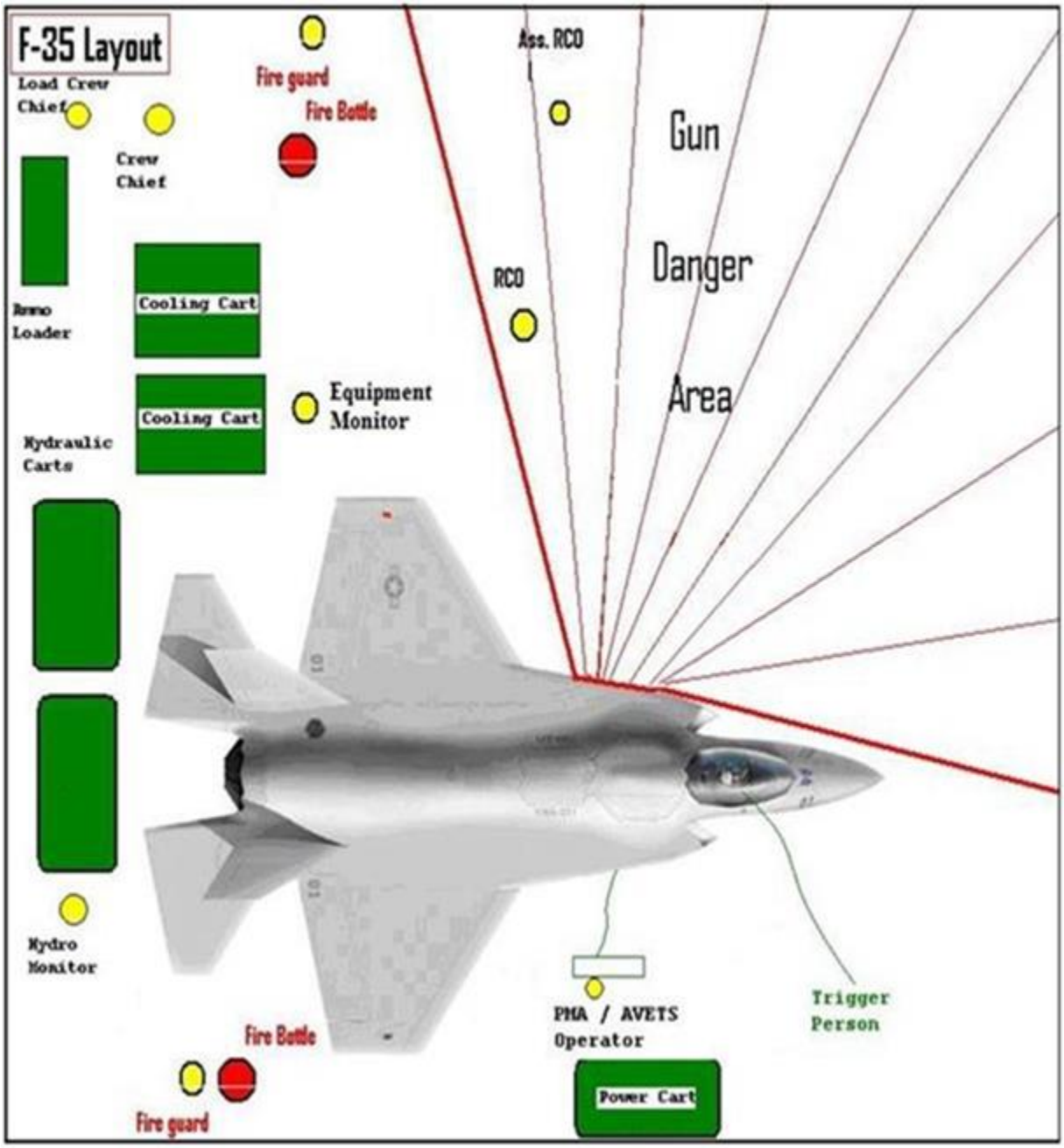
Figure A5.1. F-22 Live Fire Diagram.



Attachment 6

F-35 LIVE-FIRE DIAGRAM

Figure A6.1. F-35 Live Fire Diagram.



Attachment 7

RANGE INSPECTION AND MAINTENANCE SCHEDULE

Table A7.1. Range Inspection and Maintenance Schedule.

RANGE INSPECTION SCHEDULE

INSPECT FOR:	PREFIRING	POSTFIRING	ANNUAL	REMARKS
1. Accumulation of projectiles	x	x	x	Rake/remove Contract
2. Sand moisture/caking	x		x	
3. Sand Penetration	x		x	Cancel firing if sand does not close when penetrated
4. Sand Pulverization	x	x	x	
5. Deteriorated ricochet planking	x	x	x	Replace/repair any board planking that is half shot away
6. Deteriorated wood	x	x	x	
7. Sand slope/dimension	x		x	Add sand if more than 3 feet of the back wall is visible
8. Excessive erosion	x		x	Repair erosion

RANGE MAINTENANCE SCHEDULE

FREQUENCY	ACTION
Annually	1. Replace wood facing as needed 2. Replace ricochet planking (note 1) 3. Add interior sand (note 2) 4. Inspect central core area for accumulation of projectiles (notes 3&4) 5. Vegetation and erosion control
100,000 Rounds fired	1. Remove all interior sand in the target butt (note 4) 2. Screen sand to remove projectiles and other materials (note 3) 3. Fill butt with screened sand and add sand as necessary
200,000 Rounds fired	1. Replace all interior sand

NOTES:

1. Replace any plank that is more than 50 percent shot away. Check all planks for security. Resecure any plank that is unsecured at more than one attachment point.

2. Only if more than three (3) feet of the back wall is visible. Ensure sand meets specification outlined in para. 2.5.1 and Table 1. of this instruction.

3. Disposal of projectiles/contaminated sand will be coordinated through the Facilities Environmental Coordinator, Base CE, and the Environmental Management Office.

4. If the sand shows signs of pulverization or cratering (that is, the sand fails to absorb the projectiles penetration and does not close the hole), it should be replaced, regardless of the number of rounds that have been fired into it.