

TECHNICAL FIRE DIRECTION - PALADIN OPERATIONS For AFATDS V6.3.1.0

FINAL



31 Oct 2002

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**REVISION STATUS SHEET
FOR**

**PALADIN OPERATIONS
FOR
AFATDS V6.3.1.0**

Rev.	Date	Description of Change
Final	31 Oct 02	TB 11-70250354010-2, replaces all prior Job Aids or Technical Bulletins that were related to AFATDS Paladin Operations. This version incorporates new V6.3.1.0 functionality.

Table of Content

HOW TO USE THIS MANUAL	1
CHAPTER 1 DATA BASE CONSTRUCTION	1
DB11. CONSTRUCT BATTERY/PLATOON FDC UNIT DATA.....	1
DB12. CONSTRUCT HOWITZER UNIT DATA.....	2
DB13. STORE HISTORICAL MUZZLE VELOCITY.	5
DB14. STORE FUZE INVENTORY FOR A HOWITZER.	6
DB15. STORE PROPELLANT INVENTORY FOR A HOWITZER.....	7
DB16. STORE MUNITIONS (SHELL) INVENTORY FOR A HOWITZER.	8
DB17. INPUT MASK DATA FOR A HOWITZER	9
DB18. RECEIVE MASK DATA FROM A HOWITZER.	10
DB19. CONSTRUCT AN OBSERVER, RADAR, HEADQUARTERS OR MANEUVER UNIT.	10
DB20. ESTABLISH TARGET DECAY TIME.	14
TASK C1.3.3: CREATE AN AFCS NET.....	14
TASK C1.4 SELECT A CURRENT COMMUNICATIONS CONFIGURATION	17
TASK C1.5: ASSIGN A NETWORK TO A COMMUNICATIONS CHANNEL.....	18
TASK C1.6: TURN ON A NETWORK	18
TASK C1.7 SAVE CHANGES TO THE COMMUNICATIONS CONFIGURATION.....	18
CREATE A PROXY RELAY	19
<i>Task C2: Create a proxy relay</i>	20
CHAPTER 2 FIRE MISSION PROCESSING	21
SECTION I. THE FIRE MISSION PROCESS.....	21
SECTION II. BASIC FIRE MISSION PROCESSING.....	31
<i>FM1. Limit Charge Selection in Training Exercises</i>	31
<i>FM2. Establish Target Number Block</i>	31
<i>FM3. Enable Audible Fire Mission Alert and Adjust Volume</i>	32
<i>FM4. Establish Fire Mission Intervention Criteria</i>	33
<i>FM5. Process an Area Fire Mission at AFATDS</i>	34
<i>FM6. Initiate a Fire Mission at AFATDS</i>	37
<i>FM7. Examine the Intervention Windows</i>	40
<i>FM8. Examine the Weapon Status Paladin Window</i>	45
<i>FM9. React to a Coordination Request</i>	47
<i>FM10. Process Observer Subsequent Corrections During Degraded Comm Operations</i>	48
<i>FM11. Process End of Mission During Degraded Comm Operations</i>	50
<i>FM12. React to AFCS Comm Failure During a Fire Mission</i>	52
<i>FM13. Receive and Process Check Firing and Cancel Check Firing</i>	52
<i>FM14. Initiate and Cancel Check Firing</i>	53
CHAPTER 3 IMPROVING FIRING DATA	55
SECTION I. GENERAL.....	55
SECTION II. ACCOUNTING FOR NON-STANDARD CONDITIONS.....	62
<i>MR1. Conduct Calibration and Determine MVV using M93 and MCA</i>	62
<i>MR2. Conduct Calibration and Determine MVV using M93 without MCA</i>	62
<i>MR3. Establish Meteorological Message Distribution to Howitzers</i>	63
<i>MR4. Enter a Computer Meteorological Message</i>	64
<i>MR5. Receive a Computer Meteorological Message</i>	66
<i>MR6. Conduct A Precision Registration</i>	67
<i>MR7. Conduct A Visual High Burst/Mean Point of Impact (MPI) Registration</i>	73
<i>MR8. Conduct A Radar Observed High Burst/Mean Point of Impact Registration</i>	77

<i>MR9. Conduct A Laser Observed Mean Point of Impact Registration.....</i>	<i>80</i>
<i>MR10. Transfer Registration.</i>	<i>84</i>
<i>MR11. Re-Compute Registration.</i>	<i>84</i>
<i>MR12. Delete Registration</i>	<i>85</i>
<i>MR13. React to a Failure to Compute a Ballistics Solution.....</i>	<i>85</i>
<i>SS1 Process a Radar Fire Mission.....</i>	<i>87</i>
<i>SS2 Process a One, Two or Four Point Illumination Mission.....</i>	<i>89</i>
<i>SS3 Process a Coordinated Illumination Mission.....</i>	<i>93</i>
<i>SS4 Process a Continuous Illumination Mission.....</i>	<i>96</i>
<i>SS5 Process an Immediate Smoke Mission.....</i>	<i>99</i>
<i>SS6 Process an Immediate Suppression Mission.....</i>	<i>102</i>
<i>SS7 Process a Quick Smoke Mission.....</i>	<i>105</i>
<i>SS8 Process a FASCAM Mission.....</i>	<i>109</i>
<i>SS9 Process a Final Protective Fires Mission.....</i>	<i>113</i>
<i>SS10 Process a Copperhead Target of Opportunity Mission.....</i>	<i>117</i>
<i>SS11 Process a Copperhead Priority Mission.....</i>	<i>120</i>
<i>SS12 Assign a Known Point.....</i>	<i>123</i>
<i>SS17 Determine the Reason Targets Were Not Scheduled.....</i>	<i>124</i>
<i>SS18 Manually Schedule Targets.....</i>	<i>126</i>
<i>SS19 Receive a Fire Plan from Higher Headquarters.....</i>	<i>126</i>
<i>SS20 Execute a Schedule of Fires.....</i>	<i>127</i>
<i>SS21 Trigger a Fire Plan Based on H-hour.....</i>	<i>128</i>
<i>PG1 Place a Howitzer in a Degraded Mode with a Stay Order.....</i>	<i>129</i>
<i>PG2: Issue a Move Order to a Howitzer.....</i>	<i>130</i>
<i>PG3: Request Status from a Howitzer.....</i>	<i>131</i>
<i>PG6: Receive a Movement Order from Higher or Supported HQ.....</i>	<i>132</i>
APPENDIX A. OPERATIONS OF THE FDC.....	133
SECTION I. OPERATIONS.....	133
<i>OP1. Establish Minimum Firing Capability.....</i>	<i>133</i>
<i>OP2. Determine an HE one Plot GFT Setting.....</i>	<i>133</i>
SECTION II. COMMUNICATIONS.....	136
<i>LG2. Design a 188-220 Package 11 or JVMF Net.....</i>	<i>136</i>
SECTION III. TROUBLESHOOTING.....	138
APPENDIX B. 13D TASKS CORRELATED TO JOB AIDS PROCEDURES.....	141
GLOSSARY.....	145

How to Use This Manual.

1. **Use.** This manual is intended for use as a detailed reference for specific fire direction tasks performed at firing battery and platoon FDCs. This manual applies specifically to towed and self-propelled Paladin cannon artillery units that communicate with the weapons via radio.
2. **Design.** The manual is constructed in chapters related to specific task areas and functions that the AFATDS operator must perform. These chapters are:
 - a. **Chapter 1. Database Construction.** Chapter 1 describes a step by step method for constructing a database.
 - b. **Chapter 2. Fire Mission Processing.** Chapter 2 contains descriptions of the AFATDS fire mission process followed by specific fire mission processing tasks
 - c. **Chapter 3. Improving Firing Data.** Chapter 3 describes how to do applications of MV data, meteorological data and registration correction is described in chapter 6. This is followed by specific tasks related to these functions.
 - d. **Chapter 4. Special Situations.** Chapter 4 details specific missions types as they are carried out at
 - e. **Appendix A. Leader’s Guide.** The leader’s guide appendix provides supervisor information on operations of the FDC and troubleshooting.
 - f. **Appendix B. JMTK Map.** Information for loading and displaying the JMTK Map.
3. **Conventions used in this publication.** This publication is task oriented. Where appropriate, fundamental information is provided at the beginning of the chapter that supports the tasks that follow. This information is in paragraph form. Specific tasks that follow are, for the most part, standalone and complete.
 - a. **Task Construction.** Tasks are built in tabular format. Each task is preceded by three statements related to the specific task.
 - 1) **Conditions** statement describes the necessary state of the AFATDS and database necessary to carry out the task.
 - 2) **Objective** statement indicates the desired result.
 - 3) **Additional information** provides information that supports the task.
 - b. **Task Table Types.** There are three basic types of task tables in this publication.
 - 1) **Construction tasks** are carried out at AFATDS and result in information added to the database or transmitted to other stations. Below is an example.

Task DB5: Construct Firing Battery/Platoon Unit Data.		
This task builds the fire unit in the current situation.		
Step	Action	Result/Explanation
1.	Click Units, Workspace, New.	The Create New Unit window displays.
<p>NOTE: The Create New Unit window lists all units in the Master Unit List. This can be extremely long. The list can be reduced to more manageable size by selecting the Filter button and sorting by unit name, device type or master unit list number.</p>		

- 2) **Mission Tasks** involve the interaction of multiple stations. In these tasks, the AFATDS portion is detailed while the actions of other stations are descriptive only. Below is an example:

Task FM5: Process an Area Fire Mission			
Step	Station	Action	Result/Explanation
1	Observer	Composes and transmits call for fire.	The observer may be a human or sensor device. The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
<p>If the mission is received via data communications, go to step 3.</p>			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window.	Click Mission Processing, Initiate Fire Mission.

- 3) **Description Tasks** provide information concerning windows and are related to AFATDS output. These tasks are designed to inform the operator of information provided by to the AFATDS. Below is an example.

Task FM7. Examine the Intervention Windows.		
Step	Action	Result/Explanation
2.	The following data is presented.	
	DATA	FUNCTION
a.	Tgt Number	Displays NATO target number for this mission.
b.	Find Target	Centers the Current window map on the target when selected. The target will display even if no overlay exists for active targets.

- c. **Fonts.** Fonts are used to indicate information as follows:
- 1) *Italics is used to provide notes and directions.*
 - 2) **Bold** text indicates an AFATDS field name, menu selection or window name.
- d. Chapter Table of Contents. Each chapter, if appropriate, will have a list of the topics covered in that chapter. Below is an example of table at the beginning of chapter 2.

Chapter 2 Contents for Initialization and System Procedures	
Section I	Initialization.
Section II	System Procedures.
	S1. Load AFATDS Software.
	S2. Login in as an AFATDS User.
	S3. Restore Database from a Floppy Disk. (AFATDS started)
	S4. Restore Database from a Floppy Disk.
	S5. Start AFATDS Application.
	S6. Restore Database from a JAZ Disk.
	S7. Set Time and Date.
	S8. Activate AFATDS.
	S9. Configure a Parallel Printer.
Section III	Additional System Procedures
	S10. Import a Master Unit List (MUL)
	S11. Prepare a JAZ Disk for use.
	S12. Archive Database to a Floppy Disk.
Section IV	The AFATDS Desktop.
	AW1: Examine the AFATDS Desktop
	AW2: Describe the AFATDS menu bar

Chapter 1 Data Base Construction.

DB11. Construct Battery/Platoon FDC Unit Data

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed construct Battery/Platoon FDC data.

Procedure DB11: Construct Battery/Platoon FDC Unit Data.		
This Procedure begins with current situation displayed.		
Step	Action	Result/Explanation
1.	Click Units, Workspace, Options, New Friendly Unit.	The Create New Unit window displays.
NOTE		
<i>The Create New Unit window lists all units in the Master Unit List that are not stored in the current situation as units. This list can be extremely long. The list can be reduced to more manageable size by selecting the Filter button and sorting by unit name, device type or master unit list number.</i>		
2.	Click the name of the Platoon FDC in the Unit ID list.	The name highlights.
3.	Click Unit Type button and select the Other.	The Paladin FDC and POC are constructed as a command posts; <i>Do not select Cannon!</i>
4.	Click OK.	The Unit ID: window displays.
5.	Complete the Identification section.	
a.	Click Service and select the branch of service.	Information is used in some AFATDS message interfaces and planning processes.
b.	Click Role and select Command Post.	
c.	Click Echelon and select Battery or Platoon.	Used to construct map symbol and to determine unit size in mission processing.
d.	Click Function and select the Self-Propelled Artillery.	Selection determines form of unit symbol for AFATDS map.
e.	Click in the Lower Echelon ID: field and type the unit ID.	This becomes the label on the upper right of the unit's map symbol and is case sensitive.
f.	Click in the Higher Echelon ID: and enter the higher HQ ID.	This becomes the label on the lower right of the unit's map symbol and is case sensitive.
6.	Complete the Current Location section.	
a.	Click in the Current Location field and type the location of the FDC or POC.	Type the complete coordinates in the form H EEEEE LLL NNNNN AAAA GGG where H is the higher order easting, EEEEE is the short easting coordinate, LLL is the higher order northing, NNNNN is the short northing coordinate, AAAA is the altitude in meters and GGG is the grid zone.
OR		
b.	To enter an LAT/LONG:	Point in the location field(s). Simultaneously press <SHIFT> and right click to change the input form of the location fields.
c.		Type the latitude and longitude to the nearest 0.1 seconds.
OR		
d.	To enter MGRS:	Point in the location field(s). Simultaneously press <SHIFT> and right click to change the input form of the location fields to Lat/Long. Repeat this process to change the form to MGRS.

e.		Type the location in the form GGXSSEEEEEENNNNN where GG is the grid zone number, X is the grid zone letter, SS is the 100,000 meter square, EEEEEE is the five digit easting and NNNNN is the five digit northing.
Procedure DB11: Construct Battery/Platoon FDC Unit Data (cont). This Procedure begins with current situation displayed.		
Step	Action	Result/Explanation
f.	Click on Datum: and enter the datum of the used in position area survey.	
g.	Click on the General Data file in General folder on upper left of the window.	General Unit information data appears in the Unit ID window.
7.	Complete the Command Support section. This data must be edited after the command unit has been stored in the AFATDS database.	
8.	Complete the Status section.	
a.	Click on Operational Status and select.	Ready is reported if the unit is capable of receiving and executing fire missions. Otherwise, Out of Action should be entered.
b.	Click on the Detailed Data file in Detail folder on upper left of the window.	Detailed Unit information data appears in the Unit ID window.
9.	Complete Detailed Data section for other type units.	
a.	There is no data on the Detailed Unit information of an other type unit that is required for entry at firing platoon level.	
10.	Click Options/Save .	The UNIT ID window closes and the unit data is stored.
11.	Click Options/Exit on the Create New Unit window.	The Create New Unit window closes.

DB12. Construct Howitzer Unit Data

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed and the Platoon FDC unit data stored construct howitzer unit data.

Procedure DB12: Construct Howitzer Unit Data. This Procedure builds the Paladin howitzers in the current situation.		
Step	Action	Result/Explanation
1.	Click Units, Workspace, Options, New Friendly Unit.	The Create New Unit window displays.
NOTE: The Create New Unit window lists all units in the Master Unit List . This can be extremely long. The list can be reduced to more manageable size by selecting the Filter button and sorting by unit name, device type or master unit list number.		
2.	Click the name of the howitzer in the Unit ID list.	The name highlights.
3.	Click Unit Type button and select Cannon.	Cannon appears in the Unit Type field.
4.	Click OK.	The Unit ID: window displays.
5.	Complete the Identification section.	
a.	Click Service and select the branch of service.	Information is used in some AFATDS message interfaces and planning processes.
b.	Click Role and select Unit.	Used to construct map symbol.
c.	Click Echelon and select Section.	Used to construct map symbol and to determine unit size in mission processing.

d.	Click Function and select Self-Propelled Artillery .	Used to construct map symbol.
e.	Click in the Lower Echelon ID: field and type the unit ID.	This becomes the label on the upper right of the unit's map symbol and is case sensitive.
f.	Click in the Higher Echelon ID: and enter the higher HQ ID.	This becomes the label on the lower right of the unit's map symbol and is case sensitive.
Procedure DB12: Construct Howitzer Unit Data (cont).		
Step	Action	Result/Explanation
6.	Complete the Current Location section.	
a.	Click in the Current Location field and type the starting location.	Type the complete coordinates in the form H EEEEE LLL NNNNN AAAA GGG where H is the higher order easting, EEEEE is the short easting coordinate, LLL is the higher order northing, NNNNN is the short northing coordinate, AAAA is the altitude in meters and GGG is the grid zone. NOTE: The location will update when the howitzer reports it location via digital communications
b.	Click on Datum: and enter the datum of the used in the position area survey.	
c.	Click on the General Data file in General folder on upper left of the window.	General Unit information data appears in the Unit ID window.
7.	Complete the Command Support section.	
	Click the Current Command Unit ID and select the unit ID of the Battery FDC or POC controlling this howitzer..	The selection list displays only units already constructed.
8.	Complete the Status section.	
a.	Click on Mission and select the battalion's tactical mission.	This information is not used locally but is used at DIVARTY/ARTY REGT level mission processing.
b.	Click on Operational Status and select.	Ready is reported if the unit is capable of receiving and executing fire missions. This selection updates based on status received from the weapons via digital communications.
c.	Click on the Detailed Data file in Detail folder on upper left of the window.	Detailed Unit information data appears in the Unit ID window.
8.	Complete the Detailed data.	
a.	Click on Weapon Model and select M109A6 .	Weapon system capability data in the window changes based on selection.
b.	Edit the following as required:	
b.1	Shift Time (min)	The time required to shift fires during a fire plan.
b.2	Response Time (min)	The time required to fire a mission measured from call for fire reception.
b.3	Max Range Rap (m)	The maximum achievable range for RAP.
b.4	Max Range (m)	The maximum achievable range for non-RAP.
b.5	Min Rnds per MVV	The least number of rounds from which a calibrated muzzle velocity can be determined.
b.6	Min Range (m)	Least range at which targets may be engaged.
b.7	Max Rate of Fire (RPM)	Not used in processing ¹ .

¹ Maximum and sustained rates of fire are based on weapon system defaults. Changes made in the detailed unit information do not affect processing.

	b.8	Sus. Rate of Fire	Note used in processing.
	b.9.	Azimuth of Lay (mils)	The grid azimuth of lay of the fire unit.
	b.10	Left Azimuth Limit (mils)	Displays the azimuth of the left traverse limit. To change, enter the traverse in mil from the azimuth of lay to the left limit. For example, with an Azimuth of Lay of 1200, entering 0400 for the Left Azimuth Limit will convert to a value 400 mils left of 1200 (or 0800) when the cursor is moved to another field.
Procedure DB12: Construct Howitzer Unit Data (cont).			
Step	Action		Result/Explanation
	b.11	Right Azimuth Limit (mils)	Displays the azimuth of the right traverse limit. To change, enter the traverse in mil from the azimuth of lay to the right limit. For example, with an Azimuth of Lay of 1200, entering 0400 for the Right Azimuth Limit will convert to a value 400 mils right of 1200 (or 1600) when the cursor is moved to another field.
NOTE:			
<i>The minimum and maximum ranges are reported to higher FDCs and FSEs or FSCCs. These values are used to plot the fire unit's range fan and to determine range capabilities.</i>			
9.	Complete Weapon Data section.		
a.	Click in the Authorized field and type 1 .		This is a required entry but is not used in processing.
b.	Click in the Operational field and type 1 .		This value is used in processing fire missions. A unit must have at least one operational weapon to be considered for fire mission assignment.
c.	Click the Options/Save button.		The unit is created on the map and in the database. In addition, the folder tree on the left of the window populates to allow additional unit information to be stored.
10.	Enter Cannon Weapon data.		
a.	Click on the Weapon file in Detail folder on upper left of the window.		The weapon folder displays with no weapon data.
b.	Click the New button.		The Cannon Weapon window displays.
NOTE: <i>The displayed data is for Gun 1. Data displayed is defaulted based on the weapon system. Rates of fire are not used in mission or fire plan processing. Location displays the location entered in the unit's basic unit information. This updates when the gun reports location. The following fields should be verified and edited as required:</i>			
1)	Max QE (mils)		Enter the max elevation achievable by the weapon.
2)	Status		Defaults to Ready . Used during fire mission processing: Ready – weapon computes firing data. Degraded – AFATDS computes firing data. Out of Action – gun will not be selected to fire missions.
3)	MCA		Check box defaults to blank. Click the box if the gun has an operational MCA and M93 chronograph.
4)	Copperhead Capable		Check box defaults to blank. Check the box if the gun has Copperhead projectiles.
5)	Propellant Temp (F)		Defaults to standard temp of 70F. Edit based on prop temp reported by gun.
6)	Click OK .		The Cannon Weapon window closes.
11.	Click Cancel on the Create New Unit window.		The Create New Unit window closes.

NOTE:

*Additional howitzers may be constructed by copying the unit data of the first and editing the data. The unit data is copied by selecting **Units, Edit**, clicking on the howitzer to copy, clicking **Options, Copy** and selecting the **Unit ID** to which data will be copied.*

DB13. Store Historical Muzzle Velocity.

Conditions: Given an AFATDS workstation that is powered, with the AFATDS Current situation displayed and a howitzer unit constructed store historical muzzle velocity data for the howitzer unit.

Procedure DB13: Store Historical Muzzle Velocity data.		
This Procedure begins with howitzer unit constructed as described in Procedure DB 12.		
If no historical muzzle velocity data is to be entered, go to Procedure DB 14.		
Step	Action	Result/Explanation
Note: Normally, MVV data is measured at the howitzer and transmitted to AFATDS. However, AFATDS provides the ability to stored muzzle velocity data from past calibrations. This process is discussed in detail in chapter 6, Section III. Data previously determined from calibration, termed historical muzzle velocity data, is entered using the procedure described here. This procedure is carried out for each howitzer. Entry of MVV data for some weapons and not others will result in non-standard conditions corrected for only part of the platoon. This condition will cause the weapons of the platoon to fail to group in a sheaf when fired at the same target.		
1.	Click Units, Workspace.	The Select Unit window displays with all stored units listed.
2.	Click on the howitzer unit ID for which MVV data will be stored.	The howitzer unit ID highlights.
3.	Click the Options/Edit button.	Unit data for the howitzer displays.
4.	Click on the MVV Data file in Detail folder on upper left of the window.	The Unit ID window is displayed muzzle velocity data for gun 1.
5.	Click the Proj Model field in the first blank line and select the projectile calibrated ²	The selected projectile is displayed in the Proj Model field.
6.	Click the Prop Model field in the first blank line and select the propellant calibrated.	The selected propellant is displayed in the Prop Model field.
7.	Click the Prop Lot field and select the letter designator for the calibrated propellant lot.	This selected lot is displayed. This is a required entry but the lot does not need to be stored in ammunition inventory for the unit.
8.	Click the Prop Chg field in the first blank line and select the charge calibrated.	The charge calibrated is displayed. The list of available charge selections varies depending upon Prop Model selected in step 3. Charges with RKT proceeding the charge increment number are used for RAP calibrated in a rocket-on mode.
9.	Click the MVV field in the first blank line and type the MVV determined in the calibration.	The MVV is displayed. Note: the MVV must have already been reduced to conditions of standard projectile weight and propellant temperature.
10.	Click the Type field in the first blank line and select the Historical.	Historical is displayed.

² Muzzle velocity data is applied to the computation of firing data as described in Chapter 6. The actual projectile calibrated is entered with historical data and that data is applied according to transfer rules. No correction to MVV data is applied based on the projectile weight when storing historical data. The projectile calibrated is used simply to determine the projectile family to which MVV data may be transferred.

11.	Click the Options/Save button.	The Last Update field automatically stored the DTG MVV data was stored. The MVV is stored and available for use.
NOTE: MVV data can be requested or received from the howitzer. In either case, the AFATDS response is automatic requiring no operator action. No alert is provided to indicate the gun has requested data nor is an alert produced to indicate the gun has transmitted data. The message transaction is posted in the Message Log found on the Main Menu Bar at Messages, Message Log .		

DB14. Store Fuze Inventory for a Howitzer.

Conditions: Given an AFATDS workstation that is powered, with the AFATDS Current situation displayed and a howitzer unit constructed store fuze inventory for the howitzer unit.

Procedure DB14: Store Fuze Inventory for a Howitzer.		
This Procedure begins with howitzer unit constructed as described in Procedure DB 12 . If no fuze inventory data is to be entered, go to Procedure DB 15 .		
Step	Action	Result/Explanation
1.	Click Units, Workspace .	The Select Unit window displays with all stored units listed.
2.	Click on the howitzer unit ID for which fuze data will be stored.	The howitzer unit ID highlights.
3.	Click the Options/Edit button.	Unit data for the howitzer displays.
4.	Click on the Fuzes file in Ammunition folder on lower left of the window.	The Unit ID window displays a list of all valid fuzes for the unit's weapon system.
5.	In the Model column, click on the desired fuze nomenclature.	The selected line highlights.
6.	Click the Edit button.	The Fuze window displays.
7.	Click the Lot Code field in the first blank line and type the letter designator for the fuze lot.	This selected lot is displayed. Unlike BCS, AFATDS expects fuzes to be managed by lot.
8.	Click the Lot Number field in the first blank line and type the manufacturer's lot for the fuzes.	The lot number is entered as printed on the fuze or its container. Only letters and numbers are entered. Other characters are omitted and blank space left in their place ³ . String is invalid displays in green text when non-alphanumeric characters are entered and the cursor is moved to another field. <i>This is an optional entry.</i>
9.	Click the On Hand field in the first blank line and type the number of fuzes on hand.	The quantity of fuzes is displayed.
10.	Click the OK button.	The Fuzes window closes and the Unit ID window displays with the new fuze inventory data.
11.	To enter an Authorized Quantity of fuzes, click the Authorized Quantity field for a desired fuze type in the Category column.	The selected line highlights and the Authorized Quantity field displays a cursor.
12.	Type the authorized number for the fuze category.	The number appears in the field. When the cursor is moved to any other field, the authorized quantity is displayed for all fuze model in that same category.
13.	Click the Options/Save button to store all input data.	Fuze inventory data is stored.

³ Special characters are omitted because they cannot be inserted in some messages.

NOTE: If ammunition data is received from the howitzer's AFCS, no alert posts to the AFATDS operator. The AFCS does not report fuze lot or manufacturer's lot. AFATDS defaults the **Lot Code** to the next available letter and the **Lot Number** to AAA01J000 000A for the first received fuze and increments the last digit for each additional fuze.

DB15. Store Propellant Inventory for a Howitzer.

Conditions: Given an AFATDS workstation that is powered, with the AFATDS Current situation displayed and a howitzer unit constructed store propellant inventory for the howitzer unit.

Procedure DB15: Store Propellant Inventory.		
This Procedure begins with howitzer unit constructed as described in Procedure DB 12.		
If no propellant inventory data is to be entered, go to Procedure DB 16.		
Step	Action	Result/Explanation
1.	Click Units, Workspace.	The Select Unit window displays with all stored units listed.
2.	Click on the howitzer unit ID for which propellant data will be stored.	The howitzer unit ID highlights.
3.	Click the Options/Edit button.	Unit data for the howitzer displays.
4.	Click on the Propellants file in Ammunition folder on lower left of the window.	The Unit ID window is a list of all valid propellants for the unit's weapon system.
5.	In the Model column, click on the desired propellant nomenclature.	The selected line highlights.
6.	Click the Edit button.	The Propellant window displays.
7.	Click the Lot Code field in the first blank line and type the letter designator for the propellant lot.	This selected lot is displayed.
8.	Click the Lot Number field in the first blank line and type the manufacturer's lot for the propellant.	The lot number is entered as printed on the fuze or its container. Only letters and numbers are entered. Other characters are omitted and blank space left in their place ⁴ . String is invalid displays in green text when non-alphanumeric characters are entered and the cursor is moved to another field. <i>This is an optional entry.</i>
9.	Click the On Hand field in the first blank line and type the number of propellants on hand.	The quantity of propellants is displayed.
10.	Click the OK button.	The Propellants window closes and the Unit ID window displays with the new propellant inventory data.
11.	To enter an Authorized Quantity of propellants, click the Authorized Quantity field for a desired propellant type in the Category column.	The selected line highlights and the Authorized Quantity field displays a cursor.
12.	Type the authorized number for the propellant category.	The number appears in the field. When the cursor is moved to any other field, the authorized quantity is displayed for all propellant models in that same category.
13.	Click the Option/Save button to store all input data.	Propellant inventory data is stored.
NOTE:		
<i>If ammunition data is received from the howitzer's AFCS, no alert posts to the AFATDS operator.</i>		

⁴ Special characters are omitted because they cannot be inserted in some messages.

DB16. Store Munitions (Shell) Inventory for a Howitzer.

Conditions: Given an AFATDS workstation that is powered, with the AFATDS Current situation displayed and a howitzer unit constructed store munitions inventory for the fire unit.

Procedure DB16: Store Munitions Inventory for a Howitzer.		
This Procedure begins with howitzer unit constructed as described in Procedure DB 12.		
If no munitions inventory data is to be entered, go to Procedure DB17.		
Step	Action	Result/Explanation
1.	Click Units, Unit/Workspace.	The Select Unit window displays with all stored units listed.
2.	Click on the howitzer unit ID for which fuze data will be stored.	The howitzer unit ID highlights.
3.	Click the Options/Edit button.	Unit data for the howitzer displays.
4.	Click on the Munitons file in Ammunition folder on upper left of the window.	The Unit ID window is a list of all valid projectiles for the unit's weapon system.
5.	In the Model column, click on the desired projectile nomenclature.	The selected line highlights.
6.	Click the Edit button.	The Cannon Mortar Munition window displays.
7.	Click the Lot Code field in the first blank line and type the letter designator for the projectile lot.	This selected lot is displayed.
8.	Click the Lot Number field in the first blank line and type the manufacturer's lot for the projectile.	The lot number is entered as printed on the projectile or its container. Only letters and numbers are entered. Other characters are omitted and blank space left in their place ⁵ . String is invalid displays in green text when non-alphanumeric characters are entered and the cursor is moved to another field.
9.	Click the On Hand field in the first blank line and type the number of projectiles on hand.	The quantity of projectiles is displayed.
10.a	Click on the Projectile Weight (Pounds) field and type the projectile weight to the nearest 0.1 pounds.	Projectile weight defaults to a value in pounds based on the projectile type.
OR		
10.b	Click on the Projectile Weight (Squares) field and type the projectile weight to the nearest 0.5 square.	The typed values displays. When the Cannon Mortar Munitions window is closed and the data stored, the projectile weight is converted and stored in pounds.
11.	Click the OK button.	The Cannon Mortar Munition window closes and the Unit ID window displays with the new projectile inventory data.
12.	To enter an Authorized Quantity of projectiles, click the Authorized Quantity field for a desired projectile type in the Category column.	The selected line highlights and the Authorized Quantity field displays a cursor.
13.	Type the authorized number for the projectile category.	The number appears in the field. When the cursor is moved to any other field, the authorized quantity is displayed for all projectiles models in that same category.

⁵ Special characters are omitted because they cannot be inserted in some messages.

Procedure DB16: Store Munitions Inventory for a Howitzer (cont).

Step	Action	Result/Explanation
14.	Click the Apply button to store all input data.	Propellant inventory data is stored.
NOTE: If ammunition data is received from the howitzer's AFCS, no alert posts to the AFATDS operator. The AFCS allows the weapon to report gas projectiles (e.g., M110 and M687). These projectiles will not store at AFATDS.		

DB17. Input Mask Data for a Howitzer

Conditions: Given an AFATDS workstation that is powered, with the AFATDS Current situation displayed and a howitzer unit constructed store mask data for a gun.

Procedure DB17: Store Mask data.

This Procedure begins with howitzer unit constructed as described in **Procedure DB 12**.

If no mask data is to be entered, go to **Procedure DB 18**.

Step	Action	Result/Explanation
Note AFATDS automates the checking of XO's minimum quadrant elevation to ensure trajectories clear near masks reported in the XO's report during occupation. This is accomplished by storing each gun's reported site to crest and azimuth limits to the crests as masks. This information is usually received from the gun via digital communications. See procedure DB 12 for a description of mask data reception from the AFCS.		
1.	Click Units, Workspace .	The Select Unit window displays with all stored units listed.
2.	Click on the howitzer unit ID for which fuze data will be stored.	The howitzer unit ID highlights.
3.	Click the Options/Edit button.	Unit data for the howitzer displays.
4.	Click the Weapon file of the Detail folder.	The Unit ID window displays weapons.
5.	Click the weapon in the Wpn No. column.	The selected line highlights.
6.	Click the Edit button.	The Cannon Weapon window displays.
7.	In the Mask/Azimuth Data section, click the Add button.	A new line of data is added to the mask data displayed.
8.	Click the Left Az (mils) column and type the azimuth to the left side of the crest.	
9.	Click the Right Az (mils) column and type the azimuth to the right side of the crest.	
10.	Click the Rng To Msk (m) column and type the range to crest.	The range to crest is displayed.
11.	Click the VA (mils) field and type the site to crest.	The site to crest is displayed.
12.	Click the OK button.	The Cannon Weapon window closes and the Unit ID window displays.
13.	Click the OK button.	The Unit ID closes and the new mask data is stored.

DB18. Receive Mask Data from a Howitzer.

Conditions: Given an AFATDS workstation that is activated and with a Current communications configuration active receive mask data from a howitzer

Procedure DB18: Receive Mask Data from a Howitzer.			
Step	Station	Action	Result/Explanation
1.	AFCS	Enter mask data.	Mask data is automatically transmitted when it is stored.
2.	Btry/Plt AFATDS	Receive mask data.	A medium level alert appears indicating the weapon unit ID and Unit Mask Information Received . The Received Mask Data window displays.
a.		Review the received data.	
<i>To store the mask data, go to step 3.</i>			
<i>To discard the mask data, go to step 4.</i>			
3.	Btry/Plt AFATDS	Click the Accept button.	The Received Mask Data window closes and the medium level alert is deleted. The mask data received is stored for the reporting howitzer.
4.	Btry/Plt AFATDS	Click the Discard button.	The Received Mask Data window closes and the medium level alert is deleted. The mask data received is not stored.

DB19. Construct an Observer, Radar, Headquarters or Maneuver Unit.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed construct an observer, radar, headquarters or maneuver unit..

Procedure DB19: Construct an Observer, Radar, Headquarters or Maneuver Unit.			
This Procedure begins with current situation displayed.			
If units are not to be constructed, go to Procedure DB21 .			
Step	Action	Result/Explanation	
1.	Click Units, Workspace, New .	The Create New Unit window displays.	
NOTE:			
<i>The Create New Unit window lists all units in the Master Unit List. This can be extremely long. The list can be reduced to more manageable size by selecting the Filter button and sorting by unit name, device type or master unit list number.</i>			
2.	Click the name of the new unit in the Unit ID list.	The name highlights.	
3.	Click Unit Type button and select the appropriate type.	The applicable types are:	
		Observer	Use for arty, mortar, aerial, NGF and TACP spotters.
		Other	Use for maneuver and support units and headquarters.
		Radar	Use for counterbattery and counter mortar radar as well as JSTARS ground station modules.
4.	Click OK .	The Unit ID: window displays.	
5.	Complete the Identification section.		
a.	Click Service and select the branch of service.	Information is used in some AFATDS message interfaces and planning processes.	
b.	Click Role and make the appropriate selection.	Selection should be based on unit type:	

Procedure DB19: Construct an Observer, Radar, Headquarters or Maneuver Unit (cont).			
Step	Action	Result/Explanation	
		UNIT TYPE:	COMPATIBLE ROLE:
		Observer	FO, FIST, Observer, Air Control Party
		Radar	Radar
		Other	Depends on function:
		Arty CP/FDC	Command Post or Command Post Main, TAC or Rear
		FSE or FSCC	FSE or FSE MAIN, TAC or Rear or FSCC or FSCB
		Headquarters	Headquarters, Combat Operations Center or Rear Area Operations Center
		Maneuver Units	Unit
c.	Click Echelon and select as appropriate.	Used to construct map symbol and to determine unit size in mission processing.	
d.	Click Function and select the appropriate type.	Select based on unit type and role:	
		Observer	Air, Mortar, Naval or Observer
		Radar	Artillery Locating or Ground Surveillance
		Other	Function is based on unit type
e.	Click in the Lower Echelon ID: field and type the unit ID.	This becomes the label on the upper right of the unit's map symbol and is case sensitive.	
f.	Click in the Higher Echelon ID: and enter the higher HQ ID.	This becomes the label on the lower right of the unit's map symbol and is case sensitive.	
6.	Complete the Current Location section.		
a.	Click in the Current Location field and type the starting location.	Type the complete coordinates in the form H EEEEE LLL NNNNN AAAA GGG where H is the higher order easting, EEEEE is the short easting coordinate, LLL is the higher order northing, NNNNN is the short northing coordinate, AAAA is the altitude in meters and GGG is the grid zone.	
OR			
b.	To enter an LAT/LONG:	Point in the location field(s). Simultaneously press <SHIFT> and right click to change the input form of the location fields.	
c.		Type the latitude and longitude to the nearest 0.1 seconds.	
OR			
d.	To enter MGRS:	Point in the location field(s). Simultaneously press <SHIFT> and right click to change the input form of the location fields.	
f.		Type the location in the form GGXSSEEEEEENNNNN where GG is the grid zone number, X is the grid zone letter, SS is the 100,000 meter square, EEEEE is the five digit easting and NNNNN is the five digit northing.	
g.	Click on Datum: and enter the datum of the used in the survey of the gun position.		
h.	Click on the General Data file in General folder on upper left of the window.	General Unit information data appears in the Unit ID window.	
7.	Complete the Command Support section.		

a.	Click the Current Command Unit ID and select the unit that commands this unit. Procedure DB19: Construct an Observer, Radar, Headquarters or Maneuver Unit (cont).	The selection list displays only units already constructed.
Step	Action	Result/Explanation
b.	Click the Current Supported Unit ID and select the unit supported by this unit.	The selection list displays only units already constructed.
8.	Complete the Status section.	
a.	<i>For observer and radar units only:</i> Click on Mission and select the unit's tactical mission.	This information is not used in processing.
b.	Click on Operational Status and select.	Ready is reported if the unit is capable of receiving and executing fire missions. Otherwise, Out of Action should be entered.
c.	Click on the Detailed Data file in Detail folder on upper left of the window.	Detailed Unit information data appears in the Unit ID window.
<i>If the unit is an observer, go to step 9.</i>		
<i>If the unit is a radar, go to step 10.</i>		
<i>For all maneuver units, headquarters and Met stations, go to step 11.</i>		
9.	Complete the Detailed data for an observer.	
a.	Click on Observer Type and select the description of the observer.	Weapon system capability data in the window changes based on selection.
b.	Edit the following as required:	
b.1	TLE (m)	Type the observer's accuracy in target location. This value is used in target processing and a default value will be used if not entered here.
b.2	Laser Code	Enter the observer's laser PRF code. This is used in Copperhead mission processing.
b.3	Max Range	The far edge of the observer's assigned sector of observation.
b.4	Left Azimuth	The left most grid azimuth of the observer's assigned sector of observation.
b.5	Right Azimuth	The right most grid azimuth of the observer's assigned sector of observation.
NOTE: <i>The Max Range and azimuth limits define a range fan that can be displayed on the map by clicking the observer's symbol on the map and then clicking Map, Filters, Show range fan.</i>		
b.6	Cloud Height	The height of cloud cover above the observer in meters. This value is used in Copperhead mission processing.
b.7	Visibility	The maximum distance the spotter can observe in meters. If received from an observer device 30% is assigned 2000m, 50% is assigned 4000m and 100% is assigned 7501m. Used in Copperhead mission processing.
b.8	Laser Quantity, On Hand and Operational	Enter 1 if the observer is equipped with a laser.
c.	Go to step 12.	
NOTE: <i>In addition to TLE, the observer's reliability, accessed by selecting the Reliability file in the Detail folder, determines the ability of his targets to pass target selection standards checks during target processing. By default the observer is reliable for all target types. This can be edited and those targets for which the observer will is not reliable will fail TSS checks.</i>		
10.	Complete Detailed Data section for a radar unit.	

a.	Click on Radar Model and select the radar nomenclature.	For JSTARS ground station module, select JSTARS .
b.	Edit the following as required:	
b.1	Accuracy (m)	Type the radar's accuracy in target location. This value is used in target processing and a default value will be used if not entered here.
NOTE: Steps 10.b.2 through 10.b.6 define the search fence and become part of the Radar Deployment Order used by AFATDS to control assigned radars.		
b.2	Direction of Search	Enter the reference direction for the radar's assigned search in mils grid.
b.3	Left Azimuth	Enter the number of mils measured left of the direction of search to the left azimuth of the radar's search fan. When the cursor is moved to another field the angle entered is applied to the Direction of Search and the Left Azimuth field automatically displays the grid azimuth of the left azimuth limit. <i>The default is an azimuth 800 mils left of the Direction of Search.</i>
b.4	Right Azimuth	Enter the number of mils measured right of the direction of search to the right azimuth of the radar's search fan. When the cursor is moved to another field the angle entered is applied to the Direction of Search and the Right Azimuth field automatically displays the grid azimuth of the right azimuth limit. <i>The default is an azimuth 800 mils right of the Direction of Search.</i>
b.5	Lower Frequency Code	Enter the lower frequency code of the span of frequencies the radar is directed to scan. Codes range from 01 to 31.
b.6	Upper Frequency Code	Enter the upper frequency code of the span of frequencies the radar is directed to scan. Codes range from 01 to 31.
b.7	Max Range 1	Enter the max range the radar should search for artillery and mortars
b.8	Max Range 2	Enter the max range the radar should search for rockets.
b.9	Min Range	Enter the min range the radar should search.
b.10	Authorized and On Hand Radars	Enter the number of radars the unit possesses by T/O and the actual number on hand. Authorized must be set to at least 1.
b.11	Operational	Enter the number of operational radars assigned to the unit.
b.12	Radar FFZ's	Selecting the Add... button allows the assignment of radar zones. The zones must have been constructed as geometries to be available for assignment. These are transmitted to the radar when the RDO is sent.
b.13	Cueing Unit	Selecting the Add... button allows the assignment of units ranked by their order in access for cueing the radar. This is information and is not used in processing nor its it transmitted to the radar as part of the RDO.
c.	Go to step 12.	
11.	Complete Detailed Data section for an other type units.	
a.	There is no data on the Detailed Unit information of an other type unit that is required for entry at firing battery/platoon level. This data should be updated and distributed by the actual unit.	
b.	Go to step 12.	
12.	Click Option/Save .	The UNIT ID window closes and the unit data is stored.

DB20. Establish Target Decay Time.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed establish Target Decay Time

Procedure DB20: Establish Target Decay Time.		
This Procedure begins with the current situation displayed.		
If Target Decay Time guidance will be received from higher or support headquarters, go to Procedure DB24.		
Step	Action	Result/Explanation
Note Target Decay Time is the number of minutes a target type remains valid for attack after it is reported. To the DTG of the target report or CFF is added the Target Decay Time. This sum establishes the not-later-than DTG. If the target is engaged after the NLT DTG, AFATDS will recommend the target be denied. Normally, target decay time guidance is received from higher or supported headquarters and is based on analysis of enemy capabilities and tactics. However, in lieu of this, some value greater than "0" must be entered during database construction to ensure fire missions will be fired		
1.	Click Guidances, Miscellaneous, Target Decay Time	The Target Decay Time window displays.
2.	Click the Target Category button and select one of the 13 displayed target categories.	The Target Type list displays target types of the selected category.
3.	For each target type, double click the Decay Time fields and type the desired number of hours and minutes the target remains valid for attack after discovery.	Separate fields are provided for hours and minutes. Time ranges from 0 hours and 0 minutes to 99 hours and 59 minutes.
4.	Repeat steps 2 and 3 for the remaining target categories and types.	
5.	Click OK	The Target Decay Time window closes and target decay times are stored.

Task C1.3.3: Create an AFCS net.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed create an AFCS net.

Task C1.3.3: Create an AFCS net.		
This task creates network parameters to operate an AFCS network communicating from the TCIM on radio.		
This task is required at battery and platoon levels to communicate with the guns.		
Step	Action	Result/Explanation
NOTE: As with all communications devices, it is important that the AFCS be properly setup to communicate with AFATDS. For details of AFCS setup, see the AFCS SETUP notes at the end of this procedure.		
1.	Create the AFCS Network:	
Task C1.3.3: Create an AFCS net (cont).		
Step	Action	Result/Explanation
a.	On the Current Networks window, click the Network .	The configuration name highlights.
b.	Click Network, New	The Net Channel Settings window displays.
c.	Enter the following:	
1)	Network Name	1 to 16 character network name with no spaces.
2)	Protocol	Select AFCS . The window updates to default values for all settings.
3)	Security	Select Secure .

4)	Local Address	Enter the address of the FDC or POC. This is a single character A through Z or 0 through 9.
Task C1.3.3: Create an AFCS net (cont).		
Step	Action	Result/Explanation
5)	Media Device	Choose the communications medium. Applicable selections are: Local Radio: non-digital VRC radios Two-Wire: for wire line communications. Sincgars-ICOM: Sincgars RT1523 radio.
6)	Data Encoding	Select the method used by <u>all</u> stations on the network: NRZ: preferred method for digital radios and encrypted radio networks. FSK 1200/2400 and FSK 1300/2100: analogue methods that can be employed on wire or analogue radio. Limits data rate to a maximum of 1200 bps. NOTE: <i>The howitzers must use the corresponding values at the AFCS. Table 4-1(at the end of this procedure) provides a summary of the AFCS net type and its corresponding data encoding method.</i>
7)	Data Rate	Select the data rate employed by <u>all</u> stations on the net. NOTE: <i>The howitzers must use the corresponding values at the AFCS. Table 4-1(at the end of this procedure) provides a summary of the AFCS net type and its corresponding data rate.</i>
8)	Key Time	The same key time should be used at all stations. Recommended value is 2.1
e.	Click the More button.	The FCS Comm window displays.
f.	Enter the following:	
1)	Block Mode	Allow to default to Single .
2)	Error Control	Allow to default to EDC/TDC .
3)	Net Access Delay	Click each field and type 0.5 for each of the four settings.
4)	Click the OK button.	The FCS Comm window closes and the Net Channel Settings window displays.
4)	Click the OK button.	The Net Channel Settings window closes.
2.	Add destination units for the network:	
a.	On the Current Networks window, click the Options, Destination Units .	The Communications Unit Configuration window displays.
b.	Click Options, Add Unit	The Select List window displays. Access to the contents of the Master Unit List and all operator created distribution lists is provided.
c.	Select the list on which the desired destination units are found and click OK .	The Net Channel Settings window displays.
d.	Click on each howitzer's unit ID.	The units' names highlight.
e.	Click OK .	The howitzers are added to the Communications Unit Configuration Destination Unit ID column with a red gumball in the Active Route Column .
3.	Establish routes. Perform this step for each howitzer and AFATDS on the network:	
a.	Click the unit ID.	The name is enclosed in a blue box.
b.	Click Options, Edit Routes	The Edit Routes window displays.
c.	Enter the following:	
1)	Via	Select the AFCS network name.

2)	Address	Type the address of the AFCS. Entry may be a letter A through Z or a number 0 through 9.
3)	Gun Pltn/Sect	Select the gun number. Selections are 1/1 through 1/ 4 and 2/1 through 2/ 4 . The first number in each entry represents the gun's platoon designation and the second value is the gun number. A unique selection must be made for each gun. If 6 guns are controlled by 1FDC do not use guns 1/4 or 2/4
4)	Click OK .	The Edit Routes window closes and the Communications Unit Configuration window displays.

Table 4-1. AFCS Net Types

Net Type	Protocol	Device	Modulation	Baud Rate
1	AFCS	WIRE	CDP	8000
2	AFCS	WIRE	CDP	16000
3	AFCS	WIRE	CDP	32000
4	AFCS	WIRE	1200/2400	600
5	AFCS	WIRE	1200/2400	1200
6	AFCS	WIRE	1300/2100	600
7	AFCS	WIRE	1300/2100	1200
8	AFCS	RADIO	NRZ	600
9	AFCS	RADIO	NRZ	1200
10	AFCS	RADIO	NRZ	2400
11	AFCS	RADIO	NRZ	4800
12	AFCS	RADIO	NRZ	16000
13	AFCS	RADIO	1200/2400	600
14	AFCS	RADIO	1200/2400	1200
15	AFCS	RADIO	1300/2100	600
16	AFCS	RADIO	1300/2100	1200
17	AFCS	RADIO/KY57	NRZ	16000
18	AFCS	RADIO/KY57	1200/2400	600
19	AFCS	RADIO/KY57	1200/2400	1200
20	AFCS	RADIO/KY57	1300/2100	600
21	AFCS	RADIO/KY57	1300/2100	1200

AFCS Setup: Currently, the Package 11 Paladin implementation of this AFCS protocol also has problems, but Paladin intends to correct these problems and release a new version of the Package 11 software. The following instructions on the use of the AFCS protocol is intended to cover both the current version of Package 11 Paladin software and the updated version (when released).

The following setup instructions should be followed at the Package 11 Paladin Systems when using the current software:

1. The AFCS net type to be used is 14 (radio) or 5 (wire). This creates a net with the settings that will work with the above AFATDS AFCS net.
2. The Key Time for the net must be set at 0.7.
3. The Net Access Delay should be unique for each Paladin unit. It is recommended that the following values be used:

Gun Pltn/Sect	NAD for the Paladin
1/1	1.0

Gun Pltn/Sect	NAD for the Paladin
1/2	1.5
1/3	2.0
1/4	2.5
2/1	3.0
2/2	3.5
2/3	4.0
2/4	4.5

4. The AFCS Broadcast Address should be set to the value selected during the AFATDS Edit Routes for the unit.
5. The AFCS Physical Address is not used, but is required. A value not used on the network should be selected.
6. The AFCS Gun Pltn/Sect must be equivalent to the value selected during the AFATDS Edit Routes for the unit.
7. The BCS Address must be equivalent to the AFATDS Local Address.
8. Ensure the Primary BCS is selected for use.
9. The URN for the unit must match the value used in the AFATDS system
10. The URN for AFATDS must match the value used in the AFATDS system.
11. Due to a problem with the Paladin communications setup, the following steps are required to ensure all values are saved --
 - a. After all values are set for the communications, change the net type to 1 (one).
 - b. Press Use All on the NET ACCESS screen and the NET ADDRESS screen.
 - c. Change the net type back to the original number (14).
 - d. Press Use All on the NET ACCESS screen and the NET ADDRESS screen.
12. If the AFCS Physical Address, Broadcast Address, or Gun Number are changed, step 11 must be repeated.

The following setup instructions should be followed at the Package 11 Paladin Systems when using the corrected software:

1. ONLY AFCS net types 1 thru 21 may be used, net types 22 thru 52 are 188-220A protocol net types and will not work.
2. The Key Time for the Net must be set at 0.7.
3. Step 3 thru 10, above, remain the same.
4. Step 11 and 12, above should be eliminated. If the NAD values are not being saved properly, the work-around should be followed.

Task C1.4 Select a Current Communications Configuration

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed select a current communications configuration.

Task C1.4 Select a Current Communications Configuration.		
This task puts a planned communications configuration into use and replaces the old current configuration.		
Step	Action	Result/Explanation
1.	On the Main Menu bar, click Situations, Configuration, Communications, Current	The Current Networks window displays.
2.	Click Options, Select New Current	The Select Comm Configuration window displays.

Task C1.4 Select a Current Communications Configuration.

This task puts a planned communications configuration into use and replaces the old current configuration.

Step	Action	Result/Explanation
3.	Click on the name of the configuration to be put into use and click OK .	The Select Comm Configuration window closes and the Current Networks window displays with the networks of the new current communications configuration.

*Note: All networks must be disabled by selecting **Control, All Off** before the existing communications configuration can be replaced.*

Task C1.5: Assign a Network to a Communications Channel.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed assign a network to a communications channel.

Task C1.5: Assign a Network to a Communications Channel.

This task assigns networks to the appropriate TCIM or LAN.

Step	Action	Result/Explanation
1.	On the Current Networks window, click Network, Assign Channels	The Net Channel Assignment window displays.
2.	Click the name of a network in the Unassigned Networks list.	The network name highlights.
3.	Click the TCIM or LAN channel to which the network is to be in the Workstation Channel list.	The channel highlights and up and down pointing arrows appear.
4.	Click the down pointing arrow.	The selected network is assigned to the selected channel.
5.	Click OK .	The Net Channel Assignment window closes

Task C1.6: Turn on a Network

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed turn on a network.

Task C1.6: Turn on a Network.

This task changes the network assigned to a TCIM or LAN .

Step	Action	Result/Explanation
1.	On the Current Networks window, click the desired Network name.	The Network name highlights.
2.	Click Control. On	The Network Status column displays Enabled .

Task C1.7 Save Changes to the Communications Configuration.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed save changes to the communication configuration.

Task C1.7 Save Changes to the Communications Configuration.

This task saves changes such as channel assignments and copies any changes made on the current configuration to the planned copy of the configuration.

Step	Action	Result/Explanation
1.	On the Current Networks window, click Options, Save or click OK in the window and it will save the Current Networks	The Saved field changes from No to Yes .

Create a Proxy Relay

Conditions: Given a AFATDS workstation that is powered, with AFATDS started and activated and a communications configuration create a proxy relay.

Note: A proxy relay is created to allow a device, such as a FED or DCT, to transmit a message on a network with a given address and have that message relayed on another network with another address. This relay process is very similar to the addressing mechanism used in Tacfire protocol to relay fixed format message.

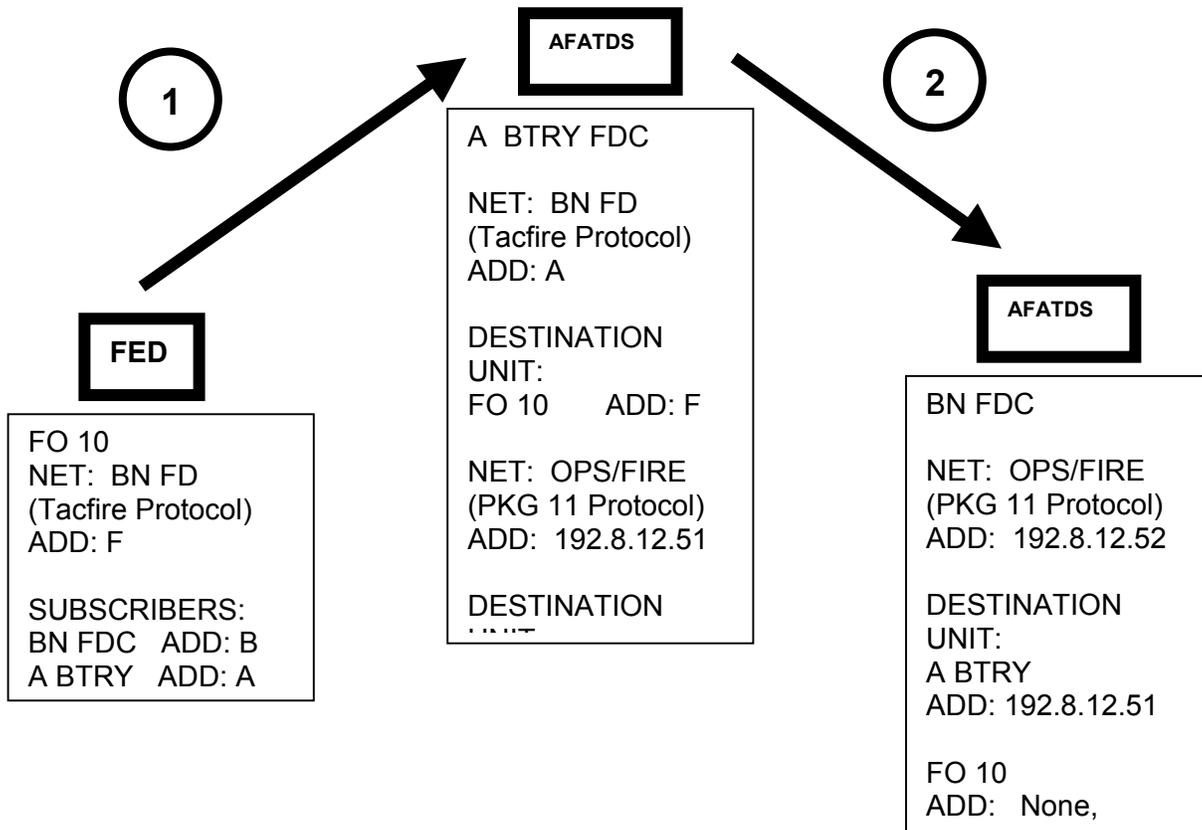


Figure 4-1.

Example: Figure 4-1 provides an example of proxy relay. FO 10, using a FED is transmitting data via a TACFIRE network to A BTRY. To allow FO 10 to communicate with the BN FDC, A BTRY creates a proxy relay for the BN FDC, assigning the BN FDC an address of B. A BTRY directs FO 10 to transmit messages to the BN FDC by assigning the same address, B. When the FO 10 FED sends a message to address B, the A BTRY AFATDS recognizes the address as an assigned proxy and processes the message as a relay. The relay message is re-addressed to the BN FDC AFATDS and re-transmitted by the A BTRY AFATDS.

Task C2: Create a proxy relay.

Conditions: Given a AFATDS workstation that is powered, with AFATDS started and activated and a communications configuration create a proxy relay.

Procedure C2: Create a proxy relay.

This task creates the communications configuration by giving it a name.

Step	Action	Result/Explanation
1.	Click System, Configuration, Communications, Current...	The Current Networks window displays.
2.	Click Options, Destination Units	The Communications Unit Configuration window displays.
3.	In the Destination Unit ID list, click on the name of the unit for which a proxy address is to be assigned.	A blue box appears around the unit name and route data.
4.	Click Options, Proxy, New.	The New Proxy window displays.
5.	Click Network, Select	The Select Network window displays with a list of networks available for a proxy assignment. Because of the nature of proxy relay, networks on which the destination unit communicates via direct and indirect routes will not appear.
6.	Select the network on which the proxy address will be used and click OK.	The Select Network window closes and the New Proxy window displays.
7.	Type the proxy address for the destination unit in the Local Proxy Address field.	The address is displayed.
8.	Click OK.	The New Proxy window closes and the destination unit proxy address data are added to the Communications Unit Configuration window.
9.	Click OK.	The Communications Unit Configuration window closes and the Current Networks window displays.
10.	Click OK.	The Current Networks window closes.

Chapter 2

Fire Mission Processing.

Section I. The Fire Mission Process.

1. General.

AFATDS processes calls for fire at a battery or platoon FDC in much the same fashion as is done at higher level. The processing continues past that performed at an FSE/FSCC or FA CP role computer only in that technical fire direction is performed. This section describes the process by which AFATDS processes a received call for fire or fire order.

2. Fire Requests and Fire Orders.

Fire requests are received from observer devices. Fire orders are received from supported or higher headquarters AFATDS. Though the AFATDS operator never sees the message format or structure of these messages, the type of message has some effect on mission processing.

3. Fire mission reception.

When a fire mission is received, the following actions are performed by AFATDS.

- a. Check for target number.
 - 1) If the mission is received with a target number assigned, that target number is maintained.
 - 2) If the mission does not have a target number, the next available is assigned from the AFATDS target block. If the AFATDS target block has not been entered, a medium level alert is presented to the operator.
- b. Check for target location.
 - 1) If the mission is received from a unit with a datum other than WGS-84 (as identified in the unit's Basic Unit Information), the location is translated to WGS-84 datum.
 - 2) If the mission is received without a target altitude, an altitude is assigned. Altitude is assigned based on best available data:
 - a) If the altitude of the observer or requestor is known, that altitude is assigned to the mission.
 - b) If the altitude of the observer is not known to AFATDS, the altitude of the COB location is assigned to the target.
 - 3) Check the mission for missing data.
 - a) If the mission is a request for smoke and length of smoke screen, duration and smoke condition is not received in the call for fire, a request for this information is placed in the **More Data** icon of the **Current** menu bar.
 - b) If the mission is a TOT and time-on-target is not received, a request for this information is placed in the **More Data** icon of the **Current** menu bar.

4. Target Filter Checks.

Target filter is performed by AFATDS to ensure that the target requested should actually be engaged. The degree of filtering differs for fire requests and fire orders. This difference avoids duplication of processing already performed by other units in creating the fire order.

- a. **Target Selection Standards** guidance is checked if the mission is received as a fire request and the **Check Calls for Fire against TSS** check box is checked in **Guidance, Target, Target Selection Standards**. This check is composed of two parts.
 - 1) The TLE of the requestor or that received in the fire request is compared to the max TLE of the Target Selection Standards.
 - 2) The time stamp of the target is compared to the current time. This difference is compared to the maximum report age in the Target Selection Standards.
 - 3) A TLE greater than the maximum or age greater than the maximum report age results in a recommendation to deny the mission.
 - 4) The following mission types always pass TSS checks during fire mission processing:
 - Immediate smoke
 - Immediate suppression

- Coordinated Illumination
 - Continuous illumination
 - Registration
 - Missions requesting illumination, FASCAM or smoke.
- b. **Duplication** checks are based on the guidance found at **Guidance, Miscellaneous, Target Duplication**. This check is made for all fire missions received at the battery/platoon FDC. The check is comprised of two separate examinations. Missions that fail duplication generate options but with a recommendation of deny.
- a) **ANY TARGETS WITH SEPARATION DISTANCE LESS THAN** is the radius from an existing active target that describes a circle. Inside this circle any new target will be considered a duplicate and the computer will recommend DENY.
 - b) **SIMILAR TARGETS WITH SEPARATION DISTANCE LESS THAN** provides the distance within which targets of the same type but differing detailed description will be considered duplicates. For example, ARTY, MED and ARTY, TOWED are similar targets.
- c. **Target exclusion** prevents targets of specific types from being engaged. Fire requests on these type targets are recommended for denial. The types of targets excluded are listed in the Target Management Matrix found at **Guidance, Target, TMM**
- d. **Target Build Up** geometries are checked as part of the filtering process. If a target plots inside a target build up geometry, the target type is checked against those established as thresholds. If the target is of one of the associated types and the number or strength of this new target and all previous targets plotting inside the area do not equal the threshold, the mission is recommended for denial. This geometry and filter check is designed to allow areas in which high target densities are probable. These areas are then not attacked until the target rich environment has been achieved. This check is only performed at the battery/platoon FDC if the mission is received as a fire request.
- e. **IEW routing** is another filter function that is controlled by the Target Management Matrix guidance. This function causes the computer to request clearance on fire missions for the targets marked for IEW routing rather than recommending denial as with other filter failures. The purpose of this function is to cause electronic warfare assets to be alerted to the potential destruction of targets that may be intel sources or targets of intel operations. The destination of the routing must be established separately (found at **Mission Processing, Missions Routing, IEW Routing**). The destination of IEW routing must be an ASAS. This check applies to missions received as fire requests only.
- f. It should be noted that failure of a single check does not prevent the remaining checks from being executed. Thus it is possible to have a fire mission fail multiple filters. The **Intervention** window provides a synopsis of filters checked and results.

5. Determination of mission value.

AFATDS ensures that fires are allocated to missions that meet commander's intent as expressed in guidance. Conversely, missions of little effect or value to the main effort are denied to conserve fire support. The mechanism used to perform this prioritization of a fire mission uses the mission value. The mission value is computed by AFATDS from four aspects of target information. Though the AFATDS operator need not be able to compute mission value, an understanding the computation is necessary to manage guidance.

- a. **Target Value** is a measure of the target's value to the enemy as an asset and the value to the supported commander of its engagement. Target value is computed using the following steps:

Table 5-1. Computation of Mission Value

Step	Computation
1.	Check the target type against the Guidance, Target, TMM guidance High Payoff Target List. If the target is a High Payoff Target go to step 2; if not go to step 6.
2.	Determine the target value from the High Payoff Target List.
3.	Determine the highest value of <i>any</i> target category from Guidance, Target, High Value Target List .
4.	Add the values determined in steps 2 and 3.
5.	Divide the sum from step 4 by 2. The result is the Target Value.
6.	For a non-high payoff target, determine the value of target's target category from Guidance, Target, High Value Target List .

Table 5-1. Computation of Mission Value

Step	Computation
7.	Divide the value in step 6 by 2. The result is the target value.

- b. **Priority of Fires.** When a fire request is received, the priority of fires of the requestor or his parent unit (which ever is available, or if both are available, the larger) is determined from **Guidance, Target, Mission Prioritization** guidance.

Table 5-2. Computation of Priority of Fires Value

Step	Computation
1.	Check the requestor and the requestor's command unit ID (as stored in the requestor's unit data) against the Guidance, Target, Mission Prioritization guidance. Extract the priority of fires rank value. If both the requestor and his command unit Id are listed, take the higher value. If neither are listed, use a value of 0(zero).
2.	Add 1 to the priority of fires rank determined in step 1.
3.	Subtract the number of ranked units found in the Mission Prioritization guidance from the value from step 2.
4.	Multiply the value in step 3 by 100.
5.	Add the priority of fires ranks of all units in the Mission Prioritization guidance.
6.	Divide the value determined in step 4 by the value from step 5. The result is the Priority of Fires value.

- c. **Targeted Area of Interest value.** Targeted Areas of Interest geometries can be established in AFATDS. These geometries can be ranked relative to each other. The objective is to create areas of interest for fire support. Targets located in these areas can then be assigned higher values than the same target found by the same observer but outside such a geometry.

Table 5-3. Computation of Targeted Area of Interest Value

Step	Computation
1.	Check the plot of the target against existing TAI geometries. If the target plots in a TAI, get the rank value of the TAI from the Guidance, Target, Mission Prioritization guidance. If the target does not plot in a TAI, use a value of 0.
2.	Add 1 to the TAI rank determined in step 1.
3.	Subtract the number of ranked TAIs found in the Mission Prioritization guidance from the value from step 2.
4.	Multiply the value in step 3 by 100.
5.	Add the ranks of all TAIs in the Mission Prioritization guidance.
6.	Divide the value determined in step 4 by the value from step 5. The result is the TAI value.

- d. **On-Call value.** Missions on the AFATDS On-Call target list can be given greater value than other targets. The objective is to allow preplanned targets that can be called for by quick fire means, to achieve a greater precedence.

Table 5-4. Computation of On-Call Target Value

Step	Computation
1.	Check the target number against the On-Call Target List. If the target is found, go to step 2; if not, the On-Call Target value is 0.
2.	Check the Guidance, Target Mission Prioritization guidance. If the OnCall Targets have Priority check box is checked, On-Call Target value is 100, otherwise the value is 0.

- e. **Mission Value.** Each of the four aspects of mission value are weighted or ranked against each other in the **Guidance, Target, Mission Prioritization** guidance. The weight is applied to the value for that specific aspect of the target computed above.

Table 5-5. Computation of Mission Value

Step	Computation
1.	Determine the weight of Target Type from the Guidance, Target Mission Prioritization guidance.
2.	Multiply the Target Type value determined in Table 5-1 by the value from step 1 above. The result is the normalized Target Type value.
3.	Determine the weight of Priority of Fires from the Guidance, Target Mission Prioritization guidance.
4.	Multiply the Priority of Fires value determined in Table 5-2 by the value from step 3 above. The result is the normalized Target Type value.

Table 5-5. Computation of Mission Value(cont)

Step	Computation
5.	Determine the weight of TAI from the Guidance, Target Mission Prioritization guidance.
6.	Multiply the Priority of Fires value determined in Table 5-3 by the value from step 5 above. The result is the normalized Target Type value.
7.	Determine the weight of OnCall from the Guidance, Target Mission Prioritization guidance.
8.	Multiply the On Call Target value determined in Table 5-4 by the value from step 7 above. The result is the normalized Target Type value.
9.	Add the values from step steps 2, 4, 6 and 8. The sum is the mission value.

6. FSCM Checks.

The plot of the target and the trajectory are checked against fire support coordination measures. If a violation of a measure is determined, the missions solution will display a yellow option and when the operator selects to transmit fire commands a coordination request is transmitted to the affected agency and AFATDS waits for the response before allowing fire commands to transmit.

- a. **Effect of FS System Buffer Distance Guidance.** To account for the effects of fires, the FS Buffer System guidance distance is applied around the outside edge of the each target checked. For example, if a circular target 100 meters in radius is received, the **FA Cannon** buffer distance, found at **Guidances, Miscellaneous, FS System Buffer Distance**, is added to the radius. If this distance is 600, the total effects area of the attack on the target is 700m, the sum of the radius and the buffer distance. The assumption is that fires impacting at the very edge of the radius may have blast and fragmentation effect that extends through the buffer distance. The plot of the target violates any FSCM if the total effects area plots behind or intersect a line or plots inside of or intersects the boundary of an area measure.
- b. **The effect of time on FSCM violations.** Fires violate a ZOR or FSCM only if the measure is in effect during the period the fires may be delivered. Planned measures are never violated unless the fire unit response time (found in the unit's detailed information) plus the time it takes to fire the target (based on volume of fire and rate of fire) overlap the future **Effective DTG** assigned to the measure.
- b. **Effect of processing at other AFATDS.** If an AFATDS at another echelon has processed the mission before sending it to the battery/platoon FDC, and that AFATDS requested and received approval for an FSCM or ZOR violation, the fact that coordination has been achieved is sent to the battery/platoon FDC in the fire request or fire order. The battery/platoon FDC AFATDS will not identify that measure as violated again. This prevents duplicate violation checks. For example, a FO transmits a call for fire to the battalion FSE/FSCC. The battalion FSE/FSCC identifies a violation of an adjacent ZOR and requests and receives approval from the affected FSE/FSCC. The battalion FSE/FSCC passes the mission to the BDE or REGT FSE/FSCC. A green option is determined because the AFATDS at that station receives the approval indication, unseen by the AFATDS operator, with the fire request. The REGT/BDE transmits to the BN FDC and again a green option is determined. The mission is transmitted to the battery/platoon FDC as a fire order and processed. If the trajectory passes through an ACA, this violation is identified at the battery FDC and a yellow option is presented at intervention. The ACA violation is determined by the FDC because it is the first AFATDS at which sufficient data, the trajectory, is computed to determine if the ACA is violated. The coordination violation will indicate only the ACA because the ZOR violation was coordinated earlier.
- c. **Zone of Responsibility and CFL and FSCL checks.** The CFL and FSCL are checked for violations based on the ownership of the measure and the zone of responsibility in which the target plots.

- 1) **CFL check.** Fires short of the CFL are identified as **ZOR** violations of the ZOR in which the target or its effect area plots. Fires beyond the CFL do not require coordination within the **ZOR** of the establishing unit or **ZORs** of any of that unit's subordinates.
 - 2) **FSCL check.** Fires beyond the FSCL are identified as FSCL violations.
 - 3) **Free Fire area.** Targets with effects areas completely inside a free fire area do not violate the **ZOR** in which the free fire area plots.
 - d. **ACA and Air Corridor checks.** The battery/platoon FDC AFATDS checks the trajectories of each weapon against the shape and height of the ACA/Air Corridor. This check is performed in three dimensions. Trajectories over or under the ACA/Air Corridor are not violations. An ACA/air corridor is also violated if the target plot directly under the measure.
 - e. **RFA and NFA checks.** Targets with effects areas overlapping or inside NFAs are violations; RFA violations work in essentially the same manner except the fires must also be of the type restricted by the RFA.
 - f. **RFL checks.** An RFL is violated any time a gun-target line intersects the RFL.
- 7. Assignment of mission precedence.**
- If a mission precedence is received in the FR/FO, that precedence is used. Otherwise, the mission precedence is based on the target management matrix found at Guidances, Target, TMM. The following rules apply:
- a. **Priority** fire requests assigned a precedence of Priority, These missions are processed in the order they are received but ahead of all lesser priority missions.
 - b. **Immediate** missions are processed behind Priority missions and above As Acquired missions. If more than one immediate mission is processing, the immediate missions are processed in the order in which they were received.
 - c. **As Acquired** missions are processed after any immediate and priority missions. If multiple As Acquired missions are received, they are ordered based on their mission value.
 - d. **Urgent** fire requests are processed based on additional fire request information:
 - 1) If ammunition other than smoke or no ammunition is request, the mission is assigned as an immediate suppression mission.
 - 2) If smoke ammunition is requested, the mission is assigned as an immediate smoke mission.
 - 3) If Assign is requested and no ammunition is requested, the mission is processed as an FPF.
 - 4) If Assign is requested and Copperhead is requested, the mission is processed as a Copperhead priority mission.
 - e. **Fire request prioritization is over-ridden by guidance** if a higher precedence is exists in the **TMM** guidance than is received in the fire request.
- 8. Fire for Effect Shell, Fuze and Lot selection.**
- a. **Fire for Effect Shell/Fuze selection.** AFATDS uses rules to select the shell/ fuze combination to try for a solution.
 - 1) **Ordinary munitions.** If the first selection cannot produce a ballistic solution, then a next shell/ fuze combination is tried. If, after three attempts, a shell/ fuze has not been selected that produces a ballistic solution the computer recommends the mission be denied.
 - 2) **Special munitions.** If the fire request specifies Copperhead, Illumination, FASCAM or improved WP or smoke munitions only these munitions will be tried by AFATDS to produce a solution.
 - 3) **Ordinary munitions selection rules.**
 - a) The preferred shell/ fuze combination is that specified in the fire request.
 - b) If there is no shell/ fuze combination specified in the fire request, the **Guidances, FS Attack, FS System Tasks** list is checked for an operator entered rule that dictates a munitions.
 - c) The next order of selection is the shell/ fuze specified in the **Guidances, FA Attack, FA Cannon Attack Methods**.
 - d) If steps 1) through 3) do not provide a shell/ fuze, AFATDS will use the most effect munitions based on JMEM calculation (Super Qwiki II secret JMEM data has not been loaded).
 - e) The last resort for shell/ fuze selection is programmed mission characteristic tables.

- b. **Fire for effect mission fire for effect projectile model and lot selection.** After shell/fuze has been selected for an attempted solution, the specific shell model and lot are picked based on the rules.
- 1) Select a range capable shell model and lot for which registration data is available.
 - a) If there are multiple possible registered lots, select the lot with the least range capability.
 - b) If there are multiple possible registered lots with the same range capability, select the lot with the greatest quantity.
 - 2) When there is no registration data applicable to the projectile type selected pick a model and lot with the least range capability that can engage the target.
 - a) If there are multiple possible unregistered lots, select the lot with the least range capability.
 - b) If there are multiple possible unregistered lots with the same range capability, select the lot with the greatest quantity.
 - 3) **Fire for effect fuze model and lot selection.** Fuze model and lot selection is based on projectile and applies the following rules:
 - a) For time fuzes fired with a registered projectile, use the fuze model that was registered.
 - b) If registration data does not apply, use the model and lot with the greatest quantity.
- c. **Adjust fire mission fire for effect shell/fuze selection.** Adjust fire shell/fuze selection reverses the fire for effect mission logic attempting to select unregistered ammunition since adjustment will correct any unaccounted for error.
- 1) Select a range capable shell model and lot for which no registration data is available.
 - a) If there are multiple possible unregistered lots, select the lot with the least range capability.
 - b) If there are multiple possible unregistered lots with the same range capability, select the lot with the greatest quantity.
 - 2) When there is only registration data applicable to the projectile type selected, pick a model and lot with the least range capability that can engage the target.
 - a) If there are multiple possible registered lots, select the lot with the least range capability.
 - b) If there are multiple possible registered lots with the same range capability, select the lot with the greatest quantity.
 - 3) **Adjust fire mission, fire for effect fuze model and lot selection** uses the same rules as for fire for effect fuze model and lot selection described in para. 8.b. (3).
- d. **Adjusting shell/fuze model and lot selection.**
- 1) **Adjusting projectile:**
 - a) Assign a projectile category legal for adjustment of the fire for effect projectile category.
 - b) If the adjusting projectile category is the same as the fire for effect projectile category, the fire for effect model and lot will be the adjusting model and lot.
 - c) If the adjusting projectile category is different than the fire for effect category, select a compatible category projectile model. If multiple lots are available, select the lot with the greatest quantity.
 - 2) **Adjusting fuze.**
 - a) If the adjusting fuze category is the same as the fire for effect fuze category, the fire for effect model and lot will be the adjusting model and lot.
 - b) If the adjusting fuze category is different than the fire for effect category, select a compatible category fuze model. If multiple lots are available, select the lot with the greatest quantity.
9. **Volume of fire determination.**
- The volume of fire is determined based on the following ordered rules:
- a. **For effects type targets.**
 - 1) If a volume of fire is specified in the fire request or order to fire, this is tried first.
 - 2) If the volume of fire was specified in the **Guidances, FA Attack, FA Cannon Attack Methods**, this volume of fire is tried next.
 - 3) Lastly, effects processing is tried.
 - b. **For volleys type targets.**
 - 1) If the fire request specifies a shell/fuze and volume of fire, this volume of fire is used.
 - 2) If the fire request is received with specified shell/fuze but no quantity, the volume of fire is set to 1 volley.

- 3) If the fire request does not specify a shell/fuze or volume of fire, the **Guidances, FA Attack, FA Cannon Attack Methods** volume of fire, if stored, is tried next.

10. Weapon Selection.

AFATDS applies the following steps to select the weapons to fire.

- c. All available weapons with a status of Ready or Not Given are initially considered. The following further limit weapons used during the mission:
 - 1) If the pieces to FFE are specified, only these weapons are considered.
 - 2) If the mission is a Copperhead mission, the unit data is checked and only Copperhead capable weapons are considered.
 - 3) If the mission is a priority Copperhead mission, weapons that currently have a Copperhead priority mission assigned are removed from consideration.
 - 4) Rank weapons remaining based on weapon's mission load and state:
 - a) Weapons with no missions assigned.
 - b) Weapons with missions at EOM.
 - c) Weapons in Cease Loading.
 - d) Weapons with missions in Do Not Load status.
 - e) Weapons busy in fire mission.
- d. Determine number of weapons required based on method of fire.
 - 1) If the mission is an illumination mission, select number of weapons from the rank ordered list based on mission type:
 - a) 1 GUN ILLUM mission is assigned one weapon.
 - b) 2 GUN ILLUM, LATERAL or RANGE SPREAD missions are assigned two weapons.
 - c) 4 GUN RANGE AND LATERAL SPREAD missions are assigned four weapons.
 - d) If illum is specified for the mission but no method of control is given, one weapon is assigned.
 - 2) For non-illum missions, select the required quantity of weapons from the ranked list.
 - a) If no weapons can be selected, display an incapable option at intervention, other wise check if an adjust mission.
 - b) If adjustment is not required send selected weapons to compute technical solution. If adjustment is required select an adjusting piece:
 - (1) If an adjusting piece is specified, assign that piece or
 - (2) if adjusting platoon is specified, assign that platoon, or
 - (3) If 2 gun, assign the highest ranked pieces.
 - (4) If the adjusting piece is not specified, select from the highest ranking. This selection process will not select a piece adjusting another mission.
 - (5) If more than one piece is highest ranking, the process selects lowest numbered piece and this rotates through all pieces as subsequent missions are fired.
 - (6) If no adjusting piece can be selected, display an incapable option at intervention. Otherwise, compute technical solution for selected pieces.
 - 3) The AFATDS operator can change the adjusting piece by recalculating the fire mission at intervention for the initial round or at intervention for any subsequent round.
 - a) The adjusting piece selected at recalculation is entered on the **Initiate Fire Mission** window **More Mission Data** tab in the **Adjusting Units**.
 - b) The adjusting piece selected must already be assigned to the mission as a piece to fire for effect.

11. Propellant selection.

Propellant selection is performed for all weapons of the fire unit. The selection process performs the following.

- e. If the propellant model, lot and charge were specified, these are used in the ballistic solution. If these are specified and no capable solution can be determined, no further processing takes place and an incapable option is presented to the operator.
- f. Otherwise, AFATDS examines all propellants for consideration that are on-hand at the fire unit in a quantity equal to or greater than the number of rounds required to engage the target.

- g. AFATDS provides data on available propellants to NABK, which applies Fire Control Input (FCI) rules to select the optimum propellant model, lot, and charge for the mission.

12. Application of Registration Data.

AFATDS provides all registration data on file to NABK, which applies FCI rules to determine which registration corrections, if any, should be used in computing the ballistic solution for the mission. See Chapter 7 for a detailed explanation of registration correction applicability.

13. Application of Meteorological Data.

AFATDS applies meteorological data from the current computer met message stored in the database. In lieu of valid meteorological data, a standard met is used as current. The standard met data stored in AFATDS reflects the International Civil Aviation Organization (ICAO) standard as it is used in all US fire control information. This data uses 0 meters for the altitude of the meteorological datum plane (altitude of the met station). It should be noted that tabular firing table standard conditions imply that there is no altitude difference between the MDP and battery altitude. To replicate standard met conditions in the firing data, the standard met MDP altitude should be edited to reflect the battery location altitude. See Chapter 7 for a detailed explanation of meteorological data applicability.

14. Application of MVV Data.

MVV data on file is provided to NABK, which applies FCI rules to determine which MVV data, if any, should be used in calculating the ballistic solution. See Chapter 7 for a detailed explanation of MVV correction applicability.

15. Near Crest Clearance (XO's min QE application).

Mask violations are checked by first determining the trajectory to the target.

- a. A mask violation exists if the QE to fire does not clear the crest by 5 meters plus 2 values of fork for shells fuzed with all but VT fuzes.
 - 1) VT fuzed munitions are checked as for all other fuzes if the time of flight to the mask is more than 5.5 seconds less than the fuze setting to fire.
 - 2) If the difference between the time of flight to the mask and fuze setting is less than or equal to 5.5, the trajectory must clear the crest by 100 meters and 2 values of fork.
- b. The QE computed for a gun is reduced by one value of fork. If this modified trajectory is computed to be lower than the mask at the piece to crest range, a mask violation is identified. If no solution results from a near mask violation, and the charge increment to fire was not operator specified, NABK recycles the mission trying the next lower charge.

16. Down range mask violations

Down range mask are checked by determining the trajectory to the target. The height of this trajectory is checked against down range mask geometries. If the trajectory violates the down range mask, the option is marked as incapable and an N is placed in the Downrange Mask Capable column on the Attack Options tab of the **Intervention** window.

17. Aimpoint placement in the sheaf.

Except for illumination missions, AFATDS transmits the center of target location as the aimpoint for a non-degraded Paladin howitzer and firing data to the center of the target for a degraded howitzer. For illumination missions, AFATDS determines separate aimpoints for range and lateral spreads by transmitting firing data to the aimpoints regardless of the howitzer status

- a. If the mission is an illumination mission, the direction is determined and the sheaf is oriented in respect to that direction. The following rules apply:
 - 1) If gun-target direction is specified or the observer-target line has been provided in the fire request, the sheaf is oriented with respect to that direction.
 - 2) If AFATDS does not know the direction from the fire request but does know the observer location, the OT direction is determined from the locations and used.
 - 3) If direction cannot be determined, AFATDS computes a GT direction from the center of the fire unit to the center of the target.
 - 4) The direction determined is the long axis of the sheaf for range spread mission with the two aimpoints 1 illumination width (500 meters for 155mm and 400 meters for 105 mm) either side of the center (Figure 5-1).

- 5) For illumination missions requiring a spread, AFATDS transmits firing data to all Paladin weapons without regard to weapon status.

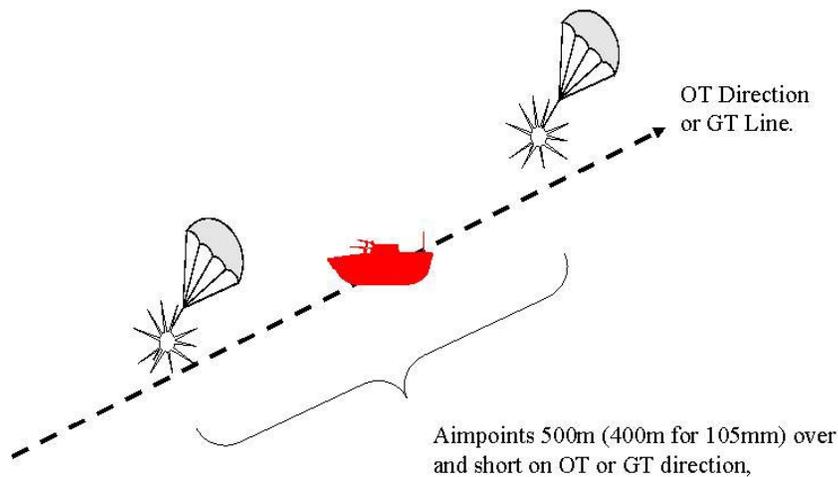


Figure 5- 1. Illumination Range Spread.

- 6) For a lateral spread mission the aimpoints are 1 illumination width left and right of the center on a line perpendicular to the direction.

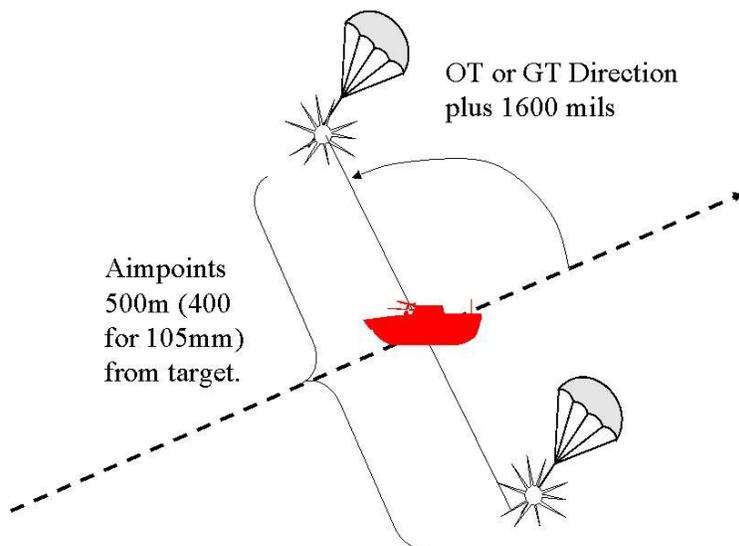


Figure 5- 2. Lateral Illumination Sheaf.

- 7) A 2-gun mission creates a sheaf similar to a lateral spread, except the aimpoints are 1 HE burst width apart. This is not a normal illumination procedure but the sheaf is available.

- 8) In a 4 gun range and lateral spread mission aimpoints are 1 illum width (500 meters for 155mm and 400 meters for 105mm) over and short on the direction and one illum width left and right on a line perpendicular to the direction.

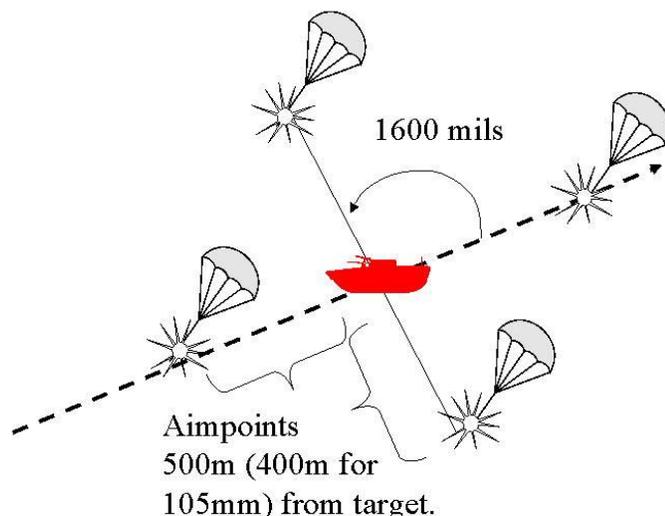


Figure 5- 3. Range and lateral spread sheaf.

- b. For all other missions, the center of the target is the aimpoint.

18. AFATDS Target lists.

AFATDS maintains a number of automatically generated as well as operator created target lists. These assist in target management and storage.

- c. Automatically generated target lists. AFATDS always possesses several target lists that are embedded in the AFATDS software. These target lists can be edited but cannot be deleted.
- 1) **Active Target List.** The Active Target List stores targets on which fire missions are in progress. This list contains both area and precision missions as well as all FPF and Copperhead priority missions.
 - 2) **Inactive Target List.** The Inactive Target List contains copies of targets that were processed as active missions and ended or denied. The list also contains any ATI targets that were received and passed target selection standards but did not become fire missions.
 - 3) **On-Call Target List.** The On-Call Target List is designed to store target for rapid attack. The firing of these targets may be requested by an observer's quick fire message. Targets are added to the On-Call Target List in the following events:
 - a) An active mission is ended with a request to "Record as Target."
 - b) A fire plan is created.
 - c) By selecting **Target, New** on the On-Call Target List.
 - d) By selecting **Mission Processing, Establish Target** from the **Current** menu bar.
 - 4) **ATF Target List.** The Amphibious Task Force Target List is a USMC targeting tool used in amphibious operations. The list is always available but blank by default. This list may be received at battery level but is not normally edited or created at this level.
 - 5) **Suspect Target List.** The Suspect Target List stores ATI information that fails target selection standards.
 - 6) **Target Indicator List.** The Target Indicator List is not a target list per se. The list stores directional target information such as shell reports.
- d. Operator created target lists. The AFATDS operator can create two types of lists.

- 1) **Named Target Lists.** A named Target List is a list created at an AFATDS. Targets are added when the list is created. The list may be transmitted to other AFATDS and systems that are capable of receiving a target list.
- 2) **Air Support Lists.** Air Support Lists contain target nominations for the air targeting cycle. These lists are not normally created or received at battery/platoon level.

Section II. Basic Fire Mission Processing.

How to use this section. This section provides procedures that detail area fire mission processing. Procedures FM1 through FM4 are supportive to the fire mission process and are not required. Procedure FM5 describes the complete area fire mission process in detail and acts as a “road map” for the process. Procedures following FM5 provide additional information that supports the fire mission process such as degraded communications procedures and check firing.

FM1. Limit Charge Selection in Training Exercises

Conditions: Given an AFATDS workstation this is powered, with AFATDS started, activated and with the current situation displayed enter Mission Processing Preferences.

Procedure FM1: Limit Charge Selection in Training Exercises This procedure creates enters Mission Processing Preferences.		
Step	Action	Result/Explanation
<p>Note: Mission Processing Preferences provide a mechanism that supports peacetime training. The preferences limit the technical solution computed to a single trajectory, propellant model and charge. If Mission Processing Preferences are entered and a solution cannot be determined for the propellant, trajectory and charge selected, AFATDS will compute a red “no capable options” solution for that fire mission. The following should be considered:</p> <ol style="list-style-type: none"> 1. This procedure should only be performed if technical solutions must be limited. 2. These preferences can be overridden by manually entering different propellant values in the IFM window. 3. These preferences are examined each time a mission is recalculated and any change in preferences is considered. 4. An observer request for high angle will override the preference for low angle fire. 		
1.	On the Current menu bar, click Mission Processing, Preferences.	The Mission Processing Preferences window displays.
2.	Click the Angle of Fire: field and select the desired trajectory.	The default displayed when the window opens if Low angle.
3.	Click the Propellant Model: field and select the desired propellant model nomenclature.	All propellant models for all artillery weapons are displayed. When a selection is made the Propellant Lot and Propellant Charge fields becomes active for selection. If no propellant model is displayed, the only preference applied is the selected Angle of Fire.
4.	Click the Propellant Lot: field and select the propellant lot letter or the blank space at the top of the selection list if no lot preference is desired.	The default is a blank or no lot specified. Lot is not required but if specified, only that lot will be considered for fire mission processing.
5.	Click the Propellant Charge: field and select the desired charge or the blank space at the top of the selection list if no charge preference is desired.	
4.	Click OK.	The Select Comm Configuration window displays.

FM2. Establish Target Number Block.

Conditions: Given an AFATDS workstation this is powered, with AFATDS started, activated and with the current situation displayed establish the Target Number Block.

Procedure FM2: Establish Target Number Block.		
Step	Action	Result/Explanation
1.	On the Current menu bar, click Targets, Target Numbering.	The Target Numbers window displays.
2.	Click the first field in the From: column and type the first target number of the unit's target block.	The target number is typed in the form @@#### where @@ are the target block letters and #### are the four digits of the target number.
3.	Click the first field in the To: column and type the last target number of the unit's target block.	The last target number is typed in the form #### where #### are the four digits of the target number. The two-letter portion is assumed to be the same as for the first number in the block.
4.	Click OK.	The Target Numbers window displays.

FM3. Enable Audible Fire Mission Alert and Adjust Volume.

Conditions: Given an AFATDS workstation this is powered, with AFATDS started, activated and with the current situation displayed enable Audible Fire Mission Alert and Adjust Volume.

Procedure FM3: Enable Audible Fire Mission Alert and Adjust Volume.		
Step	Action	Result/Explanation
Note: AFATDS can be caused to alert the operator of a received fire mission by a recorded alert that announces "Fire Mission, Fire Mission!" By default, this alert is turned off. The AFATDS operator can turn the alert on and test and re-set the volume of the alert.		
1.	To enable audible fire mission alerts:	
a.	On the lower menu bar, click Start, AFATDS, AFATDS Function.	A cascading menu appears.
b.	Select Enable Audio Alerts.	The menu closes and audio alerts are enabled and will sound at the reception of the next fire mission.
2.	To adjust the volume of audible alerts:	
a.	On the lower menu bar, click Start, AFATDS, AFATDS Function.	A cascading menu appears.
b.	Select Audio Alerts Volume Control.	The Audio Alerts Volume Control window opens.
c.	Test the current volume setting.: Type 2 and press the enter key.	A recorded voices announces "Testing, testing" and the menu redisplay in the Audio Alerts Volume Control window for the next operator selection.
d.	Set the volume: Type 1 and press the enter key.	A prompt Enter the volume number, 0 through 9 (9 is loudest): displays.
e.	Type the value of the volume and press the enter key.	The menu redisplay in the Audio Alerts Volume Control window for the next operator selection.
f.	Repeat steps 5 through 7 as required. When finished, type q and press the enter key.	The Audio Alerts Volume Control window closes.

FM4. Establish Fire Mission Intervention Criteria.

Conditions: Given an AFATDS workstation this is powered, with AFATDS started, activated and with the current situation displayed establish intervention criteria.

Procedure FM4: Establish Fire Mission Intervention Criteria.		
Step	Action	Result/Explanation
<p>Note: AFATDS receives calls for fire from the operator at the keyboard or from external communications. These are processed upon reception and the result is displayed at intervention for the operator's action. Intervention is controlled by rules that determine if the mission solution should be displayed to the operator or if fire commands should be transmitted directly to the guns. By default, all missions are intervened upon by the operator as a result of a single rule. This rule can be deleted and, as a result, no operator intervention takes place. This last condition performs the same function as "Automatic Transmission to Pieces" did in BCS. Further, intervention rules can be tailored so that some missions are intervened upon and others not.</p>		
1.	To disable intervention:	
a.	On the Current menu bar, click Mission Processing, Intervention Points.	The Intervention Criteria window displays.
b.	Click the Clear button.	The Delete Confirm window displays.
c.	Click the Delete button.	The Intervention Criteria window displays a blank list of rules and all existing rules are deleted.
d.	To operate with no intervention , go to step 3. To tailor intervention for specific missions , go to step 2.	
2.	To create specific intervention rules:	
a.	Click the New button.	The Rule Criteria window displays.
b.	Edit the following as required:	
1)	Mission Precedence	Allows intervention by mission precedence received in CFF or defaulted from the Guidances, TMM . If Immediate or As Acquired is selected, the Up to Value: field can be completed with the highest value for which intervention will occur.
2)	Battle Area	Allows intervention for missions in the All, Close, Rear or Deep battle areas.
3)	Mission Type	Allows intervention to be limited to missions of: Immediate Smoke Immediate Suppression Adjust Fire For Effect Assign FPF Assign Priority Tgt (Copperhead Pri Tgt) Continuous Illumination Coordinated Illumination All
4)	Target Type	Allows the intervention rule to be applied to a specific target type selected from on of the 13 target categories.
5)	Analysis result	Allows the intervention rule to apply to a particular type of solution. Of these only the following apply to battery/platoon operations. These are: Fire Order Deny
6)	Attack Option	Allows intervention to be applied to specific fire support assets. This aspect of intervention criteria does not apply to battery/platoon operations.

7)	Munitions Category	Opens the Select Munitions window allowing the intervention rule to apply to a specific shell.
Procedure FM4: Establish Fire Mission Intervention Criteria (cont).		
Step	Action	Result/Explanation
8)	Click the OK button when editing is complete.	The Rule Criteria window closes and the rule is added to the Intervention Criteria window.
3.	Click OK .	The Intervention Criteria window closes.
NOTE ON THE APPLICATION OF INTERVENTION CRITERIA: Each rule created acts independently. If a rule is established, each of the seven criteria in step 2 is treated like a question. For example, "Is the target of the selected precedence?" "Is the target of the selected battle area?" and so on. If the answer to all the questions pertaining to that rule are "Yes" then that mission is sent to intervention. If at least one answer is no, the next rule is checked.		

FM5. Process an Area Fire Mission at AFATDS.

Conditions: Given an AFATDS workstation that is activated and with a Current communications configuration active process an area fire mission.

Procedure FM5: Process an Area Fire Mission			
Step	Station	Action	Result/Explanation
Note: An area fire mission is received via data communications from an FSE/FSCC AFATDS, an FA CP AFATDS, a sensor (such as a radar) or an observer. The mission may also be entered from the AFATDS keyboard. This procedure describes the basic mission process and acts a map to other procedures that may be required to carry out mission processing.			
1	Observer	Composes and transmits call for fire.	The observer may be a human or sensor device. The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
If the mission is received via data communications, go to step 3.			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission. See <i>PROCEDURE FM6. Initiate a Fire Mission at AFATDS.</i>	
If intervention is set, the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 3.			
If intervention is not set, the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 4.			
3.	Btry/Plt AFATDS	Display the mission processing solution.	
a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined. For a complete description of intervention, see Procedure FM7. Examine the Intervention Windows.
If the weapons are in a degraded status and AFATDS computes the technical solution, go to step b. Otherwise, go to step c.			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.
NOTE: Ammunition reservation for a mission is created when the mission is transmitted to the weapons. If more than one mission is in intervention each mission was computed independently. In other words, if a mission is placed at intervention and a second mission is processed, ammunition assigned to the first mission is not reserved from assignment for the second mission. Avoid this problem, the AFATDS operator should display and transmit one of the missions. This causes that mission's ammunition to be considered allocated and not available. The other mission should be displayed at intervention and recalculated.			

c.		Click one of the following:	
		Accept Recommendation	<p>If coordination is required: The coordination request:</p> <ol style="list-style-type: none"> 1. Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. 2. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. 3. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. <p>If no coordination was required or coordination approval was received: Transmits the solution displayed in the Recommendation to the HOWITZERS and sends an MTO. The MTO:</p> <ol style="list-style-type: none"> 1. Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS. 2. Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect. 3. Is presented to the AFATDS operator as an alert if no comm route to the observer exists. Click the Send to Originator button on the alert to send the MTO back through the AFATDS that communicates with the observer.
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons.
		Recalculate	Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected.
		Unsupportable	Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS.
		Deny	<p>If the mission was entered at the AFATDS: places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received from an FSE/FSCC or FA CP: sends Deny message to that AFATDS. Deny message is queued in that AFATDS's Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received directly from an observer: sends a denied MTO to observer.</p> <p>If the mission was received from a radar: no response is transmitted to the radar.</p>
4.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.
<p>NOTE: If the AFCS operator selects the ABORT option on the AFCS, a deny message is sent to AFATDS. In addition, a freetext message is sent to AFATDS and placed in CMP. The freetext reads "AFCS OPERATOR ABORTED ACTIVE MISSION TARGET ID..." followed by the target number. AFATDS places the target in the Deny icon.</p>			

5.	Observer	Receives and stored the MTO.	
Procedure FM5: Process an Area Fire Mission (cont).			
Step	Station	Action	Result/Explanation
6.	Btry/Plt AFATDS	Track mission status of howitzers.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Weapon Status Paladin window displays. See <i>Procedure FM8. Examine the Weapon Status Paladin Window for details of mission tracking on the Weapon Status Paladin window.</i>
<p>If the method of control is At My Command: got to step 7. If communications with the AFCS fails: see Procedure FM13. React to an AFCS Comm Failure During Mission Processing. If the method of control is WR or TOT,: go to step 12.</p>			
7.	Guns	Transmit "Ready" report.	After acknowledging the mission, the READY selection becomes available at the AFCS.
8.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun displays  with a green background. When the last gun has reported, the "Ready" command is transmitted to the observer.
9.	Observer	Transmit "Fire" command.	The observer may command "Fire" any time after the "Ready" report is received.
10.	Btry/Plt AFATDS	Receive "Fire" command.	AFATDS receives the fire command and automatically transmits "Fire" to the AFCSs.
11.	Guns	Receive "Fire" command.	AFCS prompt changes from AWAITING COMMAND to FIRE.
12.	Guns	Report "Shot."	Shot is selected on the AFCS. NOTE: For a TOT mission, the AFCS counts down the time and determines when to prompt the crew to fire. AFATDS simply waits for "Shot."
13.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: If the mission was initiated at the Btry/Plt AFATDS , the shot report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the shot report is automatically re-transmitted to the observer. As "Shot" reports are received, the Fire/Shot indicator for the reporting gun displays  with a green background.
14.	Observer	Receives "Shot" report.	This provides indication that the mission has been fired.
15.	Btry/Plt AFATDS	Transmit "Splash" report.	This report is sent 5 seconds before impact. (The report can be manually transmitted by clicking the Splash button on the Weapon Status Paladin window.)
16.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
17.	Guns	Transmit "Rounds Complete" report.	The gun section selects SHOT for each round fired. When the last SHOT is entered, the AFCS transmits "Rounds Complete."
18.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: If the mission was initiated at the Btry/Plt AFATDS , the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the "Rounds Complete" report is automatically re-transmitted to the observer. As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting guns  with a green background.

19.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
<p><i>If the observer adjusts fire: go to step 20.</i> <i>If the observer ends the mission: go to step 23.</i></p>			
20.	Observer	Transmit subsequent corrections.	The observer transmits an adjustment for an adjust fire mission or repeat fire for effect for a fire for effect mission.
Procedure FM5: Process an Area Fire Mission (cont).			
Step	Station	Action	Result/Explanation
21.	Btry/Plt AFATDS	Receives subsequent adjustment.	<p>If intervention rules do not apply, the fire commands are transmitted to the AFCSs.</p> <p>If intervention rules apply, the mission the Intervention icon on the Current window tool bar activates.</p> <p>If the adjustment places the point of aim in violation of an FSCM Btry/Plt AFATDS transmits a request for coordination before releasing the fire commands.</p>
22.	All stations.	Steps 3 through 19 repeat as applicable.	
23.	Observer	Transmits end of mission.	
24.	Btry/Plt AFATDS	Receives end of mission.	<p>Btry/Plt AFATDS retransmits end of mission to the AFCS.</p> <p>If the observer requests Record as Target: The adjusted target location is stored in the On-Call Target list.</p> <p>If the observer requests Record as Known Point: The adjusted location is stored in the Targets, Known Points and an MTO with the known point number is transmitted to the observer.</p>
25.	Guns	Receive EOM.	The AFCS displays EOM and the mission number.

FM6. Initiate a Fire Mission at AFATDS.

Conditions: Given a AFATDS workstation that is activated and with a Current communications configuration active initiate a fire mission.

Procedure FM6: Initiate a Fire Mission		
Step	Action	Result/Explanation
<p>Note: An observed fire mission is normally initiated by an observer. The AFATDS operator can input the mission from the keyboard based on a voice call for fire received from a spotter. This procedure describes the entry of the call for fire by the AFATDS operator. It should be noted that this is the slower and less preferred method.</p>		
1.	Display the Initiate Fire Mission window.	
a.	<i>Enter Call for fire Observer Identification and Warning Order.</i> Enter the following:	
b.	Observer	Select the Unit ID of the observer.
c.	Mission Type	Select the type of mission. Default is Fire For Effect .
2.	Enter the Target Location. For a grid location:	
<p><i>To enter a grid location, go to step 2.a.</i> <i>To enter a shift location, go to step 2.</i></p>		
a.	To enter a grid location:	
1)	To enter a UTM grid:	Click in the Current Location field and type the complete coordinates in the form H EEEEE LLL NNNNN AAAA GGG where H is the higher order easting, EEEEE is the short easting coordinate, LLL is the higher order northing, NNNNN is the short northing coordinate, AAAA is the altitude in meters and GGG is the grid zone.

2)	To enter an LAT/LONG:	Point in the location field(s). Simultaneously press <SHIFT> and right click to change the input form of the location fields.
3)		Type the latitude and longitude to the nearest 0.1 seconds. Go to step 3.
OR		
4)	To enter MGRS:	Point in the location field(s). Simultaneously press <SHIFT> and right click to change the input form of the location fields.
5)		Type the location in the form GGXSSEEEEEENNNN where GG is the grid zone number, X is the grid zone letter, SS is the 100,000 meter square, EEEEEE is the five digit easting and NNNNN is the five digit northing. Go to step 3.
Or, for a shift location		
b.	Click the Shift tab.	The Shift window frame displays.
1)	Click the Target Number or Known Point number button and enter the ID.	
2)	Type the direction in the Observer-Target Azimuth	
3)	Click Deviation and select the direction of the lateral shift.	Selections are Left, Right and blank.
4)	Type the lateral shift in meters.	
5)	Click Range and select the direction of the range shift.	Selections are Add, Drop and blank.
6)	Type the range shift in meters.	
7)	Click HOB and select the direction of the vertical shift.	Selections are UP, Down and blank
8)	Type the vertical shift in meters.	
9)	Click the Apply button. <i>Go to step 3.</i>	The fields clear and the Location field on the IFM window populates.
Or, for a Polar Location		
c.	Click the Polar/Laser tab.	The Polar/Laser window frame displays.
1)	Click the Polar button.	The Polar button fills in black and the Laser button is gray.
2)	Type the OT distance in meters in the Distance field.	
3)	Type the OT direction in mils in the Direction field.	
4)	Click the HOB field and select the direction of the vertical shift.	Selections are None, Up and Down .
5)	Type the vertical shift in meters in the field to the right of HOB .	
6)	Click the Apply button. <i>Go to step 3.</i>	The fields clear and the Location field on the IFM window populates.
Or. For a Laser Location		
d.	Click the Polar/Laser tab.	The Polar/Laser window frame displays.
1)	Click the Laser button.	The Laser button fills in black and the Polar button is gray.
2)	Type the OT distance in meters in the Slant Distance field.	
3)	Type the OT direction in mils in the Direction field.	
4)	Click the vertical angle in the Vertical Angle field.	Legal entries are -1599 to 1599. + sign is omitted for positive VA.

6)	Click the Apply button. <i>Go to step 3.</i>	The fields clear and the Location field on the IFM window populates.
3.	<i>Enter Method of Control.</i>	
a.	Click Method of Control and select the desired MOC.	
Procedure FM6: Initiate a Fire Mission (cont).		
Step	Action	Result/Explanation
4.	<i>Enter the Target Description.</i>	
a.	Select Category	13 target categories are available. Selection defines choices of Type . Default is LOC .
b.	Select Type	Allows selection of specific target type. Default is Terrain .
c.	Select Shape .	Default is Point .
	Selection:	Requires:
	Circular	Radius in meters.
	Rectangular	Length in meters. Width in meters. Attitude in meters.
	Linear	Length in meters. Attitude in meters
5.	<i>Enter the Size of the Element to Fire and Adjusting Piece .</i>	
a.	Click More Mission Data tab.	The More Mission Data frame displays.
b.	In the Fire Units section, click the Add button.	The Select Unit window displays listing available guns.
c.	Click a desired FFE piece and click the OK button.	The Select Unit window closes and the selected gun is added to the Fire Units list.
d.	Repeat steps 5.b. through 5.c. for each additional gun required.	
6.	<i>Enter Method of Engagement and Method of Fire and Control.</i>	
a.	Enter as required:	
b.	Type of Adjustment.	For adjust fire missions only; selections are Area and Destruction .
c.	Trajectory	Selections are Low, High and blank.
d.	Danger Close	
e.	Cannot Observe	
f.	Time of Flight	
g.	Splash	
h.	Click the Munitions tab.	The Munitions frame displays.
i.	Click FFE#1 and select the first FFE shell.	
j.	Type the volume of fire in the QTY field.	
k.	Click on Fuze and select the desired fuze.	
l.	Click FFE#2 and select the second FFE shell, rocket or missile.	
m.	Type the volume of fire in the QTY field.	
n.	Click on Fuze and select the desired fuze.	
7.	Click the Analyze Tgt button.	The Initiate Fire Mission window closes and the mission is processed.

Note: If intervention is set, the mission is placed in the IP icon of the Current window. Otherwise, the mission is processed and the AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit.

FM7. Examine the Intervention Windows.

Conditions: Given a AFATDS workstation that is activated and with a fire mission at intervention examine the intervention window.

Procedure FM7. Examine the Intervention Windows.		
Step	Action	Result/Explanation
1	Display the Intervention Window. Click the IP icon on the Current window tool bar.	The Intervention window displays with the Intervention tab selected (Figure 5-7).

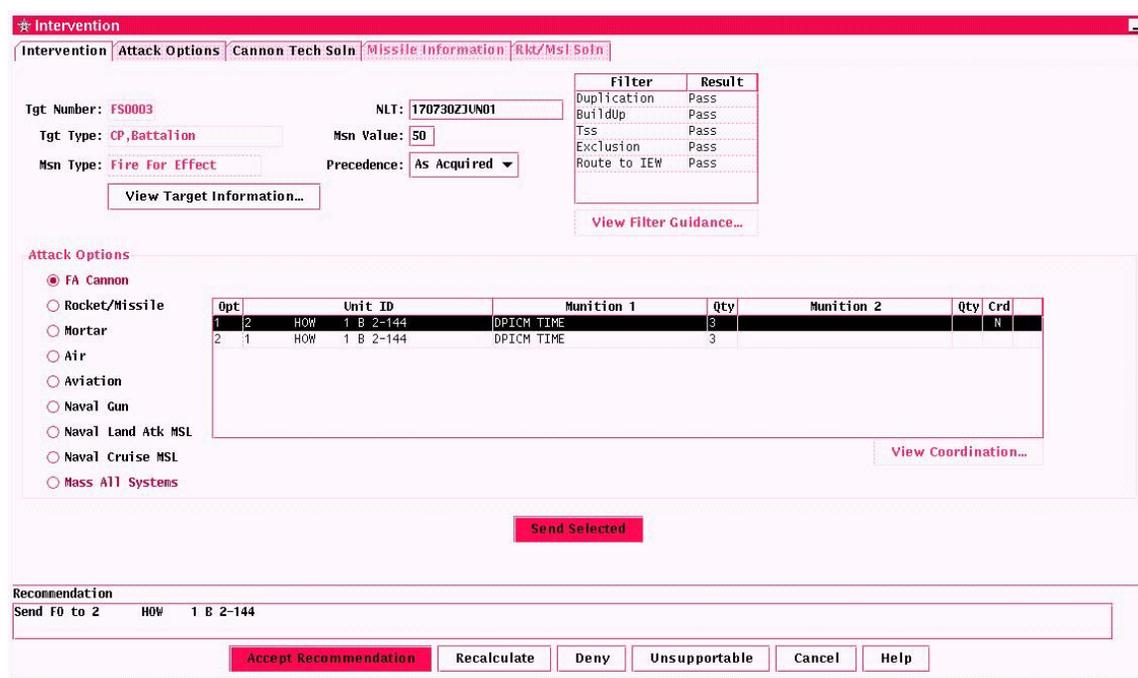


Figure 5- 4 Intervention Tab.

Procedure FM7. Examine the Intervention Windows (cont).		
Step	Action	Result/Explanation
2.	The following data is presented.	
	DATA	FUNCTION
Procedure FM7. Examine the Intervention Windows (cont).		
Step	Action	Result/Explanation
a.	Tgt Number	Displays target number for this mission.
b.	Find Target	Centers the Current window map on the target when selected. The target will display even if no overlay exists for active targets.
c.	Tgt Type	Displays the target type from the fire request.

d.	NLT	Displays the Not Later Than time. This is the sum of the time the target was identified and the Target Decay guidance.
e.	Mission Type	Displays the mission type.
f.	Mission Value	Displays the mission value used to prioritize this mission (Chapter 6, Section 1 for an explanation of mission value).
g.	Mission Precedence	Displays the mission precedence requested in the call for fire or based on the TMM guidance. <i>Changing this value to P (planned) and clicking Accept Recommendation stores the target in the Planned Target List instead of processing as a fire mission and sends a denied MTO to the requestor.</i>
h.	View Target Information	Displays the Basic Target Information window for this target. Allows review of target data.
i.	Filter Result	Displays each filter checked and the result as Pass or Fail. <i>Selecting any filter activates the View Filter Guidance button.</i>
j.	View Filter Guidance	Button is active if a filter is selected in the list above. <i>Clicking this button displays the guidance associated with the filter.</i>
k.	Attack Options	Provide color coded indicators for each fire support type. Color code is: Green : Fire support of this type can engage target within the limits of guidance and without coordination. Yellow : Fire support of this type can engage target within the limits of guidance but requires coordination. Red : Fire support of this type is available but cannot engage the target within the limits of guidance or is out of action or ammo. Black : Fire support of this type is not available.
l.	Opt Unit ID ...	For the Attack Option button selected, all capable options are listed. The list displays the following: Opt : each individual option displays a unique number. Mass fire options all display the same number. Unit ID : displays the gun number in this option. Munition1/Qty : displays the munitions and quantity for the first FFE shell/missile. Munition2/Qty : displays the munitions and quantity for the second FFE shell/missile. Crd : Displays Y if coordination is required; N if coordination is not required.
m.	View Coordination button	Activates if the selected option requires coordination. Selecting the button displays the Request Coordination window. (See procedure FM10. Process a Coordination Request.)
n.	Recommendation	Displays the recommended option. Selection of the recommended option is the product of Attack Option Ranking found under the Mission Processing menu on the Current window.
o.	Accept Recommendation	Closes the Intervention window and transmits the recommended solution as displayed in the Recommendation field. Any coordination request required is transmitted prior to the FO.
p.	Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step q. below). Recalculation allows AFATDS to recompute the technical solution for the desired weapons.

q.	Recalculate Fire Mission	Displays the Initiate Fire Mission window. This allows the operator edit the fire mission and to cause the changes made to be considered when Analyze Tgt is selected. The Intervention window closes and the new solution is placed in the IP icon.
r.	Deny	Closes the Intervention window, transmits a denied MTO to the requestor and places the target in the Inactive Target List .
s.	Unsupportable	Closes the Intervention window, transmits the mission to the unit that commands this unit as indicated in this unit's Command Unit ID . This is a request for fire support from the next higher echelon.
3.	Click the Attack Options tab.	The following data is presented: (See Figure 5-8.)

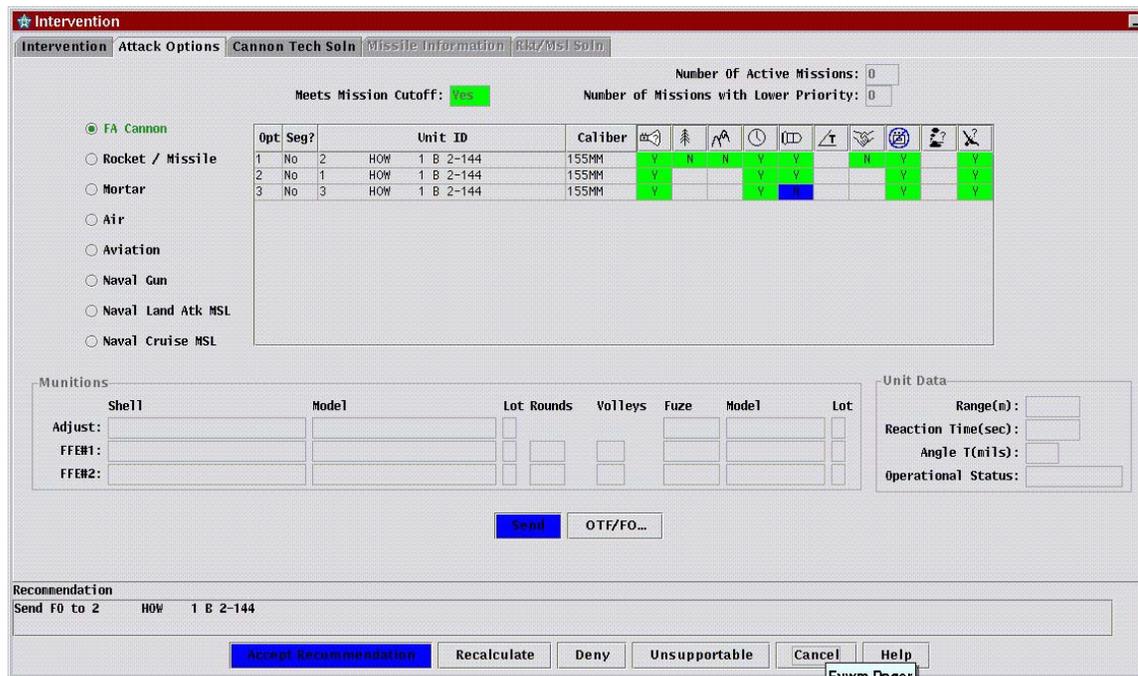
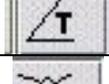
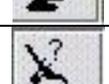
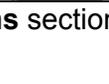


Figure 5- 5 Attack Options tab.

Procedure FM7. Examine the Intervention Windows (cont).

Step	Action	Result/Explanation
	DATA	FUNCTION
a.	Meets Mission Cutoff:	Indicates the mission meets the guidance in Guidances, Target, Mission Prioritization . This indication is relative to the fire support type selected to the left, or FA Cannon in figure 5-2.
b.	Number of Active Missions	Displays the total number of active missions assigned to the unit.
c.	Number of Missions with Lower Priority	Displays the number of active missions that are assigned to the unit with a lesser mission value than this mission.

d.	<p>Opt Seg?</p> <p>Unit ID</p> <p>Caliber....</p>	<p>This list displays all capable and incapable options examined for the fire support type selected. This provides a diagnostic.</p> <p>Unit ID for corresponding attack and FS system</p> <p>AFATDS selects caliber for FA. Labels change accordingly for the FS system selected.</p> <p>The headings are:</p>
1)	Tgt Seg?	<p>“Y” indicates the target is segmented. “N” indicates the target is not segmented. <i>Note: Target segmentation occurs at the controlling OPFAC; other computers will display a blank.</i></p>
2)		Range Capable? “Y” indicates the weapons and ammunition can range the target; “N” indicates the target is outside range.
3)		Near Mask Violation? “Y” indicates a mask stored with the unit’s weapon data is violated by this option. “N” indicates no mask violation.
4)		Downrange Mask Violation? “Y” indicates a downrange mask geometry is violated by this option; “N” indicates no violation.
5)		Response Time Capable? “Y” indicates that considering the unit response time and all missions previously assigned of equal or greater mission value, the unit can engage before the NLT time expires.
6)		Muniton Capable? “N” indicates the unit does not possess the ammunition for this option or the mission requires massing of fires and massing be prohibited by guidance entries.
7)		Angle T capable? Applies only to 155mm Copperhead missions. “N” indicates angle T is greater than 800 mils.
8)		Requires Coordination? “Y” requires coordination; “N” does not.
9)		Is the unit unrestricted? “N” indicates the unit is restricted from firing the mission in System Tasks guidance.
10)		Can the unit achieve desired effects? “N” indicates desired effects requested in the FR or in the TMM guidance cannot be achieved. This is blank if the target is a volleys type.
11)		Is the FS system appropriate for the mission? Air and rocket/missile units are inappropriate for adjust missions.
e.	Munitions section.	When an option is selected in the Unit ID list, the munitions data for that option is displayed. This may be blank if the gun was deemed incapable prior to selection of ammunition.
f.	Unit Data section	When a unit is selected in the Unit ID list, Range in meters, Reaction Time in minutes, Angle T in mils and Operational Status is displayed for that unit.
g.	Send button	Send is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step q. below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons.
h.	OTF/FO... button	Displays the OTF/FO window. The operator can direct munitions and quantity and select a Send To: unit. Clicking Send transmits the mission as a fire request to the selected unit and closes all intervention windows.

4.	Click the Cannon Tech Soln tab.	The following data is presented. (See figure 5-6.)
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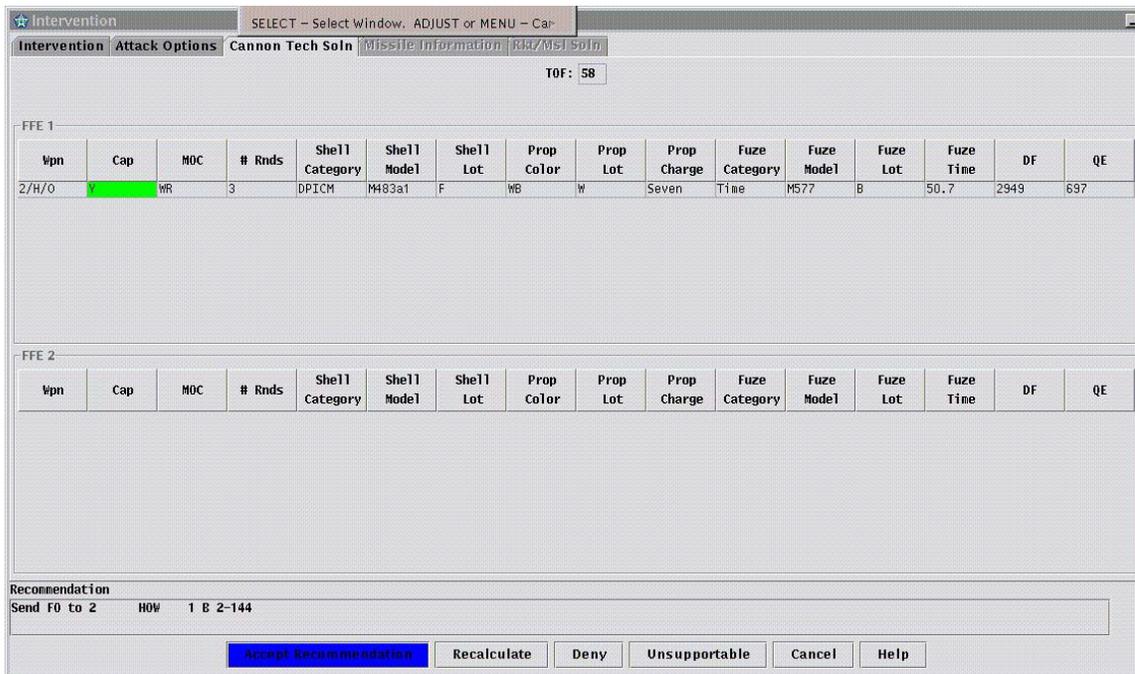


Figure 5- 6 Cannon Tech Soln tab.

Procedure FM7. Examine the Intervention Windows (cont).

Step	Action	Result/Explanation
4.	The following data is presented.	
	DATA	FUNCTION
a.	TOF	Displays the time of flight.
NOTE: The Wpn column lists weapons as three characters, each separated by a "/". The three characters are the first three characters of the weapons unit ID in the AFATDS MUL.		
b.	FFE1 section.	Displays fire commands: In an adjust fire mission: adjusting piece data for all guns during the adjustment phase. The adjusting piece displays a MOC (method of control) of WR or AMC. The pieces to follow display MOC of DNL. In the fire for effect phase data for the first of two possible FFE shells. In a fire for effect mission: Data for each piece is displayed for the first FFE shell.
c.	FFE2 section.	Displays data for a second fire for effect shell if applicable.

FM8. Examine the Weapon Status Paladin Window.

Conditions: Given an AFATDS workstation that is activated and with a fire mission transmitted to the guns...

Objective: Examine the Weapon Status Paladin window.

Additional information: The **Weapon Status Paladin** window maintains status of each fire mission with respect to mission messages sent to the AFCs and their responses. This window also allows entry of fire mission reports received by voice from guns.

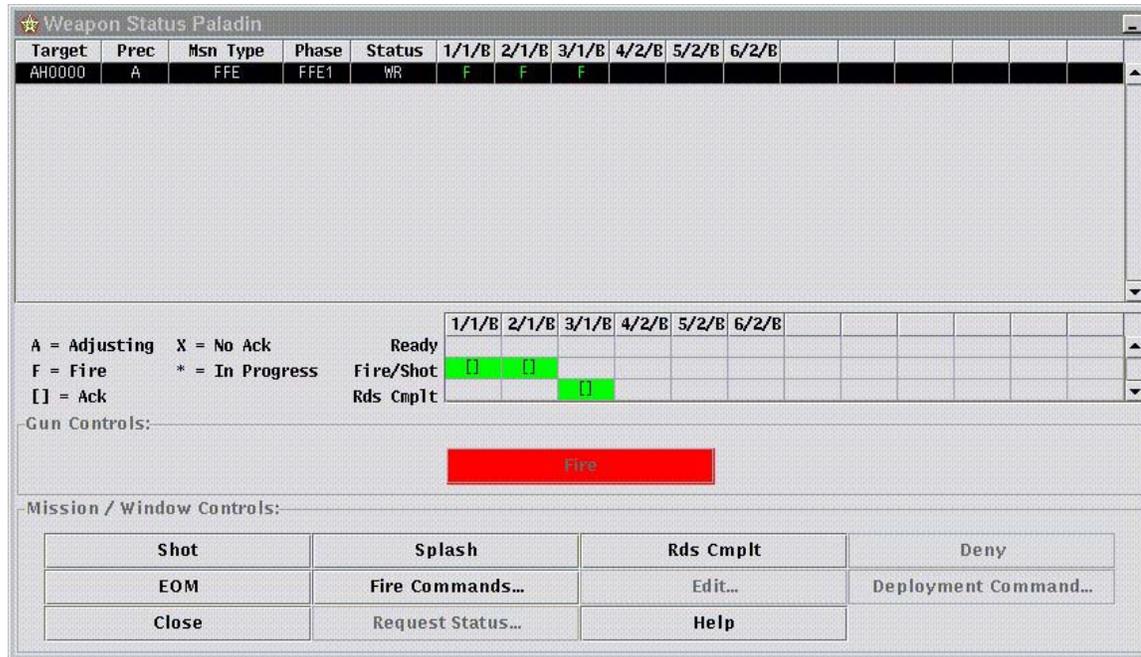


Figure 5- 7.

Procedure FM8. Examine the Weapon Status Paladin Window.		
Step	Action	Result/Explanation
1	Display the Weapon Status Paladin Window. Click the Paladin Weapon Status icon on the Current window tool bar.	The Weapon Status Paladin window displays (Figure 5-7). The window displays the following:
2	Weapon and Missions Section	The top portion of the window displays the status of each active fire mission and those guns assigned.
a.	Target	The target number assigned to the mission.
b.	Prec	The precedence assigned to the mission: A = as acquired I = immediate Pr = priority
c.	Mission Type	Mission type: FFE = fire for effect ADJ = adjust fire

d.	Phase	Phase of mission that is being executed: ADJ = adjustment FFE1 = fire for effect phase, first shell/fuze in effect FFE2 = fire for effect phase, second shell/fuze in effect
e.	Status	Time of opening fire: WR = when ready AMC = at my command Timer counting down minutes and seconds is displayed for TOT missions.
NOTE: The column headings list weapons as three characters, each separated by a "/". The three characters are the first three characters of the weapons unit ID in the AFATDS MUL.		
f.	Guns	The status of each numbered gun assigned to the mission: A = adjusting piece F = piece following the adjustment during the adjustment phase or piece firing during the fire for effect phase.
3.	Weapon status section.	The middle section of the window displays the weapon status for the mission selected in the Weapon and Missions Section. (In Figure 5-7, status is displayed for the highlighted mission AH0000.)
a.	Ready	Displays only for AMC missions:  displays when the Ready selection on the AFCS is pressed, transmitting "Ready" to AFATDS.
b.	Fire/Shot	 displays when the Shot selection on the AFCS is pressed, transmitting "Shot" to AFATDS.
c.	RDS Cmplt	 displays when the last Shot selection on the AFCS is pressed, transmitting "Rounds Complete" to AFATDS.
4.	Buttons	The following button allow the described actions to be performed.
a.	Fire	Transmits the command "Fire" for the mission selected in the Weapons and Missions section of the window.
b.	Shot	Enters shot for the selected mission. Causes the shot command to be transmitted to the observer and updates the mission status on the window
c.	Splash	Enters splash for the selected mission. Causes the splash command to be sent to the observer.
d.	Deny	When selected, denies the mission, transmitting deny to the requestor.
e.	Rounds Cmplt	Enters rounds complete for the selected mission. Causes the rounds complete command to be transmitted to the observer and updates the mission status on the window. Used when HOWITZER communications fail and voice reports are received.
e.	EOM	Ends the selected mission and transmits end of mission to the howitzers.
f.	Fire Commands	Displays the fire commands for the selected mission.
g.	Edit...	Is grayed-out until a howitzer is selected in the weapon status section. After selecting a howitzer, Edit... displays the unit data for that gun when the button is selected.
h.	Deployment Command...	Is grayed-out until a howitzer is selected in the weapon status section. After selecting a howitzer, Deployment Command... displays a Howitzer Deployment Command window for that gun when the button is selected. (See Chapter 8, Section I for details.)
i.	Close	Closes the Weapon Status Paladin window.
j.	Request Status	Is grayed-out until a howitzer is selected in the weapon status section. After selecting a howitzer, Request Status... displays the Request Status window for that gun when the button is selected. (See Chapter 8, Section I for details.)

FM9. React to a Coordination Request.

Conditions: Given a AFATDS workstation that is activated and with a fire mission requiring coordination react to a coordination request.

Note: AFATDS identifies a need for coordination of fires if FSCMs, ZORs or operator established coordination of fires rules are violated . When coordination is required, indicated by a yellow option at intervention, AFATDS automatically formats and attempts to transmit the coordination request before transmitting the fire commands to the HOWITZER. The operator may be required to take additional action in the following cases:

1. The coordination request cannot be sent to the coordinating agency because that agencies digital device cannot accept a coordination request.
2. The coordinating agency does not possess a digital device.
3. Data communications with the coordinating agency have failed.

This procedure describes those actions available to the operator in the event coordination of the mission is required.

Procedure FM9: React to a Coordination Request.		
Step	Action	Result/Explanation
1.	<i>With a fire mission at intervention, determine the violation.</i>	
a.	Click the IP icon on the Current menu tool bar.	The Intervention window displays.
b.	Click the View Intervention window.	The Request Coordination window displays (Figure 5-8).

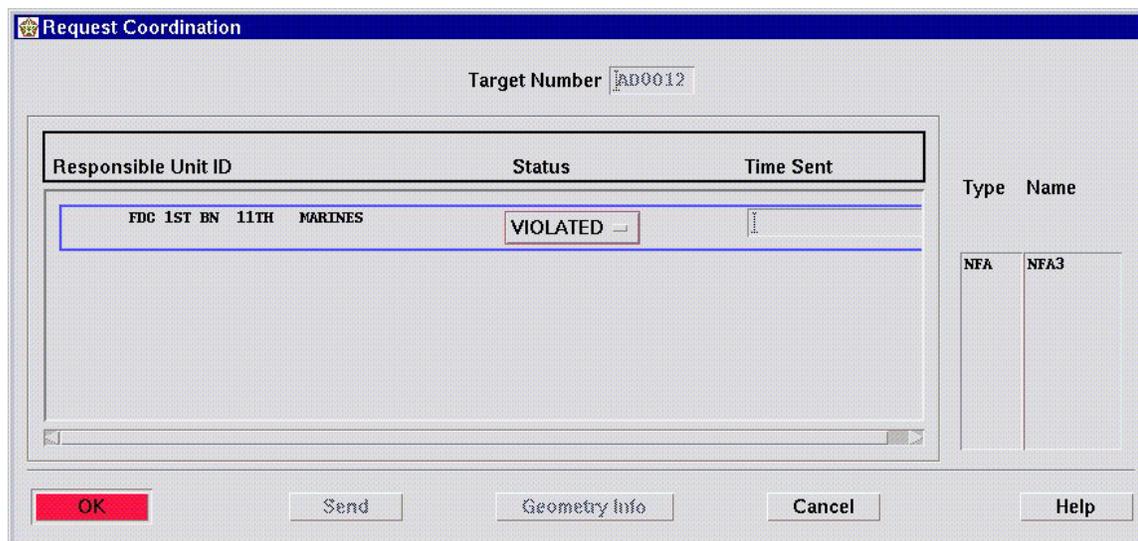


Figure 5- 8.

c.	Click a unit name Responsible Unit ID list.	A blue box appears around the name. All measures or rules violated and requiring coordination by the selected unit appear in the Type and Name columns. Type displays the type of measure or COF for violations of clearance of fires rules. Name displays the name of the violated measure. <i>Note that more than one unit ID may appear if geometry belonging to several units are violated.</i>
d.	<i>Possible operator actions at this point are:</i>	

1)	View the violated geometry.	Click the geometry name in the Name list and then click the Geometry Info button.
Procedure FM9: React to a Coordination Request (cont).		
Step	Action	Result/Explanation
2)	Override coordination and continue mission.	This action is accomplished by clicking the Status button and selecting Override in place of Violated . When the window is OK'd and the mission at intervention is sent to the HOWITZERS, AFATDS assumes coordination has been achieved. WARNING: This action should only be taken when directed by a proper coordinating agency since overriding coordination may threaten friendly troops.
3)	Deny the mission.	This action is accomplished by clicking the Status button and selecting Deny in place of Violated .
3)	Transmit the coordination request to the affected unit(s).	Click the Send button. AFATDS will not send the fire commands to the HOWITZER until coordination response is received.
4)	Take no action.	This is accomplished by clicking OK . The Intervention window displays.
2	Transmit the coordination request.	This action can occur by selecting Send from the Request Coordination window or selecting Accept Recommendation or Send from the Intervention window. A copy of the Request Coordination window is preserved in the Coordination icon of the Current menu tool bar.
3.	If coordination request fails communications:	
a.	A failed communication alert displays:	Click Retry to re-send the message or Abort to manually react.
b.	Click the Coordination icon.	The Request Coordination window displays. (If multiple coordination requests remain unresolved, a selection list displays and the appropriate target number's request must be selected.)
c.	Possible operator actions at this point:	
1)	Approve the mission locally.	Click the Status button and select Override in place of Requested . WARNING: This action should only be taken when directed by a proper coordinating agency since overriding coordination may threaten friendly troops. The fire commands and MTO are transmitted.
2)	Deny the mission.	Click the Status button and select Deny in place of Requested . This causes the mission to be placed in the Denied icon in the Current menu tool bar.

FM10. Process Observer Subsequent Corrections During Degraded Comm Operations.

Conditions: Given an AFATDS workstation that is activated and with an active fire mission and failed data communications with the observer process a subsequent correction.

Procedure FM10: Process Observer Subsequent Corrections During Degraded Comm Operations.		
Step	Action	Result/Explanation
1.	On the Current menu bar, click Target Folder, Target .	The Target List window displays the Current Active Target List .
2.	Select the desired active target by clicking the target data in the Target Type column.	The target data is surrounded by a blue box.

3.	On the Target List window menu bar, click Target, Target Actions/Commands .	The Commands window displays.
4.	Click Options, Adjust .	The Adjust window displays.
<p><i>To enter a laser correction</i>, go to step 5. <i>To adjust by coordinates</i>, go to step 6. To enter a visually spotted correction, go to step 7</p>		
5.	Click the Laser Sensings button.	The Laser Registration Adjust window displays.
a.	Click the Type Of Location field and select type of observation.	Selections are: Burst: Lased burst, apply correction to move impact to original target location. New Target: Lased new target location, apply previous corrections and compute data for new target location. Not Observed Or Ignore: Ignore spottings and repeat.
b.	Click the button to the left of the Polar Data section.	Polar data fields become active.
c.	Click the Azimuth and type the direction reported in the observer's correction.	Legal entries are 0 to 6399.
d.	Click the Slant Distance field and type the slant distance to the burst reported in the observer's correction	Legal entries are 1 to 2147483647.
e.	Click the Vertical Angle field, select the direction of the shift and type the observer's reported VA to the burst.	Legal entries are: None, Up and Down and 0 to 1600 mils.
f.	Click Apply .	The correction is applied. The Laser Registration Adjust window closes and the Adjust window displays. Go to step 8.
6.	Click the Laser Sensings button.	The Laser Registration Adjust window displays.
a.	Click the Type Of Location field and select Burst .	
b.	Click the button to the left of the Laser Location section.	The coordinate field activates
c.	Type the coordinates of the burst location.	Type coordinates in the form H EEEEE LLL NNNNN AAAA GGG where H is the higher order easting, EEEEE is the short easting coordinate, LLL is the higher order northing, NNNNN is the short northing coordinate, AAAA is the altitude in meters and GGG is the grid zone.
d.	Click Apply .	The correction is applied. The Laser Registration Adjust window closes and the Adjust window displays. Go to step 8.
7.	Click the Azimuth field and select direction on which corrections are referenced.	Selections are Observer-Target and Gun-Target .
a.	Click the field left of Azimuth and type the direction reported in the observer's correction.	Legal entries are 0 to 6400.
b.	Click the Deviation Correction field and select the direction of the shift.	Selections are Left, Right and None .
c.	Click the field to the right of Deviation Correction field and type the lateral shift.	Legal entries are 0 to 9999 meters.
Procedure FM10: Process Observer Subsequent Corrections During Degraded Comm Operations (cont).		
Step	Action	Result/Explanation

d.	Click the Range Correction field and select the direction of the shift.	Selections are Add, Drop and None .
e.	Click the field to the right of Range Correction field and type the range shift.	Legal entries are 0 to 9999 meters.
8.	Edit as required:	
a.	Mission Type:	Selections are: Adjust Fire Fire For Effect
b.	Method of Control	Selections are: Do Not Load When Ready AMC By Shell AMC On Call TOT Cease Loading Check Firing Continuous Fire Repeat Cancel AMC Warning Order
9.	Click Apply .	The correction is applied and the Adjust window clears of data entered but remains open. If intervention applies the mission is placed in the Intervention icon of the Current menu tool bar for operator action. If intervention does not apply fire commands are transmitted to the HOWITZERS.
NOTE: For a complete explanation of the fire mission process, see Procedure FM5 Process an Area Fire Mission.		

FM11. Process End of Mission During Degraded Comm Operations.

Conditions: Given an AFATDS workstation that is activated and with an active fire mission and failed data communications with the observer process an end of mission.

Procedure FM11: Process End of Mission During Degraded Comm Operations		
Step	Action	Result/Explanation
1.	On the Current menu bar, click Target Folder, Target .	The Target List window displays the Current Active Target List .
2.	Select the desired active target by clicking the target data in the Target Type column.	The target data is surrounded by a blue box.
3.	On the Target List window menu bar, click Target Action, End Of Mission .	The End Of Mission window displays.

Procedure FM11: Process End of Mission During Degraded Comm Operations (cont).		
Step	Action	Result/Explanation
4.	Click Disposition and select the observed BDA, if any.	Selections are: (blank space representing “unknown”) Neutralized Burning Destroyed No Effects Neutralized Burning Suppressed
5.	Click the Casualties field and type the reported number of casualties.	Legal entries are 0 to 9999.
To end the mission and record as target , go to step 6. To end the mission without recording as a target , go to step 7.		
6.	Click the Record as Target check box.	A check appears in the box and the Refinement selections in the Options menu becomes active.
a.	Click Options, Refinement .	The Shift window displays. The Shift From: Last Round button is selected by default causing the refinement to plot from the last reported aimpoint.
b.	Click the Deviation button and select the direction of the lateral refinement.	Selections are: Left, Right or blank space representing “None”.
c.	Click the field to the right of Deviation field and type the lateral shift.	Legal entries are 0 to 9999 meters.
d.	Click the Range field and select the direction of the shift.	Selections are Add, Drop and blank space representing “None.”
e.	Click the field to the right of Range field and type the range refinement.	Legal entries are 0 to 9999 meters.
f.	Click the HOB field and select the direction of the height of burst refinement.	Selections are Up, Down and blank space representing “None.”
g.	Click the field to the right of HOB field and type the height of burst refinement.	Legal entries are 0 to 9999 meters.
h.	Click OK .	The Shift window closes and the End of Mission window displays.
7.	Click OK .	The End of Mission window closes. The following occur: 1. End of mission is transmitted to the HOWITZERS. 2. A Mission Fired Report is created and placed in the Active Mission Messages icon. 3. The mission is moved from the Active Target list to the Inactive Target List or to the On Call Target List, if RAT was selected. 4. The target stored on the Inactive Target List possesses the original location. 5. If the target was recorded to the On Call Target List, the location reflects total corrections determined during the mission.

FM12. React to AFCS Comm Failure During a Fire Mission.

Conditions: Given an AFATDS workstation that is activated and with an active fire react to AFCS Comm failure during a fire mission.

Procedure FM12: React to AFCS Comm Failure During a Fire Mission			
Step	Station	Action	Result/Explanation
1	Btry/Plt AFATDS	Transmits fire commands to the AFCS. Communications with the AFCS fails.	A beep sounds. The M: field of the alerts panel increments and a medium level alert is queued. If the Medium Level Alerts are Suspended: the operator must click the M: field to access the Medium Level Alert List and click the alert and View . If the Medium Level Alert List is already displayed: the operator clicks Refresh , selects the alert and clicks View . If the Medium Level Alert list is not displayed and medium level alerts are not Suspended: The alert opens on the screen.
2.	Btry/Plt AFATDS	React to the displayed Failed Transmission Alert .	The alert states: "Transmission of Fire Order to (<i>Weapon's Unit ID</i>) failed."
To re-send the fire order, go to step 3.			
To reprocess the mission, selecting another gun, go to step 4.			
3.	Btry/Plt AFATDS	Click the Retry button.	The fire order is transmitted again. If communications are successful, no additional alerts post. Complete the mission.
4.	Btry/Plt AFATDS	Click the Abort button.	The alert closes. A Mission Deny message is placed in the Deny icon of the Current menu bar.
a.		Click the Deny icon	The Mission Denied window displays.
b.		Click the Reprocess button.	The mission is placed in the IP icon of the Current menu bar. The weapon to which comm failed will not be selected again. Process the remainder of the mission.

FM13. Receive and Process Check Firing and Cancel Check Firing.

Conditions: Given an AFATDS workstation that is activated and communications configured receive and process check firing and cancel check firing.

Procedure FM13: Receive and Process Check Firing and Cancel Check Firing.			
Step	Station	Action	Result/Explanation
Note:. When check firing is received or entered at the AFATDS, check firing is automatically transmitted to the AFCS only if that weapon is processing a fire mission. If check firing is in progress and a new mission is received at the AFATDS, the new mission will not be placed in the IP icon of the Current menu bar until "Cancel Check Firing" is received			
1	Btry/Plt AFATDS	Receives Check Firing Command from another station.	The following occur: 1. A beep sounds. 2. An Information Message displays indicating: "(DTG) Check Fire All" or "(DTG) Check Fire (TGT #)" 3. Check firing is transmitted to the AFCS involved in missions. 4. For Check Firing All commands only, Check Firing All displays on the Current menu tool bar.
a.		Click OK on the Information Message .	The Information Message window closes.

3.	Guns.	AFCS receives checkfiring.	
Warning! If the AFATDS operator transmits fire commands (as described in steps 4.b. through 4.e.) the HOWITZER will receive the commands despite the check firing status of the AFATDS.			
4.	Btry/Plt AFATDS	Receives Cancel Check Firing Command from another station.	The following occur: 1. A beep sounds. 2. An Information Message displays indicating: “(DTG) Cancel Check Fire All” 3. Nothing is transmitted to the AFCSs involved in missions. 4. For Cancel Check Firing All commands only, Check Firing All is removed from the Current menu tool bar.
a.		Click OK on the Information Message .	The Information Message window closes.
b.		Click the Weapon Status Paladin icon on the Current menu tool bar.	The Weapon Status Paladin window displays.
c.		In the Target Number column, click the fire mission’s target number.	The target data highlights and the current HOWITZER status for the mission displays.
d.		Click the Fire Commands button.	The Fire Command (TGT #) window displays.
e.		Click the fire commands for each gun and select Send .	Fire Commands are transmitted to the AFCSs.
NOTE: Missions received while in a check firing all status do not display at intervention. When Cancel Check Firing All is received, these missions are then queued at intervention.			

FM14. Initiate and Cancel Check Firing.

Conditions: Given an AFATDS workstation that is activated and with an active fire mission initiate and cancel check firing.

Procedure FM14: Initiate and Cancel Check Firing.		
Step	Action	Result/Explanation
Note: The AFATDS operator can initiate and cancel two forms of check firing. “Check Firing All” places all mission in the computer in a check firing status. Any missions received during this period are added to the active target list but not processed to intervention until the check firing is lifted. In addition, the operator may check firing a specific target.		
To initiate check firing, go to step 1. To cancel check firing, go to step 2.		
1.	On the Main Menu bar , click Check Firing .	The Check Firing window displays.
a.	To check fire all , click the All button and click OK .	Check firing is transmitted.
b.	To check fire a specific target , click the Target Number field and type the target number and click OK .	Check firing is transmitted.
2.	Click Messages, Cancel Check Firing .	The Cancel Check Firing window displays.
a.	To cancel check fire all , click the All button and click OK .	Fire commands can now be re-transmitted. Any missions received while the AFATDS was in check firing will be placed at intervention.

Procedure FM14: Initiate and Cancel Check Firing (cont)

Step	Action	Result/Explanation
b.	To cancel check fire a specific target , click the Target Number field and type the target number and click OK .	Fire commands can now be re-transmitted.

Chapter 3 Improving Firing Data.

Section I. General.

1. Standard Conditions.

Fire control information is provided for weapons and ammunition based on the assumption that a fixed set of conditions in position, materiel and atmosphere exist. These conditions are called *standard conditions*. Though this precise set of conditions could never occur simultaneously, they provide a starting point for the computation of data. Accurate fires can only be produced when these conditions are accounted for and corrections applied to the firing data.

2. Errors.

It must be understood that non-standard conditions are only one of three categories of errors that effect accuracy. These are:

- a. **HUMAN ERROR.** These errors result from human mistakes. These mistakes can range from improperly cut charges, errors in sight settings, errors in the construction of the data base etc.... Human errors are eliminated through training and supervision.
- b. **CONSTANT ERROR.** Constant error is that degradation of accuracy caused by constant non-standard factors influencing the firing of the round, i.e.. Weather, MVV's, propellant temperature, etc. It is these constant errors that are compensated for by registration and by using corrections to firing data.
- c. **INHERENT ERROR.** **Inherent errors are beyond control and are impractical to measure. Examples of these errors are conditions in the bore, conditions in the carriage and conditions in flight. Inherent errors cause dispersion and ARE NOT CORRECTABLE! Inherent error is, however, taken into account in the conduct of registration by bracketing and refinement methods use in precision registration and the number of rounds fired in both precision registration and high burst/MPI registration.**

2. AFATDS Computational Technique.

Firing data computed by AFATDS incorporates corrections for all non-standard conditions that are accounted for in the database. As such, AFATDS solutions are MET+VE solutions. The more non-standard conditions that are accounted for, the more accurate the solution. AFATDS automatically incorporates corrections for drift, rotation and projectile weight since these are part of the database⁶. Additional correction may be applied based on the condition of the database (Figure 6-1).

⁶ AFATDS computes firing data that approximates the data determined from the TFT if all inputs (projectile weight, propellant temperature and MVV) are set to standard and if the gun, target and MDP are at the same altitude. The last condition exists only if the AFATDS operator edits the standard computer met stored in AFATDS and changes the altitude to match that of the gun.

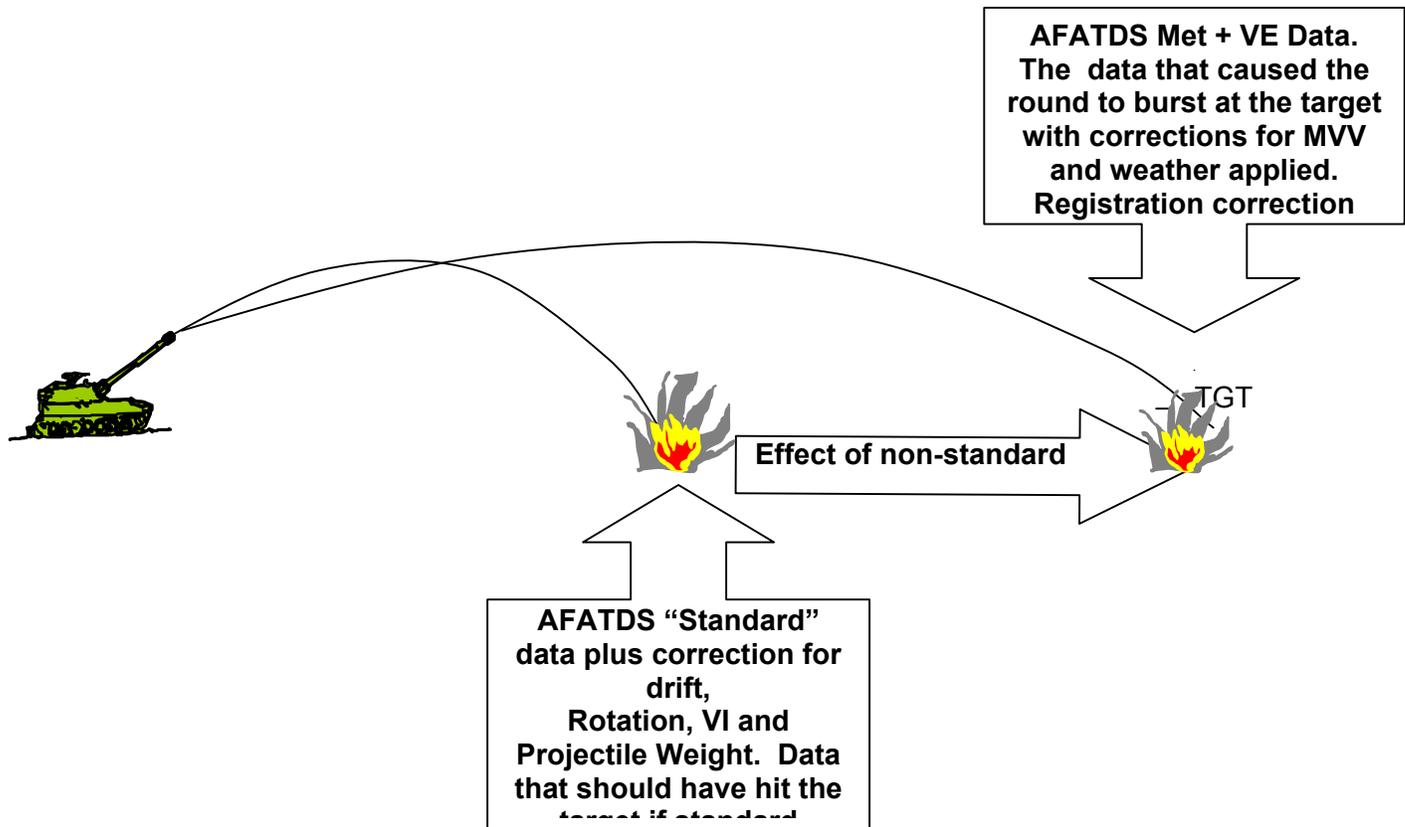


Figure 6-1. AFATDS Computational Technique.

3. **The Five Requirements for Accurate Predicted Fires**The AFATDS computational technique can be related to the five requirements for accurate predicted fires.
- a. **Accurate Weapon Location.** AFATDS computes data for each individual piece based on the range and direction to from the gun location to an aimpoint at the target. A number of points apply:
 - 1) Error in survey or map spotted battery location and azimuth of lay will carry through as accuracy error in point of impact.
 - 2) Map spot error can be corrected by recalculating gun locations after survey control has been carried forward to the battery position.
 - 3) In addition, registration corrections determined from the map spot location can be recalculated after survey control has been established in the battery position.
 - 4) Rotation corrections to range and direction of fire are automatically applied to all firing data based on the battery location.
 - b. **Accurate Target Location.** As with battery location, AFATDS cannot correct for errors in target location in the fire request. However:
 - 1) AFATDS will correct location for differences in map datum used by the observer or sensor and that used at AFATDS.
 - 2) If target area survey becomes available, AFATDS allows registration corrections determined from inaccurate target locations to be corrected.
 - c. **Accurate Weapon and Ammunition Data.** AFATD provides correction for non-standard weapon and ammunition performance.

- 1) Projectile weight is stored and corrected for during computation.
 - 2) Propellant performance is corrected for if MVV data is stored.
 - 3) The effect of propellant temperature is accounted for.
 - 4) Lot management is used to ensure the same lots of ammunition is used throughout adjustment and during fire for effect within the limits of MVV transfers.
 - 5) Registration corrections determined before calibration can be recalculated after MVV data has been determined.
- d. **Meteorological Data.** AFATDS applies meteorological data from the stored, current MET;CM message. In lieu of a met message, AFATDS applies standard atmosphere data. It should be noted that one of the standard conditions states that "Battery, Target and MDP are at the same altitude." The AFATDS standard met use 0 meters for the MDP altitude. If no met is available, the AFATDS operator should change the MDP altitude in the standard met to that of the COB grid.
- e. **Accurate Computational Techniques.** The computational technique is applied accurately and consistently to all missions computed. Unlike manual gunnery procedures that sacrifice accuracy for speed with short cuts in techniques such as immediate suppression, AFATDS applies the same computerized MET+VE technique ensuring this requirement is always met. The Computation of the Gunnery solution is consistently determined, however like any automated system; Bad data into the system will generate only bad data out. Only user practice and familiarity with the AFATDS will prevent human error.
- 4. AFATDS determination and use of muzzle velocity data.**
- a. **M93 and MCA calibration.** AFATDS supports the use of the M93 chronograph coupled with the MCA. The MCA is connected to the PALADIN communications by assembling the device between the SCA and CA of one of the PALADINS. AFATDS initializes the MCA with ammunition data and transmits requests to calibrate. The MCA queries the M93s and returns the MVV data to AFATDS. See Procedure MR1. Conduct Calibration and Determine MVV Using the M93 and MCA.
- b. **M93 calibration.** The M93 chronograph can be used independently of the MCA. In this case, the gun section initializes the M93 allowing projectile weight and propellant temperature to default to standard values. The MV measured for each round is recorded and the reported to the FDC where the correction for non-standard conditions is accomplished to compute the MVV. The AFATDS allows entry of projectile weight, compensates for additional fuze weight and average propellant temperature measured during the calibration.
- c. **Application of MVV data.** MVV data is applied during the computation of firing data based on the following rules.

Check #1. Is the MVV for the weapon assigned to the fire mission?

- If yes, go to check #2.
- If no, do not apply the MVV.

Check #2. Does the calibrated projectile family match the mission projectile family?

- If yes, go to check #3.
- If no, do not apply the MVV.

Check #3. Does calibrated propellant lot match the mission propellant lot?

- If no, do not apply MVV.
- If yes, is the calibrated charge one increment higher?
 - If yes, go to check #4.
 - If no, is the calibrated charge one increment lower?
 - If yes, go to check #4.
 - If no, is the calibrated charge two increments higher?
 - If yes, go to check #4.
 - If no, is the calibrated charge two increments lower?
 - If yes, go to check #4.
 - If no, is the calibrated charge three increments higher?
 - If yes, go to check #4.
 - If no, is the calibrated charge three increments lower?
 - If yes, go to check #4.

- If no, do not apply the MVV?

Check #4. Is the calibrated charge a restricted charge?

- If no, apply the MVV.
- If yes, does the fire mission charge match the calibrated charge?
 - If yes, apply the MVV.
 - If no, do not apply the MVV.

5. AFATDS meteorological message processing.

- a. Other AFATDS distribute meteorological messages to units stored in their databases based on the entry in the stored units' MET Unit ID field found in the units' General Data file. This field is not transmitted with unit data. Thus the distribution has to be setup by the distribution unit.
 - 1) For example, the battalion FDC is supported by MET 01 and has three battery FDCs, A, B and C. The battalion FDO directs that met messages received from MET 01 are transmitted to each of the batteries. The battalion AFATDS operator displays the unit data for each of the batteries and enters MET 01 in each battery's MET Unit ID field. (The battery AFATDS operators do not enter the MET Unit ID field because this data is not transmitted by AFATDS when unit data is sent.)
 - 2) When a met message is received at the battalion FDC from MET 01, the battalion AFATDS automatically retransmits the met message to all stations with MET 01 in their MET Unit ID field.
- b. When the met message is entered, AFATDS does not check for drastic differences in wind speed and direction from line to line nor for the same pressure on the ID line. These checks were designed to locate errors introduced in the manual plotting and encoding of the met. Electronic measurement of the met has eliminated these as checks. MMS, in fact, uses two different measurements for ID line and surface pressure, invalidating that check.

6. Registration.

- When the isolation of non-standard conditions by measurement is impossible the five requirements for accurate predicted fires cannot be met. The FDO may decide to conduct a registration.
- a. Registration allows the correction for all unaccounted-for non-standard conditions. These corrections are called *total corrections*. In the traditional sense, total corrections are determined by comparing the should-hit data (under standard conditions) to the did-hit data (data observed to hit the target under the prevailing, non-standard conditions). AFATDS modifies this traditional approach by applying corrections by applying correction for all non-standard conditions accounted for in its database to the should-hit data.
 - b. Registration corrections account for non-standard conditions that prevailed at the time of the registration. As time passes and weather changes these conditions change. This change renders the registration correction invalid unless the effects of changing non-standard conditions can be isolated. To correctly determine registration corrections and the effects of non-standard conditions as they change over time, the "five steps to improved firing data" are applied.
 - c. FIVE STEPS TO IMPROVED FIRING DATA.
 - 1) Registration involves the following three steps:
 - a) Rounds burst at a point of known location. One of the two types of registration (precision or high burst/mean point of impact) is fired.
 - b) Determine should-hit and did-hit data. The data that was fired to cause the rounds to impact at the point of known location (adjusted or did hit data {DHD}) is compared to the data the fire control equipment (TFT) predicted would hit the target (should hit data {SHD}).
 - c) Determine Total Corrections (Registration Corrections). Total corrections are determined by comparing should-hit and did-hit data (Total Corrections = DHD – SHD). These are applied to firing data to achieve first round fire for effect. Total corrections are the sum of met correction and position constants.
 - 1) Met corrections are corrections for all measurable non-standard conditions that can be accounted for.
 - 2) Position constants are all non-standard conditions that are difficult to identify, relatively small in magnitude and remain relatively constant.
 - d) Isolate Position Constants. The fourth step is to isolate position constants. The unit must account for the nonstandard conditions in effect while the registration was being fired. These are used to

isolate the position constants by performing the concurrent met technique ($TOTAL\ CORR - MET\ CORR = POS\ CONST$).

- e) Determined New Total Corrections. As time passes, the weather changes and corrections determined through registration begin to degrade. The FDC is faced with either firing another registration or, preferably, applying met techniques mentioned above. New MET corrections are computed based on new measurement of the atmosphere and added to the old POSITION CONSTANTS to determine new TOTAL corrections that are valid under the new conditions that prevail ($New\ Met\ Corr + Pos\ Const = New\ Total\ Correction$).
- d. THE FIVE STEPS TO IMPROVED FIRING DATA IN PRACTICE.
 - 1) Met + VE solutions. The preferred gunnery solution utilizes the MET+VE technique. MET+VE eliminates the need to register by measuring all non-standard conditions. These measurements are entered into the AFATDS database. AFATDS determines and applies corrections to firing data for these conditions. Registration is not required if:
 - a) Correct projectile weights and propellant temperatures are stored.
 - b) MVV data has been determined and stored for the ammunition and weapons.
 - c) Valid, concurrent meteorological data is stored.
 - d) Accurate position and target area survey exists.If these requirements are met, AFATDS computes accurate firing data. As non-standard conditions change, the gunnery solution becomes less accurate. The FDC must ensure that those conditions are accounted for on an ongoing basis. The elements most changeable over periods of hours are propellant temperature and weather. Ongoing reporting of propellant temperature by the gun sections allows this variable to be changed in AFATDS. Periodic computer meteorological messages received from a local met station answers the second requirement.
 - 2) Registration and Concurrent MET procedure. If sufficient aspects of non-standard conditions cannot be measured, accuracy may be degraded to the point that the FDC can only account for these factors by corrections determined by firing. AFATDS supports precision and HB/MPI registration. Unlike manual methods that initiate the registration by firing standard conditions data, AFATDS computes the firing data for the registration accounting for all known non-standard conditions. However, AFATDS does not apply registration corrections previously determined to a new registration. The corrections determined at the end of the registration correct all unaccounted for errors in the AFATDS database. In manual gunnery terms, these corrections are similar to the positions constants derived from a concurrent met computation. Two situations arise during registration.
 - a) Registration conducted with a valid computer meteorological message and accurate database. If the registration is conducted with all measurable non-standard conditions accounted for in the database, concurrent met procedures are automatically carried out by AFATDS (Figure 7-2). The AFATDS registration correction compensates primarily for error in measurement of non-standard conditions. As time passes and non-standard conditions change, this portion of the correction varies but the registration correction remains the same.

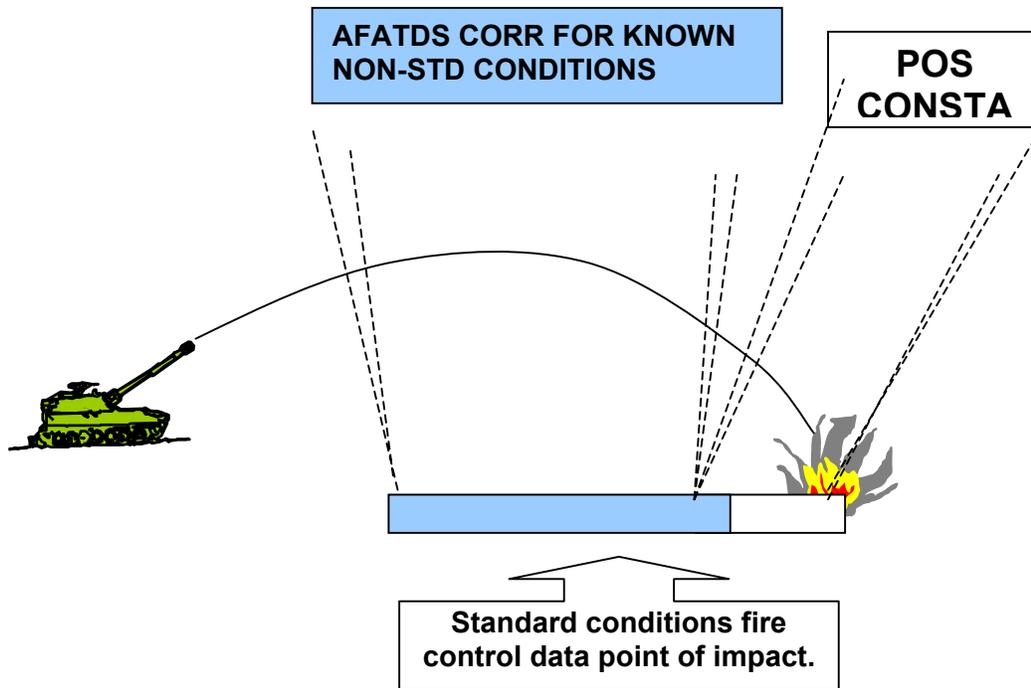


Figure 6-2.

- b) Registration conducted with less than all measurable non-standard conditions accounted for in the database. When all non-standard conditions cannot be quantified, registration corrections still provide accuracy in the determination of firing data. However, as time passes and non-standard conditions change, the registration corrections become invalid. The FDC is left with two choices.
 - i. Conduct new registrations to determine corrections for the new prevailing conditions. This action is required because the position constant has not been isolated. For example, in figure 6-3, the correction for weather and MVV, as well as that quantity of correction determined in the registration and not able to be attributed to any measurable effect is all part of the registration correction.

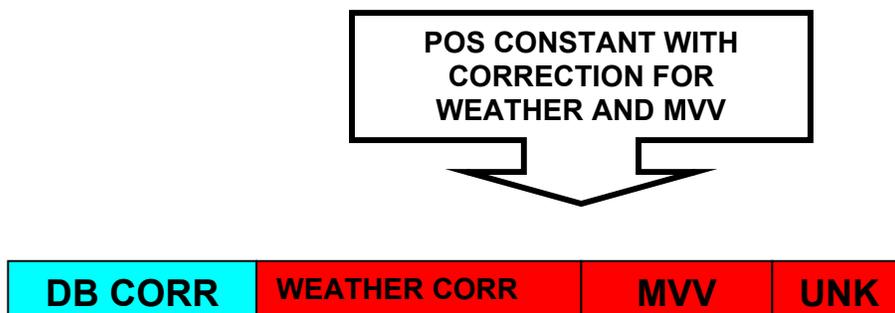


Figure 6-3.

- ii. Acquire measurements of the non-standard conditions that prevailed at the time of the registration. These measurements are usually computer meteorological message measured during or close to the time of the registration and MVV data for the ammunition registered. When these measurements are made and the data stored in AFATDS, the registration is recomputed. The result is to reduce the registration correction to a true position constant composed of correction for errors that cannot be attributed to any specific cause. Figure 6-4

reflects the condition of the registration correction from figure 6-3 after concurrent met procedure has been carried out.

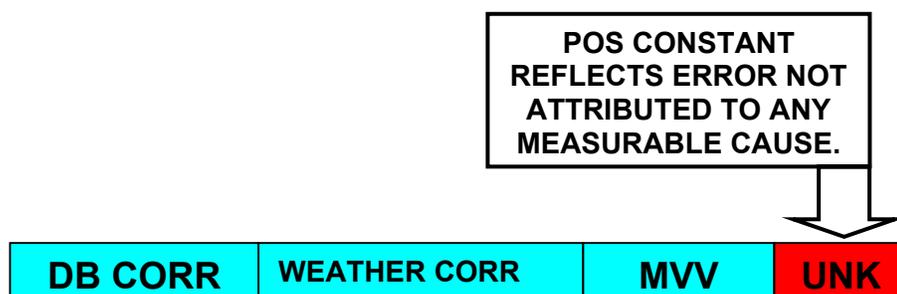


Figure 6-4.

- 3) Subsequent MET procedure. After isolation of the position constant, subsequent meteorological messages are entered and made current at AFATDS. These met messages automatically contribute to the database correction. The position correction, in the form of AFATDS registration correction, is applied to compute new firing data for each mission.

- e. AFATDS APPLICATION OF REGISTRATION CORRECTIONS. AFATDS will apply the registration corrections based on a preferential matching. The parameters used are the following.

Does the angle of fire of the registration match that for the fire mission?

- If no, do not apply the registration correction.
- If yes, go to next check.

Does the met type (standard or current) match the met type in use for the mission?

- If no, do not apply the registration correction.
- If yes, is the met type standard for both registration and mission?
 - If yes, go to next check.
 - If no, is the met message DTG within four hours of the current time?
 - If no, do not apply the registration.
 - If yes, is the current DTG within the time span defined by the met message DTG plus the met message duration?
 - If no, do not apply the registration.
 - If yes, go to the next check.

Does the registration projectile lot match the mission projectile?

- If yes, go to next check.
- If no, does the registration projectile family match the mission projectile family?⁷
 - If no, do not apply the registration correction.
 - If yes, go to next check.

Does the registration propellant lot match the fire mission lot?

- If yes, go to next check.
- If no, does the registration propellant model match the mission propellant model?
 - If yes, go to next check.
 - If no, do not apply registration.

Does the registered charge match the fire mission charge?

- If yes, go to next check.
- If no, is the registered charge one increment higher?
 - If yes, go to next check.

⁷ 155mm HE M107 registration corrections may be applied to DPICM M483A1 firing data if DPICM registration data is not available. 105mm HE M1 corrections, however, are not applied to DPICM M916 firing data.

- If no, is the registered charge one increment lower?
 - If yes, go to next check.
- If no, is the registered charge two increments higher?
 - If yes, go to next check.
- If no, is the registered charge two increments lower?
 - If yes, go to next check.
- If no, is the registered charge three increments higher?
 - If yes, go to next check.
- If no, is the registered charge three increments lower?
 - If yes, go to next check.
- If no, do not apply the registration correction?

Is standard met in use for both the registration and the fire mission?

- If no, go to next check.
- If yes, is the distance between the registered piece (at the time of registration) and the gun location for the mission within 2000 meters?
 - If no, do not apply the registration.
 - If yes, go to next check.
 - Is the difference in altitude between the registration point and target within 1000 meters?
 - If no, do not apply the registration.
 - If yes, is the registration range and the fire mission range within 2000 meters?
 - If no, do not apply the registration.
 - If yes, is the registration direction of fire within 500 mils of the mission direction of fire?
 - If no, do not apply the registration correction.
 - If yes, go to next check.

Section II. Accounting For Non-Standard Conditions.

MR1. Conduct Calibration and Determine MVV using M93 and MCA.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed and communications with a howitzer with operating MCA and M93 chronograph conduct calibration.

Procedure MR1: Conduct Calibration and Determine MVV using the M93 and MCA		
Step	Action	Result/Explanation
<p>Note: The Muzzle Velocity Communications Adapter (MCA) acts as an interface between AFATDS and the M93 Chronograph at each gun. The MCA automatically conducts calibration in an ongoing fashion.</p> <p>1. When fire commands are transmitted to the AFCS and the number of rounds to fire for effect is equal to or greater than the number of rounds specified in the AFCS's MVV ROUNDS entry, a request is automatically transmitted to the MCA to collect MVV data for this mission.</p> <p>2. At the end of the mission, the MVV data is retrieved from the M93 and transmitted to the AFCS. The AFCS sends the MVV data to AFATDS.</p> <p>3. AFATDS automatically stores the MVV data for the weapons reported. No alerts are posted at the AFATDS to indicate this has occurred</p>		

MR2. Conduct Calibration and Determine MVV using M93 without MCA.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed and communications with a gun equipped with operating M93 chronograph conduct calibration.

Procedure MR2: Conduct Calibration and Determine MVV using the M93.
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Step	Action	Result/Explanation
<p>Additional Information: If the MCA is not used to digitally transmit MV data, this data can be recorded at the M93 chronograph and manually entered at AFATDS. This procedure describes that procedure. The following rules apply:</p> <ol style="list-style-type: none"> This procedure assumes measured MV data is corrected for projectile weight and propellant temperature at AFATDS. The gun section allows the M93 chronograph to default projectile weight to standard weight and propellant temperature to default to 70.0°F. The AFATDS MVV calculator allows a compensation (not a correction) to be applied for the number of equivalent full charges fired from the calibrating piece. AFATDS <u>does not</u> apply an EFC effect for each gun during the computation of firing data. Instead, the EFC count is used to determine a range within which the measured muzzle velocity should fall. For example, the MV is expected to be higher for a tube exhibiting less wear. If the EFC count is set to 0.0 (a new tube) the acceptable range of MV measured during calibration is set to a higher min and max value than would be the case for a tube with a history of 1000 EFCs fired. If the measured MV is outside this range, a warning is displayed and the computation of MVV is not completed. 		
1.	On the Current menu bar, click Unit, Workspace Unit to be edited (Gun) .	The Unit ID window displays with Basic Data .
2.	Click the MVV Data file.	MVV data is displayed for the first gun in the unit in the Unit ID window.
3.	Click the Weapon Number field and select them gun for which MV was measured.	MVV data for that gun is displayed.
4.	Click the Compute MVV from MV button.	The MVV Calculator window displays.
5.	The following data must be entered:	
a.	Select Projectile Model	Select the nomenclature of the projectile calibrated.
b.	Type the Projectile Wt	Enter the projectile weight to the nearest 0.1 pounds. This value is used to correct the MV reported to the equivalent at standard projectile weight.
c.	Select the Propellant Model	Select the nomenclature of the propellant calibrated.
d.	Select the Propellant Lot	Select the lettered propellant lot. This lot need not be stored in the units ammunition inventory.
e.	Select the Propellant Charge	Select the charge number calibrated.
f.	Type the Propellant Temperature	Type the propellant temperature reported during the calibration. This value is used to correct the MV reported to the equivalent at 70°F propellant temp.
g.	Select the Fuze Model	Select the fuze fired during calibration. Fuze model allows AFATDS to compensate for weight during the MVV calculation.
h.	Click the EFC Count field type the number of equivalent full charges fired by the calibrated cannon tube.	This is a required entry. AFATDS uses the EFC count to establish an expected range of MV input.
i.	Type the measured MVV in the MV column for each round fired.	Enter the MV to the nearest 0.1 m/s.
6.	Click the Compute button.	The change in MV from standard MV is calculated and displayed in the Calculated MVV (m/s) field.
7.	Click the Store button.	The MVV Calculator window closes and the Unit ID window displays with the MVV stored.

MR3. Establish Meteorological Message Distribution to Howitzers.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation establish meteorological message distribution to Howitzers.

Procedure MR3: Establish Meteorological Message Distribution to Howitzers.		
Step	Action	Result/Explanation
<p>Note: AFATDS distributes met messages to units based on the originator of the met message and the entry in the MET UNIT ID field of a destination unit. The unit controlling the howitzers (battery or Platoon FDC) determines which meteorological station supports the unit. Each howitzer's unit data is then edited. The howitzer's General folder, Met Unit ID field is set to identify the supporting meteorological station. <i>Note the entry in this field is <u>not</u> distributed with unit data. This prevents units up the chain of command from all sending the same met message to the destination gun.</i></p> <p>When a met message is received, the original source met station (not the transmitting unit) is checked to determine if any unit in the database requires met messages from this station. If a unit is found with that met station in the Met Unit ID field, the met message is transmitted to the unit. NOTE met messages are also automatically transmitted to the AFCS when initialization data is requested.</p>		
1.	On the Current menu bar, click Units, Workspace Options Edit and select the desired HOWITZER unit.	The Unit ID: window for the HOWITZER displays.
2.	Click the General folder.	The Unit ID field displays general data.
3.	Click the Met Unit ID field and select the unit ID of the supporting met station.	The Met Unit ID field displays the name of the selected met station.
4.	Click the OK button.	The Unit ID: window closes.

MR4. Enter a Computer Meteorological Message

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation enter a computer MET.

Procedure MR4: Enter a Computer Meteorological Message.		
Step	Action	Result/Explanation
<p>Note: AFATDS uses a current computer meteorological message for the computation of firing data. The preferred method of met message entry is reception via digital communications (see Procedure MR5. Receive A Computer Meteorological Message). When digital communications are not possible, the met message can be received by voice communications and manually entered into AFATDS.</p>		
1.	On the Current menu bar, click Met, View CM.	The View CM MET window displays with the current met message data.
2.	Click the Name field and type a unique name for the met message.	Multiple met messages can be stored. A unique name assists the operator in identifying the met message.
3.	Type the beginning of the period of validity in the Valid from: field.	The DTG is entered in the form DDHHMMZMONYY where DD is the date, HH is the hours, MM is minutes past the hour, Z is the time zone, MON is the month and YY is the year.
4.	Type the end of the period of validity in the Valid to: field.	The DTG is entered in the form DDHHMMZMONYY where DD is the date, HH is the hours, MM is minutes past the hour, Z is the time zone, MON is the month and YY is the year.
5.	Type the latitude of the Met station in the Latitude field.	The latitude is entered in tenths of degrees. For example, 34.5° is entered as 345. Location of the latitude in the North or South hemisphere is determined by the entry in Global Octant .

6.	Type the longitude of the Met station in the Longitude field.	If the longitude is greater than 100, 100 is subtracted to encode. The remaining value is entered in tenths of degrees. For example, 128.7° is entered as 287. Location of the latitude in the East or West hemisphere is determined by the entry in Global Octant .
7.	Type the altitude of the Met station in the Altitude field.	The altitude is entered in tens of meters. For example, a met station altitude of 640 meters is entered as 064.
NOTE: Correct entry of met station altitude is crucial to the computation of safe and accurate firing data. AFATDS compares the met station and battery altitudes and adjusts the meteorological data to the altitude of the battery. Gross errors in height result in errors in correction computed for non-standard atmospheric conditions.		
8.	Type the MDP pressure in the Atmospheric Pressure field.	Pressure is entered in millibars. If the pressure exceeds 1000 millibars, only the last three digits are entered.
9.	Click the Global Octant field and select the appropriate octant in which the met station is located.	Octant further defines the Lat/Long location of the Met station allowing for shorter encoding of met messages.
10.	For each line, enter the following	
a.	Wind Dir	Type the wind direction in tens of mils true azimuth. For example, an azimuth of 3210 is entered as 321.
b.	Wind Speed	Type the wind speed on knots.
c.	Air Temp	Type the air temp in tenths of degrees Kelvin. For example, a temperature of 270.9 degrees K is entered as 2709.
Procedure MR4: Enter a Computer Meteorological Message (cont).		
Step	Action	Result/Explanation
d.	Air Press	Type the air pressure in millibars. Unlike the ID line pressure, all four digits may be entered for values over 1000.
11.	Repeat step 9 for each additional line of met. AFATDS will use standard atmosphere values for all lines for which no data is entered.	
12.	To enable an alert indicating met data validity is becoming suspect:	This is an optional step.
a.	Click the Enable Alert button.	A check appears in the box.
b.	Click the Alert Hours field and type the number of hours before the end of the valid DTG the alert will appear.	
13.	Click the Make Current button.	The met data is stored and placed in use.
<p>The AFATDS operator should perform the following:</p> <p>If the new met message replaces a standard met in use and is not concurrent to registrations stored: Delete any registrations conducted using the standard met.</p> <p>If the new met is concurrent to any registration stored: Re-compute that registration correction. See Procedure MR12. Re-Compute Registration Corrections To Account For Errors In MV/MET/SURVEY.</p> <p>If the new met is a subsequent met, replacing an existing current met and all registration corrections stored were conducted with current met in use or were re-computed with met: No additional action is required.</p>		
WARNING: The met message is not automatically distributed to the howitzers when entered by the operator. The AFATDS operator must select the Send... button on the View METCM window and select each gun.		

MR5. Receive a Computer Meteorological Message.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated, with the current situation displayed and digital communications established receive a computer meteorological message.

Procedure MR5: Receive a Computer Meteorological Message.			
Step	Station	Action	Result/Explanation
1	Met Station or Higher HQ AFATDS	Transmit the computer met message to the Btry/Plt FDC AFATDS.	
2.	Btry/Plt AFATDS	Receive the computer met message.	The MET icon on the AFATDS Current menu bar darkens and the counter increments.
If a fire mission is currently active, the received computer met message should be left in the MET icon list until completion of the mission. This prevents a change to firing data and an unexpected change in point of impact during the course of the mission. For example, if an adjustment were being conducted and the new met was put into effect, the next round fired would incorporate the observer's correction as well as a change in meteorological correction applied to the firing data. This may change the point of impact.			
3.	Btry/Plt AFATDS	Click the MET icon.	The CM MET Received window displays for review. The AFATDS operator can examine, but not edit, the met message.
a.		Click the Name field and type a name for the met message.	
b.		Click the Make Current button.	The computer met message is stored and put into use as the current met. The met message previously stored as current is renamed Previous Current . If met message distribution is established (see procedure MR3 above), the METCM is transmitted to the howitzers.
<p>The AFATDS operator should perform the following:</p> <p>If the new met message replaces a standard met in use and is not concurrent to registrations stored: Delete any registrations conducted using the standard met.</p> <p>If the new met is concurrent to any registration stored: Re-compute that registration correction. See Procedure MR12. Re-Compute Registration Corrections To Account For Errors In MV/MET/SURVEY.</p> <p>If the new met is a subsequent met, replacing an existing current met and all registration corrections stored were computed with current met in use or were re-computed with met: No additional action is required.</p>			

MR6. Conduct A Precision Registration.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed conduct a precision registration.

Procedure MR6: Conduct a Precision Registration.			
Step	Station	Action	Result/Explanation
Note:			
1. <u>OBJECTIVE OF PRECISION REGISTRATION</u> : The objectives of the precision registration are divided between the forward observer and the FDC.			
a) The observer has two objectives.			
1) <u>OBJECTIVE OF IMPACT PHASE (PREC REG)</u> : The objective of the impact phase of a precision registration is to establish spottings of two overs and two shorts along the observer-target (OT) line from rounds fired with the same data or from rounds fired with data 25 meters apart or 50 meters apart when probable error in range (PER) is greater than or equal to 25 meters.			
(NOTE: WHEN PER IS > 25 THE LIKELIHOOD OF THE OBSERVER RECEIVING A 25 METER CHANGE IN IMPACT FOR A 25 METER CORRECTION IS PRACTICALLY NON-EXISTENT).			
2) <u>OBJECTIVE OF THE TIME PHASE (PREC REG)</u> : The objective of the time phase of the precision registration is to correct the mean height of burst of four rounds fired with the same data to 20 meters above the target point.			
b) <u>FIRE DIRECTION CENTER'S OBJECTIVE (PREC REG)</u> : The FDC'S objective in a precision registration is to determine Total Corrections, (Total Range, Deflection, and Fuze). With the Registration Corrections properly applied, it is possible to fire for effect without an adjustment phase on accurately located targets within transfer limits.			
2. Advantages of the precision registration.			
a) Only a single observer is required.			
b) The observer does not require additional instruments to measure very accurate direction and vertical angle.			
c) A surveyed observation point is not required.			
3. Disadvantages of the precision registration are:			
a) Eight rounds are required ⁸ to bracket and determine the HOB. This are in addition to those fired in adjustment.			
A registration point on common survey with the battery is required.			
1	FDO	Issues fire order to FDC.	
NOTE: Prior to performing a registration, the howitzer must be placed in a degraded mode. This is accomplished by transmitting a movement order to the gun directing the gun to "Stay." This procedure is explained in Chapter 8, Procedure PG1.			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window.	
a.		Click Mission Processing, Initiate Fire Mission.	The Initiate Fire Mission window displays.
b.		Click the Mission Type button and select Precision Registration or Precision Quick and Time Registration.	Select Precision Registration if only the impact phase of the registration will be fired.

⁸ It is possible, but improbable, that the impact phase bracket could be established with spottings of only 2 rounds. A spotting of "range correct" satisfies the requirement for both an over and a short spotting.

c.		Click the Observer field and select the Unit ID of the observer.	The observer Unit ID appears in the field.
e.		Enter the Location .	
1)		To enter the registration point grid:	Type the registration point grid and altitude in the location field. Go to step f.
2)		To enter a known point as the registration point:	
a)		Click the Shift tab.	Shift data displays.
b)		Click the button to the left of Known Point Number .	The Known Point Number field becomes active.
c)		Type the known point number in the Known Point Number field.	
d)		Click the Apply button.	The IFM tab redispays with the grid and altitude of the known point in the Location field.
f.		Click the Munitions tab.	The Initiate Fire Mission window displays munitions data.
g.		Click the FFE#1 Shell and select the shell type issued in the fire order.	If the registration type selected was Precision Quick and Time Registration the FFE#2 Shell displays the same selection.
h.		Click the FFE#1 Shell Model field and select the corresponding model.	If the registration type selected was Precision Quick and Time Registration , the FFE#2 Shell Model displays the same selection. NOTE: All shell models of the selected category display. Ensure the model selected is appropriate for weapon and ammunition inventory.
i.		Click the FFE#1 (Shell) Lot field and select the lot issued in the fire order.	If the registration type selected was Precision Quick and Time Registration , the FFE#2 Shell Lot displays the same selection.
j.		Click the FFE#1 Fuze field and select the fuze issued in the fire order for the impact phase.	The Model field activates.
k.		Click the FFE#1 (Fuze) Model field and select the corresponding model.	The Lot field becomes selectable.
l.		Click the FFE#1 (Fuze) Lot field and select the lot issued in the fire order.	The
		If the registration type selected was Precision Registration , go to step p. If the registration type selected was Precision Quick and time Registration go to step m.	
m.		Click the FFE#2 Fuze field and select the fuze issued in the fire order for the time phase.	The Model field activates.
n.		Click the FFE#2 (Fuze) Model field and select the corresponding model.	The Lot field becomes selectable.

o.		Click the FFE#2 (Fuze) Lot field and select the lot issued in the fire order.	All possible letters display. The lot selected must be one stored or the mission will not produce a solution when the Analyze Tgt button is selected.
p.		Click the (Propellant) Model and select the model issued in the fire order.	The Lot and Charge fields become selectable and the Propellant field displays the type.
q.		Click the (Propellant) Lot and select the lot issued in the fire order.	All possible letters display. The lot selected must be one stored or the mission will not produce a solution when the Analyze Tgt button is selected.
r.		Click the Charge field and select the charge issued in the fire order.	The charge displays.
s.		Click the More Mission Data tab.	
t.		Click the Fire Unit Add button.	The Select Unit window displays with a list of all guns.
u.		Select the registering piece and click the OK button. This must be done for AFATDS to Compute a Solution	The unit ID of the registering piece displays in the list.
v.		Click Analyze Tgt.	The following occur:
w.	<p>The Registration window displays with firing data, orienting data and probable error data. The registration mission MTO is automatically transmitted to the observer. If the No Ballistics Solution alert displays, go to procedure MR13 at the end of this chapter. If digital communications with the observers: go to step 3. If voice communications with the observers: go to step 2.</p>		
2.	Btry/Plt AFATDS	Medium level failed communications alerts display for both observers.	Click OK but do not delete the alerts until the registration is completed.
a.		Compose and transmit voice MTO.	Establish voice communications with the observers. The MTO format is: <i>Register on (location), fuze quick (and time).</i>
3.	Observer	Report "Ready."	The observer reports ready to observe.
4.	Btry/Plt AFATDS	Receive "Ready" from the observers:	
a.		If received digitally:	The Ready to Observe check box for the observer displays a check. The Send Fire Commands button activates.
b.		If received voice:	Click the Ready to observe check box for the reporting observer. The Send Fire Commands button activates.
Note: <i>If coordination is pending the Send Fire Commands button will not become available until the coordination has been resolved.</i>			
5.	Btry/Plt AFATDS	Click the Send Fire Commands button.	Fire commands are transmitted to the AFCS.
6.	Gun	Responds with "Shot"	
7.	AFATDS	Receives "Shot"	Weapon Status Paladin window updates. Reception of shot starts a splash timer. 10 seconds prior to the expiration of the time of flight, AFATDS sends "Splash."

		If digital comm with observers:	Automatically transmits “Shot” to the observer.
		If voice comm with observers:	Observe Weapon Status Paladin window for “Shot” and announce to the observer. Splash must be manually determined and announced.
8.	Observer	Receive “Splash.”	Observer spots burst and determines spotting.
9.	Observer	Transmit correction.	The observer converts spotting to correction and sends as a subsequent adjustment.
10.	Btry/Plt AFATDS	Receive correction.	
a.		If received digitally:	The Sensings Rnd 1 data appears displaying the aimpoint location based on the correction. <i>Go to step 11.</i>
b.		If received voice:	The correction is entered by the AFATDS operator using the following steps:
1)		Click the Enter Sensings... button.	The Adjust window displays.
2)		Click the Azimuth button and select Observer-Target	The Azimuth field becomes active.
3)		Type the OT direction in the Azimuth field.	The azimuth displays.
4)		To enter a lateral shift: click the Deviation Correction button and select the direction of the shift.	Default is None ; selections are Left and Right .
i.		Type the magnitude of the shift in the Deviation Correction field.	
5)		To enter a range shift: click the Range Correction button and select the direction of the shift.	Default is None ; selections are Add and Drop .
i.		Type the magnitude of the shift in the Range Correction field.	
6)		To change the volume of fire: click the Registration Commands: field and select the correct volume of fire.	When the observer can achieve a spotting of over and short with a 25m (50m if PE _R is 38 or greater) correction, he changes the volume of fire. Applicable selections are: Registration 2 Round to fire two rounds at the same firing data, and Registration 1 Round to change the volume of fire to 1 round to complete the bracket.
NOTE: <i>The change in volume of fire is not reflected in the Registration Mission Information window. The volume of fire can be determined by viewing selecting the Fire Commands button on the Weapon Status Paladin window. The fire commands display the firing data computed after the last correction entered. You must click send Fire CMDs after each sensing.</i>			

6)		Click the Apply button.	The Sensings Rnd (#) data appears displaying the aimpoint location based on the correction.
7)		Click the Cancel button.	The Adjust window closes.
11.	Repeat steps 5. Through 10. for each additional round fired in the impact phase. For a Precision Registration (no time phase): go to step 12. For a Precision Quick and Time Registration: go to step 14.		
12.	Observer	Transmits refinement data.	The observer evaluates the bracket and determines a refinement correction that places the MPI on the registration point. This correction is transmitted to the FDC with a request to record as registration point and end the mission.
13.	Btry/Plt AFATDS	Receives refinement data.	The following occur: 1. The Sensings Rnd (#) data appears displaying the aimpoint location based on the correction. 2. The Record as Reg Point check box automatically displays a check. Go to step 24.
14.	Observer	Transmits refinement data and requests fuze time.	The observer evaluates the bracket and determines a refinement correction that places the MPI on the registration point. This correction is transmitted to the FDC with a request to fire fuze time.
15.	Btry/Plt AFATDS	Receives refinement data.	The following occur: 1. The Sensings Rnd (#) data appears displaying the aimpoint location based on the correction. 2. The Record as Reg Point check box automatically displays a check. 3. Fuze Time firing data is computed.
16.	Btry/Plt AFATDS	Click the Send Fire Commands button.	Fire commands are transmitted to the AFCS.
17.	Gun	Responds with "Shot"	
18.	AFATDS	Receives "Shot"	Weapon Status Paladin window updates. Reception of shot starts a splash timer. 10 seconds prior to the expiration of the time of flight, AFATDS sends "Splash."
a.		If digital comm with observers:	Automatically transmits "Shot" to the observer.
b.		If voice comm with observers:	Observer Weapon Status Paladin window for "Shot" and announce to the observer. Splash must be manually determined and announced.
19.	Observer	Receive "Splash."	Observer spots burst and determines spotting.
20.	Observer	Transmit correction.	The observer converts spotting to correction and sends as a subsequent adjustment.
21.	Btry/Plt AFATDS	Receive correction.	
a.		If received digitally:	The Sensings Rnd (#) data appears displaying the aimpoint location based on the correction.
b.		If received voice:	The correction is entered by the AFATDS operator using the following steps:
1)		Click the Enter Sensings... button.	The Adjust window displays.
2)		Click the Azimuth button and select Observer-Target	The Azimuth field becomes active.

3)		Type the OT direction in the Azimuth field.	The azimuth displays.
4)		To enter an HOB correction: click the HOB Correction button and select the direction of the shift.	Default is None ; selections are Up and Down .
i.		Type the magnitude of the shift in the Deviation Correction field.	
5)		To change the volume of fire: click the Registration Commands: field and select the correct volume of fire.	When the observer spots an air burst, he requests “3 rounds repeat.” Applicable selections are: Registration 3 Round to fire three rounds at the same firing data.
22.	Observer	Transmit refinement.	The observer evaluates the time spottings. He determines refinement to adjust the HOB to 20m and requests to record as time registration point.
23.	Btry/Plt AFATDS	Receives refinement data.	The following occur: 1. The Sensings Rnd (#) data appears displaying the aimpoint location based on the correction. 2. The Record as Time Reg Point check box automatically displays a check. 3. Fuze Time firing data is computed.
24.	Btry/Plt AFATDS	Click the Comp Corrections button.	The Corrections section of the window displays registration corrections.
25.	Btry/Plt AFATDS	Click the Store Corrections button.	Registration corrections are stored. Registration corrections are automatically transmitted to all guns and stored in each gun’s registration file at AFATDS. NOTE: <i>If all communications fail with a gun, a medium level alert displays. Troubleshoot communications and when communications have been re-established, display the alert and select Retry. This retransmits the registration correction. Failure to do so will cause the gun that has not received the correction to fire outside the sheaf when guns compute their own firing data in a mass mission.</i>
26.	Gun	Receives and automatically stores the registration correction.	No operator action is required at the AFCS.
27.	Btry/Plt AFATDS	Click the End Of Mission button.	AFATDS places an MFR in the MFR icon and sends end of mission to the AFCS.
NOTE: <i>If the registration corrections are later deleted at AFATDS, AFATDS automatically transmit delete messages to all howitzers in the unit.</i>			

MR7. Conduct A Visual High Burst/Mean Point of Impact (MPI) Registration.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation conduct a visually observed high burst or mean point of impact registration.

Procedure MR7: Conduct a Visual Observed High Burst/Mean Point of Impact registration.			
Step	Station	Action	Result/Explanation
<p>Note: The HB/MPI registration offers an alternative to precision registration. Two observers will report directions and vertical angle to a group of rounds fired at the same data. The data fired becomes the "did hit data". Using the reported directions and vertical angle from the observers, the AFATDS determines the location of the mean point of impact and is then able to determine should-hit data and total corrections. The HB/MPI registration has a number of advantages over the precision registration:</p> <ol style="list-style-type: none"> 1. Advantages <ol style="list-style-type: none"> a. Only six usable rounds are required (less than six rounds constitute an abbreviated registration) b. Because all six rounds are used in the determination of the mean burst location, the assurance of validity is greater. c. An accurately located, well-defined registration point is not required. d. The HB registration is easier to observe at night without illumination. e. Has the potential for greater accuracy since measurement is made with an instrument vice visual estimation in precision registration. 1. Disadvantages. The disadvantages of the HB/MPI registration are: <ol style="list-style-type: none"> f. Requires two surveyed observers. Each observer must be able to accurately measure direction and vertical angle. 			
1	FDO	Issues fire order to FDC.	The location and altitude of the orienting point must be selected to allow line-of-site from the observers. The apex angle between the lines-of-site at the orienting point should be at least 150 mils and preferably 300 mils.
<p>NOTE: Prior to performing a registration, the howitzer must be placed in a degraded mode. This is accomplished by transmitting a movement order to the gun directing the gun to "Stay"</p>			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window.	
a.		Click Mission Processing, Initiate Fire Mission.	The Initiate Fire Mission window displays.
b.		Click the Mission Type button and select and select HB Registration or MPI Registration.	The selection causes the Observer 2: field to activate.
c.		Click the Observer field and select the Unit ID of the observer who will measure the VA.	The observer Unit ID appears in the field.
d.		Click the Observer 2 field and select the Unit ID of the observer who will measure only azimuth.	The observer Unit ID appears in the field.
e.		Enter the Location.	Type the grid and altitude of the orienting point in the location field.
f.		Click the Munitions tab.	The Initiate Fire Mission window displays munitions data.

g.		Click the FFE#1 Shell and select the shell type issued in the fire order.	The Shell Model field displays.
h.		Click the FFE#1 Shell Model field and select the corresponding model.	All shell models of the selected category display. Ensure the model selected is appropriate for weapon and ammunition inventory.
i.		Click the FFE#1 (Shell) Lot field and select the lot issued in the fire order.	The lot may be selected or typed in the space. All possible letters display. The lot selected must be one stored or the mission will not produce a solution when the Analyze Tgt button is selected.
j.		Click the FFE#1 Fuze field and select the fuze issued in the fire order.	The Model field activates.
k.		Click the FFE#1 (Fuze) Model field and select the corresponding model.	The Lot field becomes selectable.
l.		Click the (Fuze) Lot field and select the lot issued in the fire order.	All possible letters display. The lot selected must be one stored or the mission will not produce a solution when the Analyze Tgt button is selected.
m.		Click the Propellant Model and select the model issued in the fire order.	The Lot field becomes selectable.
n.		Click the (Propellant) Lot and select the lot issued in the fire order.	All possible letters display. The lot selected must be one stored or the mission will not produce a solution when the Analyze Tgt button is selected.
o.		Click the Charge field and select the charge issued in the fire order.	The charge displays.
p.		Click the More Mission Data tab.	
q.		Click the Height of Burst field and type the HOB issued in the fire order.	The height of burst displays.
r.		Click the Fire Unit Add button.	The Select Unit window displays with a list of all guns.
s.		Select the registering piece and click the OK button.	The registering piece Unit ID is added to the list.
t.		Click Analyze Tgt .	The following occur:
u.	<p>The Registration window displays with firing data, orienting data and probable error data. The Orienting data is automatically transmitted to the two observers as MTOs.</p> <p>If the No Ballistics Solution alert displays, go to procedure MR13 at the end of this chapter.</p> <p>If digital communications with the observers: go to step 3.</p> <p>If voice communications with the observers: go to step 2.</p>		

2.	Btry/Plt AFATDS	Medium level failed communications alerts display for both observers.	Click OK but do not delete the alerts until the registration is completed.
a.		Compose and transmit voice orienting data.	Establish voice communications with the observers. The MTO format is: Observe HB (MPI) Registration (01 call sign) direction: (Observer Orienting Data 1: Azimuth), vertical angle: (Observer Orienting Data 1: Va), measure the vertical angle. (02 call sign) direction: (Observer Orienting Data 2: Azimuth), vertical angle: (Observer Orienting Data 2: Va). Report when ready to observe.
3.	Observers	Report "Ready."	Each observer orients to observe and reports ready.
4.	Btry/Plt AFATDS	Receive "Ready" from the observers:	
a.		If received digitally:	The Ready to Observe check box for the reporting observer displays a check.
b.		If received voice:	Click the Ready to Observe check box for the reporting observer.
c.		When both observers have reported:	The Send Fire Commands button activates.
Note: If coordination is pending the Send Fire Commands button will not become available until the coordination has been resolved.			
5.	Btry/Plt AFATDS	Click the Send Fire Commands button.	Fire commands are transmitted to the AFCS.
6.	Gun	Responds with "Shot"	
7.	AFATDS	Receives "Shot"	Weapon Status Paladin window updates. Reception of shot starts a splash timer. 10 seconds prior to the expiration of the time of flight, AFATDS sends "Splash."
		If digital comm with observers:	Automatically transmits "Shot" to the observers.
		If voice comm with observers:	Observer Weapon Status Paladin window for "Shot" and announce to observers. Splash must be manually determined and announced.
8.	Observers	Receive "Splash."	Observers spot burst and measure azimuths and VA.
9.	Observers	Transmit sensings.	01 observer sends azimuth and vertical angle; 02 observer sends azimuth.
10.	Btry/Plt AFATDS	Receive sensings.	
a.		If received digitally:	The Sensings Rnd 1 data appears displaying the azimuths and vertical angle and the computed grid and altitude of the burst.
b.		If received voice:	The sensings are entered by the AFATDS operator using the following steps:

Procedure MR7: Conduct a Visual Observed High Burst/Mean Point of Impact registration (cont).			
Step	Station	Action	Result/Explanation
1)		Click the Enter Sensings... button.	The Registration Sensings window displays.
2)		Click the button to the left of Azimuth/VA Data .	The Azimuth/VA Data section of the window becomes active.
3)		Click the Observer 1 VA: field and select the direction of the VA.	Default is None , selections are Up and Down .
4)		Type the magnitude of the VA in the Observer 1 VA: field.	
5)		Type the 01 direction in the Observer 1 Azimuth field.	
6)		Type the 02 direction in the Observer 2 Azimuth field.	
7)		Click the Apply button.	The Sensings Rnd 1 data appears displaying the azimuths and vertical angle and the computed grid and altitude of the burst.
8)		Click the Cancel button.	The Registration Mission Information window closes.
11.	Repeat steps 5. Through 10 for each additional round fired. When the number of rounds fired equals the number of rounds issued in the FDO's fire order, proceed to step 12.		
12.	Btry/Plt AFATDS	Click the Comp Corrections button.	The mean burst location is computed and the plot of each round is compared to that location. The following may occur:
a.		<i>If one or more rounds plot beyond 4 PE from the MBL:</i>	The Bad Rounds window displays indicating " Round(s) # should be rejected. " Note which rounds are recommended for deletion and go to step 13.
b.		<i>If all rounds are within 4 PE of the MBL:</i>	The Corrections section of the window displays registration corrections. Go to step 14.
13.	Btry/Plt AFATDS	Click OK .	The Bad Rounds window closes.
a.		<i>To compute the registration correction using only the good rounds:</i>	
1)		Click the Accept check box next to each round recommended for rejection per previous warning message.	The check is removed from the box.
2)		Click the Comp Corrections button.	The Corrections section of the window displays registration corrections. Go to step 12.a.
b.		<i>To fire additional rounds:</i>	
1)		Click the Accept check box next to each round recommended for rejection per previous warning message.	The check is removed from the box. This action deselects the sensing.

2)		Repeat steps 5. Through 13. To fire the additional rounds. Operator must “ comp corrections ” again to consider additional sensing.	
14.	Btry/Plt AFATDS	Click the Store Corrections button.	Registration corrections are stored. Registration corrections are automatically transmitted to all guns and stored in each gun’s registration file at AFATDS. NOTE: <i>If all communications fail with a gun, a medium level alert displays. Troubleshoot communications and when communications have been re-established, display the alert and select Retry. This retransmits the registration correction. Failure to do so will cause the gun that has not received the correction to fire outside the sheaf when guns compute their own firing data in a mass mission.</i>
15.	Gun	Receives and automatically stores the registration correction.	No operator action is required at the AFCS.
16.	Btry/Plt AFATDS	Click the End Of Mission button.	End of mission is transmitted to the AFCS.
17.	Btry/Plt AFATDS	Transmit EOM to observers.	Construct a freetext message to inform the observers that the mission is complete.
NOTE: <i>If the registration corrections are later deleted at AFATDS, AFATDS automatically transmit delete messages to all howitzers in the unit.</i>			

MR8. Conduct A Radar Observed High Burst/Mean Point of Impact Registration.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation conduct a radar registration.

Procedure MR8: Conduct a Radar Observed High Burst/Mean Point of Impact registration.			
Step	Station	Action	Result/Explanation
Note: A radar registration is observed by a Firefinder radar operating in the friendly fire mode. The registration is a form of HB/MPI registration in which the radar reports the actual location and altitude of each bursting round to AFATDS. To track the rounds, the radar requires orienting data, specifically, the maximum ordinate, quadrant elevation and time of flight. AFATDS transmits this data as an MTO to the radar.			
1	FDO	Issues fire order to FDC.	The location and altitude of the orienting point must be selected to allow electrical line-of-site from the radar.
NOTE: <i>Prior to performing a registration, the howitzer must be placed in a degraded mode. This is accomplished by transmitting a movement order to the gun directing the gun to “Stay”.</i>			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window.	
a.		Click Mission Processing, Initiate Fire Mission.	The Initiate Fire Mission window displays.
b.		Click the Mission Type button and select and select Radar HB Registration or Radar MPI Registration.	The selection causes AFATDS to create an MTO with radar orienting data.
c.		Click the Observer field and select the Unit ID of the radar.	The radar Unit ID appears in the field.
d.		Enter the Location.	Type the grid and altitude of the orienting point in the location field.

e.		Click the Munitions tab.	The Initiate Fire Mission window displays munitions data.
Procedure MR8: Conduct a Radar Observed High Burst/Mean Point of Impact registration (cont).			
Step	Station	Action	Result/Explanation
f.		Click the FFE#1 Shell and select the shell type issued in the fire order.	The Shell Model field displays.
g.		Click the FFE#1 Shell Model field and select the corresponding model.	All shell models of the selected category display. Ensure the model selected is appropriate for weapon and ammunition inventory.
h.		Click the FFE#1 (Shell) Lot field and select the lot issued in the fire order.	The lot may be selected or typed in the space. All possible letters display. The lot selected must be one stored or the mission will not produce a solution when the Analyze Tgt button is selected.
i.		Click the FFE#1 Fuze field and select the fuze issued in the fire order.	The Model field activates.
j.		Click the FFE#1 (Fuze) Model field and select the corresponding model.	The Lot field becomes selectable.
k.		Click the (Fuze) Lot field and select the lot issued in the fire order.	All possible letters display. The lot selected must be one stored or the mission will not produce a solution when the Analyze Tgt button is selected.
l.		Click the Propellant Model and select the model issued in the fire order.	The Lot field becomes selectable.
m.		Click the (Propellant) Lot and select the lot issued in the fire order.	All possible letters display. The lot selected must be one stored or the mission will not produce a solution when the Analyze Tgt button is selected.
n.		Click the Charge field and select the charge issued in the fire order.	The charge displays.
o.		Click the More Mission Data tab.	
q.		Click the Height of Burst field and type the HOB issued in the fire order.	The height of burst displays.
r.		Click the Fire Unit Add button.	The Select Unit window displays with a list of all guns.
s.		Select the registering piece and click the OK button.	The registering piece Unit ID is added to the list.
t.		Click Analyze Tgt .	The following occur:
u.	<p>The Registration window displays with firing data, orienting data and probable error data. The Orienting data is automatically transmitted to the radar as an MTO.</p> <p>If the No Ballistics Solution alert displays, go to procedure MR13 at the end of this chapter.</p> <p>If digital communications with the radar: go to step 3.</p> <p>If voice communications with the radar: go to step 2.</p>		

2.	Btry/Plt AFATDS	Medium level failed communications alert displays for the radar.	Click OK but do not delete the alerts until the registration is completed.
a.		Compose and transmit voice orienting data.	Establish voice communications with the observers. The MTO must contain: <i>Time of flight:</i> displayed in the Time of Flight field. <i>Max Ord:</i> must be determined from table G of the appropriate TFT. Entry argument is the Quadrant Elevation . <i>Quadrant Elevation:</i> displayed in the Quadrant Elevation field. Go to step 4.
3.	Radar	Receive MTO.	The radar receives an MTO with the following data: Time of flight Max Ord Quadrant Elevation Radar Submode Control: <i>For an HB Reg:</i> Artillery Air Burst <i>For an MPI Reg:</i> Artillery Datum Plane
4.	Radar	Reports "Ready."	
5.	Btry/Plt AFATDS	Receive "Ready" from the radar:	
a.		<i>If received digitally:</i>	The Ready to Observe check box for the radar displays a check. The Send Fire Commands button activates.
b.		<i>If received voice:</i>	Click the Ready to Observe check box for the radar. The Send Fire Commands button activates.
6.	Btry/Plt AFATDS	Click the Send Fire Commands button.	Fire commands are transmitted to the AFCS.
7.	Gun	Responds with "Shot"	
8.	AFATDS	Receives "Shot"	Weapon Status Paladin window updates. Shot reports are not transmitted to radars.
9.	Radar	Transmit spotting.	The radar predicts the impact point an location and reports these.
10.	Btry/Plt AFATDS	Receive sensings.	
a.		<i>If received digitally:</i>	The Sensings Rnd 1 data appears displaying the grid and altitude of the burst.
b.		<i>If received voice:</i>	The sensings are entered by the AFATDS operator using the following steps:
1)		Click the Enter Sensings... button.	The Registration Sensings window displays.
2)		Click the Burst Location field and type the grid and altitude reported by the radar.	The location displays in the field.
3)		Click the apply field.	The Sensings Rnd 1 data appears displaying the grid and altitude of the burst.
4)		Click the Cancel button.	The Registration Mission Information window displays.
11.	Repeat steps 6. through 10. for each additional round fired. When the number of rounds fired equals the number of rounds issued in the FDO's fire order, proceed to step 12.		

12.	Btry/Plt AFATDS	Click the Comp Corrections button.	The mean burst location is computed and the plot of each round is compared to that location. The following may occur:
a.		<i>If one or more rounds plot beyond 4 PE from the MBL:</i>	The Bad Rounds window displays indicating “ Round(s) # should be rejected. ” Go to step 13.
b.		<i>If all rounds are within 4 PE of the MBL:</i>	The Corrections section of the window displays registration corrections. Go to step 14.
13.	Btry/Plt AFATDS	Click OK .	The Bad Rounds window closes.
a.		<i>To compute the registration correction using only the good rounds:</i>	
1)		Click the Accept check box next to each round recommended for rejection per previous warning message.	The check is removed from the box.
2)		Click the Comp Corrections button.	The Corrections section of the window displays registration corrections. Go to step 14.
b.		<i>To fire additional rounds:</i>	
1)		Click the Accept check box next to each round recommended for rejection per previous warning message.	The check is removed from the box.
2)		Repeat steps 5. Through 13. To fire the additional rounds. Operator must “ comp corrections ” again to consider additional sensings.	
14.	Btry/Plt AFATDS	Click the Store Corrections button.	Registration corrections are stored
15.	Gun	Receives and automatically stores the registration correction.	No operator action is required at the AFCS.
16.	Btry/Plt AFATDS	Click the End Of Mission button.	End of mission is transmitted to the PALADINs.
NOTE: <i>If the registration corrections are later deleted at AFATDS, AFATDS automatically transmit delete messages to all howitzers in the unit.</i>			

MR9. Conduct A Laser Observed Mean Point of Impact Registration.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation conduct a laser observed mean point of impact registration.

Procedure MR9: Conduct a Laser Observed Mean Point of Impact registration.			
Step	Station	Action	Result/Explanation
1	FDO	Issues fire order to FDC.	
NOTE: <i>Prior to performing a registration, the howitzer must be placed in a degraded mode. This is accomplished by transmitting a movement order to the gun directing the gun to “Stay.”</i>			
2.	Btry/Plt AFATDS	<i>Complete the Initiate Fire Mission window.</i>	

a.		Click Mission Processing, Initiate Fire Mission.	The Initiate Fire Mission window displays.
b.		Click the Mission Type button and select and select Laser Registration	
c.		Click the Observer field and select the Unit ID of the observer.	The observer Unit ID appears in the field.
d.		Enter the Location.	Type the grid and altitude of the orienting point in the location field.
e.		Click the Munitions tab.	The Initiate Fire Mission window displays munitions data.
f.		Click the FFE#1 Shell and select the shell type issued in the fire order.	The Shell Model field displays.
g.		Click the FFE#1 Shell Model field and select the corresponding model.	All shell models of the selected category display. Ensure the model selected is appropriate for weapon and ammunition inventory.
h.		Click the FFE#1 (Shell) Lot field and select the lot issued in the fire order.	The lot may be selected or typed in the space. All possible letters display. The lot selected must be one stored or the mission will not produce a solution when the Analyze Tgt button is selected.
i.		Click the FFE#1 Fuze field and select the fuze issued in the fire order.	The Model field activates.
j.		Click the FFE#1 (Fuze) Model field and select the corresponding model.	The Lot field becomes selectable.
k.		Click the (Fuze) Lot field and select the lot issued in the fire order.	All possible letters display. The lot selected must be one stored or the mission will not produce a solution when the Analyze Tgt button is selected.
l.		Click the Propellant Model and select the model issued in the fire order.	The Lot field becomes selectable.
m.		Click the (Propellant) Lot and select the lot issued in the fire order.	All possible letters display. The lot selected must be one stored or the mission will not produce a solution when the Analyze Tgt button is selected.
n.		Click the Charge field and select the charge issued in the fire order.	The charge displays.
o.		Click the More Mission Data tab.	
p.		Click the Fire Unit Add button.	The Select Unit window displays with a list of all guns.
q.		Select the registering piece and click the OK button.	The registering piece Unit ID is added to the list.

r.		Click Analyze Tgt.	The following occur:
s.	<p>The Registration window displays with firing data, orienting data and probable error data. The MTO is automatically transmitted to the observer.</p> <p>If the No Ballistics Solution alert displays, go to procedure MR13 at the end of this chapter.</p> <p>If digital communications with the observer: go to step 3.</p> <p>If voice communications with the observer: go to step 2.</p>		
2.	Btry/Plt AFATDS	Medium level failed communications alert displays for the observer.	Click OK but do not delete the alerts until the registration is completed.
a.		Compose and transmit voice MTO.	Establish voice communications with the observers. The MTO must contain: Direction to orienting point. Distance to orienting point. Vertical angle to orienting point.
3.	Observer	Receive MTO.	The observer receives the MTO.
4.	Observer	Reports "Ready."	
5.	Btry/Plt AFATDS	Receive "Ready" from the observer:	
a.		If received digitally:	The Ready to Observe check box for the observer displays a check. The Send Fire Commands button activates.
b.		If received voice:	Click the Ready to Observe check box for the observer. The Send Fire Commands button activates.
6.	Btry/Plt AFATDS	Click the Send Fire Commands button.	Fire commands are transmitted to the AFCS.
7.	Gun	Responds with "Shot"	
8.	AFATDS	Receives "Shot"	Weapon Status Paladin window updates.
9.	Observer	Transmit spotting.	The observer lases the burst and transmits the laser data to the FDC.
10.	Btry/Plt AFATDS	Receive sensings.	
a.		If received digitally:	The Sensings Rnd 1 data appears displaying the grid and altitude of the burst.
b.		If received voice:	The sensings are entered by the AFATDS operator using the following steps:
1)		Click the Enter Sensings... button.	The Laser RegistrationAdjust window displays.
2)		Click the button left of the Polar Data field,	Polar data fields become available.
3)		Type the observer's direction in the Azimuth field.	
4)		Type the observer's distance in the Slant Distance field.	
5)		Click the Va button and select the direction of the vertical angle.	Selections are None, Up and Down .

6)		Type the magnitude of the observer's vertical angle in the Va field.	
7)		Click the Apply button.	The Sensings Rnd 1 data appears displaying the grid and altitude of the burst.
8)		Click the Cancel button.	The Registration Mission Information window displays.
11.	Repeat steps 6. through 10. for each additional round fired. When the number of rounds fired equals the number of rounds issued in the FDO's fire order, proceed to step 12.		
12.	Btry/Plt AFATDS	Click the Comp Corrections button.	The mean burst location is computed and the plot of each round is compared to that location. The following may occur:
a.		<i>If one or more rounds plot beyond 4 PE from the MBL:</i>	The Bad Rounds window displays indicating " Round(s) # should be rejected. " Go to step 13.
b.		<i>If all rounds are within 4 PE of the MBL:</i>	The Corrections section of the window displays registration corrections. Go to step 14.
13.	Btry/Plt AFATDS	Click OK .	The Bad Rounds window closes.
a.		<i>To compute the registration correction using only the good rounds:</i>	
1)		Click the Accept check box next to each round recommended for rejection per previous warning message.	The check is removed from the box.
2)		Click the Comp Corrections button.	The Corrections section of the window displays registration corrections. Go to step 12.a.
b.		<i>To fire additional rounds:</i>	
1)		Click the Accept check box next to each round recommended for rejection per previous warning message.	The check is removed from the box.
2)		Repeat steps 5. through 12. To fire the additional rounds.	
14.	Btry/Plt AFATDS	Click the Store Corrections button.	Registration corrections are stored. Registration corrections are automatically transmitted to all guns and stored in each gun's registration file at AFATDS. NOTE: <i>If all communications fail with a gun, a medium level alert displays. Troubleshoot communications and when communications have been re-established, display the alert and select Retry. This retransmits the registration correction. Failure to do so will cause the gun that has not received the correction to fire outside the sheaf when guns compute their own firing data in a mass mission.</i>
15.	All Guns	Receive and automatically store the registration correction.	No operator action is required at the AFCS.
16.	Btry/Plt AFATDS	Click the End Of Mission button.	End of mission is transmitted to the PALADINs.

17.	Btry/Plt AFATDS	Transmit EOM to observers.	Construct a freetext message to inform the observers that the mission is complete.
NOTE:			
<i>If the registration corrections are later deleted at AFATDS, AFATDS automatically transmit delete messages to all howitzers in the unit.</i>			

MR10. Transfer Registration.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed and a registration correction stored transfer registration corrections to another FDC.

Procedure MR10: Transfer Registration Correction to Another FDC.		
Step	Action	Result/Explanation
<p>Note: AFATDS views the transfer of registration corrections as a communications action. In other words, AFATDS simply transmits or receives the registration correction. The FDC should only transfer registration corrections if:</p> <ol style="list-style-type: none"> 1) Both registered and receiving units are on common survey. 2) Both registering and receiving units are using a valid met or both are using standard met. If both units use standard met, the receiving unit's azimuth of lay must be within the same octant as the registering unit's azimuth to the registration point. 		
1.	On the Current menu bar, click Units, Workspace, Unit to Edit.	The Unit ID window displays with Basic Data.
2.	Click the Registration file.	A summary of all registration data is displayed in the Unit ID window.
3.	Click the desired registration.	The selected registration highlights and the Send... button activates.
4.	Click the Send... button.	The Select Unit window displays.
5.	Click the desired unit ID.	The unit ID highlights.
6.	Click the OK button.	The registration correction is transmitted.

MR11. Re-Compute Registration.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated, with the current situation displayed, a registration correction stored and provided a correction to a database error that existed during the registration re-compute registration corrections to account for errors in MV, MET or Survey.

Procedure MR11: Re-compute registration corrections to account for errors on MV/MET/SURVEY		
Step	Action	Result/Explanation
<p>Note: This procedure is used to isolate position constants when a registration has been conducted with a database that did not account for all measurable non-standard conditions that existed at the time of the registration. It is imperative that this procedure is used only when a condition that existed during the time of the registration has been corrected in the database. This condition could be any non-standard condition or error in survey. When these errors exist during the computation of the registration correction, the effect of the inaccuracy cannot be predicted by AFATDS. As a result, some part of the registration range, deflection and time corrections actually correct for this error. If the database is improved, for example by reception of a computer met message concurrent with the registration, a correction from both the database and the registration is now applied to firing data. This procedure causes AFATDS to re-compute the registration correction based on the database as it exists now. Registration correction must be done on the unit that did the registration.</p>		
1.	On the Current menu bar, click Units, Workspace, Unit to Edit.	The Unit ID window displays with Basic Data.

2.	Click the Registration file.	A summary of all registration data is displayed in the Unit ID window.
3.	Double click the desired registration.	The Edit Registration window. Registrations requiring correction for survey or met can be selected based on the DTG in the Reg Time . Any registration conducted before the DTG of the survey update require correction. Any registration with a DTG concurrent with that of the met message requires update. Registrations requiring MVV update can be selected based on the ammunition lots and projectile family.
4.	Click the Update button.	The ammunition, gun data and did-hit firing data are compared to non-standard conditions known in the database and the registration corrections are recomputed.
5.	Click the OK button.	The Edit Registration window closes. Updates will be sent to the rest of the guns
6.	Click the OK button.	The Unit ID window closes.

MR12. Delete Registration

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated, with the current situation displayed, and a registration correction stored delete a registration correction.

Procedure MR12: Delete Registration Corrections		
Step	Action	Result/Explanation
1.	On the Current menu bar, click Units, Workspace, Unit to Edit .	The Unit ID window displays with Basic Data .
2.	Click the Registration file.	A summary of all registration data is displayed in the Unit ID window.
3.	Click the desired registration.	The selected registration highlights and the Delete... button activates.
4.	Click the Delete... button.	A Warning! window displays.
5.	Click the Yes button.	The selected registration is deleted.
NOTE: If the registration corrections are later deleted at AFATDS, AFATDS automatically transmit delete messages to all howitzers in the unit.		

MR13. React to a Failure to Compute a Ballistics Solution..

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated, with the current situation displayed, and a registration initiated react to a failure to compute a ballistics solution.

Procedure MR13: React to a Failure to Compute a Ballistics Solution		
Step	Action	Result/Explanation
Note: If no ballistic solution is computed during a registration the registration fire order should be re-evaluated to ensure the registration point is within range. The database should be examined to ensure the registration ammunition is on hand and the registering piece is operational.		
1.	A registration has been input on the Initiate Fire Mission window and the Analyze Target button has been selected.	An A ballistic solution could not be calculated window displays.
2.	Click the OK button.	The A ballistic solution could not be calculated window closes and the Registration window displays.
3.	Click the End of Mission button.	The End Of Mission confirmation window displays.

4.	Click the Yes button.	The mission is ended.
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Chapter 4 Special Situations.

SS1 Process a Radar Fire Mission.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed process a radar mission.

Procedure SS1: Process a Radar Fire Mission			
Step	Station	Action	Result/Explanation
<p>Note: Firefinder radars locate enemy indirect fire weapons by operating the radar in the hostile fire mode. Weapons are located by tracking rounds the weapons fire and extrapolating the trajectory to its origin. The Firefinder will only generate fire requests in one of two situations:</p> <ol style="list-style-type: none"> 1. The trajectory originates from a call for fire zone assigned to the radar, or 2. The trajectory terminates in a critical friendly zone assigned to the radar. 			
1	Radar	Locates a target.	Transmits a call for fire message.
<i>If the mission is received via data communications, go to step 3.</i>			
2.	Btry/Plt AFATDS	<i>Complete the Initiate Fire Mission window.</i> Click Mission Processing, Initiate Fire Mission.	
a.		<i>Complete the Initiate Fire Mission window.</i> Enter the following:	
b.		Observer	Select the Unit ID of the radar.
c.		Allow Mission Type to default to Fire For Effect.	
d.		Location	Enter the grid provided by the radar.
e.		Select Category	13 target categories are available. Selection defines choices of Type. Default is LOC.
f.		Select Type	Allows selection of specific target type. Default is Terrain.
g.		Click Analyze Target.	
<p><i>If intervention is set, the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 3.</i></p> <p><i>If intervention is not set, the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 4.</i></p>			
3.	Btry/Plt AFATDS	<i>Display the mission processing solution.</i>	
a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined. Examine the Intervention Windows.
<i>If the weapons are in a degraded status and AFATDS computes the technical solution, go to step b. Otherwise, go to step c.</i>			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.
c.		Click one of the following:	

Procedure SS1: Process a Radar Fire Mission (cont).

Step	Station	Action	Result/Explanation
		Accept Recommendation	<p>If coordination is required: The coordination request:</p> <ol style="list-style-type: none"> 1. Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. 2. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. 3. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. <p>If no coordination was required or coordination approval was received: Transmits the solution displayed in the Recommendation to the AFCS. If the mission was entered at AFATDS, an MTO is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS since AFATDS becomes the observer. Otherwise, no MTO is generated. Go to step 4.</p>
		Send Selected	<p>Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons</p>
		Recalculate	<p>Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected. Go to step 2.a.</p>
		Unsupportable	<p>Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS. The mission is completed by another OPFAC.</p>
		Deny	<p>If the mission was entered at the AFATDS: places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar. If the mission was received from a radar: no MTO is transmitted to the radar.</p>
4.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.
<p>NOTE: If the AFCS operator selects the ABORT option on the AFCS, a deny message is sent to AFATDS. In addition, a freetext message is sent to AFATDS and placed in CMP. The freetext reads "AFCS OPERATOR ABORTED ACTIVE MISSION TARGET ID..." followed by the target number. AFATDS places the target in the Deny icon.</p>			
5.	Btry/Plt AFATDS	Track mission status of howitzers.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Weapon Status Paladin window displays. See <i>Procedure FM8. Examine the Weapon Status Paladin Window for details of mission tracking on the Weapon Status Paladin window.</i>

6.	Guns	Report "Shot."	
7.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: If the mission was initiated at the Btry/Plt AFATDS or received from a radar, the shot report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the shot report is automatically re-transmitted to the observer. As "Shot" reports are received, the Fire/Shot indicator for the reporting gun displays  with a green background.
8.	Guns	Transmit "Rounds Complete" report.	The gun section selects SHOT for each round fired. When the last SHOT is entered, the AFCS transmits "Rounds Complete."
10.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: If the mission was initiated at the Btry/Plt AFATDS or received from a radar, the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. <i>Go to step 11.</i> If the mission was initiated at by a radar , the "Rounds Complete" report causes AFATDS to transmit EOM to the AFCS and move the mission from the Active Target List to the Inactive Target List.
11.	Btry/Plt AFATDS	Manually end a mission received by voice comm from the radar.	
a.		After receiving "Rounds Complete" from all guns, click the EOM button on the Weapon Status Paladin window.	EOM is transmitted to the AFCS and the mission is moved from the Active Target List to the Inactive Target List.

SS2 Process a One, Two or Four Point Illumination Mission.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed process a one, two or four point illumination mission, AFATDS assigns illumination aimpoints to create sheaf by computing and transmitting firing data to the howitzers regardless of their status.

Procedure SS2: Process a One, Two or Four Point Illumination Mission.			
Step	Station	Action	Result/Explanation
1	Observer	Composes and transmits call for fire.	The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
<i>If the mission is received via data communications, go to step 3.</i>			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission.	
a.		Complete the Initiate Fire Mission window. Enter the following:	
b.		Observer	Select the Unit ID of the observer.
c.		Mission Type	Select the type of mission. Default is Fire For Effect . Adjust Fire may be selected for this type mission if required.
d.		Click the Munitions tab.	The Munitions form displays.

e.		Click the FFE#1 Shell and select the Illum.	Selecting the shell type before making other entries ensures illumination type entries are provided on all other menus.
f.		Click the IFM tab.	The IFM form displays.
		Click the Method of Fire button and select the appropriate illumination sheaf.	Applicable selections are: One Gun , Two Gun Lateral Spread , Two Gun Range Spread and Four Gun Range and Lateral Spread .
g.		Location	Enter a method of target location. See Procedure FM 6: Initiate a Fire Mission for details.
h.		Select Category	13 target categories are available. Selection defines choices of Type . Default is LOC .
i.		Select Type	Allows selection of specific target type. Default is Terrain .
j.		Click Analyze Target .	
<p>If intervention is set, the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 3.</p> <p>If intervention is not set, the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 4.</p>			
3.	Btry/Plt AFATDS	Display the mission processing solution.	
a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined. For a complete description of intervention.
<p>If the weapons are in a degraded status and AFATDS computes the technical solution, go to step b. Otherwise, go to step c.</p>			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.
c.		Click one of the following:	
		Accept Recommendation	<p>If coordination is required: The coordination request:</p> <ol style="list-style-type: none"> Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. <p>If no coordination was required or coordination approval was received: Transmits the solution displayed in the Recommendation to the AFCSs and sends an MTO. The MTO:</p> <ol style="list-style-type: none"> Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS. Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect. Is presented to the AFATDS operator as an alert if no comm route to the observer exists. Click the Send to Originator button on the alert to send the MTO back through the AFATDS that communicates with the observer. <p>Go to step 4.</p>

		Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons
Procedure SS2: Process a One, Two or Four Point Illumination Mission (cont).			
Step	Station	Action	Result/Explanation
		Recalculate	Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected. Go to step 2.a.
		Unsupportable	Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS. The mission is completed by another OPFAC.
		Deny	If the mission was entered at the AFATDS: places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar. If the mission was received from an FSE/FSCC or FA CP: sends Deny message to that AFATDS. Deny message is queued in that AFATDS's Active Mission Messages icon of the Current menu tool bar. If the mission was received directly from an observer: sends a denied MTO to observer. If the mission was received from a radar: no response is transmitted to the radar.
4.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.
NOTE: <i>If the AFCS operator selects the ABORT option on the AFCS, a deny message is sent to AFATDS. In addition, a freetext message is sent to AFATDS and placed in CMP. The freetext reads "AFCS OPERATOR ABORTED ACTIVE MISSION TARGET ID..." followed by the target number. AFATDS places the target in the Deny icon.</i>			
5.	Observer	Receives and stored the MTO.	
6.	Btry/Plt AFATDS	Track mission status of howitzers.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Weapon Status Paladin window displays. See <i>Procedure FM8. Examine the Weapon Status Paladin Window for details of mission tracking on the Weapon Status Paladin window.</i>
If the method of control is At My Command: got to step 7. If communications with the AFCS fails: see Procedure FM13. React to an AFCS Comm Failure During Mission Processing. If the method of control is WR or TOT,: go to step 12.			
7.	Guns	Transmit "Ready" report.	After acknowledging the mission, the READY selection becomes available at the AFCS.
8.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun displays  with a green background. When the last gun has reported, the "Ready" command is transmitted to the observer.
9.	Btry/Plt AFATDS	Transmit "Fire" command.	The observer may command "Fire" any time after the "Ready" report is received.
10.	Observer	Transmit "Fire" command.	The observer may command "Fire" any time after the "Ready" report is received.

11.	Btry/Plt AFATDS	Receive "Fire" command.	AFATDS receives the fire command and automatically transmits "Fire" to the AFCSs.
12.	Guns	Receive "Fire" command.	AFCS prompt changes from AWAITING COMMAND to FIRE.
13.	Guns	Report "Shot."	The Shot is selected on the AFCS. NOTE: For a TOT mission, the AFCS counts down the time and determines when to prompt the crew to fire. AFATDS simply waits for "Shot."

Procedure SS2: Process a One, Two or Four Point Illumination Mission (cont).

Step	Station	Action	Result/Explanation
14.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: If the mission was initiated at the Btry/Plt AFATDS , the shot report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the shot report is automatically re-transmitted to the observer. As "Shot" reports are received, the Fire/Shot indicator for the reporting gun displays  with a green background.
15.	Observer	Receives "Shot" report.	This provides indication that the mission has been fired.
16.	Btry/Plt AFATDS	Transmit "Splash" report.	This report is sent 5 seconds before impact. (The report can be manually transmitted by clicking the Splash button on the Weapon Status Paladin window.)
17.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
18.	Guns	Transmit "Rounds Complete" report.	The gun section selects SHOT for each round fired. When the last SHOT is entered, the AFCS transmits "Rounds Complete."
19.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: If the mission was initiated at the Btry/Plt AFATDS , the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the "Rounds Complete" report is automatically re-transmitted to the observer. As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun displays  with a green background.
20.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.

If the observer adjusts fire: go to step 21.

If the observer ends the mission: go to step 24.

21.	Observer	Transmit subsequent corrections.	The observer transmits an adjustment for an adjust fire mission or repeat fire for effect for a fire for effect mission.
22.	Btry/Plt AFATDS	Receives subsequent adjustment.	If intervention rules do not apply , the fire commands are transmitted to the AFCS. If intervention rules apply , the mission the Intervention icon on the Current window tool bar activates. If the adjustment places the point of aim in violation of an FSCM Btry/Plt AFATDS transmits a request for coordination before releasing the fire commands.
23.	All stations.	Steps 3 through 20 repeat as applicable.	
24.	Observer	Transmits end of mission.	

25.	Btry/Plt AFATDS	Receives end of mission.	Btry/Plt AFATDS retransmits end of mission to the AFCSS. If the observer requests Record as Target: The adjusted target location is stored in the On-Call Target list . If the observer requests Record as Known Point: The adjusted location is stored in the Targets, Known Points and an MTO with the known point number is transmitted to the observer.
26.	Guns	Receive EOM.	

SS3 Process a Coordinated Illumination Mission.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed process a coordinated illumination mission.

Procedure SS3: Process a Coordinated Illumination Mission.			
Step	Station	Action	Result/Explanation
Note: Coordinated illumination fire requests or orders to fire cause the controlling FDC or BOC to generate a second mission on the illumination grid. Both missions are automatically assigned a method of control of At My Command. This allows the observer to control the time of opening fire and alleviates the need to mark the illumination. The Coordinated illumination is done as two independent Adjust Fire Missions. Both are At My Command.			
1	Observer	Composes and transmits call for fire.	The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
If the mission is received via data communications, go to step 3.			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission..	
a.		Complete the Initiate Fire Mission window. Enter the following:	
b.		Observer	Select the Unit ID of the observer.
c.		Mission Type	Select Adjust Fire
d.		Click the Munitions tab.	The Munitions form displays.
e.		Click the FFE#1 Shell and select the Illum.	Selecting the shell type before making other entries ensures illumination type entries are provided on all other menus.
f.		Click the IFM tab.	The IFM form displays.
		Click the Method of Fire button and select the appropriate illumination sheaf.	Applicable selections are: One Gun, Two Gun Lateral Spread, Two Gun Range Spread and Four Gun Range and Lateral Spread.
g.		Location	Enter a method of target location. See Procedure
h.		Select Category	13 target categories are available. Selection defines choices of Type . Default is LOC .
i.		Select Type	Allows selection of specific target type. Default is Terrain .
Note: <i>At My Command should be selected.</i>			
j.		Click Analyze Target.	
If intervention is set, the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 3.			
If intervention is not set, the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 4.			
3.	Btry/Plt AFATDS	Display the mission processing solution.	

a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined. For a complete description of intervention, see Procedure FM7. Examine the Intervention Windows.
<i>If the weapons are in a degraded status and AFATDS computes the technical solution, go to step b. Otherwise, go to step c.</i>			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed for two fire for effect shells. The second set of fire commands are for the HE mission generated for the illum data.
c.		Click one of the following:	
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request:</p> <ol style="list-style-type: none"> 1. Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. 2. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. 3. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. 4. A separate coordination request is generated for the HE and ILLUM missions. <p><i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the AFCSs and sends an MTO. The MTO:</p> <ol style="list-style-type: none"> 1. Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS. 2. Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect. 3. Is presented to the AFATDS operator as an alert if no comm route to the observer exists. Click the Send to Originator button on the alert to send the MTO back through the AFATDS that communicates with the observer. <p>Go to step 4.</p>
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons
		Recalculate	Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected. Go to step 2.a.
		Unsupportable	Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS. The mission is completed by another OPFAC.

		Deny	<p>If the mission was entered at the AFATDS: places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received from an FSE/FSCC or FA CP: sends Deny message to that AFATDS. Deny message is queued in that AFATDS's Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received directly from an observer: sends a denied MTO to observer.</p> <p>If the mission was received from a radar: no response is transmitted to the radar.</p>
4.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.
<p>NOTE: If the AFCS operator selects the ABORT option on the AFCS, a deny message is sent to AFATDS. In addition, a freetext message is sent to AFATDS and placed in CMP. The freetext reads "AFCS OPERATOR ABORTED ACTIVE MISSION TARGET ID..." followed by the target number. AFATDS places the target in the Deny icon. After the illumination is adjusted the Observer should initiate a second Fire Mission.</p>			
5.	Observer	Receives and stored the MTO.	A separate MTO is transmitted for each mission.
6.	Btry/Plt AFATDS	Track mission status of howitzers.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Weapon Status Paladin window displays.
<p>NOTE: The observer must receive Ready for both Illumination and HE Mission before they are fired</p>			
7.	Guns	Transmit "Ready" report.	After acknowledging the mission, the READY selection becomes available at the AFCS.
8.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun displays  with a green background. When the last gun has reported, the "Ready" command is transmitted to the observer.
9.	Btry/Plt AFATDS	Transmit "Fire" command.	The observer may command "Fire" any time after the "Ready" report is received.
10.	Observer	Transmit "Fire" command.	The observer may command "Fire" any time after the "Ready" report is received. Because marking illumination is not possible using digital messages
11.	Btry/Plt AFATDS	Receive "Fire" command.	AFATDS receives the fire command and automatically transmits "Fire" to the AFCSs.
12.	Guns	Receive "Fire" command.	AFCS prompt changes from AWAITING COMMAND to FIRE.
13.	Guns	Report "Shot."	The Shot is selected on the AFCS.
14.	Btry/Plt AFATDS	Receives "Shot" report.	<p>On reception of the first gun's "Shot" report:</p> <p>If the mission was initiated at the Btry/Plt AFATDS, the shot report is placed in the Active Mission Messages icon of the Current window tool bar.</p> <p>If the mission was initiated at by an observer, the shot report is automatically re-transmitted to the observer.</p> <p>As "Shot" reports are received, the Fire/Shot indicator for the reporting gun displays  with a green background.</p>
15.	Observer	Receives "Shot" report.	This provides indication that the mission has been fired.

16.	Btry/Plt AFATDS	Transmit "Splash" report.	This report is sent 5 seconds before impact. (The report can be manually transmitted by clicking the Splash button on the Weapon Status Paladin window.)
17.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
18.	Guns	Transmit "Rounds Complete" report.	The gun section selects SHOT for each round fired. When the last SHOT is entered, the AFCS transmits "Rounds Complete."
19.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: If the mission was initiated at the Btry/Plt AFATDS , the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the "Rounds Complete" report is automatically re-transmitted to the observer. As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun displays  with a green background.
20.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
If the observer adjusts fire: go to step 21.			
If the observer ends the mission: go to step 24.			
21.	Observer	Transmit subsequent corrections.	The observer transmits an adjustment for an adjust fire mission or repeat fire for effect for a fire for effect mission.
22.	Btry/Plt AFATDS	Receives subsequent adjustment.	If intervention rules do not apply , the fire commands are transmitted to the AFCS. If intervention rules apply , the mission the Intervention icon on the Current window tool bar activates. If the adjustment places the point of aim in violation of an FSCM Btry/Plt AFATDS transmits a request for coordination before releasing the fire commands.
23.	All stations.	Steps 3 through 20 repeat as applicable.	
24.	Observer	Transmits end of mission.	EOM must be sent for both Mission
25.	Btry/Plt AFATDS	Receives end of mission.	Btry/Plt AFATDS retransmits end of mission to the AFCSs.
26.	Guns	Receive EOM.	

SS4 Process a Continuous Illumination Mission.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed process a continuous illumination mission.

Procedure SS4: Process a Continuous Illumination Mission.			
Step	Station	Action	Result/Explanation
1	Observer	Composes and transmits call for fire.	The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
If the mission is received via data communications, go to step 3.			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission.	
a.		Complete the Initiate Fire Mission window. Enter the following:	
b.		Observer	Select the Unit ID of the observer.
c.		Mission Type	Select Continuous Illumination

d.		Click the Munitions tab.	The Munitions form displays.
e.		Click the FFE#1 Shell and select the Illum.	Selecting the shell type before making other entries ensures illumination type entries are provided on all other menus.
f.		Click the IFM tab.	The IFM form displays.
		Click the Method of Fire button and select the appropriate illumination sheaf.	Applicable selections are: One Gun, Two Gun Lateral Spread, Two Gun Range Spread and Four Gun Range and Lateral Spread.
g.		Location	Enter a method of target location.
h.		Select Category	13 target categories are available. Selection defines choices of Type . Default is LOC .
i.		Select Type	Allows selection of specific target type. Default is Terrain .
j.		Click Analyze Target .	
<p>If intervention is set, the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 3.</p> <p>If intervention is not set, the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 4.</p>			
3.	Btry/Plt AFATDS	Display the mission processing solution.	
a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined.
<p>If the weapons are in a degraded status and AFATDS computes the technical solution, go to step b. Otherwise, go to step c.</p>			
b.		Click the Cannon Tech Soln tab.	Fire commands are displayed.
c.		Click one of the following:	
		Accept Recommendation	<p>If coordination is required: The coordination request:</p> <ol style="list-style-type: none"> 1. Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. 2. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. 3. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. <p>If no coordination was required or coordination approval was received: Transmits the solution displayed in the Recommendation to the AFCs and sends an MTO. The MTO:</p> <ol style="list-style-type: none"> 1. Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS. 2. Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect. 3. Is presented to the AFATDS operator as an alert if no comm route to the observer exists. Click the Send to Originator button on the alert to send the MTO back through the AFATDS that communicates with the observer. <p>Go to step 4.</p>

		Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons
		Recalculate	Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected. Go to step 2.a.
		Unsupportable	Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS. The mission is completed by another OPFAC.
		Deny	<p>If the mission was entered at the AFATDS: places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received from an FSE/FSCC or FA CP: sends Deny message to that AFATDS. Deny message is queued in that AFATDS's Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received directly from an observer: sends a denied MTO to observer.</p> <p>If the mission was received from a radar: no response is transmitted to the radar.</p>
4.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.
NOTE:			
If the AFCS operator selects the ABORT option on the AFCS, a deny message is sent to AFATDS. In addition, a freetext message is sent to AFATDS and placed in CMP. The freetext reads "AFCS OPERATOR ABORTED ACTIVE MISSION TARGET ID..." followed by the target number. AFATDS places the target in the Deny icon.			
Procedure SS4: Process a Continuous Illumination Mission (cont).			
Step	Station	Action	Result/Explanation
5.	Observer	Receives and stored the MTO.	
6.	Btry/Plt AFATDS	Track mission status of howitzers.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Weapon Status Paladin window displays. See <i>Procedure FM8. Examine the Weapon Status Paladin Window for details of mission tracking on the Weapon Status Paladin window.</i>
The mission continues until the observer requests end of mission.			

SS5 Process an Immediate Smoke Mission.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed process an immediate smoke mission.

Procedure SS5: Process an Immediate Smoke Mission.			
Step	Station	Action	Result/Explanation
<p>Note: The following differences exist in immediate smoke mission processing over other area missions:</p> <ol style="list-style-type: none"> 1. The volume of fire and munitions for immediate smoke missions are determined from the fire request, Guidances, Workspace, FA Attack Methods, FA Immediate Attack Methods, or programmed mission characteristics, in that order. 2. The immediate smoke mission is assigned a priority of Immediate without regard to the target type specified. 3. The immediate smoke mission always passes TSS, IEW, target build-up area, duplication and target exclusion checks. 4. If more than one capable unit is determined, selecting a fire unit is based on a set of prioritized rules (i. e. the attack option ranking criteria used for "normal" (non immediate & non priority missions) missions does not apply. First, assign the mission to a unit that does not have an active immediate fire mission. Second, assign the mission to the unit specified in the immediate mission routing guidance. Third, assign the mission to the unit which was least recently assigned a mission by your OPFAC. Fourth, assign the mission to the unit closest to the target. Fifth, (as a tie breaker) assign to the first unit listed. 			
1	Observer	Composes and transmits call for fire.	The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
Procedure SS5: Process an Immediate Smoke Mission (cont).			
Step	Station	Action	Result/Explanation
If the mission is received via data communications, go to step 3.			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission. See <i>PROCEDURE FM6. Initiate a Fire Mission at AFATDS</i>	
a.		<i>Complete the Initiate Fire Mission window.</i> Enter the following:	
b.		Observer	Select the Unit ID of the observer.
c.		Click Mission Type and select Immediate Smoke	Select the type of mission. Default is Fire For Effect .
d.		Location	Enter a method of target location. See Procedure
e.		Select Category	13 target categories are available. Selection defines choices of Type . Default is LOC .
f.		Select Type	Allows selection of specific target type. Default is Terrain .
g.		Click Analyze Target .	
<p>If intervention is set, the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 3.</p> <p>If intervention is not set, the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 4.</p>			
3.	Btry/Plt AFATDS	Display the mission processing solution.	
a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined. For a complete description of intervention,
If the weapons are in a degraded status and AFATDS computes the technical solution, go to step b. Otherwise, go to step c.			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.

c.		Click one of the following:	
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request:</p> <ol style="list-style-type: none"> Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. <p><i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the AFCSs and sends an MTO. The MTO:</p> <ol style="list-style-type: none"> Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS. Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect. Is presented to the AFATDS operator as an alert if no comm route to the observer exists. Click the Send to Originator button on the alert to send the MTO back through the AFATDS that communicates with the observer. Go to step 4.
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons
		Recalculate	Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected. Go to step 2.a.
		Unsupportable	Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS. The mission is completed by another OPFAC.
		Deny	<p><i>If the mission was entered at the AFATDS:</i> places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar.</p> <p><i>If the mission was received from an FSE/FSCC or FA CP:</i> sends Deny message to that AFATDS. Deny message is queued in that AFATDS's Active Mission Messages icon of the Current menu tool bar.</p> <p><i>If the mission was received directly from an observer:</i> sends a denied MTO to observer.</p> <p><i>If the mission was received from a radar:</i> no response is transmitted to the radar.</p>
3.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.
4.	Observer	Receives and stored the MTO.	

5.	Btry/Plt AFATDS	Track mission status of AFCSs.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Weapon Status Paladin window displays. See <i>Procedure FM8. Examine the Weapon Status Paladin Window for details of mission tracking on the Weapon Status Paladin window.</i>
6.	Guns	Report "Shot."	The Shot is selected on the AFCS. NOTE: For a TOT mission, the AFCS counts down the time and determines when to prompt the crew to fire. AFATDS simply waits for "Shot."
7.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: If the mission was initiated at the Btry/Plt AFATDS , the shot report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the shot report is automatically re-transmitted to the observer. As "Shot" reports are received, the Fire/Shot indicator for the reporting gun displays  with a green background.
8.	Observer	Receives "Shot" report.	This provides indication that the mission has been fired.
9.	Btry/Plt AFATDS	Transmit "Splash" report.	This report is sent 5 seconds before impact. (The report can be manually transmitted by clicking the Splash button on the Weapon Status Paladin window.)
10.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
11.	Guns	Transmit "Rounds Complete" report.	The gun section selects SHOT for each round fired. When the last SHOT is entered, the AFCS transmits "Rounds Complete."
12.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: If the mission was initiated at the Btry/Plt AFATDS , the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the "Rounds Complete" report is automatically re-transmitted to the observer. As "Rounds Complete" reports are received, the Rds Cmpl indicator for the reporting gun displays  with a green background.
13.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
Note:			
<i>If a second shell/fuze combination is fired, upon reception of rounds complete from all weapons AFATDS automatically transmits fire commands for the second FFE shell/fuze. Steps 5 through 13 repeat for the second shell/fuze.</i>			
14.	Observer	Transmits end of mission.	
15.	Btry/Plt AFATDS	Receives end of mission.	Btry/Plt AFATDS retransmits end of mission to the AFCS. If the observer requests Record as Target: The adjusted target location is stored in the On-Call Target list . If the observer requests Record as Known Point: The adjusted location is stored in the Targets, Workspace/On-Call Known Points and an MTO with the known point number is transmitted to the observer.
16.	Guns	Receive EOM.	The AFCS displays EOM and the mission number.

SS6 Process an Immediate Suppression Mission.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed process an immediate suppression mission.

Procedure SS6: Process an Immediate Suppression Mission			
Step	Station	Action	Result/Explanation
1	Observer	Composes and transmits call for fire.	The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
<i>If the mission is received via data communications, go to step 3.</i>			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission.	
a.		Complete the Initiate Fire Mission window. Enter the following:	
b.		Observer	Select the Unit ID of the observer.
c.		Click Mission Type and select Immediate Suppression	Default is Fire For Effect.
d.		Location	Enter a method of target location. See Procedure FM 6: Initiate a Fire Mission for details.
e.		Click Analyze Target.	Go to step 4.
<i>If intervention is set, the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 3.</i>			
<i>If intervention is not set, the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 4.</i>			
Procedure SS6: Process an Immediate Suppression Mission (cont).			
Step	Station	Action	Result/Explanation
4.	Btry/Plt AFATDS	Display the mission processing solution.	
a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined. For a complete description of intervention, see Procedure FM7. Examine the Intervention Windows
<i>If the weapons are in a degraded status and AFATDS computes the technical solution, go to step b. Otherwise, go to step c.</i>			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.
<i>NOTE: The selection of shell/fuze and volume of fire is dictated by the entries in Guidances, FA Attack, Immediate Attack Methods. If this guidance has not been entered, normal fire mission selection routines are used base on the target type.</i>			
c.		Click one of the following:	

		Accept Recommendation	<p>If coordination is required: The coordination request:</p> <ol style="list-style-type: none"> 1. Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. 2. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. 3. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. <p>If no coordination was required or coordination approval was received: Transmits the solution displayed in the Recommendation to the AFCSs and sends an MTO. The MTO:</p> <ol style="list-style-type: none"> 1. Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS. 2. Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect. 3. Is presented to the AFATDS operator as an alert if no comm route to the observer exists. Click the Send to Originator button on the alert to send the MTO back through the AFATDS that communicates with the observer. <p>Go to step 5.</p>
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons
		Recalculate	Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected. Go to step 2.a.
		Unsupportable	Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS. The mission is completed by another OPFAC.
		Deny	<p>If the mission was entered at the AFATDS: places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received from an FSE/FSCC or FA CP: sends Deny message to that AFATDS. Deny message is queued in that AFATDS's Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received directly from an observer: sends a denied MTO to observer.</p>
5.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.
6.	Observer	Receives and stored the MTO.	
7.	Btry/Plt AFATDS	Track mission status of AFCSs.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Weapon Status Paladin window displays.
8.	Guns	Report "Shot."	Shot is selected on the AFCS.

9.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: If the mission was initiated at the Btry/Plt AFATDS , the shot report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the shot report is automatically re-transmitted to the observer. As "Shot" reports are received, the Fire/Shot indicator for the reporting gun displays  with a green background.
10.	Observer	Receives "Shot" report.	This provides indication that the mission has been fired.
11.	Btry/Plt AFATDS	Transmit "Splash" report.	This report is sent 5 seconds before impact. (The report can be manually transmitted by clicking the Splash button on the Weapon Status Paladin window.)
12.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
13.	Guns	Transmit "Rounds Complete" report.	The gun section selects SHOT for each round fired. When the last SHOT is entered, the AFCS transmits "Rounds Complete."
14	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: If the mission was initiated at the Btry/Plt AFATDS , the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the "Rounds Complete" report is automatically re-transmitted to the observer. As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun displays  with a green background.
15	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
If the observer adjusts fire: go to step 16.			
If the observer ends the mission: go to step 19.			
16.	Observer	Transmit subsequent corrections.	The observer transmits an adjustment for an adjust fire mission or repeat fire for effect for a fire for effect mission.
17.	Btry/Plt AFATDS	Receives subsequent adjustment.	If intervention rules do not apply , the fire commands are transmitted to the AFCS. If intervention rules apply , the mission the Intervention icon on the Current window tool bar activates. If the adjustment places the point of aim in violation of an FSCM Btry/Plt AFATDS transmits a request for coordination before releasing the fire commands.
18.	All stations.	Steps 3 through 18 repeat as applicable.	
19.	Observer	Transmits end of mission.	

20.	Btry/Plt AFATDS	Receives end of mission.	Btry/Plt AFATDS retransmits end of mission to the AFCS. If the observer requests Record as Target: The adjusted target location is stored in the On-Call Target list . If the observer requests Record as Known Point: The adjusted location is stored in the Targets, Known Points and an MTO with the known point number is transmitted to the observer.
21.	Guns	Receive EOM.	The AFCS displays EOM and the mission number.

SS7 Process a Quick Smoke Mission.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed process a quick smoke mission, AFATDS uses the smoke conditions to determine the volume of fire to create a smoke screen. AFATDS will compute firing data to a converged sheaf at the center of the target.

Procedure SS7: Process a Quick Smoke Mission.			
Step	Station	Action	Result/Explanation
1	Observer	Composes and transmits call for fire.	The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
If the mission is received via data communications, go to step 3.			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission.	
a.		Complete the Initiate Fire Mission window. Enter the following:	
b.		Observer	Select the Unit ID of the observer.
c.		Mission Type	Select the type of mission. Default is Fire For Effect . Adjust Fire may be selected for this type mission if required.
d.		Location	Enter a method of target location.
e.		Select Category	13 target categories are available. Selection defines choices of Type . Default is LOC .
f.		Select Type	Allows selection of specific target type. Default is Terrain .
g.		Click the Munitions tab.	The Munitions form displays.
h.		Click the FFE#1 Shell and select the smoke munitions dictated by the fire order.	Applicable smoke munitions for quick smoke are Smoke and WP2 .
i.		Click the Duration of Smoke field and type the number of minutes obscuration is required.	
j.		Click the Wind Speed field and type the reported wind speed in knots.	
k.		Click the Conditions button and select the smoke condition reported by the observer.	Selections are : Lapse, Neutral and Inversion .

i.		Click the Wind Direction button and select the direction reported by the observer.	Selections are: Cross and Head .
m.		Click Analyze Target .	Go to step 4.
3.	Btry/Plt AFATDS	The Data icon on the Current menu tool bar darkens.	Smoke missions received from an observer equipped with a FOS, FED or DCT are queued in the Data icon allowing the operator
a.		Click the Duration of Smoke field and type the number of minutes obscuration is required.	
b.		Click the Wind Speed field and type the reported wind speed in knots.	
c.		Click the Conditions button and select the smoke condition reported by the observer.	Selections are : Lapse , Neutral and Inversion .
d.		Click the Wind Direction button and select the direction reported by the observer.	Selections are: Cross and Head .
e.		Click OK .	The Data icon grays out and the mission is processed.
<p><i>If intervention is set, the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 4.</i></p> <p><i>If intervention is not set, the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 5.</i></p>			
4.	Btry/Plt AFATDS	<i>Display the mission processing solution.</i>	
a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined. For a complete description of intervention, see Procedure FM7. Examine the Intervention Windows
<i>If the weapons are in a degraded status and AFATDS computes the technical solution, go to step b. Otherwise, go to step c.</i>			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.
c.		Click one of the following:	

		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request:</p> <ol style="list-style-type: none"> 1. Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. 2. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. 3. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. <p><i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the AFCs and sends an MTO. The MTO:</p> <ol style="list-style-type: none"> 1. Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS. 2. Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect. 3. Is presented to the AFATDS operator as an alert if no comm route to the observer exists. Click the Send to Originator button on the alert to send the MTO back through the AFATDS that communicates with the observer. <p>Go to step 5.</p>
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons
		Recalculate	Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected. Go to step 2.a.
		Unsupportable	Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS. The mission is completed by another OPFAC.
		Deny	<p><i>If the mission was entered at the AFATDS:</i> places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar.</p> <p><i>If the mission was received from an FSE/FSCC or FA CP:</i> sends Deny message to that AFATDS. Deny message is queued in that AFATDS's Active Mission Messages icon of the Current menu tool bar.</p> <p><i>If the mission was received directly from an observer:</i> sends a denied MTO to observer.</p> <p><i>If the mission was received from a radar:</i> no response is transmitted to the radar.</p>
5.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.

Procedure SS7: Process a Quick Smoke Mission (cont).

Step	Station	Action	Result/Explanation
6.	Observer	Receives and stored the MTO.	
7.	Btry/Plt AFATDS	Track mission status of AFCSSs.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Weapon Status Paladin window displays. See <i>Procedure FM8. Examine the Weapon Status Paladin Window for details of mission tracking on the Weapon Status Paladin window.</i>
8.	Guns	Report "Shot."	Shot is selected on the AFCS.
15.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: If the mission was initiated at the Btry/Plt AFATDS , the shot report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the shot report is automatically re-transmitted to the observer. As "Shot" reports are received, the Fire/Shot indicator for the reporting gun displays  with a green background.
16.	Observer	Receives "Shot" report.	This provides indication that the mission has been fired.
17.	Btry/Plt AFATDS	Transmit "Splash" report.	This report is sent 5 seconds before impact. The report <i>is not</i> sent for missile missions. The report is transmitted by clicking the Splash button on the Weapon Status Paladin window.
18.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
19.	Guns	Transmit "Rounds Complete" report.	The gun section selects SHOT for each round fired. When the last SHOT is entered, the AFCS transmits "Rounds Complete."
20.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: If the mission was initiated at the Btry/Plt AFATDS , the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the "Rounds Complete" report is automatically re-transmitted to the observer. As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun displays  with a green background.
21.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
If the observer adjusts fire: go to step 22.			
If the observer ends the mission: go to step 25.			
22.	Observer	Transmit subsequent corrections.	The observer transmits an adjustment for an adjust fire mission or repeat fire for effect for a fire for effect mission.
23.	Btry/Plt AFATDS	Receives subsequent adjustment.	If intervention rules do not apply , the fire commands are transmitted to the AFCSSs. If intervention rules apply , the mission the Intervention icon on the Current window tool bar activates. If the adjustment places the point of aim in violation of an FSCM Btry/Plt AFATDS transmits a request for coordination before releasing the fire commands.
24.	All stations.	Steps 3 through 20 repeat as applicable.	

25.	Observer	Transmits end of mission.	
Procedure SS7: Process a Quick Smoke Mission (cont).			
Step	Station	Action	Result/Explanation
26.	Btry/Plt AFATDS	Receives end of mission.	Btry/Plt AFATDS retransmits end of mission to the AFCS. If the observer requests Record as Target: The adjusted target location is stored in the On-Call Target list . If the observer requests Record as Known Point: The adjusted location is stored in the Targets, Known Points and an MTO with the known point number is transmitted to the observer.
27.	Guns	Receive EOM.	The AFCS displays EOM and the mission number.

SS8 Process a FASCAM Mission.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed process a FASCAM mission.

Procedure SS8: Process a FASCAM Mission			
Step	Station	Action	Result/Explanation
<p>Note: AFATDS selects a FASCAM munitions in the following circumstances:</p> <ol style="list-style-type: none"> 1. An FS System Procedure (Guidances, FS Attack, System Procedure List) is entered to cause engagement of a specific target type with a FASCAM shell. 2. The call for fire or fire order specifies FASCAM. 3. The AFATDS operator enters the mission from the keyboard or recalculates the mission, specifying a FASCAM munitions. <p>Volume of Fire. AFATDS computes the volume of fire based on the assumption that a battery/platoon fires a single minefield module of the specified density of mines. Increasing the minefield size <i>will not</i> change the volume desired. The aimpoint that is sent to operational howitzers or firing data sent to degraded guns is the center of the target.</p> <p>FASCAM Safety Zone. AFATDS generates a FASCAM Safety Zone geometry when the mission is transmitted to the AFCSSs. This geometry is only created if the minefield is defined in the call for fire with rectangular dimensions. This is a rectangular geometry that encompasses the dimensions of the minefield and a buffer to contain mines dispersed outside the minefield dimension. The name of the geometry is the target number followed by three digits. These three digits indicate the number of minefield missions fired on the same target. In the event a new minefield was created at the same target as a previously fired minefield, the geometry for the second attack is numbered with 002 appended to the target number. The geometry is effective time period of the geometry is set to four hours for short duration munitions and 24 hours for long duration munitions. The geometry is automatically distributed to other units based on the data distribution scheme. Data distribution must be established for FASCAM AREAS of THIS UNIT.</p>			
1	Observer	Composes and transmits call for fire.	The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
If the mission is received via data communications, go to step 3.			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window.	Click Mission Processing, Initiate Fire Mission.
a.		<i>Complete the Initiate Fire Mission window.</i> Enter the following:	
b.		Observer	Select the Unit ID of the observer.
c.		Mission Type	Select the type of mission. Default is Fire For Effect . Adjust Fire may be selected for this type mission if required.
NOTE: If the mission type selected is Adjust Fire, AFATDS will select DP-SR as the adjusting projectile. This is required because no correlating fire control data exists between HE family projectile data and FASCAM.			

d.		Location	Enter a method of target location.
e.		Select Category	13 target categories are available. Selection defines choices of Type . Default is LOC .
Procedure SS8: Process a FASCAM Mission (cont).			
Step	Station	Action	Result/Explanation
f.		Select Type	Allows selection of specific target type. Default is Terrain .
f.		Select Shape and select Rectangular .	The selection causes Length , Width and Attitude fields to become active.
g.		Click the Length field and type the long dimension of the minefield.	Minefield volume of fire is based on modules centered on an aimpoint. For ADAM fired low or high angle or RAAM fired high angle, a module is 400 x 400m. RAAM fired low angle produces a module 200 x 200m. The length and width should be multiples of 400 (200 for RAAM low angle).
h.		Click the Width field and type the shorter dimension of the minefield.	
i.		Click the Attitude field and type the attitude of the long axis of minefield.	AFATDS assumes the target location is the aimpoint for the minefield module. Despite the shape of the target, AFATDS automatically computes a converged sheaf at the target.
j.		Click the Munitions tab.	The Munitions form displays.
k.		Click the FFE#1 Shell and select the shell type issued in the fire order.	Select the desired FASCAM shell. Applicable selections are ADAM-S or ADAM-L and RAAM-S or RAAM-L . If both anti-personnel and anti-armor minefield, select RAAM-S or RAAM-L .
l		Click the FFE#2 Shell and select the shell type issued in the fire order.	Enter only if an anti-personnel and anti-armor minefield is created; select ADAM-S or ADAM-L .
m.		Click FASCAM Density and select.	Choices are High , Medium or Low . This value, in combination with the shell and angle of fire defines the volume of fire required.
n.		<i>For RAAMS only:</i> Click the More Mission Data field.	The More Mission Data form displays.
o.		Click Trajectory and select High .	This selection can be used for RAAMS minefields to achieve a 400 x 400 meter coverage from a single aimpoint.
p.		Click Analyze Target .	
<p><i>If intervention is set, the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 3.</i></p> <p><i>If intervention is not set, the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 4.</i></p>			
3.	Btry/Plt AFATDS	<i>Display the mission processing solution.</i>	
a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined. For a complete description of intervention, see Procedure FM7. Examine the Intervention Windows.
<i>If the weapons are in a degraded status and AFATDS computes the technical solution, go to step b. Otherwise, go to step c.</i>			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed.

c.		Click one of the following:	
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request:</p> <ol style="list-style-type: none"> 1. Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. 2. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. 3. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. <p><i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the AFCs and sends an MTO. The MTO:</p> <ol style="list-style-type: none"> 1. Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS. 2. Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect. 3. Is presented to the AFATDS operator as an alert if no comm route to the observer exists. Click the Send to Originator button on the alert to send the MTO back through the AFATDS that communicates with the observer. <p>Go to step 4.</p>
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons
		Recalculate	Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected. Go to step 2.a.
		Unsupportable	Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS. The mission is completed by another OPFAC.
		Deny	<p><i>If the mission was entered at the AFATDS:</i> places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar.</p> <p><i>If the mission was received from an FSE/FSCC or FA CP:</i> sends Deny message to that AFATDS. Deny message is queued in that AFATDS's Active Mission Messages icon of the Current menu tool bar.</p> <p><i>If the mission was received directly from an observer:</i> sends a denied MTO to observer.</p> <p><i>If the mission was received from a radar:</i> no response is transmitted to the radar.</p>

4.	Btry/Plt AFATDS	Creates a FASCAM Safety Zone.	The FASCAM Safety Zone displays on the map and is transmitted to other stations via data distribution.
5.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.
6.	Observer	Receives and stored the MTO.	
7.	Btry/Plt AFATDS	Track mission status of AFCSSs.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Weapon Status Paladin window displays. See <i>Procedure FM8. Examine the Weapon Status Paladin Window for details of mission tracking on the Weapon Status Paladin window.</i>
If the method of control is At My Command: got to step 8.			
If the method of control is WR or TOT,: go to step 14.			
8.	Guns	Transmit "Ready" report.	After acknowledging the mission, the READY selection becomes available at the AFCS.
9.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun displays  with a green background. When the last gun has reported, the "Ready" command is transmitted to the observer.
10.	Observer	Transmit "Fire" command.	The observer may command "Fire" any time after the "Ready" report is received.
12.	Btry/Plt AFATDS	Receive "Fire" command.	AFATDS receives the fire command and automatically transmits "Fire" to the AFCSSs.
13.	Guns	Receive "Fire" command.	AFCS prompt changes from AWAITING COMMAND to FIRE.
14.	Guns	Report "Shot."	Shot is selected on the AFCS. NOTE: For a TOT mission, the AFCS counts down the time and determines when to prompt the crew to fire. AFATDS simply waits for "Shot."
15.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: If the mission was initiated at the Btry/Plt AFATDS , the shot report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the shot report is automatically re-transmitted to the observer. As "Shot" reports are received, the Fire/Shot indicator for the reporting gun displays  with a green background.
16.	Observer	Receives "Shot" report.	This provides indication that the mission has been fired.
17.	Btry/Plt AFATDS	Transmit "Splash" report.	This report is sent 5 seconds before impact. (The report can be manually transmitted by clicking the Splash button on the Weapon Status Paladin window.)
18.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
19.	Guns	Transmit "Rounds Complete" report.	The gun section selects SHOT for each round fired. When the last SHOT is entered, the AFCS transmits "Rounds Complete."
20.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: If the mission was initiated at the Btry/Plt AFATDS , the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the "Rounds Complete" report is automatically re-transmitted to the observer. As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun displays  with a green background.
21.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.

If the observer adjusts fire: go to step 22.			
If the observer ends the mission: go to step 25.			
22.	Observer	Transmit subsequent corrections.	The observer transmits an adjustment for an adjust fire mission or repeat fire for effect for a fire for effect mission.
23.	Btry/Plt AFATDS	Receives subsequent adjustment.	If intervention rules do not apply , the fire commands are transmitted to the AFCSS. If intervention rules apply , the mission the Intervention icon on the Current window tool bar activates. If the adjustment places the point of aim in violation of an FSCM Btry/Plt AFATDS transmits a request for coordination before releasing the fire commands.
24.	All stations.	Steps 3 through 20 repeat as applicable.	
25.	Observer	Transmits end of mission.	
26.	Btry/Plt AFATDS	Receives end of mission.	Btry/Plt AFATDS retransmits end of mission to the AFCS. If the observer requests Record as Target: The adjusted target location is stored in the On-Call Target list . If the observer requests Record as Known Point: The adjusted location is stored in the Targets, Known Points and an MTO with the known point number is transmitted to the observer.
27.	Guns	Receive EOM.	The AFCS displays EOM and the mission number.

SS9 Process a Final Protective Fires Mission.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed process a final protective fire mission. When the FPF is assigned to a weapon, the center of the target is assigned as the aimpoint.

Procedure SS9: Process a Final Protective Fires Mission			
Step	Station	Action	Result/Explanation
1	Observer	Composes and transmits call for fire.	The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
If the mission is received via data communications, go to step 3.			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission.	
a.		Complete the Initiate Fire Mission window. Enter the following:	
b.		Click the Observer field and the observer's Unit ID .	An observer must be associated with the mission to determine the PRF code portion of the Copperhead timer setting.
c.		Click Mission Type and select Assign	This identifies the mission as an FPF or Copperhead priority mission.
d.		Click the Method of Control field and select Do Not Load .	
e.		Location	Enter a method of target location. See Procedure
f.		Click the Shape field and select Linear .	The FPF is fired as a linear sheaf to provide maximum width.

g.		Click the Length field and type the length of the FPF sheaf in meters.	AFATDS computes all weapon's aimpoints to the center of the target.
NOTE: The AFATDS selects the shell/fuze to fire as for any area fire missions. If a shell/fuze combination other than that specified for the default target type (Terrain Feature) is desired, this must be entered in the Munition tab.			
h.		Click Analyze Target .	
<p>If intervention is set, the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 3.</p> <p>If intervention is not set, the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 4.</p>			
3.	Btry/Plt AFATDS	Display the mission processing solution.	
a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined. For a complete description of intervention, see Procedure FM7. Examine the Intervention Windows Mission Type displayed is Assign Precedence displayed is Priority
If the weapons are in a degraded status and AFATDS computes the technical solution, go to step b. Otherwise, go to step c.			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed. MOC is DNL.
c.		Click one of the following:	
		Accept Recommendation	<p>If coordination is required: The coordination request:</p> <ol style="list-style-type: none"> 1. Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. 2. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. 3. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. <p>If no coordination was required or coordination approval was received: Transmits the solution displayed in the Recommendation to the AFCSs and sends an MTO. The MTO:</p> <ol style="list-style-type: none"> 1. Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS. 2. Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect. 3. Is presented to the AFATDS operator as an alert if no comm route to the observer exists. Click the Send to Originator button on the alert to send the MTO back through the AFATDS that communicates with the observer. 4. AFATDS will receive a Free Text from the AFCS (Priority Target # Stored) 5. If the Priority Target has been Fired/Deleted the AFCS will send (Target # has been Deleted <p>Go to step 4.</p>

Procedure SS9: Process a Final Protective Fires Mission (cont).

Step	Station	Action	Result/Explanation
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons
		Recalculate	Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected. Go to step 2.a.
		Unsupportable	Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS. The mission is completed by another OPFAC.
		Deny	If the mission was entered at the AFATDS: places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar. If the mission was received from an FSE/FSCC or FA CP: sends Deny message to that AFATDS. Deny message is queued in that AFATDS's Active Mission Messages icon of the Current menu tool bar. If the mission was received directly from an observer: sends a denied MTO to observer. If the mission was received from a radar: no response is transmitted to the radar.
4.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.
5.	Observer	Receives and stored the MTO.	Method of Control is set to At My Command Method of Attack is set to Danger Close
6.	Btry/Plt AFATDS	Track mission status of AFCSSs.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Paladin Weapon Status window displays. See <i>Procedure FM8. Examine the Paladin Weapon Status Window for details of mission tracking on the Paladin Weapon Status window.</i>
At this point the FPF mission is available for firing. The observer may perform the following: Fire the FPF mission: Go to step 7. Delete the FPF mission: Go to step 18.			
7.	Observer	Transmit "Fire FPF" command.	The observer may command "Fire" any time after the MTO is received.
8.	Btry/Plt AFATDS	Receive "Fire" command.	
a.		If digital comm with FO:	AFATDS receives the fire command and automatically transmits "Fire" to the AFCSSs. The method of fire is "Continuous Fire."
b.		If voice comm with FO: On the Weapon Status Paladin window, click the FIRE button.	AFATDS transmits "Fire" to the AFCSSs. The method of fire is "Continuous Fire."

9.	Guns	Receive "Fire" command.	AFCS prompt changes from AWAITING COMMAND to FIRE.
10.	Guns	Report "Shot."	Shot is selected on the AFCS.
11.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: If the mission was initiated at the Btry/Plt AFATDS , the shot report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the shot report is automatically re-transmitted to the observer. As "Shot" reports are received, the Fire/Shot indicator changes to  with a green background.
12.	Observer	Receives "Shot" report.	This provides indication that the mission has been fired.
13.	Btry/Plt AFATDS	Transmit "Splash" report.	This report is sent 5 seconds before impact. The report <i>is not</i> sent for missile missions. The report is transmitted by clicking the Splash button on the Weapon Status Paladin window.
14.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
15.	Observer	Transmits "End FPF"	This causes fires to cease on the FPF. The FPF is still available for repeat firing if required.
16.	Btry/Plt AFATDS	Receives "End FPF"	
a.		If digital comm with FO:	AFATDS automatically transmits "Cease Loading" to the AFCS's.
b.		If voice comm with FO: On the Weapon Status Paladin window, click the EOM button.	AFATDS transmits "Cease Loading" to the AFCS's.
17.	Guns	Acknowledge "Cease Loading".	
NOTE: The FPF mission is still available at the AFATDS. The observer may request to fire the FPF again. If this occurs, steps 7 through 17 are repeated.			
18.	Observer	Requests to delete the FPF mission.	The observer composes and transmits a digital request to delete the FPF or transmits a voice request.
19.	Btry/Plt AFATDS	Receives delete request.	Using digital communications with the observer: The target is moved to the Inactive Target List and a Mission Fired Report is generated. If voice communications with the observer: Click Targets, Target List, Active. OK . The target is moved to the Inactive Target List and a Mission Fired Report is generated. Btry/Plt AFATDS transmits end of mission to the AFCS's.
20.	Guns	Receive EOM.	The AFCS displays EOM and the mission number.

SS10 Process a Copperhead Target of Opportunity Mission.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed process a Copperhead target of opportunity mission.

Procedure SS10: Process a Copperhead Target of Opportunity Mission			
Step	Station	Action	Result/Explanation
1	Observer	Composes and transmits call for fire.	The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
<i>If the mission is received via data communications, go to step 3.</i>			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission.	
a.		Complete the Initiate Fire Mission window. Enter the following:	
b.		Click the Observer field and the observer's Unit ID.	An observer must be associated with the mission to determine the PRF code portion of the Copperhead timer setting.
c.		Click Mission Type and select Assign	This identifies the mission as an FPF or Copperhead priority mission.
d.		Location	Enter a method of target location. See Procedure FM 6: Initiate a Fire Mission for details.
e.		Select Category	13 target categories are available. Selection defines choices of Type . Default is LOC .
f.		Select Type	Allows selection of specific target type. Default is Terrain .
g.		Click the Strength field and type the number of targets.	AFATDS allocates one Copperhead projectile for each target.
h.		Click the Munitions tab.	The Munitions form displays.
i.		Click the FFE#1 Shell and select Copperhead .	
<i>NOTE: Charge should not be selected by the AFATDS operator. If a charge is entered on the Munitions tab AFATDS will ignore this value. A charge is selected based on Copperhead shaped trajectory logic that uses range, observer cloud height and visibility.</i>			
j.		Click Analyze Target .	
<i>If intervention is set, the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 3.</i> <i>If intervention is not set, the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 4.</i>			
3.	Btry/Plt AFATDS	Display the mission processing solution.	
a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined. For a complete description of intervention, see Procedure FM7. Examine the Intervention Windows
<i>If the weapons are in a degraded status and AFATDS computes the technical solution, go to step b. Otherwise, go to step c.</i>			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed. NOTE: The fuze category, model and lot will be blank. The Fuze Time column displays the timer setting as the two digit time setting followed by the observer's PRF code.
<i>NOTE: A single weapon is selected to fire the mission. One Copperhead round is assigned to each target based on the number of targets or strength reported in the call for fire. A maximum of 6 rounds will be allocated. Fire requests with a strength greater than 6 will cause 6 rounds to be fired.</i>			

c.		Click one of the following:	
		Accept Recommendation	<p><i>If coordination is required:</i> The coordination request:</p> <ol style="list-style-type: none"> 4. Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. 5. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. 6. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. <p><i>If no coordination was required or coordination approval was received:</i> Transmits the solution displayed in the Recommendation to the AFCSs and sends an MTO. The MTO:</p> <ol style="list-style-type: none"> 6. Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS. 7. Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect. 8. Is presented to the AFATDS operator as an alert if no comm route to the observer exists. Click the Send to Originator button on the alert to send the MTO back through the AFATDS that communicates with the observer. <p>Go to step 4.</p>
		Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons
		Recalculate	Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected. Go to step 2.a.
		Unsupportable	Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS. The mission is completed by another OPFAC.

		Deny	<p>If the mission was entered at the AFATDS: places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received from an FSE/FSCC or FA CP: sends Deny message to that AFATDS. Deny message is queued in that AFATDS's Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received directly from an observer: sends a denied MTO to observer.</p> <p>If the mission was received from a radar: no response is transmitted to the radar.</p>
3.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.
4.	Observer	Receives and stored the MTO.	The MTO contains the following data: Time of flight, GT-OT relationship expressed as GT line left, right or center of OT line, range and laser alert time.
6.	Btry/Plt AFATDS	Track mission status of howitzers.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Weapon Status Paladin window displays. See <i>Procedure FM8. Examine the Weapon Status Paladin Window for details of mission tracking on the Weapon Status Paladin window.</i>
7.	Guns	Transmit "Ready" report.	After acknowledging the mission, the READY selection becomes available at the AFCS.
8.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun changes to  with a green background. When the last gun has reported, the "Ready" command is transmitted to the observer.
<p>At this point the Copperhead priority mission is available for firing. The observer may perform the following:</p> <p>Fire the Copperhead priority mission: Go to step 9.</p> <p>Delete the Copperhead priority mission: Go to step ##.</p>			
9.	Observer	Transmit "Fire" command.	The observer may command "Fire" any time after the "Ready" report is received.
10.	Btry/Plt AFATDS	Receive "Fire" command.	AFATDS receives the fire command and automatically transmits "Fire" to the AFCS's.
11.	Guns	Receive "Fire" command.	AFCS prompt changes from AWAITING COMMAND to FIRE.
12.	Guns	Report "Shot."	Shot is selected on the AFCS.
13.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: If the mission was initiated at the Btry/Plt AFATDS, the shot report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer, the shot report is automatically re-transmitted to the observer. As "Shot" reports are received, the Fire/Shot indicator for the reporting gun changes to  with a green background.
14.	Observer	Receives "Shot" report.	This provides indication that the mission has been fired.
15.	Btry/Plt AFATDS	Transmit "Splash" report.	This report is sent 5 seconds before impact. The report <i>is not</i> sent for missile missions. The report is transmitted by clicking the Splash button on the Weapon Status Paladin window.
16.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.

17.	Guns	Transmit "Rounds Complete" report.	The gun section selects SHOT for each round fired. When the last SHOT is entered, the AFCS transmits "Rounds Complete."
18.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: If the mission was initiated at the Btry/Plt AFATDS or received from a radar, the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the "Rounds Complete" report is automatically re-transmitted to the observer. As "Rounds Complete" reports are received, the Rds Cmplt indicator for the reporting gun changes to  with a green background.
19.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
20.	Observer	Transmits end of mission.	Btry/Plt AFATDS retransmits end of mission to the AFCS's. If the observer requests Record as Target: The adjusted target location is stored in the On-Call Target list . If the observer requests Record as Known Point: The adjusted location is stored in the Targets, Known Points and an MTO with the known point number is transmitted to the observer.
21.	Btry/Plt AFATDS	Receives end of mission.	
22.	Guns	Receive EOM.	The AFCS displays EOM and the mission number.

SS11 Process a Copperhead Priority Mission.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed process a Copperhead priority mission.

Procedure SS11: Process a Copperhead Priority Mission.			
Step	Station	Action	Result/Explanation
Note: Copperhead priority missions are processed and remain in the Active Target List until a request to fire is received or the mission is deleted by the requestor or the AFATDS operator. Copperhead priority missions are processed differently than other area fire missions as described below.			
1. At least one weapon must be selected as Copperhead Capable in the weapon data.			
2. Angle T cannot exceed 800 mils.			
1	Observer	Composes and transmits call for fire.	The call for fire may be transmitted to an FSE/FSCC or FA CP AFATDS. That AFATDS may then transmit a fire order to the battery/platoon AFATDS.
If the mission is received via data communications, go to step 3.			
2.	Btry/Plt AFATDS	Complete the Initiate Fire Mission window. Click Mission Processing, Initiate Fire Mission.	
a.		Complete the Initiate Fire Mission window. Enter the following:	
b.		Click the Observer field and the observer's Unit ID .	An observer must be associated with the mission to determine the PRF code portion of the Copperhead timer setting.
c.		Click Mission Type and select Assign	This identifies the mission as an FPF or Copperhead priority mission.
d.		Location	Enter a method of target location. See Procedure FM 6: Initiate a Fire Mission for details.

e.		Select Category	13 target categories are available. Selection defines choices of Type . Default is LOC .
f.		Select Type	Allows selection of specific target type. Default is Terrain .
g.		Click the Munitions tab.	The Munitions form displays.
h.		Click the FFE#1 Shell and select Copperhead .	In combination with Mission Type: Assign , this identifies the target as a Copperhead priority mission.
NOTE: Charge should not be selected by the AFATDS operator. If a charge is entered on the Munitions tab AFATDS will ignore this value. A charge is selected based on Copperhead shaped trajectory logic that uses range, observer cloud height and visibility.			
i.		Click Analyze Target .	
If intervention is set , the mission is placed in the IP icon of the Current window. The IP icon darkens and becomes selectable. . Go to step 3. If intervention is not set , the mission is processed and the Btry/Plt AFATDS determined solution is executed by sending the appropriate messages to observer and fire unit. Go to step 4.			
3.	Btry/Plt AFATDS	Display the mission processing solution.	
a.		Click the IP icon on the Current window tool bar.	This procedure assumes a capable (green or yellow) option is determined. For a complete description of intervention, see Procedure FM7. Examine the Intervention Windows.
If the weapons are in a degraded status and AFATDS computes the technical solution , go to step b. Otherwise , go to step c.			
b.		Click the Cannon Tech Soln tab.	Firing Commands are displayed. NOTE: The fuze category, model and lot will be blank. The Fuze Time column displays the timer setting as the two digit time setting followed by the observer's PRF code.
c.		Click one of the following:	
		Accept Recommendation	If coordination is required: The coordination request: 7. Is transmitted to the Establishing Unit ID (Responsible Unit ID) of the affected geometry. 8. Fails communications if no route exists, the affect unit does not possess a device that can receive a coordination request or comm fails. 9. In all cases, copied to the Coordination icon on the Current window tool bar. This allows access to override the request if voice comm is established. If no coordination was required or coordination approval was received: Transmits the solution displayed in the Recommendation to the AFCs and sends an MTO. The MTO: 9. Is placed in the Active Mission Monitor icon of the Current menu tool bar if the mission was initiated at the AFATDS. 10. Is transmitted to the observer if AFATDS has a comm route to that station, either direct or indirect. 11. Is presented to the AFATDS operator as an alert if no comm route to the observer exists. Click the Send to Originator button on the alert to send the MTO back through the AFATDS that communicates with the observer. Go to step 4.

		Send Selected	Send Selected is used by units performing tactical fire control. At the battery FDC or BOC, performing technical fire control, the mission is recalculated (see step below). Recalculation allows AFATDS to re-compute the technical solution for the desired weapons
		Recalculate	Displays a copy of the mission's Initiate Fire Mission window to allow changes to be made by editing and reprocessing. Mission is placed in Intervention icon with the new solution when Analyze Tgt button is selected. Go to step 2.a
		Unsupportable	Transmits the mission as a fire request to Command Unit ID for the btry/plt AFATDS. The mission is completed by another OPFAC.
		Deny	<p>If the mission was entered at the AFATDS: places a copy of the Deny message in the Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received from an FSE/FSCC or FA CP: sends Deny message to that AFATDS. Deny message is queued in that AFATDS's Active Mission Messages icon of the Current menu tool bar.</p> <p>If the mission was received directly from an observer: sends a denied MTO to observer.</p> <p>If the mission was received from a radar: no response is transmitted to the radar.</p>
3.	Guns	Receive fire commands.	The AFCS alarm sounds and "FIRE MISSION RECEIVED" is displayed.
4.	Observer	Receives and stored the MTO.	The MTO contains the following data: Time of flight, GT-OT relationship expressed as GT line left, right or center of OT line, range and laser alert time.
6.	Btry/Plt AFATDS	Track mission status of howitzers.	Click the PALADIN Weapon Status icon of the Current menu tool bar. The Weapon Status Paladin window displays. See <i>Procedure FM8. Examine the Weapon Status Paladin Window for details of mission tracking on the Weapon Status Paladin window.</i>
7.	Guns	Transmit "Ready" report.	After acknowledging the mission, the READY selection becomes available at the AFCS.
8.	Btry/Plt AFATDS	Receive "Ready" report.	As "Ready" reports are received, the Ready indicator for the reporting gun displays  with a green background. When the last gun has reported, the "Ready" command is transmitted to the observer.
<p>At this point the Copperhead priority mission is available for firing. The observer may perform the following:</p> <p>Fire the Copperhead priority mission: Go to step 9.</p> <p>Delete the Copperhead priority mission: Go to step ##.</p>			
9.	Observer	Transmit "Fire" command.	The observer may command "Fire" any time after the "Ready" report is received.
10.	Btry/Plt AFATDS	Receive "Fire" command.	AFATDS receives the fire command and automatically transmits "Fire" to the AFCS's.
11.	Guns	Receive "Fire" command.	AFCS prompt changes from AWAITING COMMAND to FIRE.
12.	Guns	Report "Shot."	Shot is selected on the AFCS.

13.	Btry/Plt AFATDS	Receives "Shot" report.	On reception of the first gun's "Shot" report: If the mission was initiated at the Btry/Plt AFATDS or received from a radar, the shot report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the shot report is automatically re-transmitted to the observer. As "Shot" reports are received, the Fire/Shot indicator for the reporting gun changes to  with a green background.
14.	Observer	Receives "Shot" report.	This provides indication that the mission has been fired.
15.	Btry/Plt AFATDS	Transmit "Splash" report.	This report is sent 5 seconds before impact. The report <i>is not</i> sent for missile missions. The report is transmitted by clicking the Splash button on the Weapon Status Paladin window.
16.	Observer	Receives "Splash" report.	This provides indication that the projectile impact is imminent.
17.	Guns	Transmit "Rounds Complete" report.	The gun section selects SHOT for each round fired. When the last SHOT is entered, the AFCS transmits "Rounds Complete."
18.	Btry/Plt AFATDS	Receives "Rounds Complete" report.	On reception of the last gun's "Rounds Complete" report: If the mission was initiated at the Btry/Plt AFATDS , the "Rounds Complete" report is placed in the Active Mission Messages icon of the Current window tool bar. If the mission was initiated at by an observer , the "Rounds Complete" report is automatically re-transmitted to the observer. As "Rounds Complete" reports are received, the Rds Cmpl indicator for the reporting gun changes to  with a green background.
19.	Observer	Receives "Rounds Complete" report.	This provides indication that fire for effect has been completed.
Note: <i>At this point the mission is still available.</i>			
20.	Observer	Requests to delete the priority mission.	The observer composes and transmits a digital request to delete the Copperhead priority target or transmits a voice request.
21.	Btry/Plt AFATDS	Receives delete request.	Using digital communications with the observer: The target is moved to the Inactive Target List and a Mission Fired Report is generated. If voice communications with the observer: Click Targets, Target List, Active. OK. The target is moved to the Inactive Target List and a Mission Fired Report is generated. Btry/Plt AFATDS transmits end of mission to the AFCS's..
22.	Guns	Receive EOM.	The AFCS displays EOM and the mission number.

SS12 Assign a Known Point.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed assign a known point.; A known point can be established by an observer request or by the AFATDS operator. This procedure details operator entry procedures. When a request is received from an observer via digital communications, AFATDS automatically adds the known point to the **Maintain Known Points** window and transmits an MTO to the requestor with the known point number. No alerts are produced in this case and no AFATDS operator actions are required.

Procedure SS12: Assign a Known Point.

Step	Action	Result/Explanation
1.	Click Targets, Known Points.	The Maintain Known Points window displays.
2.	Click the New button.	The New Known Point window displays.
a.	Click the Known Point Number field and type the known point number.	Number must be unique; if an already used number is entered, Known Point Number Already Exists is displayed when the window is OK'd.
b.	<i>If the known point is assigned to an already stored target:</i> Click the Target Number field and type the target number.	This causes the Location field to populate with the stored target's grid. <i>Go to step D.</i>

Procedure SS12: Assign a Known Point (cont)

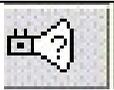
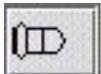
Step	Action	Result/Explanation
c.	<i>If the known point is not a stored target:</i> Leave the Target Number field blank and type the grid in the Location field.	
d.	Click the Established by: field and select the Unit ID of the requestor.	Default is the Btry/Plt AFATDS Unit ID; selecting another unit will not transmit the known point to that unit.
e.	Click the OK button.	The New Known Point window closes and the Maintain Known Points window displays with the new known point added to the list.
f.	Click the OK button.	The Maintain Known Points window closes.

SS17 Determine the Reason Targets Were Not Scheduled.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed and a fire plan created and previously calculated determine the reason targets were not scheduled.

Procedure SS17: Determine the Reason Targets were not Scheduled.

Step	Action	Result/Explanation
Note: When a schedule of fires is calculated in a fire plan, AFATDS examines each target against guidance and fire support resources available. This process parallels that used in fire mission processing. Those targets that cannot be attacked within the limits provided by commander's guidance are not scheduled. These may be examined to determine the reason the targets were not scheduled		
1.	On the Current menu bar, click Targets, Schedule of Fires	The Select Schedule of Fires window displays.
a.	Click the name of the fire plan.	The name highlights.
b.	Click the OK button.	The fire Schedule of Fires window displays.
2.	Access the Unscheduled Targets:	
a.	Click Options, Unscheduled Targets	The Unscheduled Targets window displays with a list of all unscheduled target numbers.
b.	Click the desired target number and click the OK button.	The Option Review window displays. All options considered for the fire plan
c.	Click the new target Offset Time field.	The target data is surrounded by a blue box and the munitions fields at the bottom of the window become active.
d.	Click the FFE Shell #1 field and select the desired shell.	
e.	Click the FFE Shell #1 Fz field and select the desired fuze.	

f.	Click the FFE Shell #1 # Shells field and type the desired volume of fire.	
NOTE: Repeat steps 4.d. through 4.f. for FFE Shell #2:		
g.	Click the Update button.	The target Firing Time field updates based on the volume of fire.
NOTE: To add additional targets to this unit, go to step 4. If no additional target are to be added, go to step 5.		
5.	Click the OK button.	The Unit Schedule window closes and the Schedule of Fires window displays with the new target.
DATA		EXPLANATION
a.	Meets Mission Cutoff:	Indicates the mission meets the guidance in Guidances, Target, Mission Prioritization. This indication is relative to the fire support type selected to the left, or FA Cannon in figure 6-2.
Procedure SS17: Determine the Reason Targets were not Scheduled (cont).		
Step	Action	Result/Explanation
b.	Opt Seg? Unit ID Caliber....	This list displays all capable and incapable options examined for the fire support type selected. This provides a diagnostic. The headings are:
c.	Seg?	“Y” indicates the target is segmented. “N” indicates the target is not segmented. <i>Note: Target segmentation occurs at the controlling OPFAC; other computers will display a blank.</i>
d.		Range Capable? “Y” indicates the weapons and ammunition can range the target; “N” indicates the target is outside range.
e.		Near Mask Violation? “Y” indicates a mask stored with the unit’s weapon data is violated by this option. “N” indicates no mask violation.
f.		Downrange Mask Violation? “Y” indicates a downrange mask geometry is violated by this option; “N” indicates no violation.
g.		Response Time Capable? “Y” indicates that considering the unit response time and all missions previously assigned of equal or greater mission value, the unit can engage before the NLT time expires.
h.		Muniton Capable? “N” indicates the unit does not possess the ammunition for this option or the mission requires massing of fires and massing is prohibited by guidance entries.
i.		Angle T capable? Applies only to 155mm Copperhead missions. “N” indicates angle T is greater than 800 mils.
j.		Requires Coordination? “Y” requires coordination; “N” does not.
k.		Is the unit unrestricted? “N” indicates the unit is restricted from firing the mission in System Tasks guidance.
l.		Can the unit achieve desired effects? “N” indicates desired effects requested in the FR or in the TMM guidance cannot be achieved. This is blank if the target is a volleys type.
m.		Is the FS system appropriate for the mission? Air and rocket/missile units are inappropriate for adjust missions.

6.	Click the Cancel button.	The Option Review window closes and the Unscheduled Targets window displays.
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SS18 Manually Schedule Targets.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed and a fire plan created and previously calculated The preferred method for scheduling targets in a fire plan is to calculate the fire plan (see procedure SS15 above). Targets can, however, be manually scheduled by assigning these to units. Manually scheduling should be used as a last resort

Procedure SS18: Manually Schedule Targets.		
Step	Action	Result/Explanation
1.	On the Current menu bar, click Targets, Schedule of Fires	The Select Schedule of Fires window displays.
a.	Click the name of the fire plan.	The name highlights.
b.	Click the OK button.	The fire Schedule of Fires window displays.
Procedure SS18: Manually Schedule Targets (cont)		
Step	Action	Result/Explanation
2.	Click the unit to which a target will be scheduled.	The Unit ID is surrounded by a blue box.
3.	Click Options, Unit Schedule	The Unit Schedule window displays.
4.	Add an unscheduled target to the unit's schedule:	
a.	Click Target, Add	The Select Target window displays with a list of all unscheduled target numbers.
b.	Click the desired target number and click the OK button.	The Select Target window closes and the selected target is added to the Unit Schedule window after all previously scheduled targets.
c.	Click the new target Offset Time field.	The target data is surrounded by a blue box and the munitions fields at the bottom of the window become active.
d.	Click the FFE Shell #1 field and select the desired shell.	
e.	Click the FFE Shell #1 Fz field and select the desired fuze.	
f.	Click the FFE Shell #1 # Shells field and type the desired volume of fire.	
NOTE: Repeat steps 4.d. through 4.f. for FFE Shell #2:		
g.	Click the Update button.	The target Firing Time field updates based on the volume of fire.
NOTE: To add additional targets to this unit, go to step 4. If no additional target are to be added, go to step 5.		
5.	Click the OK button.	The Unit Schedule window closes and the Schedule of Fires window displays with the new target.

SS19 Receive a Fire Plan from Higher Headquarters.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed and communications established receive a fire plan from higher headquarters.

Procedure SS19: Receive a Fire Plan from Higher Headquarters			
Step	Station	Action	Result/Explanation
1	Higher Headquart ers	Transmit the fire plan.	

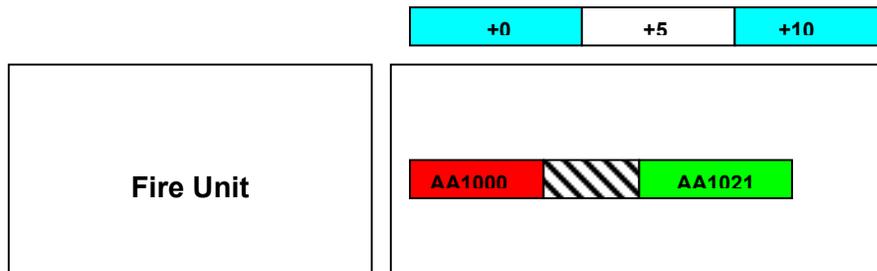
2.	Btry/Plt AFATDS	Low level alert queues.	
a.		Click L : low level alert button.	The Low Level Alert List window displays with Source: Guidance Manager Description: Received Fire Plan Notification
b.		Click the alert.	That line of text highlights.
c.		Click the View button.	The Alert Message window displays with Fire Plan (NAME) received.
d.		Click the OK button.	The Alert Message window closes
e.		Click the alert.	That line of text highlights.
f.		Click the Delete button.	The alert deletes.
g.		Click the OK button.	The Low Level Alerts List window closes.

3.	Btry/Plt AFATDS	Preview the fire plan.	
a.		Click Targets, Fire Plans, Edit	The Select Fire Plan window displays.
b.		Click the fire plan name and click the OK button.	The Fire Plan window displays with all targets assigned to the plan and the time sequence for firing.

Procedure SS19: Receive a Fire Plan from Higher Headquarters (cont)

Step	Station	Action	Result/Explanation
c.		Click Options, Schedule of Fires.	The Schedule of Fires window displays with a graphic depiction of the fire plan

Those targets scheduled are portrayed as bars with a time line in 5 minute intervals displayed above.



Red bars indicate targets scheduled at the maximum rate of fire. Striped bars portray shift time between targets and green bars represent targets fired at the sustained rate of fire.

SS20 Execute a Schedule of Fires.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed and a fire plan stored execute a schedule of fires.

Procedure SS20: Execute a Schedule of Fires.

Step	Action	Result/Explanation
Note: When a fire plan is requested, it can be fired by executing the plan. This action causes all targets in the plan to be created as TOT fire missions. The targets are also re-checked against ammunition availability and weapon status to ensure that a previously compute schedule that is no longer valid does not hinder the firing of the plan.		
1.	Click Targets, Fire Plans, Edit.	The Select Fire Plan window displays.
2.	Click the desired fire plan name and click OK.	The Fire Plan window displays.
3.	Click the Execute button.	The Confirm Target Values window displays.

a.	<i>If missions on targets of opportunity with a higher mission value than those of the plan are to be allowed to be fired during the plan:</i> Click the Yes button.	When this selection is made, AFATDS assigns a mission value based on guidance to the fire plan TOT targets.
b.	<i>If missions on targets of opportunity with a higher mission value than those of the plan are not to be allowed to be fired during the plan:</i> Click the NO button.	When this selection is made, AFATDS automatically assigns a mission value of 100 to all fire plan TOT targets.
At this point all fire plan targets are evaluated as missions. If intervention is on, the missions are queued in the IP icon of the Current tool bar.		
4.	Click the Cancel button on the Fire Plan window.	The Fire Plan window closes.

SS21 Trigger a Fire Plan Based on H-hour.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed and a fire plan stored trigger a fire plan based on H-hour.

SS21. Trigger a Fire Plan Based on H-hour.		
Step	Action	Result/Explanation
Note: The fire plan is triggered by a trigger created at AFATDS. When H-Hour arrives, the Trigger Event window displays allowing the operator to execute the plan. The following additional information applies:		
1. If targets are scheduled at an offset time too early to allow engagement (for example, offset time of 0 results in a TOT computed the instant the fire plan is called) these will be denied.		
2. All targets in the plan are assigned a mission value of 100. This prevents missions of lower priority from interrupting the firing of the plan.		
1.	Create the Trigger Event.	
a.	On the Current menu tool bar, click Trigger Events Icon	The Trigger Event List window displays.
b.	Click the New... button.	The Trigger Event window displays.
SS21. Trigger a Fire Plan Based on H-hour (cont).		
Step	Action	Result/Explanation
c.	Click in the Trigger Event: field and type the a name.	1 to 20 characters, letters or numbers. Spaces may be included.
d.	Click the Trigger Time (DTG): field and type the H-Hour time..	Time is entered in the form DDHHHZMMMYY where DD is the day, HHHH is the Z is the time zone, MMM is the month and YY is the year.
NOTE: The selection described below appear "grayed out." A selection is made by clicking the blank field to the right of the selection and not the check box to the left. After a selection is made, the check box selects automatically to indicate the action is active when the trigger event is reviewed.		
e.	Click the Execute Fire Plan field and Select...	The Select Fire Plan window displays.
f.	Click the name of the fire plan and click the OK button.	The name appears in the Execute Fire Plan field and the check box displays a check.
g.	Click the Comments field and type a description and any notes concerning the trigger event.	This data is presented for review when the trigger is tripped.
2.	React when a trigger event is tripped.	

a.	AFATDS sounds a beep and the Medium Level Alert List displays. The Trigger Event window also displays.	The event is triggered by the time or the item (unit, target, etc) reported by comm or moved by the operator into the geometry.
NOTE: The Trigger Event window will not automatically displays if the Medium Level Alerts List is already open. If this is the case, when the beep is heard, click the Refresh button on the Medium Level Alerts List and display the trigger event by clicking the event name in the list and selecting the View button.		
b.	Click the Execute button .	The Trigger Event window closes. The fire plan executes. All targets on in the plan are converted to TOT missions.

PG1 Place a Howitzer in a Degraded Mode with a Stay Order.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and communications established with the a howitzerplace a howitzer in a degraded mode with a stay order.

Procedure PG1: Place a Howitzer in a Degraded Mode with a Stay or Order.			
Step	Station	Action	Result/Explanation
1	Btry/Plt AFATDS	<i>Locate the Paladin unit symbol on the map.</i>	
Procedure PG1: Place a Howitzer in a Degraded Mode with a Stay or Order (cont).			
Step	Station	Action	Result/Explanation
a.		On the Current menu, click Map, Find Symbol .	The Find Symbol window displays.
b.		Click the Friendly Units button.	The window displays a list of friendly units displayed on all overlays in the Current window.
c.		Click the Unit ID of the Paladin in the Friendly Units list.	The Unit ID highlights and the On Overlay list displays the overlays on which the unit may be found.
d.		Click an overlay name in the On Overlay list.	The overlay name highlights.
e.		Click the OK button.	The AFATDS Current tab map centers on the selected unit.
2.	Btry/Plt AFATDS	<i>Direct the howitzer to assume a degraded mode.</i>	
a.		Click the Paladin symbol on the map.	The symbol displays as a white line form with no color.
b.		Right click on the unit symbol.	A pop-up menu displays.
c.		Click Deployment Command .	The Howitzer Deployment Command displays.
d.		Click the Deployment Command: field and select the Stay .	All other fields except Effective Time (DTG): become inactive.
e.		Click the Effective Time (DTG): field and type the time the command is to be executed.	
e.		Click the Send button.	The request is transmitted.
3.	Gun	Transmits piece status.	The AFCS transmits weapon status of degraded to the AFATDS.

4.	Btry/Plt AFATDS	The weapons status is updated for the reporting howitzer.	
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PG2: Issue a Move Order to a Howitzer

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and communications established with the a howitzer issue a move order to a howitzer. The stay order is transmitted as a move order. This order must be composed use the Common Message Processor (CMP).

Procedure PG2: Issue a Move Order to a Howitzer.			
Step	Station	Action	Result/Explanation
1	Btry/Plt AFATDS	Locate the Paladin unit symbol on the map.	
a.		On the Current menu, click Map, Find Symbol .	The Find Symbol window displays.
b.		Click the Friendly Units button.	The window displays a list of friendly units displayed on all overlays in the Current window.
c.		Click the Unit ID of the Paladin in the Friendly Units list.	The Unit ID highlights and the On Overlay list displays the overlays on which the unit may be found.
d.		Click an overlay name in the On Overlay list.	The overlay name highlights.
e.		Click the OK button.	The AFATDS Current tab map centers on the selected unit.
2.	Btry/Plt AFATDS	Issue the move order.	
a.		Click the Paladin symbol on the map.	The symbol displays as a white line form with no color.
b.		Right click on the unit symbol.	A pop-up menu displays.
c.		Click Deployment Command .	The Howitzer Deployment Command displays.
d.		Click the Deployment Command: field and select the desired command.	Applicable selections are: Move to Firing Area Move to Initialization Point Move to Logistics Resupply Point.
e.		Click the Location field and type the UTM grid.	Location is the center of a firing area or the location of the initialization or re-supply point.
For a firing point, go to step f.			
For all others, go to step g.			
f.		Click the Left Azimuth field and type the left azimuth limit the weapon will support.	
1)		Click the Azimuth of Fire field and type the center azimuth the weapon will support.	
2)		Click the Right Azimuth field and type the right azimuth limit the weapon will support.	

3)		Click the Firing Area Radius and type the radius of the firing area.	Legal entries are 1 to 750 meters.
g.		Click the Effective Time (DTG) : field and type the time the command is to be executed.	
h.		Click the Send button.	The request is transmitted.
5.	Gun	Receives Move Order.	When the message is acknowledged, Received Move Order is displayed.
After completion of the move and emplacement, the gun will transmit updated unit data and mask data. If no mask data is stored at the gun, this transmission causes previously stored mask data to be deleted.			

PG3: Request Status from a Howitzer

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and communications established with the a howitzer request status from a howitzer.

Procedure PG3: Request Status from a Howitzer.			
Step	Station	Action	Result/Explanation
1	Btry/Plt AFATDS	Locate the Paladin unit symbol on the map.	
a.		On the Current menu, click Map, Find Symbol .	The Find Symbol window displays.
b.		Click the Friendly Units button.	The window displays a list of friendly units displayed on all overlays in the Current window.
c.		Click the Unit ID of the Paladin in the Friendly Units list.	The Unit ID highlights and the On Overlay list displays the overlays on which the unit may be found.
d.		Click an overlay name in the On Overlay list.	The overlay name highlights.
e.		Click the OK button.	The AFATDS Current tab map centers on the selected unit.
2.	Btry/Plt AFATDS	Issue the request.	
a.		Click the Paladin symbol on the map.	The symbol displays as a white line form with no color.
b.		Right click on the unit symbol.	A pop-up menu displays.
c.		Click Request Status .	The Request Status window displays with the howitzer's unit ID displayed in the Request Status From: field.
d.		Click the Data Requested: field and select the desired command.	Default is Ammunition Data Applicable selections are: Computer Met Targets Registration Data Mask Data Mvv Data Howitzer Status
e.		Click the Send button.	The request is transmitted.

5.	Gun	Receives the request.	After the AFCS operator acks the request, the AFCS automatically transmits the requested data.
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PG6: Receive a Movement Order from Higher or Supported HQ.

Procedure PG6: Receive a Movement Order Higher or Supported Headquarters			
Step	Station	Action	Result/Explanation
1	Supported of Higher HQ	Transmit the move order.	
2.	Btry/Plt AFATDS	Low level alert queues.	
a.		Click L : low level alert button.	The Low Level Alert List window displays with Source: Unit Manager Description: Data Received
b.		Click the alert.	That line of text highlights.
c.		Click the View button.	The Alert Message window displays: Fact Type: Unit_Move
d.		Click the OK button.	The Alert Message window closes
e.		Click the alert.	That line of text highlights.
f.		Click the Delete button.	The alert deletes.
g.		Click the OK button.	The Low Level Alerts List window closes.
3.	Btry/Plt AFATDS	View the Move Order.	
a.		Display the Move Order	
1)		On the Current menu, click Move, Unit Moves Table .	The Move Request Order Table window displays.
2)		Click the name of your unit in the Unit Moving column.	The name highlights.
3)		Click the Edit button.	The Unit Move window displays.
b.		Review the order:	
1)		View the Unit Move window.	Start and end locations of the move are displayed as well as the start time. Azimuth of lay and position area to occupy may also be present.
2)		Click the Next button.	The Movement Table Tools window displays.
3)		Click the Move Table button.	The Move Table window displays. Each segment of the movement, speeds on segments and delays at start, check and release points are displayed.
4)		Click the Cancel button.	The Move Table window closes and the Movement Table Tools window displays.
5)		Click the Cancel button.	The Movement Table Tools window closes and the Move Order window displays.
6)		Click the Cancel button.	The Move Order window closes.
7)		Click the OK button.	The Move Request Order Table closes.

Appendix A. Operations of the FDC.

Section I. Operations.

OP1. Establish Minimum Firing Capability.

Conditions: Given an AFATDS workstation that is loaded with AFATDS software and powered but without a database...

Objective: Establish minimum firing capability.

Task OP1. Establish Minimum Firing Capability.		
Step	Action	Result/Explanation
<p>Note: The following procedures provide the minimal information and setup of the AFATDS database that is required to achieve the ability to fire. These procedures are severely abbreviated. Though a firing capability will exist, the following will not occur:</p> <ol style="list-style-type: none"> 1. Fire support coordination checks. 2. Mask checks. 3. Checks for intervening crests. 4. Digital communications except with the guns. 		

OP2. Determine an HE one Plot GFT Setting.

Conditions: Given an AFATDS workstation that is powered, with AFATDS started, activated and with the current situation displayed determine a one plot GFT setting.

Task LG1: Determine a One Plot GFT setting and TGPCs.		
Step	Action	Result/Explanation
<p>Note: A GFT setting can be derived from AFATDS to allow a manual backup capability. A GFT setting is essentially an accurate elevation and fuze setting and deflection corrections determined for a given range. The GFT setting is derived from AFATDS by computing a set of firing data for a known range and 0 VI. The target is located at a known range and altitude by polar plotting its location from one of the pieces. This procedure is based on the following assumptions:</p> <ol style="list-style-type: none"> 1. The GFT setting is computed based on a particular gun. In manual operations, this gun becomes the base piece and its data is computed based on its plot on the firing chart. Firing data for this piece becomes the "base data" to which corrections are applied to achieve a sheaf. This gun is selected by the FDC and should be the most centrally located piece and should possess an MVV close to the average of the weapons. These conditions minimize the corrections that must be applied to the base data to compute data for the other guns. If manual operations ensue and if it is necessary to compute individual piece data, corrections are applied to the base piece data. 		
1.	Determine the location of the "base piece."	
a.	Click Units, Edit this Unit.	The Unit ID: window displays with the battery/platoon's unit data.
b.	Click the Weapons file.	Weapon data displays.
c.	Record the location of the weapon that will be plotted on the firing chart as base piece.	
d.	Click the Cancel button.	The Unit ID: window closes.
2.	Create an observer at the "base piece" location.	
a.	Add the observer to the Master Unit List.	The observer must be added to the MUL to "identify" him to AFATDS.

1)	Click System, Administration, Master Unit List .	The Master Unit List window displays.
2)	Click ADD .	The Edit Unit window displays.
Task LG1: Determine a One Plot GFT setting and TGPCs (cont).		
Step	Action	Result/Explanation
3)	Click in the right cell of the Unit ID field and type Base Piece .	The text appears.
4)	Click the System Type field and select FED .	System Type: FED displays.
5)	Click the right cell of the Tacfire Alias field and type BP .	The text appears.
6)	Click the OK button.	The Edit Unit window closes and the Master Unit List window displays.
7)	Click the Cancel button.	The Master Unit List window closes.
b.	Add the observer to the current situation units.	
1)	Click Units, New .	The Create New Unit window displays.
2)	Click the Base Piece in the Unit ID list.	The name highlights.
3)	Click Unit Type button and select Observer .	
4)	Click OK .	The Unit ID: window displays
5)	Click Role and select Observer .	
6)	Click Echelon and select Section .	
7)	Click Function and select Observer .	
8)	Click in the Current Location field and type the location determined in step 1.c. above.	Type the complete coordinates in the form H EEEEE LLL NNNNN AAAA GGG where H is the higher order easting, EEEEE is the short easting coordinate, LLL is the higher order northing, NNNNN is the short northing coordinate, AAAA is the altitude in meters and GGG is the grid zone.
9)	Click on the Detailed Data file in Detail folder on upper left of the window.	Detailed Unit information data appears in the Unit ID window.
10)	Click OK .	The UNIT ID window closes and the unit data is stored.
3.	Process a "dry" fire mission to determine GFT setting.	
a.	Complete the Initiate Fire Mission window.	
b.	Click Mission Processing, Initiate Fire Mission .	The Initiate Fire Mission window displays.
c.	Click the Observer field and select the Base Piece observer.	The observer unit ID displays.
d.	Click the Polar/Laser tab.	The Polar/Laser window frame displays.
1)	Click the Polar button.	The Polar button fills in black and the Laser button is gray.
2)	Type the range ⁹ for the GFT setting in meters in the Distance field.	If the GFT setting range is greater than 9999 meters, enter 9999 here and process a subsequent correction using the gun-target line and adding the remaining range as the range shift.
3)	Type the azimuth of lay in mils in the Direction field.	
4)	Click the HOB field and select Down as the direction of the vertical shift.	Down 20 height correction is entered to compensate for the 20m HOB of an HE time fuze.

⁹ The range for the GFT setting should be selected based on the expected range to targets. The GFT met check gagepoints are not valid for this procedure. Met check gagepoints are based on altitudes of the ballistic met message zones. These altitudes do not match those at which measurements of computer mets are made.

5)	Type the 20 in the field to the right of HOB .	
6)	Click the Apply button.	The fields clear and the Location field on the IFM window populates.
7)	Click More Mission Data tab.	The More Mission Data frame displays.
Task LG1: Determine a One Plot GFT setting and TGPCs (cont).		
Step	Action	Result/Explanation
8)	In the Fire Units section, click the Add button.	The Select Unit window displays listing available guns.
9)	Click on the gun selected as base piece and click the OK button.	The Select Unit window closes and the selected gun is added to the Fire Units list.
10)	Click the Munitions tab.	The Munitions frame displays.
11)	Click FFE#1 and select the shell for the GFT setting.	
12)	Click on Fuze and select a time fuze.	
13)	Click the Propellant Model and select the model for the GFT setting.	The Lot field becomes selectable.
14)	Click the (Propellant) Lot and select the lot for the GFT setting.	
15)	Click the Charge field and select the charge for the GFT setting.	
16)	Click the Analyze Tgt button.	The Initiate Fire Mission window closes and the mission is processed.
17)	Click the IP icon on the Current window tool bar.	This task assumes a capable (green or yellow) option is determined. For a complete description of intervention, see Task FM7. Examine the Intervention Windows.
18)	Click the Cannon Tech Soln tab.	Firing Commands are displayed.
4.	Determine the GFT setting.	
a.	Observe the fire commands for the guns.	Record the fuze setting, deflection, and QE.
b.	The GFT setting is recorded in the following steps:	
1)	GFT (UNIT)	(Unit) is the battery letter.
2)	Charge	The charge computed in the fire commands.
3)	Ammunition	The projectile/propellant lot from the fire commands.
4)	Range	The GFT setting range.
5)	Elevation	The QE computed in the fire commands.
6)	Time	The fuze setting computed in the fire commands.
7)	Total Deflection Correction	Computed with the following equation: Fire Commands Deflection = <u>Common Deflection</u> Total Deflection Correction
8)	GFT Deflection Correction	Computed with the following equation: Total Deflection Correction - <u>Drift (determined from GFT)</u> GFT Deflection Correction
5.	Delete the mission.	
a.	Click the Deny button.	The mission is placed in the Denied icon on the Current menu tool bar.
b.	Click the Deny icon.	The Deny window displays.
c.	Click OK .	The Deny window closes and the

Section II. Communications.

LG2. Design a 188-220 Package 11 or JVMF Net.

When to use this procedure: This procedure is designed for an AFATDS user who is not a network administrator but must establish a package 11 or JVMF network. The objective of this procedure is to produce a usable network. The procedure is simplified and does not explain all aspects of possible use.

1. Ensure the 188-220 net addresses will not conflict with any existing network addressing scheme.

- a. Select **Communications, Configurations, Current**. Determine the IP address for each existing PKG11, JVMF or LAN network.
- b. Record the first two values from each of the network addresses. These addresses cannot be used as the first two values for any new 188-220 network.

2. Select network, local and subnet mask addresses for the new 188-220 net.

- a. Select a network address and subnet mask.
 - 1) Select two values between 1 and 255 for the first two octets of the new network IP address.
 - 2) Ensure the selected network address is not composed of the same two values determined in step 1.b. above for any other net.
 - 3) This address is the network portion of the IP address.
 - 4) Assign a subnet mask of 255.255.0.0.
- b. Select the AFATDS address.
 - 1) The local AFATDS address the last two values of the IP address. These are written to follow the two network octets to provide a complete address.
 - a) The first octet of the AFATDS address may be any value from 1 to 255.
 - b) The second octet doubles as the physical address (used in messages). The 188-220 protocol limits this value to a range of 4 to 95.
 - 2) The complete IP address for the AFATDS is composed of the network portion followed by the AFATDS address.
- c. The AFATDS requires:
 - 1) a unit reference number (URN) that is:
 - a) A value from 1 to 16777000.
 - b) Unique, the value cannot be assigned to any other unit.
 - c) Stored in the AFATDS master unit list. The master unit list is accessed by selecting **System, Administration, Master Unit List**.
 - d) The URN must also be stored in all other stations with which the AFATDS will communicate.
 - 2) A VMF Unit ID that is:
 - a) A unique text name for the unit.
 - b) Stored in the AFATDS master unit list. The master unit list is accessed by selecting **System, Administration, Master Unit List**.
- d. The AFATDS must be stored as a unit in the current situation.

3. Assign addresses for destination stations.

- a. Determine the stations with which communications will be established.
- b. For each station
 - 1) Assign the network address from step a.3)
 - 2) The third octet of the address may be any value from 1 to 255.

- 3) The fourth octet doubles as the physical address (used in messages). The 188-220 protocol limits this value to a range of 4 to 95. Assign a value that has not been assigned to any other station on this net.

4. Select communications media and net settings for the new network.

Table A-1. Selection of 188-220 Communications Settings.			
<i>Media</i>	<i>Data encoding</i>	<i>Data Rate</i>	<i>Comments</i>
SINCGARS	SINCGARS communications connect the TCIM 6 pin radio cable to the AUDIO/DATA connector on the radio. The AFATDS Frequency Hopping and Encryption Mode (Plain Text, Cypher Text or Time Delay) must match the settings established on the radio. SPTCIM supports SINCGARS communications using NRZ communications on either channel of the card. FSK communications are only supported on the first channel of the card. TCIM supports SINCGARS NRZ or FSK communications on both channels.		
	NRZ	600,1200,2400,4800,16K, 1200N, 2400N, 4800N, 9600N	<ol style="list-style-type: none"> Settings ending in N apply only to radios of D model or later. These are preferred data rates. Prior to D model radio, mid-range data rates provide better error correction. Selected data rate must be set on radio. All stations on the net must use the same data rate and encoding.
<i>Media</i>	<i>Data encoding</i>	<i>Data Rate</i>	<i>Comments</i>
	FSK 188C FSK 4202A	75,150,300,600,1200	<ol style="list-style-type: none"> FSK provides lower data rates and a less efficient net. Set data rate on radio to TF. All stations on the net must use the same data rate and encoding.
Analog	Analog radio supports non-digital radios that do not use encryption. These radios pass sound and not digital data and are limited to FSK forms. SPTCIM supports analog communications using FSK on the first channel of the card only. TCIM supports analog FSK communications on both channels.		
	FSK 188C FSK 4202A	75,150,300,600,1200	<ol style="list-style-type: none"> FSK provides lower data rates and a less efficient net. Set data rate on radio to TF. All stations on the net must use the same data rate and encoding.
KY57	KY57 communications connect the TCIM 6 pin radio cable to the handset connector on the crypto. SPTCIM supports KY57 communications using NRZ communications on either channel of the card. FSK communications are only supported on the first channel of the card. TCIM supports KY57 NRZ or FSK communications on both channels.		
	NRZ	600,1200,2400,4800,16K	<ol style="list-style-type: none"> All stations on the net must use the same data rate and encoding.
	FSK 188C FSK 4202A	75,150,300,600,1200	<ol style="list-style-type: none"> FSK provides lower data rates and a less efficient net. All stations on the net must use the same data rate and encoding.
2 Wire	2 wire networks use a pair wires for both transmit and receive. Multiple stations can be connected to the same wireline. SPTCIM supports 2 wire communications on the first channel of each card. TCIM supports 2 wire CDP communications on channel 1 only; 2 wire FSK communications can be assigned to either channel.		
	CDP	16K, 32K	<ol style="list-style-type: none"> Higher data rate is preferred. All stations on the net must use the same data rate and encoding.

Table A-1. Selection of 188-220 Communications Settings (cont).

	FSK 188C FSK 4202A	75,150,300,600,12 00	1. FSK provides lower data rates and a less efficient net. 2. All stations on the net must use the same data rate and encoding.
4 Wire	4 wire networks use a pair of receive and a pair of transmit wires. These networks connect only two stations. The transmit wires of one station must connect to the receive posts for the other station and vice-versa. SPTCIM supports 4 wire communications on the first channel of each card. TCIM supports 4 wire communications on the first channel of each TCIM.		
	CDP	16K, 32K	3. Higher data rate is preferred. 4. All stations on the net must use the same data rate and encoding.
	FSK 188C FSK 4202A	75,150,300,600,12 00	3. FSK provides lower data rates and a less efficient net. 4. All stations on the net must use the same data rate and encoding.

Section III. Troubleshooting.

Troubleshooting	
Type of Problem	Go to Table...
Accuracy problems.	Table TS2. Firing Data Troubleshooting.
Fire missions at intervention not providing desired results.	Table TS1. Fire Mission Troubleshooting.

TS1. Fire Mission Troubleshooting.	
Problem	Possible Causes/Solutions
Time Capable displays "N", red option results.	<input type="checkbox"/> Mission not later than time expired before mission could be processed. ➤ Click Guidances, Miscellaneous, Target Decay Time . Enter decay times as per operations order.
Ammo Capable – displays "N", red Option results.	<input type="checkbox"/> Ammunition operator assigned for fire mission is not available in unit database ➤ Click Units, Edit this Unit . Ensure desired projectile, propellant and fuze are stored or change FDO fire order to available ammunition. <input type="checkbox"/> No ammunition is available in the unit database. ➤ Click Units, Edit this Unit . Correct ammunition inventory.
TSS filter check failure, Recommendation is to Deny.	<input type="checkbox"/> Target TLE and/or age of report exceed TSS Guidance. <input type="checkbox"/> To turn this check off: ➤ Click Guidances, Target, TSS . Turn off TSS check by clicking the Check Fire Missions Against TSS . <input type="checkbox"/> To leave check on but find cause of this mission failure: ➤

TS2. Firing Data Troubleshooting	
Problem	Possible Solution
Single piece out of sheaf.	Determine which piece by firing a battery or platoon right or left by piece. <input type="checkbox"/> Check piece location. ➤ Click Units, Edit this Unit . Click Locate Weapons and re-enter piece lay data. <input type="checkbox"/> Check piece muzzle velocity data. . ➤ Click Units, Edit this Unit . Click MVV Data . <input type="checkbox"/> Check piece propellant temperature. ➤ Click Units, Edit this Unit . Click Weapons .
Pieces group in sheaf, sheaf	<input type="checkbox"/> Are all non-standard conditions accounted for?

TS2. Firing Data Troubleshooting	
Problem	Possible Solution
off target.	<ul style="list-style-type: none"> ➤ Yes, continue to troubleshoot. No, achieve more accurate database with meteorological and MVV data or register
	<ul style="list-style-type: none"> ❑ Did accuracy decline after reception of a MET;CM? <ul style="list-style-type: none"> ➤ If a registration is in use, was concurrent met procedure carried out properly? ❑ Check piece locations. <ul style="list-style-type: none"> ➤ Click Units, Edit this Unit. Click Locate Weapons and ensure OS locations are correct. ➤ Re-enter lay data and re-compute piece locations. ❑ Check meteorological message data. <ul style="list-style-type: none"> ➤ Click MET, View METCM. Ensure met message is in use. ➤ Ensure the MDP altitude is reasonable. ❑ Check registration data. <ul style="list-style-type: none"> ➤ Are the range and/or deflection correction larger (range correction over 5% of chart range or deflection correction greater than 10 mils)? ➤ Was the registration validated by firing a check round at a surveyed target with another gun? ❑ Check projectile weight. ❑ Check map datum. <ul style="list-style-type: none"> ➤ Is the correct datum assigned to both the observer? Click Units, Edit and select the observer. ➤ Is the correct datum assigned to both the battery/platoon? Click Units, Edit this Unit.

Appendix B. 13D Tasks Correlated to Job Aids Procedures

Task Number	Task Title	Job Aids Reference	Job Aids Procedure Title
061-280-5006	Compute Muzzle Velocity Information		Conduct Calibration and Determine MVV Using M93 and MCA
			Conduct Calibration and Determine MVV Using M93 Without MCA
061-300-5000	Prepare the TAFCS For Operation		Initialization of Existing Software and Database
			Load AFATDS Software
			Login as an AFATDS User
			Start the AFATDS Application
			Set Time and Date
			Restore a Database from a Floppy Disk
			Restore a Database from a Previous Software Version from a Floppy Disk
061-300-5001	Configure the TAFCS Database		Activate AFATDS
061-300-5002	Establish TAFCS Communications Configurations		Create and Implement a Communications Configuration
			Create a Proxy Relay
			Send Communications Checks
061-300-5003	Incorporate the Printer into the TAFCS		Configure a Parallel Printer
061-300-5006	Process Geometry Data in the TAFCS		Construct Geometry (FSCMs and Map Graphics)
			Construct an Air Corridor Geometry
061-300-5007	Update Unit Data in TAFCS		Construct Platoon FDC Unit Data
			Construct Howitzer Unit Data
			Store Historical Muzzle Velocity
			Store Fuze Inventory for a Howitzer
			Store Propellant Inventory for a Howitzer
			Store Munitions (Shell) Inventory for a Howitzer
			Input Mask Data for a Howitzer
			Receive Mask Data from a Howitzer
			Store Movement Factors for the Platoon
			Construct and Observer, Radar, Headquarters, or Maneuver Unit

Task Number	Task Title	Job Aids Reference	Job Aids Procedure Title
061-300-5010	Configure Received Message Types		Receive a Freetext Message
			Configure Message Setup
			Receive a Computer Meteorological Message
			Receive a Fire Plan from Higher Headquarters
			Implement a Plan from Higher or Supported HQ
			Receive a Movement Order from a Higher or Supported HQ
061-300-5011	Process Messages for Transmission		Compose and Transmit or Save a Freetext Message
			React to a Failed Communication
061-300-5012	Disseminate Information via Data Distribution		Make Initial Report of Fire Unit Status to Higher and Supported HQ
			Construct Data Distribution
061-300-5013	Enter the Commander's Guidance into the TAFCS		Establish Target Decay Time
			Establish FS System Buffer Distance
061-300-5014	Prepare the TAFCS for Fire Mission Processing		Establish Fire Mission Intervention Criteria
061-300-5015	Process Target Information		Create a Target List
061-300-5019	Supervise Operation of TAFCS		Import a Master Unit List (MUL)
			Prepare a JAZ Disk for Use
			Archive the Database to Floppy Disk
			Receive Mask Data from a Howitzer
			Make Initial Report of Fire Unit Status to Higher and Supported HQs
			Limit Charge Selection in Training Exercises
			Establish Target Number Block
			Enable Audible Fire Mission Alert and Adjust Volume
			Process an Area Fire Mission at AFATDS
			Initiate a Fire Mission at AFATDS
			Examine the Intervention Windows
			Examine the Weapon Status Paladin Window
			React to a Denied Fire Mission
			React to a Coordination Request
			Process Observer Subsequent Corrections During Degraded Comm Opns
			Process End of Mission During Degraded Comm Operations

Task Number	Task Title	Job Aids Reference	React to AFCS Comm Failure During a Fire Mission Receive and Process Check Firing and Cancel Check Firing Job Aids Procedure Title
			Initiate and Cancel Check Firing
			Process a Radar Fire Mission
			Process a One, Two, or Four Point Illumination Mission
			Process a Coordinated Illumination Mission (TBD)
			Process a Continuous Illumination Mission (TBD)
			Process an Immediate Smoke Mission
			Process an Immediate Suppression Mission
			Process a Quick Smoke Mission
			Process a FASCAM Mission
			Process a Final Protective Fires (FPF) Mission
			Process a Copperhead Target of Opportunity Mission
			Process a Copperhead Priority Mission
			Assign a Known Point
061-300-5032	Load Initial Vector Map to AFATDS		JMTK Map
061-300-5033	Initialize the AFATDS		AFATDS Preparation for Action Checklist
			Start the AFATDS Application
			Activate AFATDS
061-300-5048	Load AFATDS Software and System Login		Load AFATDS Software
			Login as an AFATDS User
061-300-5072	Process Muzzle Velocity Information (AFATDS)		Conduct Calibration and Determine MVV Using M93 and MCA
			Conduct Calibration and Determine MVV Using M93 Without MCA
061-300-5076	Derive a GFT Setting TGPC Corrections AFATDS		Determine an HE One Plot GFT Setting and TGPCs
061-300-5077	Process HB/MPI Registration Using AFATDS		Conduct a Visual HB/MPI Registration
061-300-5077	Process HB/MPI Registration Using AFATDS		Conduct a Radar Observed HB/MPI Registration
			Conduct a Laser Observed MPI Registration
061-300-5144	Input a Fire Plan Using AFATDS		Create a Fire Plan
			Determine the Reason Target Were Not Scheduled

			Manually Schedule Targets
061-300-5146	Input Met Data		Enter a Computer Meteorological Message

Glossary

ACO – Airspace Control Order, a list of air space control measures published daily by the air component commander. These measures support the execution of the ATO.

AFATDS – Advanced Field Artillery Tactical Data System.

AODB – Air operations database, a database of current and planned air information maintained at TBMCS.

ASL – Air Support List, target list used by AFATDS to nominate targets for inclusion on the ATO and to receive updates from the publication of the ATO.

ATACMS – Army Tactical Missile System, the family of missiles supported by MLRS.

ATCCS – A number of computer command and control systems and corresponding message protocol. These are primarily division and below systems.

ATI – Artillery Target Intelligence

ATO – Air Tasking Order, a order that directs all air missions to be flown in a theater for the specified day. The air component commander publishes and ATO for each day.

BE number – Basic Encyclopedia number, the reference used to identify facilities and installations in the MIDB.

BPS – Bits-per-seconds, a measure of the rate at which data is transmitted.

CADRG – Compressed ARC Digitized Raster Graphics.

CCU2 – Compact Computer Unit 2, Common Hardware Suite II.

BAT – Brilliant Ant-Tank submunitions, an MLRS ATACMS delivered anti-tank weapon.

DB – Database

CONOPS – Continuity of Operations, a software process that allows an AFATDS to assume fire support command and control for another AFATDS unit that fails or shuts-down to move.

DII COE – (Defense Information Infrastructure Common Operating Environment), a DOD software application that provides services (such as printing, mapping and communications) allowing other applications to share those services and thereby be smaller and more maintainable.

EFC – (Equivalent Full Charge), is a measure of tube wear expressed in charges fired. One charge zone, usually the highest possible from the weapon, becomes the base for the computation and is assigned a value of 1.00 EFC. Lesser charges are assigned an increment of this based on that charge's effect on tube wear. The total number of rounds fired over the history of the tube are recorded. The number of EFCs can be used to predict approximate loss in muzzle velocity due to tube wear.

FCS – Fire Control System, the fire control computer of the MLRS M270 and M270A1 SPLL.

FDD – First Digitized Division

FDO – Fire Direction Officer

FFZ – FireFinder Zones.

Fork – the change in elevation of the cannon tube necessary to move the mean point of impact 2 probable errors in range. This is the elevation equivalent to $\frac{1}{4}$ of the range dispersion.

FPF – Final protective fires, a fire mission allocated to a maneuver unit in the defense. The mission is designed to provide continuous, on-call fires, usually to block a maneuver corridor.

FrOB – Friendly order of battle database, database of friendly units and geometry maintained at TBMCS.

FSCC – Fire Support Coordination Center.

FSCM – Fire Support Control Measures.

FSE – Fire support element, a role AFATDS assumes to process target data and fire missions.

GDU – Gun Display Unit, a communications device provided to towed and some self-propelled artillery. The device allows transmission of fire commands and fire mission reports.

HB/MPI – High Burst/Mean Point of Impact, a type of registration conducted by cannon units to determine corrections for non-standard conditions. A number of rounds are fired at the same firing data and fuzed for air-burst (HB) or graze burst (MPI).

HPT – High payoff target

ICM – Improved Conventional Munition.

JMTK – Joint Mapping Tool Kit.

JVMF – Joint Variable Message Format.

Keytime – The time interval during which a signal is sent to a communications device (e.g., radio) to allow the device to power to a level capable of transmitting.

LAN - Local Area Network.

LMM – Loadable Munitions Module, a software module that is accessed by AFATDS to compute effects, target segmentation, air space coordination measures and flight characteristics for missiles and EFOG-M.

Max Ord – Maximum Ordinate, the highest point on a trajectory.

MCA – (Muzzle Velocity Communications Adapter), an interface that allows automatic reporting of muzzle velocity data from the M94 chronograph to AFATDS via GDU communications.

MDP – (Meteorological Datum Plane), a plane tangent to the surface of the earth at the meteorological station location. This is the altitude of the met station and height from which the met message surface data was measured.

MEF – Marine Expeditionary Force (USMC).

MFR – Mission Fired Report, generated by AFATDS at the completion of a fire mission.

MGRS – Military Grid Reference System, a map coordinate system that specifies coordinates in the form of grid zone numerical followed by grid zone letters designator, 100,000 meter square designator and 10 digit coordinate inside the 100,000 meter square.

MIDB – Modernized, Integrated Data Base, a national intelligence database of targetable information. Used by AFATDS in support of ASL nominations.

MLRS – Multiple Launched Rocket System

MPI – Mean Point of Impact, the average location of a number of rounds fired with the same firing data.

MSC – Major subordinate command.

MTO – Message To Observer

MUL – Master Unit List.

MV – Muzzle Velocity, the velocity of a projectile measured at the muzzle.

MVV – Muzzle Velocity Variation, the difference in muzzle velocity of a lot of ammunition. Referenced against the fire control data's predicted (standard) muzzle velocity.

NFA – No Fire Area

PKG 11 – See Package 11.

Package 11 – A tactical communications protocol and message set designed to replace Tacfire and bridge the gap to JVMF.

PCL – Printer Control Language.

SADARM- Sense and Destroy Armor Munitions, a submunition deliverable from MLRS or 155mm cannon systems.

Sendmail – one of the TCP/IP protocols used by AFATDS to transmit and receive data with TBMCS and ATCCS.

SCP – Survey Control Point

SPLL – Self-propelled Loader Launcher.

SPTCIM – Standard Protocol Tactical Communications Interface Module.

Subnet Mask – A value used by AFATDS on a LAN, PKG 11 or JVMF network to determine if an address is assigned to the local network. The value assists in message routing.

Suppression – Fires delivered against a target to prevent the target from accurately employing its weapons and inhibit its ability to operate. AFATDS uses a 3% effects as the munitions effectiveness calculated for suppressive fires./

Tacfire – A radio or wire data communications protocol characterized by FSK data transmission and specific "Tacfire" message set.

TAI – Target Area of Interest, an area geometry used by AFATDS to weight the value of a target located within the geometry.

TGPC – (Terrain Gun Position Corrections), corrections applied to base piece data to allow the firing of a sheaf. This provides a method of computing one gun data and quickly converting this data to individual piece data by these corrections.

TMM – Target Management Matrix, a target guidance stored in AFATDS that includes the high-payoff target list and a list of all targets excluded from attack.

TSS – Target Selection Standards, a guidance AFATDS uses to determine if target data is timely and accurate enough for attack. All ATI messages and, at the operator's discretion, fire missions are checked against TSS.

UCU2 – Ultra Computer Unit 2, an upgrade of the UCU to support A99 and especially, A99 FDD software.

UTM- Universal Transversal Mercator, a map system using coordinates in numerical form. The system divides the world into 60 grid zones and measures coordinates as departures from the center line of the grid zone for easting and the equator for northing.

VA – Vertical Angle

ZOR – Zone of Responsibility, an area geometry used by AFATDS to determine need for coordination of a fire mission. The ZOR is the area within the unit's boundaries and the area within which the commander of the responsible unit